

Erwin Hepperle, Robert Dixon-Gough, Vida Maliene,
Reinfried Mansberger, Jenny Paulsson, Andrea Pödör (eds.)

Land Management: Potential, Problems and Stumbling Blocks

Landmanagement: Potenzial, Problemfelder und Stolpersteine

EUROPEAN ACADEMY OF LAND USE AND DEVELOPMENT

EUROPÄISCHE AKADEMIE FÜR BODENORDNUNG

ACADÉMIE EUROPÉENNE DES SCIENCES DU FONCIER

**Land Management:
Potential, Problems and
Stumbling Blocks**

**Landmanagement:
Potenzial, Problemfelder
und Stolpersteine**

Erwin Hepperle, Robert Dixon-Gough, Vida Maliene,
Reinfried Mansberger, Jenny Paulsson, Andrea Pödör (eds.)

Land Management: Potential, Problems and Stumbling Blocks

Landmanagement: Potenzial, Problemfelder und Stolpersteine

EUROPEAN ACADEMY OF LAND USE AND DEVELOPMENT
EUROPÄISCHE AKADEMIE FÜR BODENORDNUNG
ACADÉMIE EUROPÉENNE DES SCIENCES DU FONCIER

Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

ISBN 978-3-7281-3479-0 (Print version)

ISBN 978-3-7281-3480-6 / DOI 10.3218/3480-6 (open access)

Download open access: www.vdf.ethz.ch

© 2013, vdf Hochschulverlag AG an der ETH Zürich

Umschlaggestaltung: Isabel Thalmann, buchundgrafik.ch

Das Werk einschliesslich aller seiner Teile ist urheberrechtlich geschützt.
Jede Verwertung ausserhalb der engen Grenzen des Urheberrechtsgesetzes ist
ohne Zustimmung des Verlages unzulässig und strafbar. Das gilt besonders
für Vervielfältigungen, Übersetzungen, Mikroverfilmungen und die Einspeicherung
und Verarbeitung in elektronischen Systemen.

Preface

Land management in Europe is a matter of high diversity: In different countries and regions we notice a great variety of procedures, institutional settings and stakeholders, caused and influenced by historical, legal, social, economic and ecological factors, like internal migration, housing density, as well as the diversity of climate and soils. Against the background of this multiplicity the peer reviewed papers in this book cover the wide spectrum of land management issues from a multinational and multidisciplinary perspective. This bundle of aspects allows a more comprehensive view on the current state of land use and on the challenges land management has to face. The objective of this book is to contribute to the understanding of the whole land management process and to raise awareness of restrictions concerning the applicability of tools and approaches caused by the diverging goals and requirements.

The European Academy of Land Use and Development (EALD) – until 2011 named European Faculty of Land Use and Development (FESF) – organizes annual symposiums on topics of land management. Most of the peer reviewed papers in this volume were presented at the 38th and last symposium of FESF in Székesfehérvár (Hungary) and the 1st symposium of EALD in Liverpool (UK). The book contains papers of land management experts from 14 different European countries with different professional background. It covers the following generalized topics:

- Interactions between landscape transformation and the structure of social systems and ecosystem services;
- the role of institutions and stakeholders in land use change;
- the various impacts of land use changes;
- coordination requirements in land use planning;
- approaches to address specific challenges in land management, and
- stumbling blocks of integral land management.

*Erwin Hepperle, Swiss Federal Institute of Technology (ETH) Zürich, Switzerland
President of the European Faculty of Land Use and Development*

Contents

Robert Dixon-Gough and Józef Hernik The Provision of Rural Housing for Rural Communities	9
Inge Aalders and Jane Morrice Land Use Change and Ecosystem Delivery by Green Networks	21
Alexandra Weitkamp Zukunftsfähige Siedlungen in ländlichen Räumen und Stadtumland	33
Thomas Kalbro and August E. Røsnes Public Planning Monopoly – or Not?	49
Peter Ekbäck Institutional Design for Public Decisions on Land Use Alterations, Acquisition of Property Rights, and Compensation	67
Eivind Hasseldokk Ramsjord and August E. Røsnes Land Assembly by the Aid of Land Readjustment	85
Hans Joachim Linke Siedlungsumbau aufgrund des demographischen Wandels	107
Giedrius Pašakarnis, David Morley and Vida Maliene Factors Influencing Land Consolidation Success: Lessons Learned in Lithuania	121
Robert Dixon-Gough, Józef Hernik, Krzysztof Gawronski and Jarosław Taszakowski Peri-urban Problems around Kraków	133
Laura Poggio, Alessandro Gimona, Iain Brown, Marie Castellazzi and Inge Aalders Changes in Land Use Capability and Impacts on Ecosystem Functions.....	141
John Kioulosopoulos and Demetris Stathakis Urban Land Evolution in Medium Size Hellenic Cities	151
Andrea Pödör and Judit Mizseiné Nyiri Urban Ecological Research in Székesfehérvár Concerning the Land Use Aspect.....	167
Maruška Šubic Kovač Land Development Potential under Conditions of Sustainable Development in the Republic of Slovenia	177
Kema Chupova The Development of Land Taxation during the Development of a Market Economy in the Russian Federation.....	187
Nikolai Volovich and Evgeniya Nikitina The Conflicts between the Systems of Public and Private Land Law.....	195

Ruşen Keleş	
Does Urban Sprawl into the Nature Jeopardize Sustainable Development in Turkey? ..	211
Hsiao-Lan Liu	
Considering Land Use in Rural Areas of Taiwan	219
Hans-Gert Braun	
Die Zukunft der Allmende.....	231
Gerlind Weber und Hermine Mitter	
Bodenschutz durch Grüngürtel.....	245
Andreas Hendricks	
Urban Redevelopment East: A Programme to Handle the Problems in Shrinking Cities in Germany.....	257
Emma Mulliner and Vida Maliene	
Affordable Housing Policy and Practice in England	267
Louise Kirsten	
The Implementation and Impact of Green Leases on Commercial Leasing Practices in the UK	279
Kim Meyer-Cech and Walter Seher	
Preservation of Farmland in the Urban Fringe	297
Erwin Hepperle	
Integrative Sustainable Land Management: Trains of Thought	309

The Provision of Rural Housing for Rural Communities

with Particular Consideration to Cultural Landscapes

1. Introduction

Although the broad categories of rural land ownership (public, private, and institutional) and occupancy (owner-occupier and tenancy) have changed very little over the past 30 years (Munton 2009), this very generalized categorization hides some significant redistributions. Whilst property (as defined by a ‘bundle of rights’) is constant, the ownership of that property will change with time and the nature of those who own it may change significantly. This is especially so in many rural areas in which there has been an important urban-rural-urban migration, especially in sought-after regions of high landscape values, where many properties have been acquired either as retirement homes or as second homes. Furthermore, this is accentuated in regions where the demographic and economic characteristics of the rural area generates differences, particularly in the nature of available employment and their remuneration (CA 2003), creates divisions between the ‘wealthy’ visitors and incomers and those who live and work in the area.

This situation of ‘insiders’ and ‘outsiders’ is prevalent in many rural parts of Britain and is especially so in scenic areas, such as the Lake District National Park, in which a relatively small housing stock of 17,000 houses (of which 87% are privately owned and rented) has been systematically purchased at inflated prices by ‘outsiders’ for many decades.

The aim of this article will be to evaluate the two approaches in the provision of rural housing – the top-downwards approach of England and Wales according to the instruments and amendments of the 1947 Town and Country Planning Act and 1949 National Parks and Access to the Countryside Act, and the more pragmatic systems of Poland and to analyse whether these approached benefit the local population. Both seek to define, establish and work with local communities and land users to create forms of regional identity but the degree of ‘people’ involvement varies as does the degree of ‘control’ exercised by those from outside the region. However, these approaches create tension – especially in the case of England and Wales but also in similar regions of Poland – through the definition and maintenance of a cultural and historic landscape, which inevitably lead to the concept of objective truth (why and how we are achieving the goals of landscape protection and conservation) and subjective correctness (defining what is sustainable and the

* The Visiting Researcher at the University of Agriculture in Kraków, Poland.

** University of Agriculture in Kraków, Faculty of Environmental Engineering and Land Surveying, Kraków, Poland.

degree by which it conflicts with the goals of landscape preservation and conservation – both physically and environmentally).

The areas that will form the basis for this comparative analysis will be the southern part of the Lake District National Park (England) and the communities of Miechów and Wiśniowa in the voivodeship of Małopolska (Poland). Whilst the regions in both England and Poland embrace programmes of community development (the economic effect) they also maintain a commitment towards landscape protection and conservation (the environmental-cultural effect).

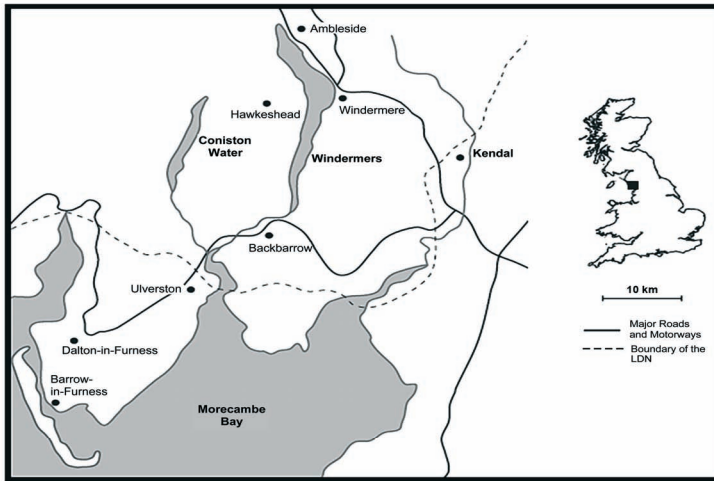


Figure 1: Sketch map of the southern part of the Lake District National Park (England).

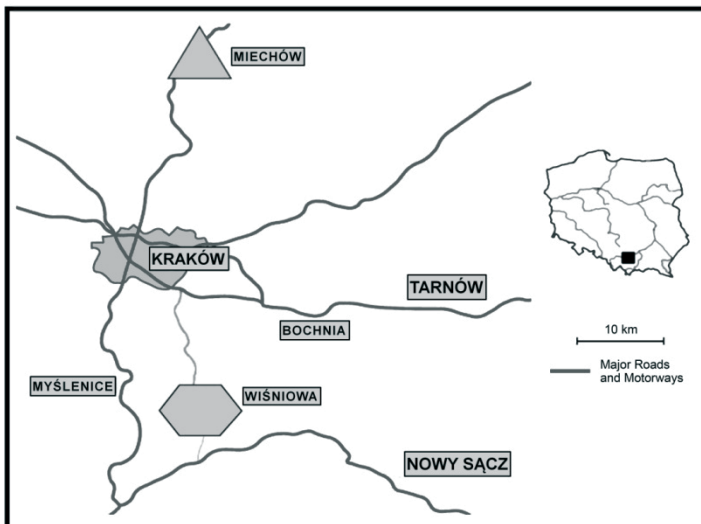


Figure 2: Sketch map of the voivodeship of Małopolska with the communities of Miechów and Wiśniowa (Poland).

2. Materials and Methods

The management of these culturally important landscapes have been analysed on the basis of empirical studies. Whereas in the case of Poland in which the studies have been made of two specific communities, the study made in England is of a more general nature albeit within and close to the Lake District National Park. It is very difficult to make a direct comparison between the cultural landscapes of the respective countries. In the case of England, the problems of the provision of rural housing has existed since the 1950s (or even earlier), fuelled by the combination of a mature property market and highly restrictive spatial planning regulations in those areas designated as National Parks or Areas of Outstanding Natural Beauty. In Poland, the housing market is gradually being developed, particularly in rural areas. The decision was made, therefore, through an evaluation of suitable case study areas in Poland that have some common characteristics with the Lake District National Park – cultural landscapes remote from large urban areas, and not directly served by motorways and important through routes. This extensive or broad approach resulted in the selection of two communities being selected for more detailed studies; Miechów – the municipal-rural community, and Wiśniowa – the rural community.

It is in this selection that the major differences between the respective study areas of England and Poland became apparent. The Lake District National Park has been an entity since its formation in 1951 and covers an area of approximately 2300 km². Under the Sandford Principle of 1974, the enjoyment of all National Parks in England and Wales 'shall be in a manner and by such means as will leave their natural beauty unimpaired for the enjoyment of this and future generations.' This principle was embedded in Section 62 of the Environment Act 1995, which makes it clear that if National Park purposes are in conflict then conservation must have priority. As set out in the Environment Act 1995, the Lake District National Park Authority's (LDNP's) statutory purposes are to conserve and enhance the natural beauty, wildlife and cultural heritage of the LDNP; and to promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public. Within the region of the southern part of the LDNP (as far north as Grasmere and southwards as far as the coastline of Morecambe Bay) comparable settlements have been selected to provide a comparable assessment of the respective policies of the two countries. The municipal-rural settlement chosen was Dalton-in-Furness, located outside the boundaries of the LDNP, whilst the rural settlements are Bouth and Backbarrow, located outside but very close to the boundaries of the LDNP, and Hawkhead (inside the National Park).

As in the case of the Polish communities of Miechów and Wiśniowa, those in and near to the LDNP were selected on the basis of their unique characteristics based upon frequent field visits and the analysis and evaluation of historic and current source materials such as maps of various kinds, land use details, local current and past development plans, and the availability and nature of housing and industry. This initial iteration was subsequently refined through discussions with people from the local communities thereby permitted the research programme to be both inward and outward looking.

3. Results and Discussion

The main function of Miechów community (apart from the city) is agriculture with a characteristic arrangement of arable fields. At present this agrarian cultural landscape is under threat through the abandonment of land cultivation through the combined effects of unprofitability, unemployment, and depopulation of the rural community. To overcome these problems the community started work a few years ago on developing and implementing solutions based on renewable sources of energy, the direct aim of which was to encourage the production renewable sources of energy to improve the economic situation in agriculture whilst reducing of energy costs for individual consumers and institutions of the community (www.miechow.eu/gmina). Importantly, the community obtained this ecological-energy effect by means of acquiring energy from biomass, importantly from straw and oats that were unfit for consumption. Arable fields, which are a source of the biomass, are an important element of the cultural landscape of the community and this land is typical for the Małopolska voivodeship and characterised by its picturesque, mosaic-like nature with numerous trees and natural barriers, as well as a high level of biodiversity. Governed by a need to consider the values of cultural landscapes in the management of the community, a Centre of Renewable Energy was created within the pilot project together with production lines for generating pellets from straw in Pojałowice (Miechów community) (www.cadses.ar.krakow.pl). From the information received from the Municipality and City Office in Miechów it was observed that there had been a significant interest by farmers in producing pellets from straw as a cheap source of energy for heating their houses and farmsteads. This form of cultivation used for producing renewable energy sources contributes to the preservation of cultural landscapes of arable lands.

Wiśniowa community is important for its rural tourism since picturesque mountain slopes with a characteristic division of the land cover into layers covers most of the area. Nowadays, this cultural landscape of mountain slopes and vast valleys hillsides is in danger. The main threats are: the disappearance of the terrace system of arable fields; the increase of soil erosion; the arbitrary afforestation of lands; and the fragmentation of building development. The community realises the importance of a development programme through becoming involved in the process centred around a tourist infrastructure that recognises a rich cultural and historical heritage and an attractive submontane landscape. At the moment, in the period of an economic development and a sudden decrease of agricultural production due to a low profitability, the protection of landscape and cultural heritage is becoming of special importance.

To improve the infrastructure, with particular respect to rural tourism, two important pilot projects were implemented in this region: the reconstruction of the Astronomical Observatory on Lubomira (<http://www.ug-wisniowa.pl>) and the reconstruction of the recreational reservoir on Krzyworzeka river in Wiśniowa (<http://www.cadses.ar.krakow.pl>).

Based upon information received from the Wiśniowa Community Council these works contributed to the increase of the number of accommodation in farm tourism buildings

and to the increase of people visiting the community. As a result of those increases, the development of tourism contributed significantly to the values of the cultural landscape in the development of the community and to a special cultivation and promotion of these cultural landscapes. Moreover, one can notice a greater interest of the inhabitants in the values of the landscape, which permitted the authorities to pass new local plans of spatial development for the villages of Wiśniowa and Węglówka, in which (Uchwała 2006a; Uchwała 2006b) scattered building development was restricted, restrictive regulations on agricultural-forest border and afforestation rate were introduced, and better conditions for preservation of terraced fields together with the construction of new networks of community and agricultural roads were created. These new local plans were passed through a great awareness of the importance of landscape among the inhabitants and an understanding of its important role in the process of the management of the community for its better development.

In contrast to this gradual and pragmatic approach of rural development and the recognition of particular landscape characteristics of the regions in Poland, the situation in the Lake District National Park has been far more invasive on the lives of the local inhabitants who both live and work there. For example, the National Parks and Access to the Countryside Act of 1949 presented a dilemma for all National Park Authorities with potentially conflicting aims since they were directed to 'preserve and enhance the natural beauty' whilst also 'encouraging the provision or improvement for persons resorting to National Parks of facilities for the enjoyment thereof and they also had a statutory responsibility to promote the social and economic well-being of the Park.' This includes the provision of housing (GILG 1978: 154) the aspect that causes the greatest degree of controversy in most cultural and historic landscapes of England and Wales. Should conservation be the prime role of a cultural landscape or should it be shared equally with the responsibility to care for those who live in the landscape, as in the case of Poland?

Whether in conservation areas or not, most rural parts of the UK have experienced social and economic restructuring over the past six decades. Certainly until the beginning of the 1960s there has been a well-defined structural coherence, based on the central position of agriculture (and in more localised regions, fishing, forestry and mining) in society, the economy and, to a certain extent, politics and the church (Cloke and Goodwin 1992). This coherence was largely achieved through the ability of the 'property, paternalism and power' (Newby et al. 1978) of a combination of landed agrarian interests, or other dominant commercial interests, that acted as localized catalysts that had a significant influence of both rural society in general, and those whose livelihoods depended upon those interests, in particular – defined by Newby (1977) as the 'deferential worker'. This is also true in Poland where agricultural land has been owned by individuals for many generations although, in the case of small farms, there has been little economic aid from the state.

In Poland, the land use and zoning of land must be initially determined followed by a formal decision. Both individuals and social organisations, including land owners, may request to open the proceedings either on behalf of an individual or through direct repre-

sentation by that individual providing it is justified by the statutory objectives of the organisation and if it is in the public interest. For example, an organization called “Conservation of Nature Association” (Stowarzyszenie na Rzecz Ochrony Przyrody), acting in Krakow makes comments on decisions concerning the environmental conditions of the developments significantly affecting the environment, and if it takes part in the proceedings, participates in it as a party. In addition, the public participation of these decisions is publicized on the relevant websites of the council (city, municipality). It can also be an administrative hearing with the participation of the public.

One of the factors that differentiates the British National Parks from other national parks around the world is the absence, in general, of public ownership: access to land is not guaranteed apart from the uncultivated areas, and must be negotiated with a variety of owners. In all National Parks, the National Trust is a major landowner, a position which is due in part to deliberate acquisition policy over the years. The Trust had in fact been a major campaigner for the creation of National Parks (Sheail 1975) and has been able to make an indirect influence beyond its own holdings of land management policies. In the case of Cumbria its interest dates from its origins, and it is now by far the largest landowner in the Lake District National Park; the importance of covenants and similar protective arrangements in further enhancing its role is illustrated by the acquisition in 1978 of the Lordship of the Manor of Borrowdale, giving it rights over the use of more than 3000 ha in the area (Tunbridge 1981).

Although tourism is the major source of employment across the LDNP, it is both seasonal and subject to changes in the habits of holiday-makers. The second major source of employment is farming, which is in severe economic decline, leaving the major industrial centre and centre of employments for the southern part of the Lake District as Barrow-in-Furness, a steel production and shipbuilding centre with the associated industries of these two sectors. However, as the steel industry declined so too did the construction of merchant ships, leaving the area dependent upon government defence contracts, which have contracted significantly as part of the post-1989 ‘peace-dividend’, leaving the area depressed and annual wages low, by national standards (Mort and Spinardi 2004). These factors have had a combined effect on the average incomes throughout the area, which is significantly lower than those elsewhere in the north-west of England, which are similar to the mean annual pay throughout England (Table 1). It is very difficult to provide such detailed, comparable figures for Poland on a regional basis. According to government sources the mean annual gross income per person in Poland, with no differentiation between genders is 37,075 PLN (approximately £8,000 at the exchange rate in April).

As mentioned above, one of the greatest problems encountered in the LDNP is that of housing. Prior to 1974, the number of houses constructed within the boundaries of the LDNP increased (Clark 1982) through a Development Plan for the National Park drawn up in 1956, which allowed a considerable number of houses to be built including some large estates. The new houses were only built in the larger settlements such as Windermere, while smaller-scale developments were permitted in villages and even hamlets. As a

Table 1: Mean annual pay for the area of the southern part of the Lake District National Park (based upon ASHE 2008).

Region	Mean annual pay – Gross (£)			
	All	Male	Female	Full-time
North-West	23,495	29,134	17,973	28,005
Barrow-in-Furness	21,030	26,052	15,126	25,647
Westmorland & Lonsdale	22,273	28,059	15,143	27,794

result there was a 45 per cent increase in the number of houses in the LDNP between 1951 and 1976 (LDSPB 1978:151). This decision was based upon the belief that although the houses would be too expensive to be purchased by the majority of those who lived and worked in the National Park, the more private houses that were built, the more likely it would be that local people would obtain one. However, by the early 1970s this policy was causing concern for three reasons: firstly, house prices remained higher than elsewhere in the regions with Bennett (1976: 78) reporting that two-bedroomed houses inside the LDNP being worth between £2,000 and £6,000 more than such similar properties outside the Park (Bennett 1976: 24–25) with average house prices in north-west England in 1970 being approximately £4000 (HEA 2005). Secondly, the house prices in the southern part of the LDNP were, on average 50 percent greater than those in the northern part of the LDNP and that at times of rapid inflation of house prices the differential could be as high as 100 percent (Shucksmith 1980: 10). This differential was, in part, due to the closer proximity of the southern part of the LDNP to the industrialised areas of north-west England and the purchase of such properties either as retirement or second homes. In a survey conducted in the late 1970s, it was found that of those houses built since 1970, some 26 percent were occupied as holiday or second homes and 40 per cent by retired people. These groups also accounted for 66 per cent of the occupants of nineteenth-century terraced housing which was surveyed at the same time (LDSPB 1980: Annex 1). Finally, the scale of building resulting from this policy was causing disquiet because of its effect on the landscape. In 1951, Bowness and Windermere were physically separate settlements while by 1970 new building had linked them into a virtually continuous built-up area (LDSPB 1980: 4).

In the case of each community, the price of property is well above the means of the average worker within the region. Information is not available for the average earnings for each community since the statistics are acquired by government at a far coarser scale. However, by extracted general figures ASHE (2008) it may be seen in Table 1 the average earnings for the region in which the settlements are located (Westmorland and Lonsdale) is well below that of the average for the north-west of England and slightly higher than those in Barrow-in-Furness, although it should be noted that this urban area provides the major

employment opportunities in the region. These figures, although local, are particularly relevant to the situation encountered by those who live and work in the southern parts of the LDNP. These should be considered in relation to the cost of housing in the same area, based upon the average house prices sold in selective communities in 2007 and 2008 (Table 2).

Table 2: The average price of house sales in the respective communities between January 2007 and December 2008 (based upon information made available from nethouseprices.com).

	Bouth	Backbarrow	Dalton-in-Furness	Hawkshead
Average price	£312,000 (a)	£277,073 (b)	£167,107 (c)	£583,626 (d)
(a) Based upon a sample of 5 house sales				
(b) Based upon a sample of 17 house sales				
(c) Based upon a sample of 14 house sales				
(d) Based upon a sample of 4 house sales				

It may be clearly seen from Table 1 and 2 that the discrepancies in average earning and house prices very large, raging from a factor of x6 (full time earnings and average house prices) to almost x21 in the case of Hawkshead. Such a situation is clearly unsustainable, especially given that the average house price in north-west England in September 2008 was £129,166 (HMLR 2008), although within the planning regulations and a freemarket of property prices there appears very little that can be achieved immediately to make housing more affordable to those who live and work in the LDNP. In terms of affordable housing, it is often those who have purchased property from outside the region who are most vociferous in their demands that new, affordable housing would spoil the nature of the region and this, unfortunately leads to further levels of conflict as the situation polarises between ‘insiders’ and ‘outsiders’.

Table 3: The average price of house sales in the respective communes during 2011/2012 (based upon information made available by the Office of the Mayor). N.B. No data is available from Miechów.

	Wiśniowa
Average price	610,000 PLN (a) (b)
(a) Based upon a sample of 3 house sales	
(b) Equivalent price is approximately £120,000 (with exchange rate in April 2012)	

In Table 3, significant discrepancies also exist in Wiśniowa that are even greater than those encountered in England between the mean gross income and house prices. This should be

taken with some degree of caution since the houses sold are to outsiders, most of whom live in the city of Kraków where the salaries are clearly much higher than those of an agricultural worker in Wiśniowa. However, the prices of those properties sold are equivalent to an apartment in Kraków.

4. Conclusions

This paper has examined two very contrasting situations. An enormous potential for the development of cultural landscapes particularly in the Małopolska voivodeship is wasted due to lack of infrastructure. The examples of Miechów and Wiśniowa show that it is possible to identify those activities that will economically revive a given community and at the same time preserve and protect the most valuable characteristics and values of landscapes, typical for the whole region.

In the case of the LDNP, the situation is equally polarized and based upon a lack of infrastructure, mainly housing but also forms of employment. Most of those brought up and whose families have lived in the region for countless generations wish to stay within the area but are often prevented from so doing by high property prices and a lack of employment opportunities. In most communities, property as it becomes available on the market is quickly purchased at inflated prices by those who wish to move into an area of high cultural and landscape values. Without significant policy changes it seems that there is very little that can be done to ameliorate the situation. The most problematic question is whether a landscape formed by the actions of humankind should be allowed to be preserved without any further development? Is the environment and landscape more important than those who have helped form it?

However, it is worth considering the comment by Bogdanowski et al. (1981) [in that] “when the changes introduced into the landscape by man are advanced to the level at which its permanent existence can be preserved only by human permanent treatments when we deal with the cultural landscape”. This can only effectively be addressed through the respective spatial planning systems used in conjunction with those who live and work in the area, together with other stakeholders such as environmental and conservation groups. The basis for the development of cultural landscapes on the level of a community should be the integration of the development of landscapes first of all with the policy within spatial and urban planning, and the cultural, environmental, agricultural, social and economical policy, as well as with any other activity which directly or indirectly influences the landscapes. Very often in Polish communities, in particular in rural ones, on the local level one can see that the value and essence of cultural landscapes is underestimated; moreover, cultural landscapes often loose with more urgent needs on the level of forecasting, planning, as well as on the level of execution, realization. This contrast completely from the top-down approach used in the case of National Parks in England in which communities are considered as part of the landscape rather than the landscape being comprised of communities, each of which has some degree of autonomy.

The basis for the development of cultural landscapes on the level of a community should be the integration of the development of landscapes first of all with own policy within spatial and urban planning, and the cultural, environmental, agricultural, social and economical policy, as well as with any other activity which directly or indirectly influences the landscapes. Very often in Polish communities, in particular in rural ones, on the local level one can see that the value and essence of cultural landscapes is underestimated; moreover, cultural landscapes often loose with more urgent needs on the level of forecasting, planning, as well as on the level of execution, realization. This contrast completely from the top-down approach used in the case of National Parks in England and Wales in which communities are considered as part of the landscape rather than the landscape being comprised of communities, each of which has some degree of autonomy.

The pilot projects in Poland of the two communities, show that it is possible to protect and preserve the cultural landscapes and obtain the economic profits at the same time. Therefore, such projects should be the future for the preservation of valuable cultural landscapes. In Austria some of such pilot projects were successfully initiated whilst others will be put into practice in the future (Christian and Feichtinger 2007) and whilst such an approach does not form part of the management of National Parks, it has a very important role to play in England and Wales in those landscapes that have not been designated as either National Parks or Areas of Outstanding Natural Beauty which, nevertheless, have important historic and cultural landscape elements. In these instances, such initiatives could well be led by community based participation. Such examples from western countries, in which the management of cultural landscapes has a long tradition, can be a motivation and a stimulus for Poland to initiate and put into practice. Such actions, in Poland and elsewhere, demonstrate the valuable role of rural landscape planning which is an integral aspect of the holistic nature of land management and is both object-orientated whilst addressing the issues of conservation and sustainability.

References

- Adams, W.M., Bourn, N.A.D. and Hodge, I. [1992], Conservation in the wider countryside: SSSIs and wildlife habitat in Eastern England. *Land-Use Policy* 9:235–248.
- ASHE [2008], Annual Survey of Hours and Earnings (ASHE) – 2008 Results. Office for National Statistics (ONS), Annual, Online edition, Table 10: Place of residence by Parliamentary Constituency. Available at: http://www.statistics.gov.uk/downloads/theme_labour/ASHE_2008/2008_res_pc.pdf (Accessed 10th March 2009).
- Bennett, S.M. [1976], *Rural Housing in the Lake District*. Lancaster University Press.
- Bogdanowski, J., Łuczyńska-Bruzda, M. and Novák, Z. [1981], *Architektura krajobrazu*, wyd. trzecie, PWN, Warszawa – Krakow, 1–246.

- CA [2003], *Rural Economies: Stepping Stones to Healthier Futures*. Cheltenham, Gloucestershire: The Countryside Agency.
- Christian, R. and Feichtinger, R. [2007], *Protecting Cultural Landscape in Austria – Strategies and Projects in Practice*. [In] Hernik J. and Pijanowski J. M. (eds.) *Cultural Landscape – Assessment, Protection, Shaping*. Wyd. AR Kraków. pp. 87–92.
- Clark, G. [1982], *Housing policy in the Lake District*. *Transactions of the Institute of British Geographers, New Series*, 7:59–70.
- Cloke, P. and Goodwin, M. [1992], *Conceptualizing countryside change: from Post-Fordism to rural structured coherence*. *Transactions of the Institute of British Geographers, New Series*, 17:321–336.
- Gilg, A.W. [1978], *Countryside Planning*. Newton Abbot: David and Charles.
- HEA [2005], *General Elections and House Prices*. Halifax Estate Agents. Available at <http://www.hbosplc.com/economy/includes/16-04-05GeneralElectionsandhouseprices.doc> (Accessed 21st March 2009).
- HMLR [2008], *Average House Prices*. Available at: (<http://www1.landregistry.gov.uk/assets/library/documents/251208.pdf>) (Accessed 3rd March 2009).
- LDSPB [1978], *Lake District National Park Plan*. Kendal: Lake District Special Planning Board.
- LDSPB [1980], *Supplementary Evidence to Examination in Public of Joint Structure Plan*. Kendal: Lake District Special Planning Board.
- Mort, M. and Spinardi, G. [2004], *Defence and the decline of UK mechanical engineering: the case of Vickers at Barrow*. *Business History* 46:1–22.
- Munton, R. [2009], *Rural land ownership in the United Kingdom: Changing patterns and future possibilities for land use*. *Land Use Policy* 26:54–61.
- Newby, H. [1977], *The Differential Worker*. London: Allen Lane.
- Newby, H., Bell, C., Rose, D. and Saunders, P. [1978], *Property, Paternalism and Power*. London: Hutchinson.
- Sheail, J. [1975], *The Concept of National Parks in Great Britain, 1900–1950*. *Transactions of the Institute of British Geographers* 66:41–56.
- Shucksmith, D.M. [1980], *Evidence to Examination in Public of Joint Structure Plan*. Kendal: Lake District Special Planning Board.
- Uchwała [2006a], *Uchwała nr XXXII/205/06 Rady Gminy Wiśniowa z dnia 28.02.2006 r. w sprawie miejscowego planu zagospodarowania przestrzennego Gminy Wiśniowa obejmującego obszar miejscowości Wiśniowa*.

Uchwała [2006b], Uchwała nr XXXII/206/06 Rady Gminy Wiśniowa z dnia 28.02.06 r. w sprawie miejscowego planu zagospodarowania przestrzennego Gminy Wiśniowa obejmującego obszar miejscowości Węglówka.

Web sites:

<http://www.cadses.ar.krakow.pl>

<http://www.nethouseprices.com/>

<http://www.miechow.eu/gmina/>

<http://www.ug-wisniowa.pl>

Land Use Change and Ecosystem Delivery by Green Networks

1. Background

1.1 Introduction

Land use change commonly is driven by political, urban and economic development. The demand for development increases the pressure on natural resources and the concern about the sustainability of change has been a political issue since the 1980s and the publication of the Brundtland Report (United Nations 1987). In the quest to make our human activities more sustainable, our relationship and appreciation of natural systems and our role within that had to change. In the decades following the introduction of concept of sustainability, science and policy have gradually made the transition from an emphasis on separate human and natural systems towards an appreciation of integrated and complex human-ecological systems. The Millennium Ecosystem Assessment (2005) reflects the change in our understanding of complex human-ecological systems and a more holistic and systems perspective on our world. It introduces the ecosystem services that represent the interaction between human and natural ecosystems.

The changes that have taken place in our relationship with green space, defined as open urban green spaces without specific economic importance or ecological designation, provide an important illustration of the changes that have taken place in relation to the way we understand our ability to implement and achieve sustainability. In this paper we will review the changing role of green space in planning and the growing evidence of the role that these open green spaces can have in maintaining biodiversity and supporting the creation of resilience in both human and natural (eco)systems. More specifically it aims to consider whether ecological or green networks are suitable planning instruments, to secure the continued delivery of ecosystem services and to develop more resilience and adaptive ecosystems in ever changing landscapes.

For this purpose the paper will look back at the history of use of green space in urban and peri-urban areas, the impact of land use change on fragmentation and loss of biodiversity, and the growing evidence of the value of green space to both human and natural systems. It will draw on the lessons learned to reflect on the green networks, like the Central Scotland Green Network (CSGN), as a planning tool to secure the delivery of ecosystem services for urban populations.

* James Hutton Institute, Aberdeen, United Kingdom.

1.2 History of green space

Well known early examples of green space as a planning tool include London's greenbelt (Kühn 2003, Gant et al. 2011), and the Dutch green heart (van der Valk and Faludi 1997), which were later followed by ecological networks (Jongman 2004). In the historical context these types of green space illustrate the changing role of green space in land use and land use planning within urban and peri-urban areas as well as our changing perception and values of these green spaces. As a planning tool the initial objective of green spaces was to control urban sprawl and to protect peri-urban agriculture, however evidence of the added benefits for human well-being emerged following their introduction. While the effectiveness of the metaphors for these early green spaces may be questioned (van der Valk and Faludi 1997), they have made an important contribution to advancing our understanding of the value of urban and peri-urban green space for human health and well-being, biodiversity and economic activities.

The greenbelt around London aimed to protect agricultural land from urban sprawl, i.e. semi-natural buffer between urban and rural areas. According to Kühn (2003) at the end of the 19th century the traditional city walls are replaced by greener areas, which were to retain a separation between urban and rural areas. An alternative spatial relationship between the urban and the peri-urban green space is based on maintaining the separation between different urban centres, which in the Netherlands resulted in the green heart, an open area surrounded by towns and cities (Van der Valk and Faludi 1997). The Randstad in the Netherlands is a well known example of multiple urban areas around an open green space, which as a planning objective dates back to the 1930s. Originally the planning focus was to protect agricultural land from urban development, hence the same objective as that of greenbelts. From the 1970s though, the planning priority of the Green Heart developed to include potential nature conservation, environmental protection, recreation as well as agriculture and later its intrinsic values (Van der Valk and Faludi 1997). The Green Heart as a planning concept has been much debated since its inception; however it has evolved into a multifunctional open peri-urban space which since 1998 is referred to as a 'National Landscape' (Kühn 2003), where investment in green networks is used to counter the demand for urban development.

Kühn argues that the weakness, as planning instruments, of both the Greenbelt and Green Heart is that their idealistic concept is unrelated to the functional reality. He argues that both planning instruments are abstract constructs which do not consider the reality and dynamics of an urban-rural continuum. Ecological networks, green networks and the development of green infrastructure try to address that reality through the integration of human and natural processes in their spatial context and actively involving local communities (Bouwman and Rosenberg 2010, CSGN 2010).

1.3 Fragmentation and the role of ecological networks

Species survival is dependent on habitat quality, food availability and for most species the ability to move through the landscape. Changing environmental conditions, either due to

natural events or land use change, make many species rely on their ability to colonise new areas. Landscape's connectivity is important to facilitate this demand for migration physically realised in ecological networks (Jongman et al. 2004).

Land use change has contributed to significant areas of natural habitats being lost. In particular urbanisation and expanding transportation networks linking urban developments have progressively transformed large habitat patches into smaller, more isolated fragments of ecologically valuable habitat. Despite many improvements in legislation, fragmentation of landscapes is rising and the remaining ecological network provides less and less connectivity. Landscape fragmentation increases the isolation of populations, making them more vulnerable to stress factors, i.e. lowering their resilience. Therefore landscape fragmentation is a major cause of the rapid decline of many wildlife populations (EEA 2011).

The extent of the loss of natural habitat and biodiversity in Europe has driven the developments of nature conservation from site based protection in its early phase towards planning systems based on a 'whole landscape' and connectivity of core natural areas through the introduction of ecological networks. The ecological networks are based on landscape ecological principles and consist of core areas, corridor zones, buffer zones and, if needed, nature rehabilitation areas for the re-establishment of nature (Jongman 1995). While ecological networks in Europe are all based on recent landscape ecological principles, Jongman et al (2004) illustrates in his review that they are in different stages of development and interpreted in a variety of ways reflecting the different complex of local circumstances and leading to different outcomes across Europe. In Central and Eastern Europe, a more environmentally based approach has been applied, where land use is considered to influence the interaction of the landscape elements and the stability of the landscape as a whole (Mander et al. 1995). The Dutch ecological network is both a pro-active planning strategy and the core of national nature conservation management, with the aim to develop a coherent network of natural areas (core areas and nature development areas) connected by ecological corridors. It replaced the traditional protection approach of site based conservation, with a pro-active form of protection and nature development, setting clear priorities in a wider national and international context. 20 years of actively developing the ecological network, in the Netherlands, has illustrated that in addition to the creation of connectivity between important core conservation areas the network has delivered unintended but welcome benefits for well-being, through leisure and recreation, education and local economy (Bouwman and Rosenberg 2010).

The European Landscape Convention captures the major progress that has been made since the introduction of early green space as a planning tool from separate activities to an integrated understanding of human and natural processes that shapes our landscapes. It defines landscape as: "An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe 2000). The Convention enforced the need to develop policies dedicated to the protection, management and planning of landscape. It raises awareness of the landscape and encourages the integration of landscape into all relevant areas of policy, including cultural, economic and

social policies. This transition in thinking and practice of nature conservation has drawn on systems thinking (Hugget 1980), developments in resilience science (Gunderson et al. 2005) and sustainability science (Holling 2000), which have introduced concepts like socio-ecological systems and complex systems, and it has contributed to the thinking around the concept of ecosystem services (MA 2005).

2. Ecosystem Services Approach in land use planning

An ecosystem is defined as: *“a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit. Humans are an integral part of ecosystems”* (MA 2005). Within the current context the concept of an ecosystem is recognised as a valuable framework for managing the complex relationship between people and the environment. The conceptual framework assumes: *that a dynamic interaction exists between people and other parts of ecosystems, with the changing human condition serving to both directly and indirectly drive change in ecosystems and with changes in ecosystems causing changes in human well-being* (MA 2005).

According to the Convention on Biological Diversity (CBD 2000) the ecosystem approach is a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way. This approach recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

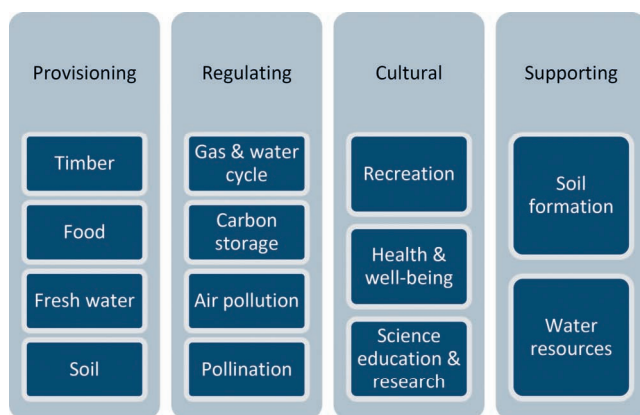


Figure 1: Ecosystem Services (MA 2005).

The decreasing capability of ecosystems to provide a growing demand for ecosystem services poses important challenges to the land use decision making process, in particular because these ever-growing demands being placed on increasingly degraded ecosystems seriously diminish the prospects for sustainable development.

a knock-on effect on human well-being which is affected not just by gaps between ecosystem service supply and demand but also by the increased vulnerability of individuals, communities, and nations. It is now recognised that *‘... while well-managed ecosystems reduce risks and vulnerability, poorly managed systems can exacerbate them by increasing risks of flood, drought, crop failure, or disease’* (MA 2005).

Implementation of the ecosystem approach therefore requires decision makers to understand the multiple effects on an ecosystem of any management or policy change. Niemelä et al. (2010) argue the importance and challenges of incorporating this abstract and complex concept into land-use planning particularly in urban regions strongly modified by

human actions. To address these challenges and improve the decision making process, the ecosystem approach has been described in 12 Principles of Ecosystem Approach (Table 1). These principles can be organised in four groups: a) people – principles 1, 11 and 12; b) management – principles 2,3 and 4; c) scale and dynamics – principles 7, 8 and 9; and d) functions, goods and services – principles 5, 6 and 10. Aspinall et al. (2009) propose a 7 staged policy/decision cycle for the implementation of the ecosystem approach in the planning process (Figure 2).

Table 1: 12 Principles of the UN Convention on Biodiversity.

UN Convention on Biological Diversity
<ul style="list-style-type: none">• The objectives of management of land, water and living resources are a matter of societal choices.• Management should be decentralized to the lowest appropriate level.• Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.• Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:<ul style="list-style-type: none">• Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.• Ecosystem must be managed within the limits of their functioning.• The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.• Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.• Management must recognize the change is inevitable.• The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.• The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.• The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Selman (2009) argues that the introduction of a ‘wider landscape’ as introduced by the ecosystem approach provides an opportunity to include strategic commitment to habitat

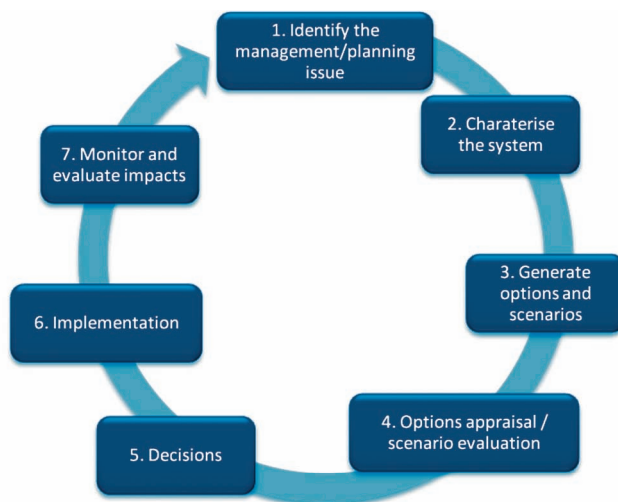


Figure 2: Model Ecosystem Framework (Aspinall et al. 2009).

reconnection through green networks complementing the role of designated areas for biodiversity conservation.

The most significant threats to the biodiversity and ecosystem services are climate change and land-use and land-cover change (MA 2005, Grimm et al. 2008). Both of these threats can be mitigated by land-use planning, through developing resilience and adaptive capacity within the human and natural ecosystems. In cities and urban regions, this can mean con-

solidating urban community structure so that transportation needs decrease (Lerch 2007) and habitats remain contiguous. The challenge to urban development is to build in a compact way, while at the same time incorporates existing and new green space in urban and peri-urban areas to deliver important ecosystem services, such as recreational services, storm water absorption and carbon sinks (Tratalos et al. 2007). Integrated planning can reduce the impacts of urban development on ecosystem services (Whitford et al. 2001).

3. Evidence of the value of green space

3.1 Ecological value

Under the continued threat to biodiversity and core areas of natural habitats from loss through land use change, evidence has been emerging from unexpected ways that natural systems have adapted to the human driven change and the opportunities provided by the urban green space as a habitat to particular species. In the context of the developments regarding ecological networks and connectivity between core habitat areas this has dramatically changed our understanding and perception of the ecological value of urban green space.

An important example of this is the significant decline in bee populations in rural areas, which can pose a serious threat to our food security and relies heavily on bees pollination. Size, structure and biodiversity of the urban green space, including green roofs (Tonietto et al. 2011), have an impact on the nature of activity bee populations. However there is evidence of management that can provide and support suitable habitats for essential pollinators (Peter 1999; Henning and Ghazoul 2011). Although this may not compensate for all the habitat loss and the decline in rural areas, it provides an opportunity to create multifunctional green space areas that support both leisure and pollinators in urban and peri-urban areas. On degraded urban green space introduction of dominant native plant species can encourage a rapid return of native pollinators (Lomov et al. 2010).

While in the context of the delivery of ecosystem services in urban and peri-urban areas above ground biodiversity has generally accepted value, the health of soils in urban areas is often overlooked. However soils fulfil an important role for example in an ecosystem's resilience to extreme events that lead to floods. An important threat to soils from urban development is sealing, which reduces significantly the soil's ability to infiltrate water. Soil biodiversity is a common indicator for soil health, a study by Smith et al. (2006) illustrates the value of urban green space, in particular urban gardens, as a source of native soil biodiversity. Their results of species diversity compare with that of natural oak-beech woodland, suggesting that even in areas heavily disturbed by human activities urban green space can create a 'haven' for healthy soils.

Demand for green space and restoration of nature in urban areas requires planners to seek effective form, configuration and maintenance schemes for parks and open spaces in urban areas. A comparative study of Tokyo Bay Bird Sanctuary Park in Tokyo and Tommy Thompson Park in Toronto, illustrates that ecological restoration involves not simply a

return of wildlife species to urban areas but requires a re-design of cities in accordance with ecological processes (Yokohari and Amati 2005).

3.2 Human value

It has long been acknowledged that green spaces are essential for human health and well-being. The first UK urban parks were established as early as 1833 and were intended to provide people who lived and worked in heavily industrialised cities with clean air and access to nature. The Victorian era saw a huge increase in the number and diversity of these parks and green spaces, as “part of a philanthropic and mentoring approach to urban dwelling” [<http://www.go4green.org.uk/page.aspx?categoryid=130&id=164>]. However, modern urban populations have become increasingly isolated from the natural environment (Miller 2005) as urban areas have become more densely developed, resulting in a decline in the quality and quantity of urban green spaces (Galea and Vlahov 2005).

It is widely recognised that many of the underlying determinants of inequalities in health are environmental, and positive associations between human health, well-being and access to outdoor natural environments are reported (e.g. Kaplan 2001; Maas et al. 2008; Abraham et al. 2010; Han 2010; Ward Thompson 2011). The growing body of primary research and literature reviews highlights the need for understanding the role green environments can play in facilitating improved health and well-being for all (e.g. Health Council of the Netherlands 2004; Newton 2007; Velarde et al. 2007; Bell et al. 2008; Donnelley 2009). This means both a better understanding of the underlying mechanisms which relate outdoor natural environments with health outcomes, in both preventative and therapeutic terms, and the means by which the knowledge can be exploited in the planning and management of such spaces.

Scientific literature suggest that research has tended to be directed towards effects of exposure to nature (Ulrich 1991), exploring connections between health and accessibility of greenspace, its role in promoting physical activity, and the positive benefits received from increased biodiversity (Fuller et al. 2007; Taylor and Kuo 2009; McCurdy et al. 2010). Studies in descriptive epidemiological research have shown that there is a positive relationship between the amount of greenspace available in people’s everyday environment and people’s physical and mental health (Groenewegen et al. 2006). Other research illustrates the therapeutic value of the natural environment (McCaffrey 2007; Lovasi et al. 2008) and suggest support for Kaplan and Kaplan’s views on the restorative role of nature (Kaplan and Kaplan 1989), and Wilson’s biophilia theory (Wilson 1984). Exercising in a green environment can lead to a significant improvement in self-esteem and mood disturbance (with anger-hostility, confusion-bewilderment, depression-dejection and tension-anxiety all improving post-activity, Pretty et al. 2005).

3.3 Economic value

The difficulty of using ecological and human value is that they are difficult to monetise. Economic value through direct monetary benefits gained from the land through production systems (agriculture or forestry) or urban development has historically dominated

decision making, however evidence supports the economic value of green space through indirect monetary benefits (i.e. reduced health care costs and damage from extreme events) as well as direct benefits from business developments for recreation and tourism.

4. Central Scotland Green Network

The CSGN is one of Scotland's 14 National transport or infrastructural priorities. The inclusion of the CSGN is a clear indication of the CSGN's importance within the strategic planning of the Scottish Government. The aim is to transform Central Scotland "into a place where the environment adds value to the economy and where people's lives are enriched by its quality" by 2050 (CSGN 2011).

The CSGN incorporates the peri-urban landscape around the two largest Scottish cities, which is characterised by urban in matrix of agricultural land with a demand for economic development and important areas of deprivation. Key challenges the CSGN aims to address are: urban expansion and sprawl, social and economic change, and human health and well being. Although the network is only recently established it draws on a range of local initiatives already active in different areas of the network and the activities of local authorities, landowners, NGOs and communities in the network.

While the concept of the CSGN is based on planning experiences with green space in UK and Europe, unlike European networks key drivers of the CSGN are social and economic development rather conservation of natural habitats. The CSGN will work towards functional and integrated habitats. The focus is on human well-being and health but recognising the need for the creation of healthy and robust ecosystems that will be able to continue delivering expected services in a changing world.

The CSGN as a national priority may have a similar status as the Dutch ecological network, its strategy is sustainable development rather than conservation management. The Scottish Government has embraced the ecosystem services approach, hence the natural resources will have an equal role in the decision making process. The lead partners of the CSGN Scottish Natural Heritage and Forestry Commission Scotland have great responsibility in realising the socio-economic objectives of the CSGN while maintaining healthy natural systems to support that realisation. It makes the CSGN a logical next step in the development from greenbelt, green heart and ecological networks towards realising sustainability.

A baseline study (CSGN 2010) and a landscape audit (SNH 2011) have been conducted and identified the current status of the CSGN against which to measure change. The landscape audit is based on the landscape character assessment which are seen in line with the European Landscape Convention as a framework for the activities of the CSGN, both at strategic level and area based. These include the development of ecological networks to support biodiversity conservation and will develop into the 'backbone' of the CSGN and community based projects funded by CSGN which implement the health and well being objectives.

5. Discussion

Green space as a planning tool has been at the heart of fundamental changes to the way we use and see natural areas. The value of green areas is not just in its own qualities but also the way it connects and is connected to other green areas. Depending on their quality and location green spaces can provide a range of ecosystem services. The ecosystem approach as put forward by the Millennium Ecosystem Assessment (2005) has brought us closer to understanding and implementing the concept of sustainability as introduced decades earlier by the Brundtland Commission.

The transformation from green space toward green networks reflects the closer integration of human and natural systems within a planning context, whether it will be able to handle the complex trade-offs of ongoing demand for development driven land use change and the maintenance of healthy and resilient ecosystems that deliver the essential services. Lessons from the developments of green space are likely to be additional consequences that will lead us to new insights regarding the value of complex human-ecological systems and their adaptive capacity.

The CSGN stands at the beginning of its life time during which it will have to face important challenges. The recent experience with ecological networks in Europe suggests that we are able to conserve, restore and create new natural areas in a way that will support core natural areas and can fulfil multiple landscape functions and deliver a range of ecosystem services. However as illustrated by the Dutch ecological network which half way through its life time had its financial investment withdrawn, long term planning priorities can suffer from changing political condition which make the realisation of their original objectives unrealistic. Never the less achievements of the first phase have generated important insights regarding multifunctionality and ecosystem services. It shows that these long-term and large scale planning instruments are potential vulnerable to political change, but the vision of change embodied in ecological and green networks is important for achieving more sustainable land use change. The significance of the ecosystem approach to sustainable land use change is that all components of the ecosystem are considered as equally important which is key for the conservation of vital all natural resources but more importantly for the ability of both human and natural system to adapt to change.

References

- Abraham, A., Sommerhalder K. and Abel T. [2010]. Landscape and well-being: a scoping study on the health promoting impact of outdoor environments. *International Journal of Public Health* 55:59–69.
- Aspinall, R., Milne, E., Black, H., Blackstock, K., Brown, I., Cooksley, S., Ferrier, R., Gill, E., Gimona, A., Glenk, K., Hasings, E., Hester, A., Langan S., Matthews K., Miller D. and Pakeman R. [2009]. *A field guide to an ecosystem approach in Scotland*. Aberdeen: Macaulay Land Use Research Institute.

- Bell, S., Hamilton, V., Montarzino, A., Rothnie, H., Travlou P. and Alves S. [2008]. Greenspace and quality of life: a critical review. Stirling: Greenspace Scotland Report.
- Bouwman, D. and Rosenberg, J. (eds.) [2010]. The success of the National Ecological Framework – a public secret. <http://www.natuurmonumenten.nl/sites/default/files/Het%20succes%20van%20de%20EHS.pdf> (last visited 29/01/2012).
- CSGN [2010]. The 2010 Baseline – bringing change to life. <http://www.centraalscotlandgreennetwork.org/Download-document/33-CSGN-Baseline-Report-2010.html> (last visited 29/01/2012).
- Donnelley, R. [2009]. Towards a mentally flourishing Scotland: Policy and action plan 2009–2011. Edinburgh: The Scottish Government.
- Fuller, R.A., Irvine, K.N., Devine-Wright, P., Warren, P.H. and Gaston, K.J. [2007]. Psychological benefits of greenspace increase with biodiversity. *biological letters* 3:390–394.
- Galea, S. and Vlahov, D. [2005]. Urban health evidence, challenges and directions. *Annual Review of Public Health* 26:341–365.
- Gant, R.L., Robinson, G.M. and Fazal, S. [2011]. Land-use change in the ‘edgelands’: Policies and pressures in London’s rural–urban fringe. *Land Use Policy* 28:266–279.
- Grimm, N.B., Faeth, S.H., Golubiewski, N.E., Redman, C.L., Wu, J., Bai, X. and Briggs, J.M. [2008]. Global Change and the Ecology of Cities. *Science* 319:756–760.
- Groenewegen, P., den Berg, A., de Vries, S. and Verheij, R. [2006]. Vitamin G: effects of green space on health. *BMC Public Health* 6, 149.
- Gunderson, L., Folke, C., and Janssen M. [2005]. Integrating ecology and society to navigate turbulence. *Ecology and Society* 10:39.
- Han, K. [2010]. An exploration of relationships among the responses to natural scenes: scenic beauty, preference and restoration. *Environment & Behavior* 42:243–270.
- Health Council of The Netherlands [2004]. Nature and health. The influence of nature on social, psychological and physical well-being. <http://www.gezondheidsraad.nl/en/publications/nature-and-health-influence-nature-social-psychological-and-physical-well-being-0>.
- Hennig, E.I. and Ghazoul, J. [2011]. Plant-pollinator interactions within the urban environment. *Perspectives in Plant Ecology, Evolution and Systematics* 13:137–150.
- Holling, C.S., [2000]. Theories for sustainable futures. *Conservation Ecology* 4:7.
- Hugget, R., [1980]. System analysis in geography. Oxford: Clarendon Press.
- Hutyra, L.R., Yoon, B., Hepinstall-Cymerman, J. and Alberti, M. [2011]. Carbon consequences of land cover change and expansion of urban lands: A case study in the Seattle metropolitan region. *Landscape and Urban Planning* 103:83–93.
- Jongman, R.H.G. [1995]. Nature conservation planning in Europe: developing ecological networks. *Landscape and Urban Planning* 32:169–183.

- Jongman, R.H.G, Külvik, M. and Kristiansen, I. [2004]. European ecological networks and greenways. *Landscape and Urban Planning* 68:305–319.
- Kaplan, R. [2001]. The nature of the view from home. Psychological benefits. *Environment & Behavior* 33:507–542.
- Kaplan, R. and Kaplan, S. [1989]. *The Experience of Nature: The Psychological Perspective*. Cambridge University Press.
- Kühn, M. [2003]. Greenbelt and Green Heart: separating and integrating landscapes in European city regions. *Landscape and Urban Planning* 64:19–27.
- Lerch, D. [2007]. *Post carbon cities: planning for energy and climate uncertainty*. Post Carbon Press. Santa Rosa (CA): Post Carbon Institute.
- Lovasi, G., Quinn, J., Neckerman, K., Perzanowski, M. and Rundle A. [2008]. Children living in areas with more street trees have lower prevalence of asthma. *Journal of Epidemiology and Community Health* 62:647–649.
- MA [2005], *Millennium Ecosystem Assessment*. Washington DC: Millennium Ecosystem Assessment, World Resources Institute and Island Press. <http://millenniumassessment.org>
- Maas, J., Verheij, R., Groenewegen, P.P., de Vries, S. and Spreeuwenberg, P. [2008]. Green space, urbanity and health: how strong is the relation? *Journal of Epidemiology and Community Health* 60:587–592.
- Mander, U., Jagomägi, J., Külvik, M. [1995]. Network of compensative areas as an ecological infrastructure of territories. In: Schreiber, K-F. (ed.), *Connectivity in Landscape Ecology*. Proceedings of the 2nd International Seminar of the International Association for Landscape Ecology, Münster (pp. 35–38). *Münstersche Geographische Arbeiten* 29. Paderborn: Schöningh.
- McCaffrey, R. [2007]. The effect of healing gardens and art therapy on older adults with mild to moderate depression. *Holistic Nursing Practice* 21:79–84.
- McCurdy, L., Winterbottom, K., Mehta, S. and Roberts, J. [2010]. Using nature and outdoor activity to improve children's health. *Current Problems in Pediatric and Adolescent Health Care* 40:102–17.
- Miller, J.R. [2005]. Biodiversity conservation and the extinction of experience. *Trends in Ecology and Evolution* 20:430–434.
- Newton, J. [2007]. *Wellbeing and the natural environment: a brief overview of the evidence*. Defra Discussion Paper. London: Department for Environment, Food and Rural Affairs (Defra).
- Niemelä, J., Saarela S.-R., Söderman, T., Kopperoinen, L., YLI-Pelkonen, V., Väre S. and Kotze, D.J. [2010]. Using the ecosystem services approach for better planning and conservation of urban green spaces: a Finland case study. *Biodiversity and Conservation* 19:3225–3243.
- Peter, G. [1999]. Pollinators as bioindicators of the state of the environment: species, activity and diversity. *Agriculture, Ecosystems & Environment* 74:373–393.

- Pretty, J., Peacock, J., Sellens, M. and Griffin, M. [2005]. The mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research* 15:319–337.
- Scottish Natural Heritage [2011]. Describing and promoting the landscapes of Central Scotland – CSGN landscape audit. SNH report.
- Selman, P. [2009]. Conservation designations – Are they fit for purpose in the 21st century? *Land Use Policy* 26, Supplement 1:142–153.
- Smith, J., Chapman, A. and Eggleton, P. [2006]. Baseline biodiversity surveys of the soil macrofauna of London's green spaces. *Urban Ecosystems* 9:337–349.
- Taylor, A. and Kuo, F. [2009]. Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders* 125:402–409.
- Tonietto, R., Fant, J., Ascher, J., Ellis, K. and Larkin, D. [2011]. A comparison of bee communities of Chicago green roofs, parks and prairies. *Landscape and Urban Planning* 103:102–108.
- Tratalos, J., Fuller, R.A., Warren, P.H., Davies, R.G. and Gaston, K.J. [2007]. Urban form, biodiversity potential and ecosystem services. *Landscape and Urban Planning* 83:308–317.
- Ulrich, R., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A. and Zelson, M. [1991]. Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology* 11:201–230.
- Usalov, B., Keith, D.A. and Hochuli, D.F. [2010]. Pollination and plant reproductive success in restored urban landscapes dominated by a pervasive exotic pollinator. *Landscape and Urban Planning* 96:232–239.
- van der Valk, A. and Faludi, A. [1997]. The Green Heart and the Dynamics of Doctrine. *Dutch Journal of Housing and the Built Environment* 12:1–19.
- Velarde, M., Fry, G. and Tveit, M. [2007]. Health effects of viewing landscapes – Landscape types in environmental psychology. *Urban Forestry and Urban Greening* 6:199–212.
- Ward Thompson, C. [2011]. Linking landscape and health: the recurring theme. *Landscape and Urban Planning* 99:187–195.
- Whitford, V., Ennos, A.R. and Handley, J.F. [2001]. City form and natural process indicators for the ecological performance of urban areas and their application to Merseyside, UK. *Landscape and Urban Planning* 57:91–103.
- Wilson, E.O. [1984]. *Biophilia*. Cambridge (USA): Harvard University Press.
- Yokohari, M. and Amati, M. [2005]. Nature in the city, city in the nature: case studies of the restoration of urban nature in Tokyo, Japan and Toronto, Canada. *Landscape and Ecological Engineering* 1:53–59.

Zukunftsfähige Siedlungen in ländlichen Räumen und Stadtumland

Was macht eine nachhaltige Kommune aus?

1. Zielsetzung

Was macht zukunftsfähige Siedlungen in ländlichen Räumen und im Stadtumland aus? Wie ist Nachhaltigkeit in Kommunen messbar? Für diese Fragestellungen wurden verschiedenste Indikatorensets aufgestellt, die die Nachhaltigkeit auf den unterschiedlichen Ebenen operationalisieren. Allerdings beurteilen sie oft die Nachhaltigkeit für eine konkrete Siedlung; dabei handelt es sich zumeist um Städte. Wenig betrachtet wurde der Vergleich der nachhaltigen Entwicklung von Gemeinden und selten stehen Dörfern im Vordergrund, deren Nachhaltigkeit es zu messen gilt.

In diesem Ansatz sollen daher zunächst bestehende Indikatorensets auf ihre Anwendbarkeit in Dörfern untersucht werden. Dabei wird vorrangig darauf geachtet, dass die Sets eine Vergleichbarkeit von Dörfern hinsichtlich ihrer nachhaltigen Entwicklung zulassen.

2. Indikatorensysteme zur Messung der Nachhaltigkeit

Welche Maßnahmen sind zukunftsfähig, welche lösen Probleme nur kurzfristig? Die Antwort kann eine objektive Einschätzung geben: Anhand von Nachhaltigkeitskriterien ist eine Kommune in der Lage, ihr Handeln neutral zu beurteilen.

Der Begriff der nachhaltigen Entwicklung wurde durch den Brundtland-Bericht der UN-Weltkommission für Umwelt und Entwicklung definiert: „*Die Menschheit hat die Fähigkeit, die Entwicklung nachhaltig zu gestalten, sodass die Bedürfnisse dieser Generation sichergestellt werden, ohne die Bedürfnisse zukünftiger Generationen zu kompromittieren. [...]*“ (World Commission on Environment and Development 1987). Aus dieser allgemein gehaltenen Definition entwickelten sich unterschiedliche Auffassungen des Begriffs „Nachhaltigkeit“. Umweltorientierte Institutionen verstehen die Nachhaltigkeit im ökologischen Sinn als nachhaltig ökologisch verträgliches Ein-Säulen-Konzept. Weiter verbreitet ist das Drei-Säulen-Konzept: Hier setzt sich Nachhaltigkeit gleichberechtigt aus Ökologie, Ökonomie und Sozialem zusammen. Eine Weiterentwicklung sind die Vier- und Mehr-Säulen-Konzepte, die zusätzlich zu den drei Säulen kulturelle und institutionelle Dimensionen berücksichtigen. RENN ET AL. stellen fest, dass der Trend zum Verständnis der Nachhaltigkeit als Mehr-Säulen-Konzept tendiert (Renn et al. 2007: S. 27).

* Geodätisches Institut, Flächen- und Immobilienmanagement, Leibniz Universität Hannover, Germany.

2.1 Indikatoren und deren Aggregation in Indikatorensystemen

Trotz vieler konzeptioneller Überlegungen ist die nachhaltige Entwicklung nicht direkt messbar. Dies ermöglichen Indikatoren (Nachhaltigkeitskriterien); sie operationalisieren die Nachhaltigkeit. BIRKMANN definiert Indikatoren als Anzeiger bzw. Messgrößen. Sie beinhalten leicht verständliche und kommunizierbare Informationen, verdeutlichen vielschichtige Zusammenhänge und reduzieren die Komplexität. Indikatoren dienen der Beschreibung, Evaluation oder Erfolgskontrolle des angestrebten Ziels, können aber auch für Vergleiche herangezogen und zur Prognose eingesetzt werden (Birkmann 1999).

Die Definitionen unterscheiden sich dahin gehend, ob nur quantitative Kenngrößen verwendbar sind oder auch qualitative Kriterien als Indikatoren infrage kommen. Diesbezüglich werden deskriptive versus wertende Größen diskutiert. GEHRLEIN versteht unter Indikatoren mehr als nur rein quantitative Größen: Sie können deskriptiven, aber auch wertenden Charakter haben (Gehrlein 2004: S. 31 ff.).

Indikatoren müssen zudem der guten wissenschaftlichen Praxis folgen. Hierbei ist es wichtig, dass sie repräsentativ sind und Zusammenhänge bzw. Probleme abbilden. Methodik und Ergebnisse sind darzulegen und müssen reproduzierbar sein. Daneben sollen Indikatoren funktionalen Anforderungen genügen: Im Vordergrund stehen Messbarkeit und Sensitivität gegenüber zeitlichen Änderungen. Sie sind so zu wählen, dass sie eine Vergleichbarkeit von Systemen erlauben und zielfähig sind. Als aufgaben- und nutzerbezogene Anforderungen müssen Indikatoren u.a. Informationen verdichten, zielorientiert sein und einen Raumbezug nachweisen. Daneben ist es erforderlich, dass Indikatoren praktischen Anforderungen genügen. Dazu zählen die Datenverfügbarkeit, die Aktualisierbarkeit und der vertretbare Aufwand in der Datenbeschaffung (Gehrlein 2004: S. 44).

Die einzelnen Indikatoren werden in Indikatorensystemen zusammengefasst. Dazu können zwei Wege beschritten werden: Entweder werden sogenannte Basisdaten zu Indikatoren aggregiert oder besonders aussagekräftige Daten als Einzelindikatoren ausgewählt. Die Gesamtheit der Indikatoren stellt im Ergebnis das Indikatorensystem dar (Gehrlein 2004: S. 31 ff.). Es handelt sich um eine Auswahl an Informationen hinsichtlich des Zielsystems (Leitbild). Indikatorensysteme, die die Nachhaltigkeit beurteilen sollen, knüpfen folglich an die Definition der Nachhaltigkeit an (Birkmann 1999). Die Auswahl der Indikatoren bzw. die Aggregation der Daten zu Indikatoren kann auf zwei Wegen erfolgen: In einem Top-Down-Ansatz existiert eine wissenschaftliche Modellvorstellung oder ein gesellschaftliches Zielsystem, für welches Indikatoren aufgestellt werden. Im Bottom-Up-Ansatz soll die Situation kleinräumig beschrieben oder aus vorhandenen Daten Indikatoren abgeleitet werden. Eine strikte Trennung der Verfahren hält GEHRLEIN in der Praxis für schwierig. Beide Ansätze werden oft vermischt (Gehrlein 2004: S. 31 ff.).

Die Gesamtheit aller Basisdaten ist objektiver als die selektierten Indikatoren eines Indikatorensets, da bei der Auswahl die Subjektivität nicht gänzlich ausgeschaltet werden kann (Birkmann 1999). Indikatorensysteme, die auf dem Bottom-Up-Ansatz basieren, beinhalten mehr Subjektivität, da sie im Gegensatz zu den Top-Down-Ansätzen auf keinem Modellansatz gründen.

2.2 Systematisierung der Indikatorensysteme

Es gibt eine Vielzahl von Indikatorensystemen auf verschiedenen Ebenen: international, national, überregional, regional und lokal (Heiland et al. 2003: S. XXI f., Morosini 2002: S. 73). Die meisten Systeme orientieren sich am Begriff der Nachhaltigkeit nach Agenda 21 und umfassen mindestens drei Säulen. Mit der Wahl der Indikatoren wird eine Ausgewogenheit der Dimensionen angestrebt. (Heiland et al. 2003: S. 23). Festzustellen ist allerdings, dass nur wenigen lokalen oder regionalen Indikatorensystemen eine hinreichende Systematisierung zugrunde liegt (Heiland et al. 2003: S. 53).

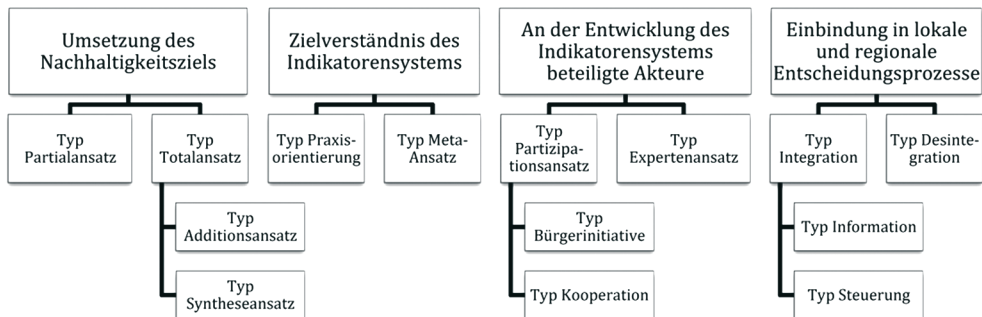


Abbildung 1: Kategorisierung der Indikatorensysteme nach Heiland et al. 2003.

Die sehr heterogenen Indikatorensysteme können nach HEILAND et al. in vier Kategorien systematisiert werden (vgl. Abbildung 1):

- *Umsetzung des Nachhaltigkeitsziels:* Im Totalansatz wird die Umsetzung des Nachhaltigkeitszieles ganzheitlich beurteilt (gleichgewichtige Wertung der Säulen). Die Dimensionen werden entweder additiv nebeneinandergestellt (Additionsansatz) oder als Wechselwirkung zwischen ökologischen, ökonomischen und sozialen Aspekten betrachtet (Syntheseansatz). Das Indikatorensystem kann aber auch als Partialansatz nur Teilaspekte der Nachhaltigkeit als thematischen Schwerpunkt berücksichtigen und die anderen Bereiche ausblenden (Heiland et al. 2003: S. 30 f.).
- *Zielverständnis des Indikatorensystems:* Der praxisorientierte Ansatz wurde für die Anwendung in der Praxis entwickelt – ohne besonderen Wert auf methodische Herangehensweise zu legen. Im Meta-Ansatz stehen konzeptionelle Überlegungen zur Entwicklung von Indikatorensystemen im Vordergrund (Heiland et al. 2003: S. 31). Auch GEHRLEIN definiert den Zielbezug als Abgrenzungskriterium: Nur durch formulierte Ziele können Indikatoren zur Steuerung und Kontrolle verwendet werden. Hier wird unterschieden in einen qualitativen, einen quantitativen und keinen Zielbezug (Gehrlein 2004: S. 174 ff.).
- *An der Entwicklung des Indikatorensystems beteiligte Akteure:* Einige Systeme im Partizipationsansatz basieren auf der Initiative und Ausarbeitung durch die Bürger selbst (Bürgerinitiative), andere wurden kooperativ mit Bürgern, den Politik- und

Verwaltungsvertretern sowie externen Beratern entwickelt (Kooperation). Im Expertenansatz erarbeiteten (wissenschaftliche) Experten das Indikatorensystem, das theoretisch gut fundiert ist und somit Indikatorensysteme weiterentwickelt (Heiland et al. 2003: S. 31). Als Experten können Externe, die Verwaltung oder auch eine Kooperation zwischen beiden verstanden werden. Partizipative Ansätze werden unterschieden in Arbeitskreise mit Bürgern einerseits und mit externen Experten und Verwaltung andererseits (Gehrlein 2004: S. 174 ff.).

- *Einbindung in lokale und regionale Entscheidungsprozesse:* Für den Typ „Integration“ sind Entscheidungsstrukturen bereits eingebunden bzw. sollen oder können prinzipiell eingebunden werden. Das Indikatorensystem dient somit der Information oder im Fall einer tief greifenden Einbindung von Entscheidungsstrukturen sogar der Steuerung. Der Typ „Desintegration“ bedeutet, dass die lokalen und regionalen Entscheidungsprozesse in das Indikatorensystem nicht eingebunden sind (Heiland et al. 2003: S. 31).

3. Bedeutung der Nachhaltigkeit in Siedlungen in ländlichen Räumen und im Stadtumland

Indikatorensysteme der lokalen Ebene sind in der Regel auf die Beurteilung größerer Siedlungseinheiten (Städte) ausgerichtet. Lediglich eine Studie der Deutschen Umwelthilfe (Spreter et al. 2004) unterscheidet bei der Auswahl der Indikatoren hinsichtlich der Siedlungsgröße. Es stellt sich demgemäß die Frage, ob die Indikatorensets in Siedlungen in ländlichen Räumen und Stadtumland anwendbar sind, bei denen es sich zumeist um kleinere Siedlungseinheiten – Dörfer – handelt.

Wie unterscheidet sich die Stadt von Dörfern? Diese Frage konnte bis heute noch nicht konkret beantwortet werden. Als entscheidendes Kriterium gelten „Erwerbstätige je Wirtschaftssektor“ mit einem überwiegenden Anteil im sekundären und tertiären Sektor. In Städten existieren ein breit gefächertes Spektrum an Berufen und ein ebenso großes Gefüge an sozialen Schichten. PAESLER stellt insgesamt Forschungsbedarf hinsichtlich einer genauen Abgrenzung von Stadt und Umland fest. Eine exakte, allgemeingültige Abgrenzung wurde bis heute nicht gefunden (Paesler 2008: S. 10 ff.).

Auch HENKEL weist darauf hin, dass noch keine exakte Definition der ländlichen Siedlung existiert. Der Begriff „Siedlung“ kann über den Ausschluss der Feldflur definiert werden. Während die ländliche Siedlung früher durch die Agrarproduktion geprägt war, verwischen die Grenzen dieser Definition zunehmend. Zwar prägt die Agrarproduktion insbesondere durch die vorhandene Bausubstanz die ländliche Siedlung weiterhin, sie stellt jedoch kein allumfassendes Merkmal mehr dar. Die Übergänge zwischen ländlichen Siedlungen und Städten sind fließend. In einem Minimalkonsens folgt HENKEL der Definition von UHLIG und LIENAU (1972 S. 11 ff.): Sie verstehen als ländliche Siedlung die verschiedenen Siedlungsformen im ländlichen Raum, der wiederum als nicht-städtischer Kulturraum betrachtet wird. Daneben wird im Sprachgebrauch für ländliche Siedlungen der Begriff „Dorf“ als Synonym gebraucht (Henkel 2004: S. 35 ff.).

Das Dorf unterscheidet sich von den Städten durch charakteristische Stärken und Schwächen (s. Abbildung 2). Ein Indikatorensystem, das die nachhaltige Entwicklung von Dörfern erfasst, muss diese operationalisieren können. HENKEL benennt als Vorteil der Dörfer gegenüber Städten deren Naturnähe. Über die Grenzen hinaus haben das Dorf und sein Umfeld einen hohen Freizeit- und Erholungswert. Auch der ökonomische Bestand ist hoch. Die Wirtschaft stützt sich auf den Mittelstand, wenn auch das traditionelle Wirtschaftspotenzial an Bedeutung verloren hat: Dies geht einher mit dem Verlust von Arbeitsplätzen und Wertschöpfungen. Es besteht Bedarf an Arbeitsplätzen für höher Qualifizierte – vornehmlich im Dienstleistungsbereich. Es herrscht eine hohe Dichte sozialer Beziehungen. Allerdings werden Aussiedler und Zugezogene zu wenig in das Dorfleben integriert. Netzwerke zwischen Vereinen, Verwaltung und Bürger sind zu schwach ausgeprägt (Henkel 2010).

In der Infrastruktur haben die Dörfer Vorzüge: Die Ausstattung mit technischer Infrastruktur ist oft auf einem guten Standard und soziale Infrastruktur ist besonders für Freizeit und Sporteinrichtungen vorhanden. Mängel sind für Schulen, im öffentlichen Personennahverkehr (ÖPNV) sowie für öffentliche und private Dienstleistungseinrichtungen, Gasthöfe und Versorger festzustellen. Daneben verfügen die Dörfer über generell höhere Geburtenraten, wenn auch ein großer Teil der jungen Erwachsenen später wegzieht. Negative Folgen dieser Abwanderungen sind u.a. Leerstände. Als weitere Vorteile sind die ländlichen Lebensstile mit der besonderen Lebensqualität durch die Nähe zur Natur festzuhalten. Insgesamt sind die Bewohner mit ihrer Situation zufrieden und fühlen sich sicher (Henkel 2010).

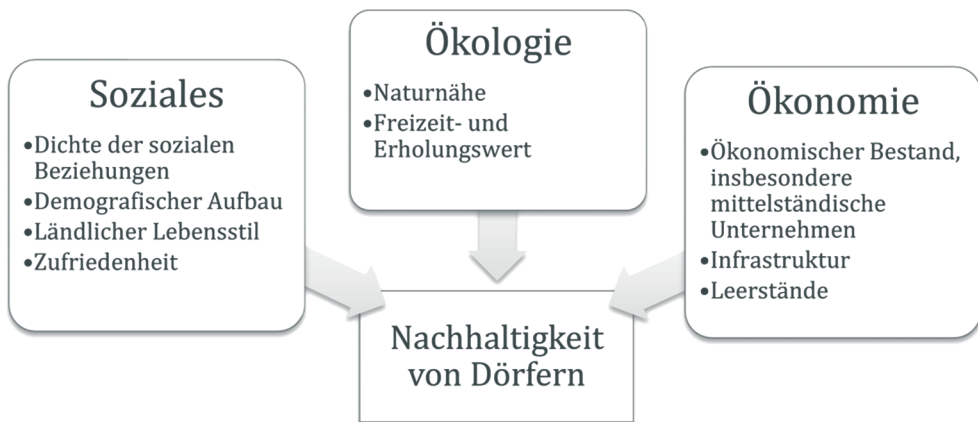


Abbildung 2: Stärken und Schwächen der Dörfer im Kontext der Nachhaltigkeit (eigene Darstellung nach Henkel 2010).

Da sich die Dörfer in diesen Punkten von den Städten unterscheiden, kann für die Bewertung von Indikatorensets festgehalten werden, dass es nach Möglichkeit viele Indikatoren geben sollte, die die oben genannten Stärken und Schwächen widerspiegeln soll-

ten. Je mehr Indikatoren vorhanden sind, die diese abbilden, desto besser werden die Verhältnisse in Dörfern mit dem Set abgebildet. Daneben muss es zudem die für Siedlungen allgemeingültigen Indikatoren geben, die nicht Dorf-typisch sind: Das Indikatorenset muss dem Totalansatz folgen und die Nachhaltigkeit in allen Säulen gleichmäßig abbilden.

4. Vergleich von Indikatorensystemen hinsichtlich der Beurteilung der nachhaltigen Entwicklung von Dörfern

4.1 Anforderungen an Indikatorensysteme

Zur Auswahl von Indikatorensystemen für die folgenden Untersuchungen werden in Anlehnung an die Kategorisierung nach HEILAND et al., ergänzt um Forderungen von GEHRLEIN, folgende Bedingungen an die auszuwählenden Indikatorensysteme formuliert:

- die Nachhaltigkeit soll ganzheitlich beurteilt werden (Typ Totalansatz),
- dem Indikatorensystem soll eine methodische Herangehensweise zugrunde liegen (Typ Metaansatz) und möglichst im Expertenansatz entwickelt worden sein,
- Entscheidungsstrukturen sollen eingebunden sein (Typ Integration),
- es soll einen Zielbezug geben und
- das System muss die lokale Ebene beurteilen.

Das Ziel ist es, die Zukunftsfähigkeit von Kommunen anhand der Nachhaltigkeit zu beurteilen. Ein partialer Ansatz, um z.B. die umweltpolitische Situation einer Kommune zu bewerten, reicht dazu nicht aus. Zur Beurteilung muss ein Totalansatz erfolgen. Ein integrativer Ansatz als Synthesansatz bildet die Verknüpfungen zwar realitätsgetreuer ab, ist aber für die Beurteilung nicht zwingend. Folglich werden Indikatorensysteme weiter betrachtet, die den Totalansatz verfolgen.

Da die Nachhaltigkeit methodisch fundiert gemessen werden soll, sind Indikatorensysteme zu wählen, die auf konzeptionellen Überlegungen gründen. Es werden Systeme betrachtet, die durch Experten aufgestellt wurden, um die theoretische Basis sicherzustellen. Auch ein Bottom-Up-Ansatz kann für das einzelne Dorf sehr gute Ergebnisse bringen. Hier definiert in großem Maße die Öffentlichkeit, was sie unter nachhaltiger Entwicklung versteht. Diese Ansätze werden hier nicht vorrangig betrachtet, da mit ihrer Verwendung nicht sichergestellt ist, Dörfer generell bewerten und vergleichen zu können.

Werden beim Messen der Nachhaltigkeit Defizite festgestellt, so sollen diese darauf folgend bestmöglich beseitigt oder minimiert werden. Das erfordert Indikatorensysteme, die Entscheidungsstrukturen einbinden. Abschließend ist es wichtig, dass die kommunale Ebene beurteilt werden kann. Es sind daher lokale Indikatorensysteme zu wählen (Gehrlein 2004: S. 198 f.).

Für die Nachhaltige Entwicklung ist eine Gleichgewichtigkeit der Säulen notwendig. Dies ist allerdings nicht zwingend durch eine gleiche Anzahl von (Einzel-) Indikatoren sicher-

gestellt. Oftmals unterscheiden sich Indikatoren in einfache und zusammengesetzte Indikatoren (Birkmann 1999: S. 18 ff.). Damit haben Indikatoren ggf. unterschiedliche Gewichte, die wiederum entsprechend berücksichtigt werden müssen. Daher sollte vermieden werden, die Gleichgewichtigkeit der Säulen zwingend auf eine rein numerische Gleichheit in Form der Anzahl an Indikatoren zurückzuführen.

4.2 Auswahl und Beschreibung der zu untersuchenden Indikatorensets

Nach GEHRLEIN 2004 werden vornehmlich vier Indikatorenssysteme verwendet und sind durch verschiedene Kommunen erprobt worden. Dabei handelt es sich um das Indikatorensystem der Forschungsstätte der evangelischen Studiengemeinschaft (FEST) (Diefenbacher 2009) und das unter Federführung der Deutschen Umwelthilfe e.V. (DUH) entwickelte Indikatorensystem „Die zukunftsfähige Kommune“. Letztere schlägt zwei Indikatorenssysteme vor, die abhängig von der Gemeindegröße sind (Spreter et al. 2004). Außerdem werden häufig die im Kontext von Nachhaltigkeitsberichten entwickelten Indikatorensets der B.A.U.M.-Consult GmbH (B.A.U.M. consult 2000; Weber-Blaschke et al. 2002) und die entwickelten Indikatorenssysteme im Kontext von Nachhaltigkeitsinventuren des ECOLOG-Institut, Hannover verwendet. Die ECOLOG-Indikatoren sind u.a. in das Set der DUH eingegangen.

Da diese dem Auswahlschema nur in wenigen Punkten widersprechen (entweder Typ Praxisorientierung statt Metaansatz [FEST, B.A.U.M.-Consult, ECOLOG, DUH] bzw. Partizipationsansatz in Kooperation statt Expertenansatz [B.A.U.M.-Consult]), werden für die weiteren Untersuchungen die folgenden Indikatorensets ausgewählt: Das Indikatorenset

- der *DUH* für die Gemeindegröße < 15.000 EW (Vollmer et al. 2004; Spreter et al. 2004) wegen der Verwendbarkeit in kleinere Siedlungen,
- der *FEST* (Diefenbacher 2009) wegen seiner verbreiteten Anwendung,
- der *Econtur gGmbH* wegen der Anwendung im Untersuchungsraum Niedersachsen (als einziges im partizipativen Ansatz aufgestellt) (Stadt Syke 2002) und
- von *B.A.U.M.-Consult* wegen der Anwendung in einem Dorf (B.A.U.M. consult 2001).

Die vier Indikatorensets umfassen rund 80 verschiedene Indikatoren und gliedern sich in mindestens in drei Säulen. Die untersuchten Indikatorensets werden im Folgenden kurz vorgestellt. Sie sollen im weiteren Verlauf auf ihre Verwendbarkeit für die Bewertung der Nachhaltigkeit in Dörfern überprüft werden.

FEST-Indikatorenset

Das FEST-Indikatorenset basiert auf einem Vier-Säulen-Modell (einschließlich der institutionellen Säule der Partizipation, vgl. auch Gehrlein 2004: S. 200). Die vier Säulen bzw. Kategorien differenzieren sich in je sechs Teilziele (Tabelle 1). Diese werden aus 37 Einzelindikatoren, davon 24 Kernindikatoren, gebildet, die sich allerdings nicht gleichmäßig auf

die Säulen verteilen (auf eine Darstellung wird hier verzichtet). Das Set ist zunächst mit verschiedensten Akteuren diskutiert und anschließend in einer Testphase praktisch in Großstädten, Landkreisen und kleineren Städten erprobt worden. Einige für die Agenda 21 Prozesse wichtige Indikatoren konnten aufgrund methodischer Probleme bzw. mangelnder Datenverfügbarkeit keinen Eingang in das Set finden. Eine Anleitung zur Datenbeschaffung liegt vor (Diefenbacher 2009).

Tabelle 1: FEST-Indikatorenset (Diefenbacher 2009).

Kategorien			
Ökologie	Ökonomie	Gesellschaft/Soziales	Partizipation
Geringe Abfallmengen	Gleichmäßige Verteilung von Arbeit	Gerechte Verteilung von Einkommen und Vermögen	Hohes ehrenamtliches Engagement
Möglichst niedrige Luftverschmutzung	Möglichst hoher regionaler Selbstversorgungsgrad	Hohes Niveau von Aus- und Weiterbildung	Hohes demokratisches Engagement
Möglichst schonender Umgang mit nicht erneuerbaren Ressourcen	Ausgeglichene Wirtschaftsstruktur	Ausgewogene Bevölkerungs- und Siedlungsstruktur	Kommunaler Einsatz für internationale Gerechtigkeit
Möglichst geringe Entnahme erneuerbarer Ressourcen	Hohe Preisniveaustabilität	Hohes kulturelles Angebot	Gleichberechtigte Teilhabe von Frauen am öffentlichen Leben
Möglichst niedriger Energieeinsatz	Gesunde Struktur der öffentlichen Haushalte	Hohes Gesundheitsniveau	Verbesserung der Lebensumwelt von Kindern und Jugendlichen
Umwelt- und sozial verträgliche Mobilität	Verbesserung des betrieblichen Umweltschutzes	Hohes Sicherheitsniveau	Teilhabe am Nachhaltigkeitsprozess

DUH-Indikatorenset „Die zukunftsfähige Kommune“

Das Indikatorenset der DUH bildet ebenfalls vier Säulen ab, wobei die vierte Säule das sogenannte „Wohlbefinden“ beinhaltet. Diese vier Leitkategorien werden mit Hilfe von 20 Indikatoren bewertet (für Gemeinden unter 15.000 Einwohner; das Indikatorenset für größere Gemeinden ist umfangreicher und wird hier nicht vorgestellt).

Tabelle 2 stellt die Leitkategorien und aggregierten Indikatoren dar. Auf die Darstellung der Einzelindikatoren wurde verzichtet. Insgesamt wird das Set aus 38 Einzelindikatoren gebildet, die sich nicht gleichmäßig auf die vier Säulen (Kategorien) verteilen. Das Set wurde im Wettbewerb „Zukunftsfähige Kommune“ in drei Jahren getestet und wurde anhand von verschiedenen Kriterien (z.B. Vollständigkeit des Agenda 21 Prozesses, Datenverfügbarkeit etc.) beurteilt und überarbeitet. Eine Anleitung zur Erfassung der Indikatoren liegt vor (Spreter et al. 2004: S. 7).

Tabelle 2: Indikatorenset der DUH nach SPRETER et al. (2004: S. 7).

Wohlbefinden	Leitkategorien		
	Soziale Gerechtigkeit	Ökologie	Ökonomie
Kulturelles Leben	Betreuung von Kindern	Geschützte Natur	Arbeitslosigkeit
Bevölkerungsentwicklung	Geschlechtergerechtigkeit in der Kommunalpolitik	Flächenverbrauch	Ausgeglichene Wirtschaftsstruktur
Kinder mit Übergewicht**	Empfänger von Hilfe zum Lebensunterhalt	Sparsamer Umgang mit Flächen	Kommunale Schulden
Erschließung mit Bus und Bahn (*)	Kommunales Eine-Welt-Engagement	Umwelt- und ressourcenschonende Energieerzeugung*	Arbeitsplatzangebot
Wohnungsnahe Grundversorgung	Einrichtungen für Kinder und Jugendliche	Vorkommen der Mehlschwalbe*	Ökologische Landwirtschaft

Nachhaltigkeitsbericht der B.A.U.M.-consult am Beispiel für Immenstadt

Tabelle 3 stellt die neun Handlungsbereiche und 25 z.T. aggregierte Indikatoren dar. Insgesamt werden 36 Einzelindikatoren erfasst (B.A.U.M. consult 2001). Es wird kein eigenes Nachhaltigkeitsverständnis zugrunde gelegt. Das Indikatorenset orientiert sich stattdessen an dem auf der UNCED in Rio de Janeiro entwickelten Nachhaltigkeitsverständnis (vgl. World Commission on Environment and Development 1987). Die Indikatoren werden zur Darstellung des Istzustands in ausgewählten Agenda 21 Handlungsbereichen verwandt. Im Vordergrund der Erstellung stand die u.a. ausgeglichene Erfassung der Dimensionen der nachhaltigen Entwicklung (Heiland et al. 2003: S. 331 f.).

Tabelle 3: Nachhaltigkeitsbericht am Beispiel Immenstadt (B.A.U.M. consult 2001).

Handlungsbereich	Indikator
Siedlung	Anteil der Siedlungs- und Verkehrsfläche an der Gesamtfläche
	Anteil der im Innenbereich errichteten Wohneinheiten an allen Neubauten
Landschaft	Fläche von Schutzgebieten und kartierten Biotopen
	Zahl und Größe landwirtschaftlicher Betriebe
Abfall	Wertstoff-, Restmüll- und Gesamtabfallaufkommen in kg pro Einwohner und Jahr
Energie	Stromverbrauch der Haushalte in kWh pro Einwohner und Jahr
	Zahl kommunaler Gebäude, die mit erneuerbaren Energien versorgt werden
Wasser	Anschlussgrad an die Ortskanalisation
Mobilität und Verkehr	Stündliches Verkehrsaufkommen in der Innenstadt
	Zahl der ÖPNV-Personenfahrten pro Jahr
	Zahl der Verkehrsunfälle mit Personenschaden und verletzte Personen
Arbeit, Wirtschaft, Finanzen	Anteil der Aus- und Pendler an den sozialversicherungspflichtig Beschäftigten
	Arbeitslosenzahl
	Zahl der Unternehmen mit Umweltmanagement-Strukturen
	Kaufkraftbindung am Ort
	Schuldenstand und Schuldendienstleistungen

Handlungsbereich	Indikator
Soziales, Bildung, Partizipation	Anteil der Altersgruppen an der Bevölkerung
	Zahl der Kriminaldelikte
	Versorgungsgrad mit Kindergartenplätzen
	Anteil der Schulabgänger ohne Schulabschluss in Prozent
	Zahl der Sozialhilfeempfänger
	Anteil der Kinder mit allergischen Erkrankungen
	Zahl der Vereinsmitglieder
	Freizeitangebot für Jugendliche
Globale Partnerschaft	Zahl der Veranstaltungen mit Partner-Kommunen

Econtur-Indikatorenset „Zukunftsfähiges Syke“

Das Indikatorenset bildet das Drei-Säulen-Modell der Nachhaltigkeit gleichgewichtig ab. Es werden die drei Dimensionen „Umwelt“, „Wirtschaft“ und „Soziales“ mit Hilfe von 17 Indikatoren und 10 Handlungsfeldern bewertet (s. Tabelle 4) (Stadt Syke 2002). Die Auswahl der Indikatoren erfolgte im Rahmen von zwei Workshops mit verschiedensten Akteursgruppen (Heiland et al. 2003: S. 353 f.).

Tabelle 4: Indikatorensystem der Stadt Syke (Stadt Syke 2002).

Kategorie	Themenfeld	Indikator
„Umwelt“	Energie und Klimaschutz	Energieverbrauch in kommunalen Gebäuden
		Umweltschonende Energieerzeugung
		Anteil der Solar-Kollektorfläche
	Natur und Landschaft	Gebiete mit besonderer Bedeutung für Natur und Landschaft
		Vorkommen des Feldhasen
	Flächenverbrauch	Verhältnis der Siedlungs- und Naturfläche
	Wasser	Trinkwasserverbrauch
„Wirtschaft“	Bauen und Wohnen	Wohnungsfertigstellungen im Ein- und Mehrfamilienhausbau
	Naherholung und Freizeit	Länge der markierten Wander- und Radwege
		Anzahl der Übernachtungen in ausgewählten Betrieben
	Landwirtschaft	Naturnahe Landwirtschaft
	Verkehr	Annahme des Anrufsammeltaxi-Service
		Ortschaften mit ÖPNV-Anschluss
	Haushalt	Pro-Kopf-Verschuldung
„Soziales“	Bürgerbeteiligung	Neue Formen der Bürgerbeteiligung
		Bürgerfreundlichkeit des Bürgerbüros
		Ehrenamtliches Engagement

4.3 Auswahl der zu bewertenden Dörfer

Anhand dieser Sets wird die nachhaltige Entwicklung dreier Dörfer in Niedersachsen bewertet. Die Sammlung der Indikatoren erfolgte im Rahmen einer Masterarbeit (vgl. Geisemeier 2011). In den Gemeinden Menslage, Leiferde und Nordsehl (s. Abbildung 3)

wurde die nachhaltige Entwicklung anhand der oben genannten Sets gemessen. Alle Gemeinden befinden sich in Niedersachsen, einem der ländlich geprägten Bundesländer Deutschlands. Menslage liegt im Landkreis Osnabrück und gehört der Samtgemeinde Artland an. Es ist mit 65,2 km² die flächenmäßig größte der drei untersuchten Kommunen. Leiferde liegt nördlich von Braunschweig im Landkreis Gifhorn. Es hat eine Fläche von 27,9 km². Nordsehl liegt im Landkreis Schaumburg und gehört der Samtgemeinde Niedernwöhren an. Sie ist mit 6,0 km² die kleinste der drei Kommunen. Die Einwohnerdichten liegen in Leiferde bei 155 EW/km², in Nordsehl bei 130 EW/km², in Menslage knapp unter 40 EW/km² (Datengrundlage: LSKN 2011). Alle Kommunen können grundsätzlich als Dörfer bezeichnet werden.

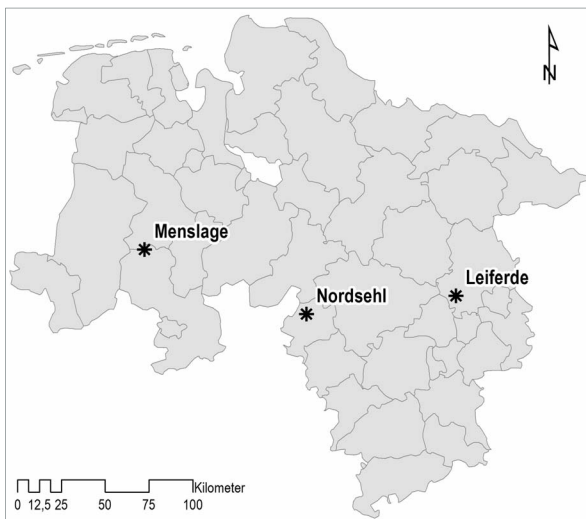


Abbildung 3: Lage der Gemeinden in Niedersachsen, Deutschland (Eigene Darstellung).

4.4 Vergleich der Indikatorensets

Nach Bewertung der nachhaltigen Entwicklung der drei Dörfer mithilfe der vier ausgewählten Indikatorensets kann festgestellt werden, dass die Ergebnisse sich unterscheiden. Aus jedem der erhebbaren Indikatoren wird ein relatives Ranking erstellt. Die Summe dieser (Indikatoren-) Einzelrankings ergibt ein Gesamtranking pro Set pro Gemeinde, die untereinander verglichen werden können (s. Tabelle 5).

Tabelle 5: Relatives Ranking der untersuchten Dörfer für die vier Indikatorensets.

	Menslage	Leiferde	Nordsehl
DUH	gut	mittel	schlecht
FEST	mittel/gut	schlecht	mittel/gut
Econtur	gut	mittel	schlecht
B.A.U.M	mittel	gut	schlecht

Die Indikatorensets der DUH und von Econtur stimmen in ihrer relativen Einschätzung der Nachhaltigkeit der Orte überein. Auch das Set von B.A.U.M. kommt zu dem Ergebnis, Nordsehl in Relation zu den beiden anderen Ort am schwächsten einzustufen; lediglich das Set nach FEST beurteilt Leiferde am schwächsten.

Allerdings unterscheiden sich die Beurteilungen der Orte nach FEST nur unwesentlich im Vergleich zur Beurteilung der anderen Sets. Während die Beurteilung nach DUH die größten Unterschiede zwischen den Orten feststellt, liegen die Sets nach Econtur und FEST in ihrer Variation deutlich darunter; die festgestellten Unterschiede sind deutlich geringer als bei DUH.

Werden die Indikatoren der vier Sets auf die von HENKEL (2010) definierten Charakteristika für Dörfer untersucht, so ist festzustellen, dass das Indikatorenset der DUH die meisten dorfcharakterisierenden Indikatoren (im Folgenden als Dorf-Indikator bezeichnet) aufweist (s. Tabelle 6). Allerdings beinhalten auch die anderen Indikatorensets über ein Drittel dorfcharakterisierenden Indikatoren. Im Vergleich aller Sets enthält das Econtur-Set die wenigsten Dorf-Indikatoren.

Tabelle 6: Vergleich der Sets hinsichtlich der Beschreibung von Charakteristika für Dörfer.

	DUH	FEST	Econtur	B.A.U.M
Kein „Dorf-Indikator“	49%	55%	65%	58%
„Dorf-Indikator“	51%	45%	35%	42%

Für alle Sets sind die in Abschnitt 4.1 formulierten Anforderungen an eine gute wissenschaftliche Praxis, Funktionalität und Aufgaben- und Nutzerangemessenheit erfüllt (weiterführend: s. Gehrlein 2004 und Heiland et al. 2003). Festzustellen ist allerdings, dass nicht alle Indikatoren den praktischen Anforderungen genügen. Es gibt etliche Indikatoren, die sich als nicht erfassbar erweisen oder nicht weitergegeben werden, z.B. Energieversorger (s. Tabelle 7).

Tabelle 7: Erhebbarkeit von Indikatoren.

Nicht ermittelbar	DUH	FEST	Econtur	B.A.U.M
Indikatoren gesamt	38	37	17	36
Nicht erhebbar	10 (26%)	13+2 (35% + 5%)	7 (41%)	12+1 (33% + 3%)
„Dorf-Indikatoren“	20	15	6	10
„Dorf-Indikatoren“, nicht erhebbar	2 (10%)	7 (47%)	2 (33%)	4 (40%)

Auch hier stellt sich das Indikatorenset der DUH als praktikabelstes Set dar; mit nur 26% nicht erhebbarer Indikatoren kann die Mehrzahl an Indikatoren erfasst werden. Die Indikatorensets nach FEST und B.A.U.M. beinhalten über 30% nicht erhebbarer Indikatoren. Dazu kommen noch ein bzw. zwei Indikatoren, die nur für max. zwei Dörfer erfasst werden konnten. Am schlechtesten schneidet wiederum das Set von Econtur mit 41% nicht erhebbarer Indikatoren ab. Wird die Erfassbarkeit der dorfcharakterisierenden Indikatoren betrachtet, kann das Set der DUH als am besten geeignet festgestellt werden. Das Indikatorenset von FEST ist diesbezüglich am schwächsten.

Die als dorfcharakterisierend festgestellten Indikatoren sind allerdings nicht die Indikatoren, die die Merkmale von Dörfern besonders zutreffend beschreiben. Würde ein Set in Hinblick auf die Abbildung dörflicher Eigenarten hinsichtlich der nachhaltigen Entwicklung aufgestellt werden, so müssten zum Teil andere Indikatoren gewählt werden.

Auch kann festgestellt werden, dass die von HENKEL (2010) beschriebenen Merkmale sehr heterogen abgebildet werden. Keines der Indikatorensets beinhaltet Aussagen zu dem Merkmal „Leerstände“, das die nachhaltige Entwicklung von Dörfern sehr gut widerspiegelt (vgl. Voß et al. 2010). Auch die eher der Säule „Soziales“ zu zuordnenden Indikatoren werden nur sehr beschränkt abgebildet. Deutlich mehr Indikatoren beschäftigen sich mit der Infrastruktur. Auch Naturnähe und Freizeit- und Erholungswert werden abgebildet.

5. Fazit

Die vorgestellte Untersuchung umfasste die Untersuchung bestehender Indikatorensets hinsichtlich einer Anwendbarkeit in Siedlungen in ländlichen Räumen und Stadtumland. Wie zu erwarten war, werden dörfliche Belange von den Sets nicht gänzlich optimal widerspiegelt.

Von den untersuchten Indikatorensets ist für die Anwendung in Dörfern das Indikatorenset der DUH nach SPRETER et al. 2004 zu empfehlen (Tabelle 2). Es spiegelt die nachhaltige Entwicklung in Dörfern gut wider. Die in Tabelle 2 mit * bezeichneten Indikatoren „Umwelt- und ressourcenschonende Energieerzeugung“ sowie „Vorkommen der Mehlschwalbe“ waren in der Untersuchung nicht erhebbar. Hinzukommen Teilindikatoren des Indikators „Erschließung mit Bus und Bahn“ (gekennzeichnet mit (*)). Keine Erfahrungswerte gibt es für den Indikator „Kinder mit Übergewicht“ (gekennzeichnet mit **), da dieser in Kommune mit weniger als 5.000 Einwohnern nicht erhoben werden muss.

Die Problematik der Erhebung kann sich ggf. für den Indikator „Umwelt- und ressourcenschonende Energieerzeugung“ als weniger schwierig erweisen, wenn ein entsprechender Kontakt mit den zuständigen Energieversorgungsunternehmen geknüpft werden kann, an dem die Erhebung in GEISEMEIER (2011) gescheitert ist. Auch der Teilindikator aus „Erschließung mit Bus und Bahn“ könnte mit entsprechendem Mehraufwand erfasst werden. Der Indikator „Vorkommen der Mehlschwalbe“ scheint eher schwierig und nur mit viel Aufwand für kleinere Kommune erfassbar zu sein. Als positiv ist darauf hinzuweisen, dass viele Indikatoren der DUH schon in offiziellen Datenbanken vorgehalten werden

oder durch GIS-Analysen ableitbar sind. Nur wenige Indikatoren mussten direkt bei der Kommune/Verwaltung abgefragt werden.

Das Indikatorenset der DUH stellt insgesamt ein in Dörfern verwendbares Indikatorenset dar. Empfehlenswert ist die Integration eines Indikators für Leerstände. Für eine Weiterentwicklung des Indikatorensets ist zu empfehlen, dass der Indikator „Leerstände“ ergänzt wird. Die Forderung von Leerstandskatastern für Dörfer wird beispielsweise auch in VOSS et al. (2011) thematisiert.

Zudem könnte die Beurteilung der nachhaltigen Entwicklung ergänzt werden durch „soziale“ Indikatoren, die den ländlichen Lebensstil und die Zufriedenheit abbilden. Dazu ist wegen fehlender Messgrößen eine ergänzende Befragung zu empfehlen. Somit könnte auf die nachhaltige Entwicklung speziell in Dörfern eingegangen werden: Diese Ergänzungen würden die Operationalisierung der Zukunftsfähigkeit im Sinne einer nachhaltigen Entwicklung in Dörfern optimieren.

Noch besser können die dörflichen Belange nur durch ein speziell dafür entwickeltes Indikatorenset abgebildet werden. Dabei müssten die Anforderungen an Nachhaltigkeitsindikatoren und deren System erfüllt sein (vgl. Gehrlein 2004: S. 44 ff., Heiland et al. 2003, S. 131 ff.) und dennoch den dörflichen Problemstellung Rechnungen getragen werden. Zu Vergleichbarkeit von Siedlung ist zudem darauf zu achten, dass eine einheitliche Bewertung möglich ist. Zumindest in Kernindikatoren muss eine übergreifende Bewertbarkeit ermöglicht werden.

Zusammenfassend kann festgehalten werden, dass das Indikatorenset der DUH grundsätzlich für Dörfer verwendbar ist. Soll die dörfliche Entwicklung besser abgebildet werden, bedarf es allerdings mindestens der Erweiterung des Sets oder besser einer Neuentwicklung mit konkreter Ausrichtung auf die speziellen Belange von Dörfern.

Literaturverzeichnis

B.A.U.M. consult [2000], Agenda 21 in Vaterstetten. Vaterstetten: Gemeinde Vaterstetten http://www.vaterstetten.de/city_info/display/dokument/show.cfm?region_id=276&id=11912&design_id=5442&type_id=0.

B.A.U.M. consult [2001], „Was isch und was sei sodd“. Nachhaltigkeitsbericht 2001. Immenstadt: Stadt Immenstadt. http://wap.immenstadt.de/se_data/_filebank/pdf_alt/988274375.pdf.

Birkmann, J. [1999], Indikatoren für eine nachhaltige Entwicklung: Eckpunkte eines Indikatorensystems für räumliche Planungsfragen auf kommunaler Ebene. *Raumforschung und Raumordnung* 57:120–131.

Diefenbacher, H. [2009], Leitfaden. Indikatoren im Rahmen einer lokalen Agenda 21. 4. Aufl. Heidelberg: Forschungsstätte der Evangelischen Studiengemeinschaft.

ECOLOG-Institut [2010], Nachhaltigkeitsindikatoren für Städte und Gemeinden (Datenbank). <http://indikatoren.ecolog-institut.de> [Stand: 17. Juni 2010].

- Gehrlein, U. [2004], Nachhaltigkeitsindikatoren zur Steuerung kommunaler Entwicklung. Diss. Wiesbaden: VS Verlag.
- Geisemeier, T. [2011], Vergleich von Indikatorensets zur Bewertung der nachhaltigen Entwicklung. Anwendung in Dörfern. Masterarbeit (unveröffentlicht). Hannover: Geodätisches Institut, Flächen- und Immobilienmanagement.
- Heiland, S., Tischer, M., Döring, T., Pahl, T. und Jessel, B. [2003], Indikatoren zur Zielkonkretisierung und Erfolgskontrolle im Rahmen der Lokalen Agenda 21. Endbericht. Texte/Umweltbundesamt Nr. 67/2003. Berlin: Umweltbundesamt.
- Henkel, G. [2004], Der ländliche Raum. Berlin, Stuttgart: Gebrüder Borntraeger.
- Henkel, G. [2010], Stärken und Schwächen unserer Dörfer – Wie könnte ein Fitnessprogramm für die Zukunft aussehen? In: Flächenmanagement und Bodenordnung (fub) Heft 2/2010:54–61.
- LSKN [2011], Online-Datenbank LSKN-Online. LSKN (Hg.). <http://www1.nls.niedersachsen.de/statistik/> [Stand: 17. November 2011].
- Morosini, M. [2002], Umweltindikatoren. Grundlagen, Methodik, Relevanz. Stuttgart: Akademie für Technikfolgenabschätzung in Baden-Württemberg.
- Paesler, R. [2008], Stadtgeographie. Darmstadt: WBG.
- Renn, O., Deutschle, J., Jäger, A. und Weimer-Jehle, W. [2007], Leitbild Nachhaltigkeit. Eine normativ-funktionale Konzeption und ihre Umsetzung. 1. Aufl. Wiesbaden: VS Verlag.
- Spreter, R., Vollmer, C., Neitzke, H.-P., Korczak, D. und Hoffmann, A. [2004], Indikatoren-Set „Zukunftsfähige Kommune“. Handlungsanleitung. Radolfzell: DUH.
- Stadt Syke (Hrsg.) [2002], Nachhaltigkeitsbericht der Stadt Syke 2002. Syke: Eigenverlag.
- Uhlig, H. und Lienau, C. [1972], Die Siedlungen des ländlichen Raumes. Gießen: Lenz.
- Vollmer, C. und Spreter, R. [2004], Abschlussbericht des Projekts „Die Zukunftsfähige Kommune“ und Dokumentation des dritten Wettbewerbsjahres. Radolfzell: DUH.
- Voß, W., Güldenbergh, E., Jürgens, A., Kirsch-Stracke, R., Streibel, N. et al. [2011], Modellprojekt Umnutzung landwirtschaftlicher Altgebäude und Hofanlagen als Beitrag zur Vitalisierung der Ortskerne. Abschlussbericht der wissenschaftlichen Begleitforschung. Hannover. http://www.gih.uni-hannover.de/images/stories/forschung/bericht_modellprojekt_umnutzung.pdf [Stand: 15. März 2011].
- Weber-Blaschke, G., Frieß, H., Peichl L. und Faulstich, M. [2002], Nachhaltige Entwicklung – Aktuelle Entwicklungen bei Umweltindikatorensystemen. Umweltwissenschaften und Schadstoff-Forschung 14:187–193.
- World Commission on Environment and Development [1987], Our Common Future. New York: Oxford University Press.

Public Planning Monopoly – or Not?

The Right to Initiate Development Plans in Norway and Sweden

Abstract

During the last decades planning systems in Europe have been changing towards more openness and extended possibilities for market players to take responsibilities in planning – market oriented planning. This paper discusses private actors' rights to initiate statutory plans for property development. This is done in the light of the planning and building legislations in Norway and Sweden. Although the two countries have a lot in common, and have influenced each other in many ways, the right to initiate development plans has been treated differently. In Norway this right has been an integral part of the planning and building legislations since 1924, and the right as such has never been disputed. In Sweden the right for market players to initiate development plans is a recent invention, 2011, and is substantially more restricted compared to the Norwegian legislation.

In planning theories external players' rights to initiate and prepare plans for development projects is regarded a key-indicator of market intrusion in spatial planning. However, to what degree the planning systems in Norway and Sweden open up for market forces in practice can be discussed – the outset of the formal planning and permit system is one thing; the way matters work in practice may be very different (Cullingworth and Nadin 2006). In both systems, municipal governments are still in a strong position for formulating visions, setting agendas for overall development and projects, and allocate resources for the implementation of plans.

1. Introduction

Planning authorities' mandate to initiate spatial planning is an integral part of their capacities to prepare for new developments and exercise *planning control* in the evolution of urban environments. Normally, in regulatory planning systems, the sole right to initiate planning is under the rule of the planning authorities in charge. The formal possibilities for the private sector to put forward development proposals for public handling are reserved for the phase of *development control*, i.e. building applications (Davies et al. 1989; Booth 1996).

However, during the latest decades planning systems in Europe have by and large been changing towards more openness and extended possibilities for market players to take

* Department of Real Estate and Construction: Economics, Law and Management, The Royal Institute of Technology (KTH), Stockholm, Sweden.

** Department of Landscape Architecture and Spatial Planning, Norwegian University of Life Sciences, Aas, Norway.

responsibilities in planning (Nordberg 1988; CEC 1997; Adams 2008; Kule and Røsnes 2010). The term market-oriented planning has been used to describe this phenomenon (Staley and Scarlett 1998; Mäntysalo 1999; Lind 2002). An important indicator of extended market responsibilities in planning should then be the market players' right to initiate and prepare planning for development projects. This will probably enhance the opportunities for landowners and developers to take a leading position in planning for new developments and hence contribute to the content of the plans that after eventual adoption will constitute the regulatory status for development control.

Our purpose in the following is to explore the right to initiate planning in light of the legal traditions in Norway and Sweden. We start with a short introduction to the importance of the right to initiate and prepare plans under the headline "Justifications and procedures". Then, there will be an overview of the Norwegian and Swedish legal traditions in planning, labelled "Tradition and pragmatism". The two last sections are headed "Characteristics of private planning initiatives" and "How to meet public conflicts". The first one investigates the meaning of this right. The latter section deals with conflicts generated through external players' right to initiate planning for developments and the well known demands for conformance throughout levels and space of plans (Faludi 1989).

The empirical background of this study is the planning and building legislation of Norway and Sweden. In both states the Nordic regulatory planning systems prevail (Newman and Thornley 1996; CEC 1997; Kalbro, Lindgren and Røsnes 2010). The territorial administrations of the two states indicate strong similarities in planning organisation. The primary municipality is responsible for spatial development planning at local level. The secondary municipality¹ is in charge of regional planning, while a decentralised state authority² is responsible for, among other things, the realisation of state policies concerning planning at regional and local levels. In Norway there are 429 primary municipalities, in Sweden 290, in which the average population amounts to 11,700 and 31,400 respectively. In both countries the planning systems have been through several legal changes in the last years. These reforms indicate how national planning traditions and contemporary ideas have affected the possibilities for market players to gain legal positions to get involved in the initiation or preparation of plans for new developments.

The primary source for our study is legal documents of present and earlier legislation and their preparatory works. These documents are judged for the actual issues in the light of secondary sources that comprise of professional literature like books, journals, research reports etc. Regarding implications of similarities or differences in the planning systems, the connection to the European Union (EU) can be of some interests. Sweden is an EU-member, Norway is not.

¹ The County Municipality (*fylkeskommunen*) in Norway and the County Council (*landstinget*) in Sweden.

² The County Governor (*fylkesmannen*) in Norway and the County Administrative Board (*länsstyrelsen*) in Sweden.

2. Justifications and procedures

Planning systems in which the planning authorities have the sole right to initiate planning can be termed *planning monopolies*. Any deviation from this mandate that opens up for external players, e.g. developers, to initiate planning and launch their planning proposals for public approval, means that some pieces of this mandate in terms of co-rights have been removed from the planning authority. Accordingly, the transfer of opportunities for exercising power over the spatial environment to external players – other authorities, market players or holders of civil rights – will as a consequence weaken the planning authorities' monopolistic power to decide where, when and how to plan for coming developments.

An important driver behind arguments for liberal rights to initiate planning is that the planning authorities in our economies have no guarantee for the realisation of the plans. In a market economy planning authorities have to, in the main, rely on market players both for the initiation and the implementation of building projects. In Norway and Sweden private actors have dominant positions in the building markets. The right to initiate planning will therefore have certain impacts on the interrelationship between spatial regulation and the local building market as well as on the connection between planning and development control.

In regulatory planning systems the plans normally contain the essential regulations for considering future building projects (Booth 1995). The possibility for market players to initiate development planning that creates binding regulations for their building projects will then establish (with reference to Lane 1983) closer links between planning and plan implementation. Moreover, enhanced influence for market players in the planning control processes necessarily improves their ability to communicate their interests and needs to planning authorities. Furthermore it makes sense to believe that the developers' right to initiate development plans will affect the planning content, since the developers' responsibilities during the projects' implementation will affect their attitudes and priorities during the plans' initiation and preparation. In consequence, when developers are allowed to initiate and prepare regulatory frameworks for their projects they can extend their responsibilities to include proposals for the regulatory frameworks that will decide plan implementation (Kule and Røsnes 2009). Other factors, among them ownership to land, will then probably be more crucial for the capacities of the planning authorities to rule over urban developments (Van Rij and Korthals Altes 2010).

Anyhow, the right to initiate planning will extend the developers' position from an implementer to an initiator of development planning and responsible plan-maker. This extension of the functional connections between planning and the subsequent implementation of building projects exceeds the traditional institutional border between public responsibilities and market generated initiatives for development control. In consequence there will be enhanced opportunities for a more sensitive coordination between urban planning and the building market, compared to a rigid and monopolistic approach where

planning authorities solely decide where, when and how to regulate developments (Thornley 1993; Needham 2004; Kalbro, Lindgren and Røsnes 2010; Buitelaar et al. 2010).

Interaction between initiators of detailed plans and the planning authority takes place at local level. It constitutes the first line arenas for discussing how planning for the implementation of development projects could meet policies and requirements relating to the physical environment. Other authorities and a variety of interests will regularly be involved in this public handling of planning initiatives. Both the initiator and the planning authority will therefore meet resistance from conflicting powers and interests. The ways in which the authority will be involved in such contradictions and the possibilities for resolving them, depend on the hierarchical structure of competences for the adoption of plans and the autonomy of the lower level planning authority to respond directly to the players involved. The former decides to what degree the local authority can adopt detailed plans that contradict higher level regulations; the latter determine the procedures when such contradictions occur.

3. Tradition and pragmatism

Historically, the formal constructions of planning systems can be traced back to certain origins, i.e. the legal frameworks for public planning depend on national characteristics (Lai 1987; Newman and Thornley 1996). Therefore the right to initiate plans cannot be viewed isolated from national traditions and the pre-modern pasts that lacked unitary planning control or even control of developments (Nordberg 1988; Booth 2003). But legal constructions are changing due to overall policies and what the legislature finds necessary when modernising laws and regulations. The intent to modernise can then be based on searches for closer links between planning and the building market as well as the wish to strengthen the links between planning and implementation.

The planning systems of Norway and Sweden are close to each other, not only because the two states are bordering. Under separate constitutions the two countries were governed in a union headed by one king between 1814 and 1905, an awakening period for modern planning in the Nordic countries. Legislation related to territorial organisation and local administration combined with building and planning legislation was particularly operational during the early and middle part of this period. In Norway, the first factual building act for Oslo was adopted in 1827 (Jensen 1981) and an extensive reform of the local government system was assumed in the late 1830s. This reform opened up for more democratic ways to govern the localities (municipalities) and gave them indirectly more extended responsibilities in matters of planning and building. Successively, new building acts were adopted and the existing ones amended for regulating urban developments in a wider spatial context. But this building and planning legislation was limited to the jurisdiction of the municipality, meaning the biggest towns, and would of course vary in content between the different areas of local jurisdictions (Jensen 1981). The Swedish local reforms came some years later (1862) and a town planning act was introduced in 1874.

After the dissolution of the union in 1905, still strong impulses were transmitted from Sweden into Norwegian planning and local government. Norway's first unitary building act, which also contained the main rules for urban planning, was adopted in 1924. In Sweden an act for the similar sector of rule for the whole country came more than 15 years earlier, in 1907. But the transmitting effect from Sweden to Norway reached higher levels in the years after 1945, partly due to Sweden's economic growth and building of a welfare system under public umbrellas (Nordberg 1988; Hall 1991; Blücher 2004; Jensen 2005). In 1952 and 1971, Sweden adopted two extensive municipal reforms while Norway implemented a similar reform in the early 1960s. A particular purpose of all these local reforms was to enhance the capacity of the municipalities to produce services of welfare for its citizens, and guided by central state directions, to plan for the good of the local community.

The close history of the two states in cultural, political and economic terms explains the ways ideas and experiences were adopted both for organising public activities and directing public institutional behavior during the Post-WWII-period – until the early 1980s in Norway and somewhat later towards the real property crisis in the 1990s in Sweden – in both countries the local government's responsibilities and authority to realise the public will could briefly be characterised by three core components (Lind 2002, p. 4):

1. The local government had an ideologically dominating position. The local political apparatus formulated the general visions as well as visions concerning specific projects.
2. The local government had a strong legal position, which gave them wide decision-making powers and also the right to expropriate land and buildings if that was judged to be necessary.
3. The local government had a strong economic position, partly through local taxes that grew because of a positive general economic development and partly through resources supplied through the central government. These resources made it possible to implement the decisions that were taken.

When it comes to spatial planning in this period, Sweden adopted a new planning and building act in 1947, followed by a major revision of the act in 1959. Six years later Norway decided on a new act. Then in the mid 1980s both countries revised their existing systems. This legislation for planning and building stayed in force until recently, after a period of intense legislative activities, especially in Norway (Kalbro, Lindgren and Rønnes 2010). In Norway the planning part of a joint planning and building legislation was adopted mid-year 2008, and the building (processing of building application) part of it mid-year 2009. A new Planning and Building Act for Sweden was introduced in May 2011.

During all these reforms the organisational model for planning and planning control at local level has by and large been unchanged. The municipality as local government is – without regards to urbanity, size and location – equipped with planning authority and

responsibility for operative local planning and planning control towards development. Although regulation methods have undergone some changes, the main principles of the regulatory systems for the local level prevail. Legally binding plans decide the regulatory status for the implementation of building projects, i.e. the development control, and at least two types of plans, one for overall and detailed levels each, are key-instruments in local planning and planning control.

However, when it comes to statutory types of plans the two national systems deviate. In Norway the 1985-legislation contained three categories of optional detailed plans (simplified detailed development plan; detailed development plan; and building plan) and legally binding land use regulations for all local plans, the detailed ones as well as the overall land use plan (*kommuneplanens arealdel*). The 2008-legislation introduced two types of detailed development plans, but intentionally, for two different territorial levels. Detailed plan II (*områderegulering*) should be reserved for more extensive areas covering several landed properties, while the detailed plan I (*detaljregulering*) should be limited to one parcel, which in urban planning practice is the building plot (Planlovutvalget 2003, p. 316ff.). The deliniation of planning areas should be up to the planning authority to decide. In Sweden, only an overall land use plan (*översiktsplan*) and a detailed development plan (*detaljplan*) are required since the 1987 legislation, and only the latter one is legally binding. This planning system was transferred, unchanged, into the 2011-legislation.

The two planning systems can be summarised as in the figure below. Here the Norwegian detailed development plan I and the Swedish detailed development plan can be characterised as “project plans”, i.e. they are normally prepared after the initiation of specific development projects. Whether the Norwegian detailed development plan II should be

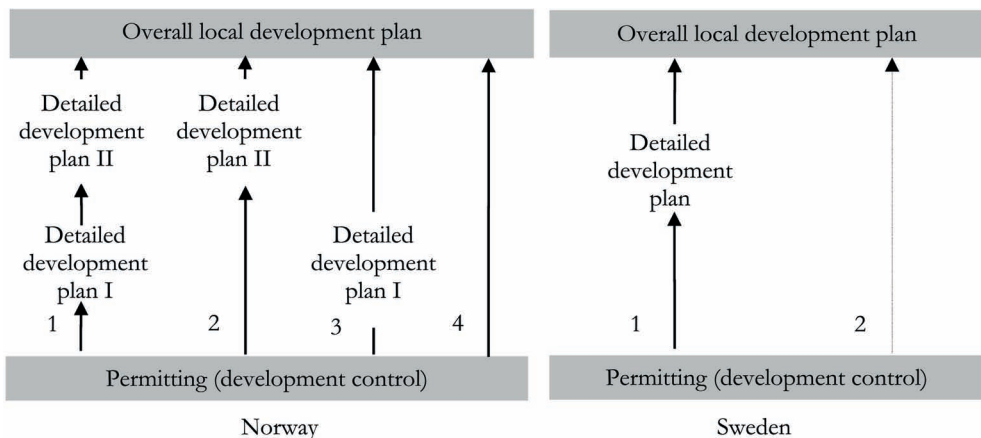


Figure: Planning frameworks for development control in Norway and Sweden.

In Norway all the three local categories of plans are legally binding, and there are a minimum of four combinations of plans that can constitute the regulatory status for permitting. In Sweden there are two types of local plans, but only one combination of plans that can constitute regulatory status for permitting, because the overall local plan is not legally binding for the development control.

characterised as an overall land use plan or a project plan is formally optional, depending on the planning authority's choice.

How can the right to initiate development plans be understood in light of the two planning traditions under the assumption that the localities more or less will have to realise ambitious state policies?

Norway

The Norwegian planning legislation, starting with the first unitary building act, has given external players rights to initiate detailed planning proposals for public handling and eventually approval. The 1924-Building Act stated that necessary urban plans to create the regulatory status for building applications should be prepared according to law. Although the local planning authority should be in charge of the initiation of such plans other players were given a co-right to launch planning proposals for public approval.³ Almost the same formulation was used in the 1965-act.⁴ In the 1985-Planning and Building Act⁵ this co-right was linked to explicit conditions. The local planning authorities were given an opportunity to judge whether detailed plans from landowners, developers etc. should be recognised for public handling. In practice this kind of fore checking rarely took place (Røsnes 2005). In the later years, under the rule of this act, definitely most of the detailed plans were initiated and prepared by external players (Planlovutvalget 2001; Røsnes 2005). The right to initiate and prepare plans applied for the all three types of statutory detailed plans mentioned in the 1985-act. For the two levels of detailed plans introduced in the recent Norwegian legislation,⁶ the rights to initiate and prepare are reserved for the detailed development plan I, but not necessarily the most detailed one in terms of zoning regulations. The sole right to initiate detailed development planning, category II, for wider areas, should be in the hands of the local planning authority, while external stakeholders could be given the responsibility for the preparation.⁷ Convincingly, in Norwegian planning legislation the right for external players to initiate detailed planning has a long and unbroken record, regardless whether the legislation did or did not require state approval or alternatively review of the detailed development plans.

Some formal justifications of this right are however more difficult to trace. At the origin, before 1924, the right to build elsewhere in the country was far lesser regulated by law compared to recent times. Through the modern planning epoch, all the Nordic countries have somehow allowed minor building activities outside denser populated areas (mostly rural areas), without the ordinary procedures of planning and even development control. Traditionally this "rural development right" has been stronger in Norway than in Sweden

³ Act; February 22 No. 2, 1924; "Om bygningsvesenet", Section 27 No. 1 and 2.

⁴ Act; June 18 1965 No. 7, "Bygningslov", Section 27 No 2.

⁵ Act; June 14 1985 No. 77, "Plan- og bygningslov", Section 30.

⁶ Act; June 27 2008 No. 71, "Lov om planlegging og byggesaksbehandling", Sections 12-2, 12-3.

⁷ 2008-act, Section 12-3, cf. Section 12-2.

(Nordberg 1988). This might explain why the right to initiate detailed plans for external players was codified in the first unitary legislation. Although the building act was limited to urban municipalities, any municipality could decide to apply this legislation for planning and building in their communities. The act needed therefore to be formulated in a way that gave relevance for planning and building in all categories of settlement structures. The introduction of modifications and limitations in the later planning and building acts need to be viewed in this tradition, but also in relation to some national particularities. Both several statutory detailed plans and several legally binding levels of provisions will necessarily require more detailed rules and regulations relating to the right to initiate planning, provided that certain requirements for certainty and conformance should be met.

Sweden

The right to initiate detailed planning in Sweden exhibits a different record. First and foremost, the Swedish discussion has to an overwhelming extent been limited to the struggle between the state and the municipalities. Until 1987 overall and detailed (zoning) plans, although prepared by the municipality, had to be approved by the state (County Administrative Board). Since then, the act states that land use planning is a municipal responsibility. Still, however, the state can, like in Norway, intervene in municipal planning if necessary to promote or safeguard “national interests”.

Towards this background private landowners’ initiative to planning has been more or less a non-issue. In the preparation of both the 1907- and 1931-act private planning initiation of development plans was discussed – but it was never realised in the legislation (Tobé 1975). In the Post-WWII-period the local government’s strong ideological and legal position, cf. above, gave faint rationales for challenging the municipal planning monopoly. In Norway the right for market players to launch planning initiatives was already legally formalised, and interesting to note, more extensive public control over the rights to initiate development planning for actual projects was not discussed in this period. From the 1990s and onward Sweden has gradually moved towards “market-oriented planning”, where the municipalities formulate their spatial visions in co-operation with other actors, in order to increase the competitiveness of the municipality as well as the local community. In this new situation it is logical that the legislation recognises private planning initiatives as a part of municipal development. In 2007 the issue again came up on the legislative agenda, partly due to influences from the Norwegian legislation (Kalbro 2007; Kalbro and Lindgren 2008). Thus, the new 2011-Planning and Building Act formally introduces a right for landowners or developers to initiate detailed planning by demanding that the municipality decides, within four months, whether planning in a certain area shall start or not. This decision (*planbesked*)⁸ must be in written form and solely based on “planning considerations”; requirements that had been non-existent in previous legislation.

⁸ 2010-act, Chapter 5, Section 1.

4. Characteristics of private planning initiatives

The right to initiate planning will in reality meet the planning authorities' requirements for accepting plan proposals. Except for the planning content, such requirements can be directed towards the capacities of the initiator as well as procedural conditions for launching planning proposals. But requirements relating to the interests, skills etc. of the initiator as well as to the initiating procedures and existing regulations can be used for securing the terms on which this planning should take place. Is then the right to initiate planning a right for everyone, or just for prioritised groups? And furthermore, what are the conditions for bringing planning initiatives to public handling and eventual approval?

Norway

In the Norwegian legislation the right to initiate detailed planning has never been understood as a privilege for a certain group of interests. In the earlier building acts (1924, 1965) "landowners or other interests" are mentioned as initiators, while the 1985-act adds "holders of rights" and the 2008-act more wordily, but confusing, lists "private interests", "holders of projects", "organisations" and "other authorities" as candidates to the right to initiate detailed plan proposals. These formulations have in recent times been understood as right for anybody to initiate detailed plans. Moreover, there has never been any requirement for a specific consent by the planning authorities, before the planning proposal can be brought into public handling. However, the 1985-act introduced that market players intending to prepare detailed plans should, in a meeting, present their ideas before the municipal planning committee. The committee would then be given an opportunity to advise how the planning should take place, and perhaps to support in the plan preparation. In the recent legislation an almost identical formulation is used for all types of external initiators of detailed plans, but now the local planning agency and not the body of politicians, as earlier, should arrange an obligatory starting-up meeting.⁹ However, in reality the initiators can put forward plan proposals more or less directly without application, and the planning authority does not need to issue a specific written statement that verifies the initiator's right to start planning and to launch a planning proposal for eventual approval. In these procedures, the initiator, whether private or public, will just have to follow the general requirements for initiating the preparation of detailed plans.

One of these is the requirement for professional competence in planning in order to secure reasonable quality measures in the preparation of plans. All building and planning acts since 1924 have explicitly emphasised that professional skills are demanded in conducting detailed planning.¹⁰ The existing act introduces, strangely enough, a difference between detailed developments plans I and II. While requirements for professional skills follow this tradition and apply for the former, there are no such requirements for the latter, although

⁹ 1985-act, Section 30; 2008-act, Section 12-8.

¹⁰ 1924-act, Section 27 No. 1; 1965-act, Section 27 No. 1; 1985-act, Section 27-1, No. 1 and 2008-act, Section 12-3.

the responsibility for the preparation of such plans can be left to external players. However there has never been any arrangement for certifying this competence like the one introduced for the development control i.e. building application, building design, construction and building control, in the mid-1990s. Another requirement is public announcement of where and when the planning, i.e. preparation of the plan, will start.

If the planning proposal is found acceptable, formally as well as in content, the planning authority is obliged to handle it as quickly as possible following formal procedures. This emphasis on requirements for expedient public handling of external planning proposals was incorporated into the building- and planning legislation starting in 1924. After legal amendments in 2003 a time limit of 12 weeks was set for the local handling procedure (Kalbro, Lindgren and Røsnes 2010). During the public handling of the plan the municipality is responsible for possible public participation arrangements, public review, exhibition of the plan etc.

This more or less free access for coming up with new detailed planning proposals means that the evaluation criteria for having a “yes” or “no” to this proposal are concentrated on the content of the plan, and of course how the plan will meet standards relating to the physical environment. In these regards the requirements for externally initiated detailed plans could supposedly be somewhat different from plans initiated and prepared under the rule of the planning authority.

Sweden

The new Swedish act gives a landowner, developer etc. who wants to carry out building activities a right to initiate and apply for the preparation of a detailed plan. But this does not mean, contrary to Norway, that private planning measures are formally authorised by the legislation. When planning starts it is solely the municipality who is responsible for preparing the plan including planning procedures such as consultations with the public, exhibition of the plan etc. In practice, however, it is common that professional developers assist the municipality in plan preparation. But from a legal point of view then the developer acts as “consultant” to the municipality, not as a “planner”.

5. How to meet public conflicts?

Certainly, detailed planning initiatives from landowners, developers or other external interests will probably generate more conflicts towards higher level policies and plans, compared to systems where the initiation of planning regardless of level is in the hands of planning authorities. Regulations in force will demand conformance, while various factors embedded in the actual situation, like needs for specific floor space or wishes to introduce new design measures, will require a more performance oriented approach without strict ties to higher level regulations (Faludi 1989; 2000). How will discrepancies and contradictions between the content of planning initiatives on the one hand and the existing built order and regulations on the other be settled during the public handling of such planning proposals?

In both Norway and Sweden detailed development plans are decisive for considering legality and quality of building activities. One should then believe that there must be some requirements for meeting legal and environmental standards of this planning, at least in Norway where the right to initiate planning shows an unbroken record. An initiator responsible for plan preparation needs for instance to consider the quality and content of this planning, as well as the impacts of existing regulations.

Norway

The first Norwegian unitary planning legislation contained only one statutory legally binding plan. Overall policies and guidelines could be considered with specific reference to proposals for such plans, under the assumption that laws and regulations prevailed. Consequently, in the 1924-act there was no clear requirement for considering the conformance of planning proposals towards planning on higher levels. It was up to the local planning authority's discretion to decide for final ratification by the Ministry of Local Government. Although the 1965-legislation introduced an overall (strategic) land use plan, the procedures for handling detailed planning proposals remained, without strong requirements for considering consistency towards higher level plans. Neither planning on regional level nor overall local planning automatically had any legal bearing on the uses of land. The overall local plan was supposed to give guidance for the preparation of the detailed plans that set the regulatory status for developments.¹¹ Before the local planning authority could finally decide over a detailed plan, this plan proposal needed to be reviewed by the regional planning authority. The local planning committee was also mandated for the further handling of a plan proposal. If that should be the case, the municipal council, need to be given an opportunity to decide if this planning proposal could be furthered for an eventual local approval.¹² Both the regional and the local planning authorities had mandates to issue legally binding regulations for uses of land in terms of associated articles for regional and local overall plans respectively. But this imposing of legal impacts on land uses in overall level plans did not lead to extended requirements for conformance towards detailed levels or changes in the formal handling procedures of detailed plans.

However, introducing possibilities for a binding hierarchy of regulations later on gave strength to arguments for the conformance principle as an important criterion in planning control; planning on lower levels should harmonise with higher level planning and policies (Faludi 1989). In urban planning under regulatory systems this assumption will have particular implications, provided that two or several plans contain binding regulations for the same uses of land in the same area. When lower level plan proposals at the end constitute the regulatory status for building, any noticeable deviation from higher level regulations will in regulatory systems need legal flexibility concerning measures for eventual approval, including dispensation or legal justifications for refusal. As long as there are no superior

¹¹ 1965-act, Section 20 No.1.

¹² 1965-act, Section 27 No. 1 and 2.

legally binding regulations, the planning authority could, alternatively together with other authorities, discretionally consider relevant inputs in relation to policies and guidelines, and then decide (Booth 1995). It is then easy to believe that the ways planning authorities can deal with this kind of contradictions would change over time, any other things being equal, and that the planning systems would include more extensive and composite controlling mechanisms over time (Booth 2003).

The 1985-legislation introduced some changes to the former procedures. These changes intended seemingly both to formalise the handling procedure and at the same time clarify conditions for this handling depending on deviations from existing regulations. If the local planning committee did not find sufficient justifications for sending the plan proposal to the municipal council for eventual approval, the initiator of the plan should formally be informed. The initiator was then given an opportunity to demand that the plan proposal should be considered by the municipal council directly, provided that the plan proposal would lead to substantial changes in an existing detailed plan or comprised areas without regulatory status for building purposes.¹³ In reality, none of the previous planning acts contained requirements that explicitly indicated strong ambitions for conformance on the level of detailed planning. Worth mentioning is the requirement in the 1985-act regarding involvement from higher level authorities if proposals for a (detailed) building plan was in conflict with the overall local plan or a detailed plan. But these rules applied also for the local planning authority when initiating building plans.¹⁴ In consequence, the formal instruments for securing conformance and consistency throughout planning levels became more or less the same as when planning authorities themselves initiated and prepared detailed plans.

The recent legislation has introduced new planning instruments for the local level and at the same time exposed more extensive ambitions for conformance over binding planning levels. According to the 2008-act, a detailed development plan I should by and large follow up intentions and regulations in the overall local plan, or alternatively an existing detailed development plan II. Should the detailed plan I deviate substantially from such higher level plans, an environmental impact assessment is required¹⁵ in order to clarify the justification of the plan. If the local planning agency refuses to accept detailed plan proposals launched by marked players for further handling, the initiator should formally be informed as mentioned in the 1985-legislation. But due to the 2008-act the initiator should only have a possibility to require a decision by the municipal council if the detailed plan proposal harmonises with the local plan or a neighbourhood plan.¹⁶

¹³ 1985-act, Section 30.

¹⁴ 1985-act, Section 28-2.

¹⁵ 2008-act, Section 12-3, cf. Section 4-2.

¹⁶ 2008-act, Section 12-11.

In principle, planning control in regulatory planning systems is based on legally binding regulations for all parties involved. A detailed plan that harmonises with the regulations of higher level plans should directly be accepted for public handling and adopted, any other things being equal. For that reason the Norwegian planning legislation, as the above requirements illustrate, is apparently bewildering and contradicts a bearing principle of regulatory planning systems. However, how the issues of harmony and contradiction between planning levels are resolved, depend more specifically on the regulation of power between levels of plans. If a detailed plan proposal contradicts higher level regulations there are three principal possibilities for conclusions. The plan proposal can be refused without conditions for change, alternatively it can be left alone until the overall regulations are brought in accordance with the proposal concerned, and finally, it can be approved provided that all authorities involved give their consent for an approval. The two former alternatives imply that some kinds of countervailing mechanisms exist (Grauhan 1973), which entail that the planning authorities will refuse any approval until the detailed plan proposal is either amended towards the higher level regulations, or on the opposite, until the higher level regulations are brought in line with the planning proposal concerned. The latter alternative allows direct approval of the detailed plan proposals even though they could deviate from existing higher level plans.

The existing Norwegian planning legislation recognises the principle of latest approval, as the previous legislation explicitly did. Unless otherwise provided a new plan takes precedence over older plans and provisions, whether state or regional, for the actual binding jurisdiction area of the plan.¹⁷ Either this rule gives more logic to the formulation that the initiator of a detailed plan can only require a decision in the municipal council if the site plan proposal harmonises with higher level plans. Or the principle of latest approval will inevitably meet challenges relating to management and transaction costs in a planning control system that operates at least two levels of legally binding plans (Webster 2005; Buitelaar 2007). Conformity restrictions on possibilities for having approvals of market initiated detailed plans could definitely contribute to formal coherence within this regulative hierarchy of plans, but at the same time lessen the flexibility in order to perform in development planning and expand the management and transaction costs in planning control.

The anomaly that appears in the existing Norwegian legislation will hardly have any substantial effect on coming practices in the initiation and handling of detailed plans. First of all, the possibility to compensate for incongruence towards higher levels through environmental impact assessments will probably open up for the authorities' acceptance of externally initiated plans in spite of their lacking conformity towards higher level regulations. Besides, combined with this requirement, the rule that gives new plans precedence over older ones will probably nullify requirements for considering whether proposals in harmony with existing regulations should be granted a yes or no.

¹⁷ 2008-act, Section 1-5, cf. 1985-act, section 20-6.

Sweden

The municipal overall plan (the comprehensive plan) is not legally binding for subsequent detailed plans, as long as the latter plan does not interfere with national interests. In this respect private planning initiatives deviating from the overall plan are, compared to Norway, less problematic. The Swedish system makes it possible to judge a private planning proposal “on its own merits”. As mentioned earlier, the municipality is in full control of the planning process, i.e. a private initiative must have support and consent from the municipality in order to be successful. If planning initiatives should be in line with – or may deviate from – the overall local plan is still a matter for the municipality to decide on.

6. Ending comments

The right for market players to initiate development plans, that after approval constitute the regulatory status for the development control, has a quite different origin and record in Norwegian and Swedish planning. In Norway this right has been an integral part of the planning and building legislations, from the first unitary building act (1924) to the existing Act relating to Planning and Processing of Building Application (2008). The formal procedures for the public handling of this category of plans have to some extents been changed over time. But the right as such for developers and landowners to launch plan proposals for new developments has never been disputed. However, in the recent legislation there are stronger demands for conformance towards higher level regulations, and in this regard certain contradictions in the formulations of how conflicts between this detailed planning and higher level regulations should be met. In Sweden the right for market players to initiate development plans is a recent inventions (2011), and is substantially more restricted compared to Norwegian legislation.

It makes sense to conclude that the Norwegian right to initiate development plans is based on an unbroken legal tradition that opens up for near connections between local planning authorities and players in the building market. In the existing legislation there is no sign to broaden this right towards more market-oriented planning, rather the opposite. The recent introduction of this right in the Swedish legislation gives evidence for a stronger market-orientation, however still within strict requirments for division of responsibilites between the local planning authority and the initiator of planning. It can then be asked how the evolution of the right to initiate delvelopment plans within the two planning systems can be understood in the light of planning theories used to indicate tendencies towards market-oriented planning.

In planning theories the right for external players to initiate and prepare plans for development projects is regarded a key-indicator of market intrusion in spatial planning (Staley and Scarlett 1998; Mäntysalo 1999). Apparently the Norwegian planning system, from its earliest existence, has given market players extensive formal opportunities to take a leading position in planning for new developments. In this regard one can hardly talk about a bend towards market influence in planning, which certainly should be the consequence of the latest Swedish planning reform. However, to what degree planning systems open up

for markets forces, should also be discussed, as Lind (2002) underlines. In both systems, municipal government is in a strong position for formulating visions, setting agendas for overall development and projects, and allocating resources for their implementation within the community. Furthermore, spatial planning is based on comprehensive ideas with strong requirements for territorial and functional coordination between public activities and local development (Nordberg 1988; Farinós Dasi 2007). The opportunities for market players to affect where, when and how to build, will for the planning authorities indicate market based priorities in building and property development, and hence represent valuable inputs for municipal planning and prioritising. But the municipal systems for spatial planning can as such still be used in accordance with the ideal type of planning for a strong local government, political will for doing so provided.

References

- Adams, N. [2008], Convergence and policy transfer: An examination of the extent to which approaches to spatial planning have converged within the context of an enlarged EU. *International Planning Studies* 13:31–49.
- Blücher, G. [2004], Physical planning, in: Lujanen, M. (ed.), *Housing and housing policy in the Nordic countries* (pp. 243–67). Copenhagen: Nord 2004:007.
- Booth, P. [1995], Zoning or discretionary action: Certainty and responsiveness in implementing planning policy. *Journal of Planning Education and Research* 14:103–112.
- Booth, P. [1996], *Controlling development. Certainty and discretion in Europe, the USA and HongKong*. London: UCL Press.
- Booth, P. [2003], *Planning by consent: The origins and nature of british development control*. London: Routledge.
- Buitelaar, E. [2007], *The cost of land use decisions. Applying transaction cost economics to planning and development*. Oxford: Blackwell.
- Buitelaar, E., Galle, M. and Sorel, N. [2010], Plan-led planning systems in development-led practices: an empirical analysis into the (lack of) institutionalization of planning law. *Environment and Planning A* 43: 928–941.
- Cullingworth, B. and Nadin, V. [2006], *Town and country planning in the UK*. London: Routledge.
- Davies, H., Edwards, D., Hooper, A. and Punter, J. [1989], *Planning control in Western Europe. Comparative Study*. London: HMSO.
- CEC: Commission of the European Communities [1997], *The EU compendium of spatial planning systems and policies*, Luxembourg: Office for official publication of the European Communities.
- Faludi, A. [1989], Conformance vs. performance: Implications for evaluation. *Impact Assessment Bulletin* 7:135–151.

- Faludi, A. [2000], The performance of spatial planning. *Planning Practice and Research* 15: 299–318.
- Farinós Dasi, J. (ed.) [2007], Governance of territorial and urban policies from EU to Local Level. Esch-sur-Alzette: ESPON Coordination Unit, Final Report Project 2.3.2.
- Grauhan, R.-R. [1973(1969)], Notes on the structure of planning administration. In: Faludi, A. (ed.): *A reader in planning theory* (pp. 297–316). Oxford: Pergamon.
- Hall, T. (ed.) [1991], *Planning and urban growth in the Nordic countries*. London: E. & F. N. Spon.
- Jensen, R. [1981(1980)], *Moderne norsk byplanlegging blir til*. Stockholm: Nordiska institutet för samhällsplanering (Dr. Techn.-thesis).
- Jensen, R. [2005], *Svenske impulser i norsk byplanlegging – refleksjoner ved hundreårsjubileet*. Plan 3–4:4–11.
- Kalbro, T. [2007], *Tidsfrister för myndighetsbeslut i plan- och byggprocessen*. Stockholm: KTH, Fastighetsvetenskap, Rapport 4:98.
- Kalbro, T. and Lindgren, E. [2008], *Plan- och bygglovsprocessen, privata planinitiativ och tidsfrister. Kan det norska systemet överföras till svensk lagstiftning*. Stockholm: KTH, Fastighetsvetenskap, Rapport 4:106.
- Kalbro, T., Lindgren, E. and Røsnes, A. [2010], “Nær utakt”. *Plan- og bygningslovreformer i Norge og Sverige*. *Kart og Plan* 70:27–45.
- Kule, L. and Røsnes, A. [2009], Balancing developers’ interests in planning control, paper FESF-symposium 2009.08.27–28, Stockholm.
- Kule, L. and Røsnes, A. [2010], Planning control on the Northern European Periphery. *European Planning Studies* 18:2027–2048.
- Lai, R. [1987], *Law in urban design and planning: The invisible web*. New York: Van Nostrand Reinhold.
- Lane, J.-E. [1983], The concept of implementation. *Statsvetenskaplig Tidskrift* 1:17–40.
- Lind, H. [2002], Market-oriented land-use planning. *Planning and Markets*, <http://www-pam.usc.edu/volume5/v5i1a5s1.html>.
- Mäntysalo, R. [1999], Learning from UK : Towards market-oriented land-use planning in Finland. *Housing, Theory and Society* 16:179–191.
- Needham, B. [2004]. The new Dutch spatial planning act. Continuity and change in the way the Dutch regulate the practice of spatial planning. Working Paper Series 2004/12. Research Group “Governance and Places”. University of Nijmegen.
- Newman, P. and Thornley, A. [1996], *Urban planning in Europe: International competition, national systems and planning projects*. London: Routledge.
- Nordberg, L. [1988], *Översikt och jämförande analys av plan- og byggnadslagstiftningen i de nordiska länderna*. København: Nordisk Ministerråd.

- Planlovutvalget [2001], Bedre kommunal og regional planlegging etter plan- og bygningsloven. Første delutredning. Oslo: Statens forvaltningstjeneste, NOU 2001:7.
- Planlovutvalget [2003], Bedre kommunal planlegging etter plan- og bygningsloven II. Andre utredning med lovforslag. Oslo: Statens forvaltningstjeneste, NOU 2003:17.
- Røsnes, A. [2005], Regulatory power, network tools and market behaviour: Transforming practices in Norwegian urban planning. *Planning Theory & Practice* 6:35–51.
- Staley, S. and Scarlett, L. [1998], Market-oriented planning: Principles and tools for the 21st century. *Planning and Markets*, <http://www-pam.usc.edu/volume1/v1i1a5s1.html>.
- Thornley, A. [1993 (1991)], *Urban planning under Thatcherism: The challenge of the market*. London: Routledge.
- Tobé, E. [1975], Det kommunala planmonopolet. *Svensk Lantmäteritidskrift*, 1975:2.
- Van Rij, E. and Altes Korthals, W. [2010], Looking for the optimum relationship between spatial planning and land development. *Town Planning Review* 81: 283–306.
- Webster, C. [2005], The New Institutional Economics and the evolution of modern urban planning. *Town Planning Review* 76: 455–484.

Institutional Design for Public Decisions on Land Use Alterations, Acquisition of Property Rights, and Compensation

A Comparison of Nordic Legal Procedures

1. Introduction

Rural development in general often denotes actions and initiatives taken to improve the standard of living in non-urban regions, and aim at the economic and social development of the areas. With more than half of the population in the member states of the European Union living in rural areas, which cover 91% of the territory, rural development is an important topic.

According to the present EU rural development policy,¹ rural development can include measures within the framework of three different themes:

- Improving the competitiveness of the agricultural and forestry sector by supporting restructuring, development and innovation.
- Improving the environment and the countryside by supporting land management.
- Improving the quality of life in rural areas and encouraging diversification of the rural economy.

One important measure, with bearing on all three themes is: Improving and developing infrastructure related to conditions for enterprises and the population in rural areas. This may comprise new and developed land uses, such as new buildings and different types of construction works – roads, railroads, power supply, communications, water and sewage etc.

The technical and physical construction activities must usually be preceded by legal transformations and transactions such as planning procedures, permissions or concessions regarding land use changes, alterations of property division and other property rights in land, purchases, etc.

Some of the legal measures can be achieved by agreements, e.g. negotiated transactions. But in many instances, public decisions are required regarding the permissibility of land use changes or acquisition of property rights. For economic reasons, the procedures facili-

* Department of Real Estate and Construction: Economics, Law and Management, The Royal Institute of Technology (KTH), Stockholm, Sweden.

¹ Council Regulation (EC) No. 1698/2005.

tating the legal transformations and economic transactions should be designed with the objective to economize on the costs associated with these measures.

The purpose of this article is to explore and compare legal procedures for decision-making on land use alterations, property rights acquisition and compensation in four Nordic countries, with respect to three different types of infrastructure: Public roads, railroads and electrical power lines. After an investigation of procedural features, the institutional designs are briefly evaluated with regard to economic efficiency. The findings show a notable pattern of consistency in institutional design between the studied countries, which can easily be associated with transaction cost minimization.

2. Institutions, transaction costs and efficiency

The legislation governing land use alterations and property rights acquisition constitute parts of a society's legal institutions (North 1990). Institutions can be informal (e.g. social customs) or formal (e.g. legislation) which define possibilities and restrictions considering e.g. the right to undertake different land uses, whether a permission is required, what public authority that grants such a permission, who can apply, procedural design, compulsory acquisition of property rights, possibilities for appeal, etc.

The costs associated with legal transformations and economic transactions are normally termed transaction costs (Williamson and Masten 1995). In common terms, these can be depicted as costs for information, for negotiations, for contracts or public decisions, and for enforcement of these contracts or decisions (Coase 1960).

It is by no means a novel idea that different institutional design results in varying transaction costs (Ekbäck 2000). However, institutional design does not only affect procedural costs but can also influence the material outcome of the process.

Voluntary negotiations and agreements are often efficient in the sense that all parties must share the benefits resulting from the deal – they will not consent until they are satisfied with the agreement. On the other hand may significant resources need to be vested in the process of obtaining information, negotiating, contracting and securing enforcement. With many parties, the procedural costs may become prohibitive. This is reinforced by opportunistic behavior, such as holdout strategies (Cohen 1991).

It could, in those cases, be efficient to design institutions for *public decision-making* on such matters. Public decision-making also involves information costs and organizational costs. But the authority can make decisions without the support of agreements, so total procedural costs in cases with high numbers of parties may be lower. On the other hand, the material outcome may not be perceived as optimal by all parties.

Public decision-making can take various forms. When decisions are made by *political representatives*, the individuals affected (land owners, right holders, developers etc.) usually have less control over the final outcome, which may be a product of political compromises between different interest groups in society (Libecap 1989). On the other hand, these

procedures are normally public and easily accessed in order to retrieve information and express opinions at low costs for anyone.

When decisions are made by *courts or trained professionals*, the room for political opinions and bias is much smaller. The parties affected (land owners etc.) have greater opportunities to influence the material outcome. At the same time, these proceedings typically require a more active participation.

As mentioned before, institutional design affects the nature and size of transaction costs. An efficient legal institution can never eliminate transaction costs completely, but should instead be directed at economization (cf. Demsetz 1969). This should be a non-controversial objective, in the sense that it will save resources for pursuing other goals in a society.

3. Some initial remarks about the comparisons

The selection of countries for comparison has been limited to the Nordic countries: Denmark, Finland, Norway and Sweden. The choice is based on the broad similarities between the countries with respect to political, economic and social factors. Comparisons between specific legal sub-systems will be meaningful, even without considering differences at a higher or constitutional level, which the limited scope of an article does not permit.

The choice of countries can also be defended on the grounds that they all represent stable and enduring systems, where legal reforms have evolved within the democratic framework. As a hypothesis one could expect efficient institutions to have a better ability for survival in the political processes (North 1990). A long lasting and permanent institutional choice may therefore indicate efficiency, or at least the absence of evident inefficiency. Consistent similarities between the national institutions would consequently imply efficiency, while clear differences rather suggest that improvements are conceivable.

For the selected countries, legal procedures for alteration of land use as well as property rights acquisition will be investigated concerning three different types of infrastructure: Public roads, railroads, and electrical power lines. Within these processes I have further limited the study to a few distinctive features:

- Initiation (i.e. the entitlement to initiate the formal procedure)
- Authority type (in terms of political bodies, administrative agencies or courts)
- Participant rights (e.g. right to information, consultations or negotiations)
- Decision type (alteration of land use, property rights acquisition or compensation)
- Rules of appeal (to political body or to court)

Processes of public decision-making are complex procedures, and clearly these few characteristics will omit many aspects. The chosen features should, however, be seen as an attempt to capture the key elements of the legal institutions at issue.

4. Public roads

4.1 Denmark

The Danish road network is divided into public roads and private roads. The public roads can further be separated into national roads and municipal roads. National roads are managed by the state through the Danish Road Directorate (*Vejdirektoratet*). This overview covers only the procedures for planning and construction of national roads.

Planning procedures for national roads

Planning and management of national roads is governed by the Public Roads Act (*vejloven*). As a first measure, the Ministry of Transport gives a mandate to the Danish Road Directorate to investigate problems and possible solutions regarding the transport system in a certain area.

The planning procedure, which may include several stages, culminates in the preparation of a road plan (*vejplan*). The road plan can comprise one or several alternative proposals for the location and design of the road. The proposals in the road plan are submitted for consideration by the Danish Parliament. Decision on approval of a project proposal is made by the enactment of a parliamentary Act on the specific project (*anlægslov*). The decision by Parliament cannot be appealed.

During the planning procedures, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the parliamentary enactment.

Property rights acquisition and compensation

When the Act on the specific project is adopted, the different aspects of the road project are worked out in detail. By virtue of the parliamentary Act, the land necessary for the road may be acquired with ownership rights by the road manager. In most cases the acquisition is accomplished through expropriation, which is governed by the Act on Expropriation of Real Property (*lov om fremgangsmåden ved ekspropriation vedrørende fast ejendom*).

The Danish Road Directorate applies for expropriation from the national Government, which refers the matter to a special Expropriation Board (*ekspropriationskommission*). The Board examines and confirms the road project in detail in a cadastral procedure – somewhat similar to a legal proceeding. Subsequently, the Board determines the questions of acquisition and compensation. Typically, agreements on the level of compensation are reached and provide basis for the Board's decisions (Norell 2007).

The Expropriation Board's decision on the legality of property acquisition can be appealed to the District Court (*byretten*), the High Court (*landsretten*) and the Supreme Court. The Board's decision on compensation can be appealed to the Valuation Board (*taksationskommission*), and further on to the courts mentioned above.

4.2 Finland

The Finnish road network is divided into highways, municipal streets and private roads. The regional Centre for Economic Development, Transport and the Environment (*Närings-, trafik- och miljöcentralerna*) is the responsible government agency for road management regarding the highways. This section refers only to procedures relating to planning and construction of highways.

Highway planning procedures

Planning of highways is regulated in the Highways Act (*landsvägslagen*). The road manager – the Centre for Economic Development, Transport and the Environment – is in charge of initiation and the following measures in the planning procedures.

In most cases a preliminary road plan (*utredningsplan*) shall be prepared, which e.g. comprises investigations of existing problems and alternative solutions. The preliminary road plan constitutes a basis for the preparation of a final road plan (*vägplan*), in which the precise location and design of the highway shall be considered.

The decisions to adopt the plans are made by the Finnish Transport Agency (*Trafikverket*), or – in exceptional cases – by the national Government (*Kommunikationsministeriet*). The decisions can be appealed to the Administrative Court (*förvaltningsdomstolen*) and the Supreme Administrative Court (*Högsta förvaltningsdomstolen*).

Preparation and adoption of the preliminary and final road plans are mandatory elements of the road planning process. During the procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the road plans.

Property rights acquisition and compensation

The adoption of the final road plan entitles the road manager to acquire land with ownership rights according to the plan, by means of redemption (*expropriation*). This is regulated in the Highways Act (*landsvägslagen*) and the Act on Redemption of Immovable Property and Special Rights (*inlösningslagen*).

The issues of redemption and compensation are determined in a cadastral procedure, a road survey, after application by the road manager. The Cadastral Authority (*inlösningskommission*) is appointed by the National Land Survey of Finland. Within the scope of the cadastral procedure, it is possible for land owners and the road manager to negotiate agreements, which can provide basis for the decisions. The redemption decision can be appealed to the Land Court (*jorddomstolen*) and to the Supreme Court.

4.3 Norway

The Norwegian road network is divided into national roads, county roads, municipal roads and private roads. The Norwegian Public Roads Administration (*Statens vegvesen*) is

responsible for planning and operation of the national and county road network. This section refers only to the procedures regarding national and county roads.

Planning procedures for national and county roads

No specific legislation exists for planning of particular road projects, and therefore planning of public roads follows the regulations in the Planning and Building Act (*plan- og bygningsloven*).

The initiative is formally with the Norwegian Public Roads Administration, whose regional organization in many projects also performs most of the work with plan preparation. The plan approval is, however, undertaken by the Municipal Council (*communestyret*). In exceptional cases, e.g. conflicting public interests, plan approval is submitted to the County Administrative Board (*fylkesmannen*) or the national Government.

The outlines of the road project and different routes or corridors are first examined in a municipal comprehensive plan (*regional plan/kommuneplan*). The more specific aspects, such as the precise location and design, are considered in a detailed development plan (*reguleringsplan*). The detailed development plan is legally binding. The municipality's plan decision can be appealed to the County Administrative Board and to the Government.

During the planning procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the detailed development plan.

Property rights acquisition and compensation

By virtue of the detailed development plan, the land necessary for the road may be acquired with ownership rights by the road manager (regional organization of the Norwegian Public Roads Administration). This does not occur automatically, but requires further assessments.

In most cases, the road manager reaches agreements on purchases with the land owners concerned. In other cases the land is acquired by expropriation, which is regulated in the Roads Act (*veglova*) and in the Act on Valuation and Expropriation (*skjønnsprosessloven*). The decision to expropriate is taken by the Norwegian Public Roads Administration. The road manager can subsequently apply for a summons in the Lands Tribunal (*skjønnsretten*), a special court for matters concerning real property acquisition and compensation. The Lands Tribunal will then determine the compulsory purchase and the compensation in a legal proceeding. The judgment can be appealed to the Court of Appeal and to the Supreme Court.

4.4 Sweden

The Swedish road network is divided into national roads, municipal streets and private roads. This overview refers only to procedures for planning and construction of national roads, where the state is road manager.

National road planning procedures and property rights acquisition

Planning of national roads is regulated in the Roads Act (*väglagen*). The Swedish Transport Administration (*Trafikverket*) is responsible for initiation and the following planning procedures, which consist of several stages.

The first step is the preparation of an initial study (*förstudie*), which shall describe problems and alternative solutions for the road project. The final document constitutes a basis for subsequent planning measures. When alternative locations of the road need to be investigated, a feasibility study (*vägutredning*) is undertaken, where optional corridors are studied. In order to determine the precise location and design of the national road, a final design plan (*arbetsplan*) shall be carried out. The design plan shall, inter alia, include account for the land that needs to be acquired for the national road. The road design plan is approved by the Swedish Transport Administration or – in exceptional cases – by the national Government. The decision by the Swedish Transport Administration can be appealed to the Government.

The design plan is legally binding and has important legal consequences. Due to the adoption of the plan, the road manager – the Swedish Transportation Administration's regional organization – obtains so called right of way (*vägrätt*). The right of way is a strong usufruct right that gives the road manager sole access to the road area according to the design plan.

Preparation and adoption of the initial study and the design plan are mandatory elements of the road planning process. During the procedures, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the design plan.

Compensation

Land owners affected by the national road are entitled to compensation for the intrusion. Normally, the road manager and the land owners reach agreements on the level of compensation. In other cases they can bring a lawsuit in the Land and Environment Court (*mark- och miljödomstolen*). The court will then determine the compensation in a legal proceeding. The judgment can be appealed to the Land and Environment Court of Appeal (*Mark- och miljööverdomstolen*) and to the Supreme Court.

5. Railroads

5.1 Denmark

The Danish railroad network is predominantly state-owned. These railroads are managed by Rail Net Denmark (*Banedanmark*), a state-owned enterprise under the Ministry of Transport. The Public Transport Authority (*Trafikstyrelsen*) is responsible for planning and construction of the railroad network.

Railroad planning procedures

Planning of new railroads is mainly governed by the Railroad Act (*jernbaneloven*). The Public Transport Authority takes the initiative to draft proposals for new railroads in a certain area. These plan proposals are submitted for consideration by the Danish Parliament. Decision on approval of a project proposal is made by the enactment of a parliamentary Act on the specific project (*anlægslov*). The decision by Parliament cannot be appealed.

During the planning procedures, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the parliamentary enactment.

Property rights acquisition and compensation

When the Act on the specific project is adopted, the different aspects of the railroad project are worked out in detail. By virtue of the parliamentary Act, the land necessary for the railroad may be acquired with ownership rights by the railroad manager. In most cases the acquisition is accomplished through expropriation, which is governed by the Act on Expropriation of Real Property (*lov om fremgangsmåden ved ekspropriation vedrørende fast ejendom*).

The Public Transport Authority applies for expropriation from the national Government (*Transportministeren*), which refers the matter to a special Expropriation Board (*ekspropriationskommission*). The Board examines and confirms the railroad project in detail in a cadastral procedure – somewhat similar to a legal proceeding. Subsequently, the Board determines the questions of acquisition and compensation. Typically, agreements on the level of compensation are reached and provide basis for the Board's decisions (Norell 2007).

The Expropriation Board's decision on the legality of property acquisition can be appealed to the District Court, the High Court and the Supreme Court. The Board's decision on compensation can be appealed to the Valuation Board, and further on to the courts mentioned above.

5.2 Finland

The Finnish railroad network is state-owned, and the Finnish Transport Agency (*Trafikverket*) is responsible for management of the national railroad network.

Railroad planning procedures

Planning of railroad projects is regulated in the Railroad Act (*banlagen*). The regional organization of the Finnish Transport Agency is normally in charge of initiation and the following measures in the planning procedures, which may consist of several stages.

In most cases a preliminary engineering plan (*utredningsplan*) shall be prepared, which e.g. comprises investigations of existing problems and alternative solutions. The preliminary engineering plan constitutes a basis for the preparation of a final engineering plan

(*järnvägsplan*), in which the precise location and design of the railroad is determined. The decisions to adopt the plans are made by the Finnish Transport Agency or – in exceptional cases – by the national Government (*Kommunikationsministeriet*). The decisions can be appealed to the Administrative Court and the Supreme Administrative Court.

Preparation and adoption of the preliminary and final engineering plans are mandatory elements of the railroad planning process. During the procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the engineering plans.

Property rights acquisition and compensation

The adoption of the final engineering plan entitles the railroad manager (regional organization of the Finnish Transport Agency) to acquire land with ownership rights according to the plan, by means of redemption (*expropriation*). This is regulated in the Railroad Act and the Act on Redemption of Immovable Property and Special Rights (*inlösningslagen*).

The issues of redemption and compensation are determined in a cadastral procedure, a railroad survey, after application by the railroad manager. The Cadastral Authority (*inlösningskommission*) is appointed by the National Land Survey of Finland. Within the scope of the cadastral procedure, it is possible for land owners and the railroad manager to negotiate agreements, which can provide basis for the decisions. The redemption decision can be appealed to the Land Court and to the Supreme Court.

5.3 Norway

The Norwegian railroad network is state-owned. The Norwegian National Rail Administration (*Jernbaneverket*) is the responsible authority for the management of the national railroad network.

Railroad planning procedures

No specific legislation exists for planning of particular railroad projects, and therefore planning of railroads follows the regulations in the Planning and Building Act (*plan- og bygningsloven*).

The initiative is formally with the Norwegian National Rail Administration, whose regional organization in many projects also performs much of the work with plan preparation. The plan approval is, however, undertaken by the Municipal Council. In exceptional cases, e.g. conflicting public interests, plan approval is submitted to the County Administrative Board or to the national Government.

The outlines of the railroad project and different routes or corridors are first examined in a municipal comprehensive plan (*regional plan/kommuneplan*). The more specific aspects, such as the precise location and design, are considered in a detailed development plan (*reguleringsplan*). The detailed development plan is legally binding. The municipality's plan decision can be appealed to the County Administrative Board and to the Government.

During the planning procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the detailed development plan.

Property rights acquisition and compensation

By virtue of the detailed development plan, the land needed for the railroad may be acquired with ownership rights. This transfer of property rights requires further assessments. In most cases, the regional organization of the Norwegian National Rail Administration reaches agreements on purchases with the affected land owners. In other cases the land is acquired by expropriation, which is regulated in the Planning and Building Act and in the Act on Valuation and Expropriation (*skjønnsprosessloven*).

The decision to expropriate is taken by the Norwegian National Rail Administration. The railroad manager can subsequently apply for a summons in the Lands Tribunal (*skjønnsretten*), a special court for matters concerning real property acquisition and compensation. The Lands Tribunal will then determine the compulsory purchase and the compensation in a legal proceeding. The judgment can be appealed to the Court of Appeal and to the Supreme Court.

5.4 Sweden

The Swedish railroad network consists mainly of state railroads. These are owned and managed by the Swedish Transport Administration (*Trafikverket*).

Railroad planning procedures

Planning of railroad projects is regulated in the Railway Construction Act (*lagen om byggande av järnväg*). The Swedish Transport Administration is normally responsible for initiation and the following planning procedures, which consist of several stages. It is, however, possible for private subjects to initiate and design the planning documents.

The first step is the preparation of an initial study (*förstudie*), which shall describe problems and alternative solutions for the railroad project. The final document constitutes a basis for subsequent planning measures. When alternative locations of the railroad need to be investigated, a feasibility study (*järnvägsutredning*) is undertaken, where optional corridors are studied. In order to determine the location and design of the railroad in detail, a final design plan (*järnvägsplan*) shall be carried out. The design plan shall, inter alia, include account for the land that needs to be acquired for the railroad. The railroad design plan is approved by the Swedish Transport Administration or – in exceptional cases – by the national Government. The decision by the Swedish Transport Administration can be appealed to the Government.

Preparation and adoption of the initial study and the design plan are mandatory elements of the railroad planning process. During the procedure, authorities, land owners, and the

public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the content of the design plan.

Property rights acquisition and compensation

The design plan is legally binding, and establishes a right for both the railroad manager and the affected land owners to apply for a summons in the Land and Environment Court (*mark- och miljöödomstolen*). In a legal proceeding the court will then determine the terms for compulsory purchase (*inlösen*) and the amount of compensation to be paid. The judgment can be appealed to the Land and Environment Court of Appeal and to the Supreme Court.

Alternatively, the parties can apply for a property reallocation at the Cadastral Authority (*lantmäterimyndigheten*). The issues of property reallocation and compensation will in that case be determined in a cadastral procedure. The property formation order can be appealed to the Land and Environment Court and the higher courts.

It is common that the parties negotiate agreements regarding the acquisition and compensation, which provide the basis for the judgment by the court or the Cadastral Authority, respectively.

6. Power lines

6.1 Denmark

The Danish electricity network consists of a transmission system and several distribution grids. The transmission network is owned and managed by Energinet.dk, a public organization under the Ministry of Climate and Energy with a comprehensive responsibility for the Danish electricity supply. The distribution grids are owned by several different operators.

Electricity system planning and permission procedures

Planning and construction of new power lines is governed by various acts, primarily the Electricity Supply Act (*elforsyningsloven*) and the Act on Energinet Denmark (*lov om Energinet.dk*).

Energinet.dk may, on its own initiative, prepare plans for development of the transmission network. Initiative can also be taken by the national Government (*Klima- og energiministeriet*). New construction plans shall be scrutinized and approved by the Ministry. Other power line owners must apply for a permission (*tilladelse*) from the Ministry of Climate and Energy before any new constructions. The Government's decision cannot be appealed.

During the planning and permission procedures, other authorities and land owners are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the location and design of a new power line.

Property rights acquisition and compensation

The subsequent acquisition of property rights can take various forms. In most cases the power company reaches agreements on leasehold or usufruct rights (*brugsret*) and compensation with the land owners (Norell 2007).

Property rights can also be compulsory acquired by expropriation, which is regulated in the Act on Electrical Installations (*lov om elektriske starkstrømsanlæg og elektrisk materiel*) and the Act on Expropriation of Real Property (*lov om fremgangsmåden ved ekspropriation vedrørende fast ejendom*). The power line operator must then apply for expropriation from the Danish Safety Technology Authority, which is organized under the national Government. After examination, the matter is submitted to a special Expropriation Board (*ekspropriationskommission*). The Board scrutinizes and confirms the power line project in detail in a cadastral procedure. Subsequently, the Board determines the questions of acquisition and compensation.

The Expropriation Board's decision on the legality of property acquisition can be appealed to the District Court, the High Court and the Supreme Court. The Board's decision on compensation can be appealed to the Valuation Board, and further on to the courts mentioned above.

6.2 Finland

The Finnish electricity network is divided into a transmission grid, regional networks and distribution systems. This overview refers only to procedures regarding new power lines in the transmission grid and regional networks.

Electricity system license procedures

In order to construct and operate an electrical power line, an electricity system license (*elnettstillstånd*) is required, from the Energy Market Authority (*Energimarknadsverket*). The procedures for application and acquirement are regulated in the Electricity Market Act (*elmarknadslagen*). The decision by the Energy Market Authority can be appealed to the Administrative Court and the Supreme Administrative Court.

During the electricity system license procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the location and design of a new power line.

Property rights acquisition and compensation

For acquisition of property rights, the standard measure is to apply the Act on the Redemption of Immoveable Property and Special Rights (*inlösningslagen*). Access is usually secured by the formation of usufruct rights (*nyttjanderätt*).

At first the power line operator must apply for a redemption permit (*inlösningsstillstånd*), which is determined by the national Government. With the redemption permit as a basis,

an application can be made for a cadastral procedure (*inlösningsförrättning*). The Cadastral Authority (*inlösningskommission*) is appointed by the National Land Survey of Finland (*Lantmäteriverket*) and resolves issues of redemption and compensation. It is possible – and frequently occurring – for land owners and the power line operator to negotiate agreements, which can provide basis for the decisions (Norell 2007). The redemption and compensation decisions can be appealed to the Land Court and the Supreme Court.

6.3 Norway

The Norwegian power line network consists of three levels: The central network, the regional network and local distribution grids. This overview refers to procedures for new power lines in the central network.

Concession procedures

In order to construct and operate a high voltage electrical power line, a special concession (*anleggskonseksjon*) is required. The procedure for application and acquirement of a concession is regulated in the Energy Act (*energiloven*).

Concession applications are generally determined by the Norwegian Water Resources and Energy Directorate (*Norges vassdrags- og energidirektorat*). Some power lines are decided by the national Government (*Olje- og energidepartementet*). The decision by the Norwegian Water Resources and Energy Directorate can be appealed to the Government.

During the concession procedure, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the location and design of a new power line.

Property rights acquisition and compensation

By virtue of the concession, the land needed for the power line may be acquired with easement rights (*servitutter*). In most cases, the power line operator reaches agreements regarding formation of easements and compensation with the land owners concerned.

In other cases the property rights are acquired by expropriation, under the provisions in the Act on Valuation and Expropriation (*skjønnsprosessloven*). The power line operator must then first apply for an expropriation permit, which is determined by the Norwegian Water Resources and Energy Directorate (and appealed to the national Government). Subsequently, the power line operator must apply for a summons in the Lands Tribunal (*skjønnsretten*), which decides on the compulsory acquisition and compensation in a legal proceeding. The judgement can be appealed to the Court of Appeal and the Supreme Court.

6.4 Sweden

The Swedish power line network is divided into three classes, depending on voltage levels: The transmission network, regional networks and local grids. The public procedures are the same for all three levels.

Concession procedures

In order to construct and operate a high voltage electrical power line, a network concession (*nätkoncession*) is required. The procedure for application and acquirement of a concession is regulated in the Electricity Act (*ellagen*).

Concession applications are generally determined by the Energy Markets Inspectorate (*Energimarknadsinspektionen*). Some power lines are decided by the national Government. The decision by the Energy Markets Inspectorate can be appealed to the Government.

During the concession procedures, authorities, land owners, and the public are given opportunities for organized consultations, i.e. to receive information and to comment. However, it is not possible to negotiate and meet agreements regarding the location and design of a new power line.

Property rights acquisition and compensation

The network concession does not involve any transfer of property rights from the land owners. The subsequent acquisition can take various forms. In many cases the power company reaches agreements on easement (*servitut*) or leasehold (*nyttjanderätt*) rights and compensation with the land owners.

As an alternative, the power company can apply for a utility easement at the Cadastral Authority (*lantmäterimyndigheten*), which is regulated in the Utility Easements Act (*ledningsrättslagen*). The issues of utility easement formation and compensation will then be determined in a cadastral procedure. Even in these cases it is common that the parties negotiate agreements, which provide the basis for the decisions by the Cadastral Authority. The decisions can be appealed to the Land and Environment Court, to the Land and Environment Court of Appeal, and to the Supreme Court.

7. Comparison and conclusions

7.1 Some comments on distinctive features

In spite of national differences, the preceding process illustrations have confirmed many common features in the Nordic legal institutions. There are certain consistent patterns which will be highlighted and commented in the following sections. The characteristics are summarized in figure 1.

Land use alterations

Throughout the studied countries, alterations of land use for purposes of public roads, railroads or electrical power lines require special consideration or examination in a public decision procedure, either in the form of a plan or a permit/concession.

Another similar feature is that the public procedures have clear political attributes. In Denmark some decisions are made by the Parliament, while in the other countries determination is undertaken either by the national Government or some subordinate adminis-

trative agency. It is notable that the agency's decisions in most cases are appealed to the Government.

A final persistent feature in the explored procedures, regarding land use alterations, is the inability to circumvent the public decision procedure through negotiations and agreements between developers and the affected land owners. Developers and land owners – as well as the public at large – only have a right to receive information and to give comments (consultation rights).

Property rights acquisition and compensation

Regarding the procedures for property rights acquisition and compensation, a common feature is the right to negotiate and conclude agreements in these matters. The compulsory options in the public decision procedures are only resorted to in cases where no settlement can be reached between the parties.

The public procedures are also designed in quite different forms, with no political influence present. On the contrary, courts, special tribunals or cadastral authorities examine and determine issues on property rights acquisition and compensation. Decisions are appealed to the court system.

Land use alterations	Property rights acquisition and compensation
Administrative/political procedures Appeal to political bodies Consultation rights	Cadastral or court procedures Appeal to courts Negotiation rights

Figure 1: Overview of recurrent features in Nordic legal institutions.

7.2 Concluding remarks

Is it possible to explain the above identified features of institutional design in economic terms? Previously, in section 2, some initial assumptions about institutional design and transaction costs were formulated. In this closing section it is my intention to return back to these theses, and illuminate some economic aspects concerning the studied legal institutions.

With respect to decisions on *land use alterations*, public roads, railroads and electrical power lines typically generate widely-spread externalities. The decisions will affect many individuals and sectors of society apart from the developer/operator and the land owners along the actual infrastructure location, e.g. consumers of the facilities, trade and industry. Most affected in this latter group can still be depicted as having low stakes in a specific project. The costs of active involvement and participation in negotiations will generally exceed potential benefits. In order for the responsible authority to still receive some information on the public opinion, the political decision system may still be better than the alternatives available, such as court/cadastral procedures or negotiations. The legal

impediment to negotiations and agreements may be reasonable, since transaction costs in these cases are likely to be prohibitive.

Once the new land use has been determined, the subsequent decisions on *property rights acquisition and compensation* will not concern others than the developer/operator and the affected land owners. As a result, the number of interested parties is much lower. Another modification is that the parties here have higher stakes since the values in question are significant. The incentives to get involved and actively participate in the process are apparent.

The fact that no externalities are present – i.e. fewer affected parties – and that these individuals have higher stakes could indicate that negotiations may lead to efficient outcomes. Consequently, the parties have a right to conclude agreements in these procedures. At the same time, each land owner has a monopoly power over his own property which can be used for opportunistic behavior. Such strategies require an opportunity for compulsory decisions by a public authority. The political system has here been replaced by courts and cadastral authorities, which should be insensitive to political opinions and pressures, and at the same time possess more expertise in the matters at issue.

This article was opened with some words on rural development and the importance of infrastructure for economic and social progress in such areas. Regarding the legal transformations and economic transactions preceding the technical and physical construction activities, it is desirable if the institutions are designed with the objective to economize on transaction costs. This is fundamental, since rural development also requires resources for other activities than decision-making – in this context primarily for construction and management of the new infrastructure.

References

- Coase, R. [1960], The Problem of Social Cost. *Journal of Law and Economics* 3:1–44.
- Cohen, L. [1991], Holdouts and Free Riders. *Journal of Legal Studies* 20:351–362.
- Demsetz, H. [1969], Information and Efficiency: Another Viewpoint. *Journal of Law and Economics* 12:1–22.
- Ekbäck, P. [2000], *Förfaranden vid planering och markåtkomst. En rättsekonomisk analys.* [Legal procedures for land use planning and property acquisition. An economic analysis.] Stockholm: Div. of Real Estate Planning and Land Law, Royal Institute of Technology.
- Libecap, G. [1989], *Contracting for Property Rights.* Cambridge University Press.
- Norell, L. [2007], *Markåtkomst och ersättning för vägar, järnvägar och kraftledningar i Norden.* [Land acquisition for infrastructure in the Nordic countries.] LMV-rapport 2007:13. Gävle: Lantmäteriet.

North, D. [1990], *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.

Williamson, O. and Masten, S. [1995] *Transaction Cost Economics. Volume I: Theory and Concepts*. International Library of Critical Writings in Economics. Aldershot: Edward Elgar Publishing Ltd.

Land Assembly by the Aid of Land Readjustment

Norwegian Experiences in Urban Transformations

Abstract

This paper analyses land readjustment as an instrument in land assembly for plans realisation. The empirical background is a study of the newly enacted institutions for urban land readjustment in relation to land assembly in on-going urban transformations in the city of Oslo, Norway. Legal preconditions, purposes, contents and procedures of this new implementation tool are discussed, focusing on the roles private development actors and public authorities play in land assembly, planning and property registration. The findings indicate that the legal preconditions for launching planning initiatives as well as the organisation of the land readjustment authority have severe impact on how land readjustment can be applied in land assembly for plans' realisation. The free right to initiate development plans motivates developers to assemble land for initiating planning and preparing plans, which after eventual adoption, will constitute the regulatory status for the projects they are going to implement. At the same time the court organisation of the land readjustment authority limits its opportunities for direct involvement in planning. Its involvement has then to be reserved for the realisation phase, i.e. after plans' adoption. In consequence land readjustment is mainly used for deciding over property issues in relation to adopted regulations, which tasks involve: clarification of existing tenure structure, transformation of existing and establishing of new property units and rights, and finally formalisation of the new tenure structures through cadastral registration.

1. Background

Land readjustment (LR) has during the latest years attracted increasing interests in land assembly (LA) and urban plans' realisation. In this paper we analyse modalities of LR as a LA-tool concerning its organisation, power and processes, as well as connections to the planning system. The necessity of LA as a process for gathering and transforming land ownership for new uses is based on the fact that land designated for future building must somehow belong to the developer of the land. On the other hand, as an instrument in plans' realisation, LR should be remedial for allocating rights to develop land across existing property borders and for assigning responsibilities between involved parties during the implementation (Larsson 1993; Hong and Needham 2007).

LA, public and private, constitutes preconditions for land development, and consequently for realising plans and implementing projects (Sagalyn 2007a; Van Rij and Korthals Altes

* Department of Landscape Architecture and Spatial Planning, Norwegian University of Life Sciences, Aas, Norway.

2010). Certain kinds of coordination over property issues will be necessary, whether LA should be based on existing development plans for implementing projects or not. The complexities of these issues are partially reflected in the formal systems for land administration; dividing, titling and registering of land and rights related to land (Williamson et al. 2010). Partially they are embedded in planning as a public instrument to allocate rights to develop land fairly across property borders, and hence create the very regulatory basis for producing institutionally serviced plots for development. Being operated as an instrument for land administration, LR represents a necessary service in voluntary acquisition of land. Accordingly it will most likely have a more limited scope in providing land for developments, compared to the far more demanding situation in the latter case; as an additional tool for public allocation of development rights across property borders. From this two questions appear: How will the content of LA in terms of tasks and duties affect the needs for LR, and how can LR have an impact on the assembly of land during property development processes?

The need for some kind of coordinative action, for or among property holders and developers involved in urban developments, have worldwide justified implementation of LR-legislation (Home 2007). The land tenure is a key-factor to understand requirements for institutional coordination of private and public powers related to land. Planning that exceeds territorial boundaries of properties and rights will somehow meet private constraints because the regulatory power does not automatically reallocate, remove or extinguish civil right structures in conflict with the regulations (Doebele 1983).

The struggle for coordinative action towards planning is broad and large based on four arguments: Coordination between holders of property rights will make it easier to produce, adopt and realise plans because the planning content then will include the broadest possible spectre of interests compared to a situation without this kind of coordination. This is particularly underlined when holders of properties and rights later on will operate their individual ownership in implementation of projects during the realisation phase of the plan (Larsson 1993).

The second and the third arguments are closely connected. Planning for realising development of land generates prospective land values. If proper procedures and efficient mechanisms are followed increments in land values represent a potential financial source for producing territorial goods in development projects. LR can then be used to acquire land to meet common needs and to distribute costs among properties involved. (Doebele 1982). Furthermore prospective development values can be levied in order to cover investments in infrastructure and community services. Financial contributions levied from projects can enhance the authorities' capacities to realise plans, and if based on sound exploitation of land, strengthen developers' opportunities to implement projects. Accordingly LR can be instrumental for covering costs to produce territorial goods in general, and then avoid public or private financial shortage that endangers implementation of urban transformations (Alterman 2007).

At last, inherent in LR-systems there are possibilities to balance benefits and costs between landowners. In consequence, instruments for achieving equality between landowners will reduce or remove possible resistance to follow-up development procedures and strengthen their motivation to contribute to assembling of land that also will contribute to realisation of plans (Sagaly 2007b). How LR can be working in coordination towards planning depends not only on how LA takes place, but also on its organisation in connection to planning processes. Hence, two more questions appear: On what institutional terms does LR operate in planning and how does LR contribute to the implementation of development projects?

Empirical background for this selected case-study is the recent introduction of LR in Norwegian urban planning due to changes in the Land Consolidation Act (LCA; 1979-12-21 No. 77). From its former, mainly rural, application (Sevatdal 1989, 1990; Sevatdal and Sky 2003) LR is expected to have a role in realising urban plans across property borders. All cases for these in-depth studies of LR comprise brownfields planned for transformation to new and more intensive uses of land. For these areas public investments in infrastructure (particularly roads and metro-rails) have induced changes to former uses, and at the same time opened up for extensive residential developments. Empirical sources for the study are based on formal documents; such as laws, regulations, plans and legal minutes from LR- and planning authorities. Regarding the application of LR-tools this information is verified through interviews of the main actors involved; land owners, developers, and the respective authorities for planning, LR and land administration. The in-depth interviews followed interview guides and are documented in sound recordings. The main empirical input concerning Norwegian LR draws heavily upon two on-going urban transformation projects in Oslo. Both of which are earlier explored in details under different perspectives concerning the structural character of LR in relation to planning, cadastral and land book registration (Ramsjord and Røsnes 2011a,b).

The subsequent chapters start with a discussion on how property issues are coordinated in LA-processes to produce serviced land, with or without LR. The next three chapters follow the main sequences of urban LA-processes where LR can be involved. The very inception of a LA-process starts with selection of the site for the gathering of land in order to gain ownership control. How the acquired ownership can be exploited in future developments is determined by the regulatory status of the site, whether an existing plan has to be followed or a new one should be prepared for eventual approval. Under the heading of planning we present how LA connects to development planning, before we discuss the use of LR to produce serviced property units for the implementation of building projects. In a final chapter we summarise and reflect on the findings.

2. Coordination of property issues in LA

2.1 LA and the production of institutionally serviced plots

Developers who want to develop a specific area have to acquire land from the existing owner(-s) and make sure that the plots to build on will be serviced according to the

planned developments. However, developers as land assemblers can meet ownership constraints or other institutional and physical barriers that need to be resolved during the land acquisition and the preparation of land for new uses (Adams et al. 2001; Louw 2008). In consequence, LA will include several categories of tasks depending on how it is defined, but also on the actual situation and who the assembler is.

The fact that land needs to be assembled before it can be developed does not mean that LA is clearly defined. A dividing line seems to exist between those who include construction works and planning activities in LA and those who confine LA more narrowly to the acquisition of land to make property development activities possible (Golland 2003; Louw 2008). A strict understanding of the former opinion implies that physical land preparations or planning activities for future arrangements could be included, while in the latter not. The former fits very well to the idea that LA is about producing serviced plots in institutional and physical terms ready for building. The latter delimit LA to acquisition and division of land, although without clarifying how the division of parcels, plots or property units are suitably divided and institutionally serviced for the building activities. Normally, in regulatory planning systems, like the Norwegian (Booth 1995; Kule and Røsnes 2010), the development plan will have an impact on the plot pattern and somehow determine the delineation of the future real estate entities for building activities. The physical conditions of these entities can then be left for the developer's improvements in harmony with regulations. A LA-process that should end up with institutionally serviced property units, which will or will not need physical upgrading before building, should according to these assumptions include planning. To what extent construction works could be a precondition, and hence included in LA, depend hypothetically on the physical situation within the transformation area. Technically however, the tasks that transform the tenure structure are separated from construction works (Williamson et al. 2010). Construction work that might have an impact on the division of land can therefore take place before, in parallel with or after the future pattern of property units is decided.

2.2 LA and public acquisition of land

Ownership constraints are embedded in tenure structures. How the land assembler can meet such obstacles depends on instruments to reorganise these structures and on power relations connected to land (Doebele 1983; Adams et al. 2001). Public entities acquiring land are usually in a stronger position than private actors towards existing owners and holders of rights, formally because the public interests in such matters can be equipped with rights excluded from private use, such as right of pre-emption, compulsory purchase and eventually eminent domain, either as provocative threats for sale or enforced. In Norwegian urban development, challenges related to land tenure structures and land assembly are mainly dealt with in two ways. The site in question can be acquired, usually by local authorities, through compulsory purchase or expropriation and then redistributed as new property units (plots) to new owners for new uses. This LA-procedure was strongly propagandised in the early and late Post-WWII years (Johnsen et al. 1978; Røsnes 2005). Later on, arguments advocating public compulsory land acquisition and public land ownership

have lost strength (Predelli et al. 1998; Steinsholt 2005; Nordahl et al. 2007). Under existing circumstances developers will therefore in most cases have to assemble land for new developments regardless where the development takes place. So without enabling support from public planning authorities or municipalities, private developers intended to assemble land will have to rely on contractual mechanisms in the land market. In Norway developers are formally in a weak position to acquire land compulsory, except in those situations where a municipality or another public authority is willing to expropriate land in favour of third party interests (Sandane 1962; Pedersen et al. 2010).

2.3 LR as a tool in LA and planning

Ownership constraints deriving from acquiring, transferring, reorganising and extinguishing of rights to land create possible interconnections between LA-process and LR. The organisation and mandates of LR will affect how it can be operated both towards land administration and planning tasks, as both of which could be considered as necessary conditions for the production of institutionally serviced plots.

Towards planning Adams et al. (2001) indicate five categories of constraints that might be a target for LR. Two of them comprise situations depending on existing owners' willingness to sell land to the developer and the developers' attitude to buy on actual terms. In such situations LA can succeed if the developer can benefit from buying and the seller(-s) can achieve an acceptable gain from selling. The new owner will then have to make sure that the new property is institutionally serviced for the new uses. This implies that LA can start before the plan that determines the regulatory status for land exploitation has been approved. Should the developers be allowed to initiate and prepare plans for development they can do so based on this outcome. In such cases the development plan will most likely cover one property, i.e. the developers will try to initiate the plan when sufficient property units on the preferred site have been assembled. If not the planning authority will be in charge.

Alternatively, in situations when the planning area covers several properties, LR can meet a third category of constraints and contribute to LA by managing the realisation of plans, by including entirely unwilling owners. As long as the parties can discuss prospective solutions for the development of the existing properties, there should be possibilities to formulate a plan that can motivate them for positive conclusions. This opportunity for assembling land taken into account might also exclude or reduce needs for such an early LR-assistance; provided that the actors have a right to initiate development plans. But also in land development situations covering several owners the intention of the LR-entity is to make owners active and willing to participate in order to coordinate towards the plan that determines the regulatory status of the site. Therefore, a pre-planning involvement by a LR-entity could be useful for this coordination. Though, this plan should definitely not give the included owners any opportunity to breakout from the regulations at expenses of the cooperating parties.

A fourth category of constraints emerges from unclear ownership rights, and a fifth from rights that can restrict an immediate property transaction. Investigations can clarify and

define rights, even rights that can erode the conditions for a purchase. Such lesser rights of some contemporary relevance can be disputed and will normally have some impact on uses of land. Therefore rights that can hamper intended land uses need to be reorganised. A LR-entity can definitely contribute to investigations that will explain the ownership situation and on certain conditions reorganise property and right structures. But to settle legal conflicts judiciary power will be needed.

3. Gathering of land ownership (private initiatives) for redevelopment

3.1 The complexity of ownership

The term ownership is in itself confusing. The territorial and perceived borders between ownership in all its forms and the large variety of lesser rights can make it difficult to figure out who the “real owner” is, where the ownership starts and ends territorially and what the actual rights account for etc. If LA for development of land is understood as simple transfer of ownership from passive to active owners the problems regarding transformation of ownership and lesser rights structures fall in the background (Louw 2008).

In Norway as in other countries the existing tenure structure in urban areas is a product of former ownership and uses. Fragmentation in property and rights structures is common as well as changes in forms of ownership. Although freehold and leases dominate there exist normally several legal categories of owners who in practice will indicate differences in economic activity levels and business strategies regarding exploitation of land (Børrud 2005; Louw 2008; Ramsjord and Røsnes 2011a). In the brownfield areas investigated various types of owners (active, less active etc.) ruled through dissimilar forms of ownership to realise their diverse interests. Different categories of lesser rights, resting on one or several properties served various purposes in order to safeguard timely needs. Institutionally the land tenure structures generally resemble what one expects to find in this type of redevelopment area (Hong 2007; Sagalyn 2007b).

In LA-processes based on voluntary actions, the gathering of ownership through acquisition of property units or lesser property rights will consist of several different sequential activities. The process generally starts with preparations towards negotiations over buying and selling. If an agreement is concluded the transaction can be fulfilled and the property or the right in question will get a new (formal or “real”) owner.

3.2 Acquisition strategies

For the developer, gathering of ownership to acquire rights for developing land is exposed to uncertainties that more often than not will have some impacts on the property development that expectantly takes place later on. The developer will have to overcome challenges of acquiring series of property units and lesser rights. Voluntary based LA differs from expropriation and other compulsory means, as these usually secure full ownership including opportunities to extinguish or acquire lesser rights. The number of transactions will usually increase with the diversity of property rights and number of holders. Acquisition requires the parties to negotiate an agreement all are willing to accept, but as the

developer are dependent on agreements with several actors uneven bargaining positions and social traps in various forms may appear (Hong 2007, p. 6,16; Kristoffersen and Røsnæs 2009). When agreement has been negotiated, the transfer of property units may be organised in several ways.

The simplest forms of property transactions transfer ownership directly; from previous owner to a new owner; generally a legal entity chosen or created by the new owner/developer. An important precondition for transfer in property development is that the property is registered as a unit in the cadastral system. If not, subdivisions can be required prior to the transaction. As acquisition can be organised prior to planning, and formation of new properties will have to be made in accordance with public regulations, the legal foundation may not yet be prepared, whether for formal registration of the transfer or for property transactions in the future. Generally the types of transactions transferring control over development property in this context are complex. The outcome is often development areas where formal property owners differ from “real” owners. This can be achieved in several ways. One category of transactions can be executed without formal transfer of title through contractual agreements and the use of “security packages” that involve registry of mortgage securities and lesser rights. Without registering of the property transfer in the land book, the previous owner will still officially appear as the formal owner, although the buyer and new “real” owner has full physical and juridical disposition. The transactions following from these acquisition strategies do not have any impact on other lesser rights held by third parties.

The level of risk in early phase developments can also justify conditioned transactions rather than direct transfer, i.e. through the use of call option agreements. Such agreements may be registered or unregistered and when executed cause similar conditions as above. At last a widespread and diverse category of property transactions involve SPVs (single purpose vehicles). These companies are set up either to develop a site or for property ownership, investments and management. The latter case will often be an “empty” company, which only purpose is holding of the title. If organised this way property transactions can be made with company stocks rather than through title transfer, thus reducing tax on commercial property transactions. The legal and economic impacts of all transactions mentioned above are legal, and in the Norwegian cadastral system, complex matters (Sevatdal and Hegstad 2006). The outcome of negotiations, the actors’ financial strength, their attitude to risk, motivations behind ownership, and desire to avoid taxes will usually affect the modes of transfer (Bjaaland and Nielsen 2009; Janson 2011).

In the investigated developments the gathering of ownership was based on several of these acquisition strategies, utilising both direct transfers and contractual structures establishing “real ownership” based on different categories of rights. In one development area most of the involved properties were (formally) owned by the state (Norwegian railroad). The developer, a publicly owned private company (the railroads property development company), was granted disposition over the properties through power of attorney. The developer then formed an SPV in partnership with a private developer and transferred “real”

ownership to the SPV through the type of contractual arrangements mentioned above. When final units are ready for sale the title will be transferred from the formal owner to new owner. Transfer of ownership was also in some cases done “as is”, meaning that the developer amongst other things met the challenges and risks of extinguishing lesser rights after the time of acquisition. All the developments were organised in several building stages and developed, utilising one or more SPVs, sometimes in partnership with other investors. Parts of development areas were in a few cases sold directly as serviced plots to other developers. Generally the SPVs have been granted disposition over the properties in question, often through further contractual agreements and documents that give these corporations power of attorney to fulfil necessary transactions in the development process (Ramsjord and Røsnes 2011a,b).

Impact on planning

The outcome of this gathering of ownership will more or less determine the bordering of the development site, but only to the extent this bordering harmonises with the development plan of the area in question. Because the developer has a right to initiate and prepare development plans, cf. below, there are possibilities for achieving territorial congruence between the acquired ownership area and the planning area of this site. Developers will rarely invest efforts into planning for development of other owners’ land (Røsnes 2005).

However, the planning authority can demand that initiators of development planning have to include neighbouring properties in the planning area, to amend the physical environment or to enhance capacities for implementation. If the planning authority demands extension of the area already acquired, the developer might refrain from the project, at least for a period of time, and no plan will be prepared. Other possibilities can be revision of the existing plan or preparation of a new one covering the area delineated according to the planning authority’s requirements. For all cases investigated developers have launched new development plans for the whole area initially acquired, except some smaller pockets of neighbours’ land that had to be included. These parcels under external ownership were not suitable as individual building plots, but still had to be transferred to developer’s ownership. The planning authority left the acquisition to the developer. Although the parcels were of minor value to the existing owners, the developer was in a poor bargaining position both regarding acquisition terms and prices. After acquisition the developer had to coordinate subdivisions and clarification of rights, and as for the other property units and rights, arrange for registration (Ramsjord and Røsnes 2011b).

4. The planning system

4.1 Planning organisation and characteristics

Planning in Norway is legally based on rules in advance rather than by discretionary case-by-case considerations of actual projects (Booth 1995). Development plans and building regulations are in principle legally binding on all citizens. According to the unified act relating to Planning and the Processing of Building Application (PBA; 2008-06-27 No. 71)

municipalities are responsible for development planning at two planning levels; one overall or strategic and another one detailed (Kule and Røsnes 2010).

New types of local detailed plans were introduced during the revision of the act. In addition, new and more specific rules were adopted to create regulatory tools to overcome, among other things, lack of coordination across property borders. When it comes to responsibilities for covering costs to provide territorial goods the legal statutes of this act are quite clear after the introduction of rules concerning the use of land development agreements. Development agreements and post development fees can be used for levying contributions to transportation and water infrastructure, and open space structures, but not contributions for covering social infrastructure costs, cf. PBA. ch. 17, 18. Because regulation methods in main are based on rigid zoning, some of these new rules are directly aiming at delineation of land use zones in which particular issues should be observed for planning later on. In the strategic local plan such kind of zones could be delineated and connected to provisions requiring that the subsequent detailed planning for several properties should be based on cooperation between landowners regarding physical transformation and renewal, cf. PBA § 11-8 litera e). For the realisation of plans covering such zones instruments like LR can be used (Planlovutvalget 2003:78; MD 2008:220). The legal implication is that the planning authority can refuse planning proposals that do not include properties that is crucial for achieving aimed results or for securing sound realisation of development plans. Yet, none of the investigated cases or other known cases initiated in the districts of Oslo since 2007 has followed this LR-procedure (LCA § 2 litera h). Planning initiatives to follow-up of such provisions can the planning authority leave to the land owners, cf. below. However, there is no land LR-agency that can coordinate such initiatives and give support to the involved parties during the planning process, like in other countries where LR is frequently used in urban transformations (Davy 2007; Hong 2007).

Instruments and rights

Landowners are in a key-position to gather land ownerships for new developments, and also for requiring LR. In consequence, their possibilities to initiate development planning will have an impact on when and under which ownership conditions coordination towards planning will take place. In local planning on detailed levels there are two categories of statutory development plans, type I and II (Kalbro and Røsnes 2012). The justification for introducing two types of detailed development plans is directly connected to needs for coordinating interests of different owners towards planning. Detailed development plan type II should per intent be used for areas of some extension overlapping several properties, cf. PBA § 12-2, while the other one should be limited to development projects, which are expected to include more limited areas covering one property, cf. PBA § 12-3 (MD 2008:229). However, in both types of plans land use zones can be delineated to meet special needs or particular challenges, cf. PBA § 12-6. For the coordination across property borders, the rights to initiate these plans and to participate in plan preparations are supposedly more important (Webster 2005).

A free right to initiate plans that after approval constitutes regulatory status for developments gives wide opportunities to decide where to plan for new developments. Even more important is the right to prepare plans, particularly if the system gives rights to initiate and prepare plans in the same planning area. Developers' opportunities to take the responsibility for plans' preparation will inevitably give far reaching influences on how and when to build. The formulation of the plan can then take place under consideration of the developer's ideas for land exploitation as well as when and on what terms the coming projects can be realised (Kule and Røsnes 2010). The rights to initiate and prepare development plans of type I are free, planning qualification provided, and there is no formal prohibition against including several properties in the planning area. During the recent years most of the detailed development plans in Norway is of this free type (Røsnes 2005; Kule and Røsnes 2010). The local planning authority has to decide if development planning of category II should take place but the same authority can decide that the plan preparation could be outsourced to external bodies if they are qualified in making plans.

Issues in initiation and preparation of plans are assumingly easier to settle when few rather than many parties are involved. It is then close to believe that developers and land owners will prefer autonomy in planning and implementation matters to the coordinative approach covering several owners. Should several landowners be involved in planning across property borders, conflicts regarding the layout of the plan will probably arise due to diverting interests between the owners. The transformation process in creating serviced development areas will be more demanding the more complex and intricate the land tenure structure is. Accordingly, opportunities to organise coordinative planning across property borders are trapped with conflicts and transactions that possibly will demotivate developers as landowners to launch initiatives, either towards planning or LR.

Privately initiated detailed development plans of type I expire after five years, cf. PBA § 12-4. The rule was implemented with the new act. This will probably affect the delineation of planning area and the size of the building projects to be implemented, because developers will try to avoid uncertainties and transactions generated by the necessity to renew the adoption of the plan. How this will affect private or public actors who can and will initiate and prepare plans for larger redevelopments is yet to be seen.

4.2 Regulation and property formation

The Norwegian planning system contains rather weakly elaborated rules concerning the use of LR. The main approach is that LR should be carried out as an instrument for realising plans that cover several properties and impose regulatory status on the development site. LR should take place due to instruments either legally prescribed or chosen according to the LCA. These procedures determine the possibilities to include landowners and holders of rights in the LR-process. A decisive precondition is that this coordination of interests through LR, including property formations, will not violate either the plan or the rules of public law that regulate property formations and property formation processes as parts of property development.

Regardless of the number of owners, the formation of institutionally serviced property units is regulated in the building legislation. Establishments of new properties, construction property (3D-property), new land commons, land units that can be leased out for a period exceeding ten years, or other kinds of land transfer are subject of development control and need to be applied for, cf. PBA § 20-1 litera m. The detailed plan regulates the subdivision of plots for new building projects, cf. PBA § 26, but usually plan maps do not display the new property boundaries. Deviations from the plan can occur during the implementation of projects. Private developers are concerned about flexibility in plans as this will allow for redesigning projects (buildings, building stages etc.). If external conditions (markets, trends etc.) should change, flexible detail plans and provisions reduce the risk of being bound to suboptimal solutions or having to go through delaying procedures in order to change the plan. This adaption will have practical consequences for when new property structures can be delineated and rights established. As a result final inputs for the delineation of plots and construction properties, e.g. underground parking constructions, will be validated after the issuance of the general and the construction permits respectively. Accordingly the property formation process will have to follow the development process and await the necessary permits in order to delineate the plots and to create new structures of rights. This will apply both under normal cadastral and LR-procedures.

In general a property must not be subdivided in such a manner that plots according to size, shape or location will be unsuitable for building purposes, cf. PBA § 26. In LR this public requirement might create a particular challenge. When bordering the planning, and hence the LR-area, there is no guarantee against the necessity to create temporary property units that in size, shape and location are unsuitable as building plots. The same can also happen in pooling of property units inside this area. Temporary subdivisions and registrations can be necessary when transforming the property structures to create suitable building plots according to the plan later on. It is close to believe that the actual requirements in the building legislation is contradictory to the purpose of LR and the needs to create new property units for building during the land assembly process (Ramsjord and Røsnes 2011b).

5. LR for transformation of urban land tenure structures

5.1 Legislation and organisation

The Norwegian LR-legislation comprise a multitude of purposes aiming at reorganising land tenure structures in order to enhance the general conditions for the use of land according to private law (Ravna 2009). Here we focus on LR's role in the assembly and servicing of land in realising urban redevelopment plans and projects.

The Norwegian LR-authority is officially termed, due to its rural origin, the Land Consolidation Court. This authority has a long history in resolving land disputes and implementing transformations of land tenure structures in rural areas. The court was reorganised in 2003 (LMD 2003). It was then decided to keep the judicial branch based organisa-

tion. Out of constitutional reasons, the central administration was transferred from the Ministry of Food and Agriculture to a new Department for Land Consolidation, a wing under the Norwegian Courts Administration. The recent reforms have moved the Land Consolidation Court further away from public administration and closer to the ordinary courts (Bjerva 2012; Langbach 2003). However the legislation is still under the responsibility of the Ministry of Food and Agriculture.

The LCA defines LR and the court's territorial jurisdiction and legal mandates. Numerous changes to this act have been widening the land readjustment authority's mandate both geographically and in relation to use of instruments. According to the principle of "freedom of contract" the court generally acts as an enabler of decisions and transactions the parties could have prepared for themselves, if they should have agreed (Bjerva and Sevatdal 2009; Austenå and Øvstedal 2000).

The new LR-legislation introduces allocation of costs and benefits between property owners as an instrument for coordination in planning and hence for collaboration between landowners to secure projects' implementation. Enhanced capacities in assigning rights to develop land and in levying of monetary contributions to cover infrastructure or possibly other categories of costs, should be instrumental both in the coordination towards planning and in the collaboration between landowners. This legal approach need to be considered in relation to planning and building legislation, as LR-processes can be initiated under requirements of an adopted plan, strategic or detailed, stating that such measures can be applied, cf. LCA §§ 2 litera h, 5 and PBA §§ 11-7 No. 1, 12-7 No. 13. LR-processes allocating costs and benefits in urban development projects have not become widespread. In early May 2012 there are no known LR-cases in the category of division of costs and benefits from developments (cf. LCA § 2 litera h). There is however a growing number of cases that apply LR for the purpose of property formation; clarifying and transforming property and rights structures in connection with development projects, as the investigated cases are examples of (Ramsjord and Røsnes 2011a,b).

5.2 Implementation of LR

The choice of implementing LR, rather than using the municipal cadastral authority for implementing changes in property structures, is largely justified from the developers' side through their experiences in LA-processes and their position in regulatory matters at the time of application. The investigated cases indicate that LR in connection to urban transformations is fronted by market players on the basis of being land owners (AOJ 2007a,b; 2010). The ownership can formally be registered or secured through contracts and lesser rights, beyond the cadastral system. The landowners' arguments for applying LR to transform property and right structures are to some extents related to differences in efficiency and coherence in land administration processes between the LR-authority and the municipal cadastral authority. In LR, clarification of rights, subdivisions and legal regulation of the future structures can be accomplished in more or less streamlined processes by the same authority (Ramsjord and Røsnes 2011b).

A wide range of physical or juridical persons on the basis of being or pretending to be holders of property rights can apply for LR. One implication is that planning authorities in ordinary urban transformation situations cannot require LR to prepare for intended planning solutions. The only situation where municipalities can initiate LR is when they act on behalf of municipal property rights. The LR-authority cannot on its own initiate land readjustment. These constraints are due to basic constitutional principles. Furthermore since the LR-authority is organised as a court, there are meagre opportunities for giving direct support in planning, i.e. during the coordinative plan preparation phase, which is under the responsibility of the planning authority and the executive branch of the constitution.

There are two absolute criteria for having LR-applications accepted; inefficient use of the landed properties due to the land tenure structure, whether properties or rights. And equally important, LR should be remedial for improving these structures, cf. LCA § 1, 2. LR cannot be carried out if costs and disadvantages exceed benefits for each of the involved properties, cf. LCA § 3 litera a. LR following the new urban regulations is prohibited if it prevents each property from having its required share of the increased values created by the development. It implies that no individual property should lose value. At the same time every property is entitled to have its relative share of the values generated, cf. LCA § 3 litera b. The traditional LR-legislation opens up for substantial use of power. LR can be initiated by one owner, against the will of other affected owners. The new urban LR-procedures require consensus or at least two thirds majority both concerning land owners and amount of land involved, cf. LCA § 2 litera h, i. In situations where a development plan does not contain provisions stating that LR-instruments can be utilised, consensus is required in order to divide cost and benefits from development, cf. LCA §§ 2 litera h, 5. Consensus is also required to change land tenure structures in existing built up areas, cf. § 2 litera i, No. 1. In un-built development areas a two thirds majority rule applies. The relationship between the former readjustment procedures suitable for urban LR and the new legislation designed for this purpose is not that clear as the rules are partially overlapping (Ramsjord and Røsnes 2011a). In one of the actual cases the application for LR was strategically made after the former legislation, avoiding the stricter criteria and higher fees of the new “urban” LR-rules (AOJ 2010). These rules have also been of minor relevance because all LR-cases have been fronted by one dominant developer. The relationship to other (minor) owners and holders of rights is largely regulated by agreements. The LR-authority can then carry out the requirements stated in the agreements according to the adopted plan.

In all cases the developer and her consultancies, experts in the fields of property development, LR and cadastral work have formulated the applications. In court cases the parties' dispositions are due to the principle of party control binding on the courts' decisions. The application will therefore decide the terms on which an accepted LR should be implemented, cf. LCA § 25, provided that losses for individual properties can be avoided. However if there is one dominant party and owner in the LR-area (owning several cadastral

units), or the relationship between involved owners and rights holders have been regulated in contracts prior to implementation of LR, the parties dispositions must be taken into account by the court. This will give the developer substantial control over the LR-process. If the court finds it necessary LR can be ended consecutively for parts of the area, e.g. following the developments divisions into building steps, cf. LCA § 21. This means that the LR-process can be organised according to the progress of the development project. This allows for adaptations to the developer's needs, thus reducing property development risks (Ramsjord and Røsnes 2011a).

5.3 Clarification of land tenure structure

Clarification of property rights is preconditioned in all land readjustment cases, cf. LCA §§ 3, 16. The main purpose is to record and legally confirm the existing land tenure structure "as it is". Whether there should be several or one owner, the recording and legal confirming of the existing land tenure structure is legally necessary and therefore obligatory for its later reorganisation. The necessity to clarify and confirm the land tenure structures must also be seen in connection with the Norwegian cadastral system and institutions governing property registration. Of various historical, technical and legislative reasons the cadastral maps and documentation are of varying quality. Uncertainty around boundaries and lesser rights regularly occur hence creating a high number of disputes on these matters (Mjøs and Sevatdal 2011). This situation strengthens the arguments for a court based LR-system that effectively can clarify contested land tenure structures and settle disputes among the owners (Bjerva 2012; LMD 2003).

Dispute concerning land is valid justification for requiring LR. In case of uncertainties or disputes relating to the land tenure structure the result will either be mediated in-court compromises or a special consensus based decision referred to as a "special finding", as in the cases investigated (AOJ 2007a,b; 2010; Ramsjord and Røsnes 2011a, b). If the parties cannot agree the dispute will be settled by judgement. All decisions are legally binding if appeal does not proceed. The clarified land tenure structure is surveyed and registered in the cadastre and land book. So far revealed in the investigated cases latent legal disputes over rights to land do not seem to be the main reason why urban LR-issues are taken to the land consolidation court (AOJ 2007a,b; 2010). Since land tenure structures in general affect the impact of plans on property owners and hence the opportunities for coordinated implementation of development projects, this clarification should preferably be done as a part of the planning process (Larsson 1993). This will particularly apply in situations with several owners. Should there be one or one dominant owner who is in a process of assembling land ownership, this deduction can easily turn different. If the developer has a right to initiate and prepare the plans required, the impact of these plans should be easier to conceive, both in relation to the interests of the developer and the development of the site. The recording and confirming of existing tenure structures can then more easily wait until the plan is adopted.

When the boundaries of the LR-area and all internal boundaries and rights (easements and servitudes) have been clarified, valuation is necessary in order to secure the guarantee of no individual losses or biased allocation of values, cf. LCA § 3 litera a,b. This valuation must be completed before the land tenure structure can be changed, cf. LCA §§ 16, 19. For the actual cases in question the disposition of properties within the LR-area is under the developer's control, either through ownership or individual agreements. This leaves no probable risk of losses and biased allocation of values; hence valuation for later decisions on costs and benefits is of minor relevance.

5.4 Transformation of property and rights structures

The next step in the procedure is to reorganise property and rights structures. The LR-authority is mandated to subdivide, including merging of property units, and change the property and rights structures, cf. LCA §§ 86, 2 litera b. If the reorganising tasks are carried out in accordance with a plan, further permits from the municipal cadastral authority is not necessary, cf. PBA § 20-1 litera m. Applications to the cadastral authority are generally subject to charges and will create further transaction costs as the processes are time consuming, difficult to coordinate with other tasks and applications and also normally require extensive documentation. The case-studies reveal that the developers consider the elimination of these application procedures very advantageous (Ramsjord and Røsnes 2011 a, b).

In urban transformation areas plot patterns suitable for implementation of the development projects will rarely correspond to the existing structures. New plots for developments according to plan have to be subdivided and registered as individual parcels. The parcels created can be registered as new units or merged with existing units within the LR-area, and in some of the cases these formations were based on contractual agreements (Ramsjord and Røsnes 2011b). Establishing of these parcels is then a kind of formalisation that concludes transactions determined by voluntary agreements and the content of the plan.

Before existing property units can be pooled and the division of land reorganised any kind of rights that represent a threat to the new developments will usually have to be removed. This also includes mortgages, which regularly represent financial risks in property development. Both registration and extinction of rights can face particular challenges. Rights can be registered directly on a single property, or lie "hidden" on the parcel the property previously has been subdivided from. Moreover they do not need to be registered in the land book, but still have relevance. In the Norwegian cadastral and land book systems there is no legal requirement neither for cadastral or land book registration, cf. Cadastral Act (CA; 2005-06-17 No. 101) and Registration Act. (RA; 935-06-07 No. 02). This type of rights can have obtained legal protection against third parties based on established custom (Falkanger 2000:597; Stavang 2011:59). For investigations on unregistered rights the LR-authority or the developer will have to rely on information from landowners, holders of rights as well as other stakeholders involved (Ramsjord and Røsnes 2011 a, b).

The developer is dependent on the willingness of other parties to defect existing rights (Stavang 2011:160). Extinction can be based on agreements between the property owner

and the right holder as a declaration that also will grant extinction in the land book (Stavang 2011). The extinction of mortgages has to be handled by property owners alongside the LR-process via their respective financial institutions. In some cases rights have “public interest”. Extinction in these situations will require consent from the authorities in question, which seems to be more demanding and time consuming than getting consents related to rights of pure private interests (Ramsjord and Røsnes 2011a).

If a specific LR-solution depends on some type of rights (positive or negative servitudes) being reorganised, the Land Consolidation Court can decide that the right should be altered or removed through judgement, cf. LCA §§ 2 d, 39. Rights can be compensated in land, other rights or if necessary, money. It is also possible to apply for LR merely for the purpose of changing or removing rights, but here further conditions and restrictions apply, cf. LCA §§ 2 d, 36 (Stavang 2011). Since the LR-authority is a court, possibilities for resolving the conflicts at an early stage will probably be enhanced by reaching settlement prior to or in-court, or eventually by judgement. Defection of rights can of practical reasons be a precondition for transforming the property and right structures, as registration of the established property units is necessary for establishing new rights in land and additionally as security for mortgages. These activities can therefore have a major impact on the development process as a whole. LR can be a useful tool in handling lesser rights in this context.

The LR-legislation offers special tools for reorganising physical property structures. Some LR-instruments are designed for use in rural land consolidation and mainly based on land swapping between properties where relative land values determine the amount of land transferred, cf. LCA § 2 litera b. Others are recently adopted for urban use, cf. LCA § 2 litera i. In urban transformations the traditional land swapping between property units, which also includes realignment of property boundaries, can offer easier solutions in transforming property patterns, compared to realignments following the procedures prescribed in the CA. The LR-legislation opens up for alterations in property boundaries as well as cadastral and land book registrations, all of which to be implemented in one coordinated procedure. Cadastral register units can be moved and boundaries changed by the Land Consolidation Court in accordance with an adopted plan and building permits without further involvement by municipal authorities, except the final registration in the cadastre. In one of the investigated cases traditional land swapping is used to transform property units belonging to the developer (AOJ 2010).

5.5 Formalisation – organising institutionally serviced land

Legal formation of property units are based on regulatory requirements and procedures. In order to complete the transactions all units will have to be recorded and finally registered by cadastral and land book authorities. The content of what is to be registered will be determined by the outcome of the LR-process. This organisation of responsibilities and authorities creates overlapping duties and in consequence an increased number of transactions for fulfilling the registration of the new units (Ramsjord and Røsnes 2011b).

Another aspect of the current institutional approach is that the capacity of the municipal cadastral authorities can meet difficulties facing this type of massive changes in cadastral records because the cadastral legislation and computer systems were not designed for handling this type of land tenure transformations (Statens kartverk 2010). So far cadastral registration processes following from the investigated cases have met some delays, but produced acceptable outcomes. Cadastral and land book registration during the LR-process will have to follow the steps of the development process.

At this stage of the property formation establishing of new rights related to land can be required based on detailed plans map and provisions, building permits and the developers' needs for organising the development process. Development areas including common uses of space and facilities such as entrance roads, parking lots, play-grounds etc. will need organising. This is vital for the future users, for facility management and maintenance. The LR-authority is mandated to organise access to regulated floor or ground space for common uses within the planning area. Permanent or temporary rules governing the relationship between properties, different users and holders of rights can be established; described, demarcated and registered as servitudes on properties involved, cf. LCA §§ 2 litera c, 23. When necessary there will be formulated rules or by-laws for residential associations, tenancies in common etc. In ordinary implementation of developments the responsibility for formulating rules and rights that goes beyond the public regulations concerning future uses of land and facilities will normally be in the hands of the developer or the new user organisations when the produced floor space eventually is captured by the new owners. Rights that will secure individual uses of common facilities however will be formulated during the establishing of the new property units by the cadastral authority (Ramsjord and Røsnes 2011a, b).

The LR-authority's mandate to regulate the future of the land tenure structures legally will in this final phase contribute to enhanced coordination of tasks that in ordinary LA and beyond in the building phases will be divided between several entities. In the investigated cases LR is implemented in the later phase of privately led land acquisition and planning processes. Under these circumstances LR is a tool for enabling private transactions that finalise LA-processes where development plans determine the layout of property units for different kinds of future uses. The new plot patterns with attached rights created through LR-procedures will in combination with granted building permits result in institutionally serviced land ready for building and final organisation towards owners/users of developed land and floor space.

6. Conclusions

In this study LA is understood as a process that include gathering of land related ownerships in order to produce institutionally serviced land ready for urban (re)development. In this process development plans will by and large determine territorial divisions of future landed property units and rights for building purposes. This means that development planning will affect the institutional status of the property units to be developed. LR is a

possible LA tool. This versatile property formation instrument can be used in land administration as well as in coordinating and allocating costs and benefits between holders of property and rights in order to coordinate property issues, both towards planning and plans' realisation.

The investigations of urban transformation projects in Oslo, Norway, through selected case studies, indicates that LR so far has been applied as an instrument for LA, based on the understanding of LA discussed in this paper. Application for LR can be made by holders of property rights, developers included, and the main purpose of will here be to serve their interests in reorganising land tenure structures, assembling land and enabling property development. LR will in this situation have to deal with property issues concerning clarification of existing property borders and land related rights, and establishing of new property units and rights, based on regulations for the utilising of land and building activities. The latter part of the LR-authority's involvement include cadastral and property registration tasks. In this clarifying of existing and establishing of new land tenure structures the LR-authority meets demanding challenges in terms of overlapping responsibilities and lack of efficient coordinative mechanisms towards planning and land administration bodies.

The LR-authority is organised as a special court and must base its assistance in LA on already adopted development plans. Combined with the private right to initiate development plans this has a severe impact on the land assembling capacity of the LR-authority. The court organisation prevents early phase coordination during the preparation of plans, and the free right to initiate and, on certain conditions, prepare development plans, give the developers incentives to secure some sort of disposition over the intended development area prior to or in parallel with the plan preparation phase. If successful in this early part of the assembly process there are no incentives for collaboration with other land owners. On the contrary, that will merely pose a risk in the property development process, provided that the planning authority will accept the development plan proposal for adoption. This implies that LR under these circumstances primarily will work as an instrument for LA under the rule of one developer in rearranging property and rights structures and hence contribute to production of institutionally serviced property units for and during implementation of urban development projects.

In relation to recent literature on LR (Hong and Needham 2007) the scope of the investigated processes are relatively different from what one could expect. The main focus of this LR-literature seems to be coordination between landowners towards planning. The purpose is to assemble land under coordinated regulatory rules for later realisation of developments. The process starts with the formation of a LR-agency, which task is to persuade affected land owners to join in for development of land. The objective is to overcome ownership constraints through transfer of dispositions to the LR-entity (Hong 2007, p. 13–14). The initiating actor may be in a position to choose what area to implement LR, and hence what properties, rights and owners that will be affected. In this model the purpose of LR is to distribute the prospective land values of planning and plan related costs.

However, the roles of LR in these regards will vary with national legislations and traditions in urban development.

From a theoretical point of view, the ambition of the LR legislation in question goes beyond coordination between land owners for overcoming ownership and planning constraints (Hong 2007). In the Norwegian institutional context LR also coordinate land administration tasks (permits, cadastral and land book registration) towards respective authorities, mainly for overcoming “institutional ownership constraints” relating to clarification of property rights and transformation of property and rights structures. This coordination is necessary in institutional servicing of land, and is a definite precondition for property development. Even if the investigated cases seem to be “least likely cases” for LR, these institutions prove to be more effective in balancing public and private interests in the coordination of land administration tasks. The investigation reveals that this institutional aspect of the LA process is complex, and it shows that the LR process reduces the developer’s transaction costs in the institutional transformation of land tenure structures, therefore making it more attractive than alternative procedures. These aspects of LA and LR, in the intersections towards land administration and planning tasks, seem to have been offered very little attention in international literature. The complexity these processes reveal suggests that further investigation of these aspects of LA and LR processes, under various institutional arrangements, may be interesting.

From a Norwegian institutional perspective this conclusion suggests that the systems for planning and LR should be revised and further developed if the national ambitions for a more extensive coordination of property issues towards planning should be followed up. Furthermore the land administration institutions governing tasks relating to implementation of redevelopments in the intersection between planning, permitting, cadastral and land book tasks should be further investigated and revised with effectiveness and transaction costs in mind. As for now the LR-legislation seems to fill in a gap in this regard.

References

- Adams, D., Disberry, A., Hutchinson, N. and Munjoma, T. [2001], Ownership constraints to brownfield redevelopment. *Environment and Planning A* 33:453–477.
- Alterman, R. [2007], Land Readjustment for the Supply of Urban Public Services. In: Hong, Y.-H. and Needham, B. (eds.), *Analyzing Land Readjustment. Economics, Law, and Collective Action* (pp. 57–85). Camb. Mass.: Lincoln Institute of Land Policy.
- AOJ (Akershus og Oslo jordskifterett) [2007a], *Rettsbok*, sak: 0200-2007-0016 Løren 2. gnr. 124 i Oslo kommune. Påbegynt: 15.10.2007, avsluttet: 18.12.2009.
- AOJ (Akershus og Oslo jordskifterett) [2007b], *Rettsbok*, sak: 0200-2007-0006 Løren, gnr. 124 og 126 i Oslo kommune. Påbegynt: 11.6.2007, avsluttet: 18.12.2009.

- AOJ (Akershus og Oslo jordskifterett) [2010], Rettsbok, sak: 0200-2007-0006 Grefsen Stasjonsby, gnr. 76 og 79 i Oslo kommune. Påbegynt: 19.4.2010 (ikke avsluttet).
- Austenå, T. and Øvstedal, S. [2000(1984)], Jordskifteloven. Kommentarutgave. Oslo: Universitetsforlaget.
- Bjaaland, M. and Nielsen, J.-E. [2009], Eiendomsprosjekter. En praktisk juridisk håndbok. Oslo: Cappelen.
- Bjerva, Ø. [2012], Jordskiftedomstolene i endring . Ås: Norwegian University of Life Sciences (PhD-thesis).
- Bjerva, Ø. and Sevatdal, H. [2009], Jordskifte i teoretisk perspektiv. In: Ravna, Ø. (red.), Perspektiver på jordskifte (pp. 65–90). Oslo: Gyldendal.
- Booth, P. [1995], Zoning or Discretionary Action: Certainty and Responsiveness in Implementing Planning Policy. *Journal of Planning Education and Research* 14:103–112.
- Børrud, E. [2005], Bitvis byutvikling – møte mellom privat eiendomsutvikling og offentlig byplanlegging. Oslo: Arkitektur og designhøgskolen i Oslo (PhD-thesis).
- Davy, B. [2007], Mandatory Happiness? Land Readjustment in Germany. In: Hong, Y.-H. and Needham, B. (eds.), *Analyzing Land Readjustment. Economics, Law, and Collective Action* (pp. 37–55). Camb. Mass.: Lincoln Institute of Land Policy.
- Doebele, W. (ed.), [1982], *Land readjustment: A different approach to financing urbanization*. Lexington Ma.: Lexington Books.
- Doebele, W. [1983], Concepts of Urban Land Tenure. In: Dunkerley, H. and Whitehead, C. (eds.), *Urban Land Policy: Issues and Opportunities* (pp.63–107). Washington D. C.: Oxford University Press.
- Falkanger, T. [2000], *Tingsrett*. Oslo: Universitetsforlaget.
- Golland, A. [2003], Models for land assembly in the UK. A comparative analysis of other European approaches. London: RICS.
- Home, R. [2007], Land readjustment as a method of development land assembly. *Town Planning Review* 78:459–483.
- Hong, Y.-H. [2007], Assembling Land for Urban Development. Issues and Opportunities. In: Hong, Y.-H. and Needham, B. (eds.), *Analyzing Land Readjustment: Economics, Law and Collective Action* (pp.3ff.) Boston: Lincoln Land Institute.
- Hong, Y.-H. and Needham, B. (eds.) [2007], *Analyzing Land Readjustment: Economics, Law and Collective Action*. Boston: Lincoln Land Institute.
- Janson, A. [2011] Eiendomstransaksjoner uten hjemmelsoverføring: Manipulasjon av tinglysingssystemet. Ås: UMB-ILP. (MA-thesis).
- Johnsen, Y., Bergersen, Ø., Bergsgard, U. and Gustavsén, Ø. [1978], *Samfunnsplanlegging – generalplan, regionplan*. Oslo: Universitetsforlaget.

Kalbro, T. and Røsnes, A. [2012], Public Planning Monopoly – or Not? The Right to initiate Plans in Norway and Sweden. In: Hepperle, E., Dixon-Gough, R., Maliene, V., Mansberger, R., Paulsson, J. and Pödör A. (eds.), *Land Management: Potential, Problems and Stumbling Blocks*, (in volium). Zürich: vdf.

Kristoffersen, Ø. and Røsnes, A. (red.) [2009], *Eiendomsutvikling i tidlig fase. Erverv, stiftelse og utnyttelse av eiendom til bygging og byutvikling*. Oslo: Senter for eiendomsfag.

Kule, L. and Røsnes, A. [2010], Balancing developers' interests in planning control: Tendencies in the Revision of Planning Legislation in Latvia and Norway. In: Hepperle, E., Dixon-Gough, R., Kalbro, T., Mansberger, R. and Meyer-Cech, K. (eds.), *Core-Themes of Land Use Politics: Sustainability and Balance of Interests* (pp. 161–187). Zürich: vdf.

Langbach, T. [2009], *Jordskiftedomstolene og de alminnelige domstolene – likheter og ulikheter*. In: Ravna, Ø. (red.), *Perspektiver på jordskifte* (pp. 35–64). Oslo: Gyldendal.

Larsson, G. [1993], *Land readjustment: A modern approach to urbanization*. Avebury, England: Aldershot.

LMD (Landbruks- og matdepartementet) [2003], Ot. Prp. Nr. 106 (2002–2003) Om lov om endringer i domstoloven og jordskifteloven (jordskifterettens stilling og funksjoner). Oslo: Statens forvaltningstjeneste.

Louw, E. [2008], Land assembly for urban transformations: the case of s-Hertogenbosch in The Netherlands. *Land Use Policy* 25:69–80.

MD (Miljøverndepartementet) [2008], Ot. prp. nr. 32 (2007–2008) Om lov om planlegging og byggesaksbehandling (plandelen). Oslo: Statens forvaltningstjeneste.

Mjøs, L. and Sevatdal, H. [2011], *Eigedomstvistar og matrikkelsystem*. Kart og Plan 71:151–171.

Nordahl, B., Barlinhaug, R. and Ruud, M. [2007], *Markedsbasert utbyggingspolitikk. Møte mellom kommune og utbygger*. Oslo: NIBR, SINTEF-Byggforsk, Samarbeidsrapport.

Pedersen, O., Sandvik, P., Skaaraas, H., Næss, S. and Os, Audvar [2010(2000)], *Plan- og bygningsrett. del I*. Oslo: Universitetsforlaget.

Planlovutvalget [2003], *Bedre kommunal og regional planlegging etter plan- og bygningsloven*. Oslo: Statens forvaltningstjeneste (NOU 2003:14).

Predelli, L., Hansen, T., Nordahl, B. and Strand, A. [1998], *Kommunal boligpolitikk, variasjoner og konsekvenser*. Oslo: NIBR/Byggforsk, Samarbeidsrapport.

Ramsjord, E. and Røsnes, A. [2011a], *Eiendomsdannelse i bytransformasjon. Om jordskiftestyrt endring av eiendomsforhold*. Kart og Plan 71:91–106.

Ramsjord, E. and Røsnes, A. [2011b], *Jordskifterettens rolle i deling og registrering av eiendom ved urbant jordskifte*. Kart og Plan 71:248–265.

- Ravna, Ø. (ed.) [2008], *Perspektiver på jordskifte*. Oslo: Gyldendal.
- Røsnes, A. [2005], Regulatory power, network tools and market behaviour: Transforming practices in Norwegian urban planning. *Planning Theory & Practice* 6:35–51.
- Sagalyn, L. [2007a], Public/private development. *Journal of the American Planning Association* 73:7–22.
- Sagalyn, L. [2007b], Land Assembly, Land Readjustment, and Public-Private Redevelopment. In: Hong, Y.- H. and Needham, B. (eds.), *Analyzing Land Readjustment: Economics, Law and Collective Action* (pp. 159–179). Boston: Lincoln Land Institute.
- Sandane, E. [1962], *Oreigningsloven*. Oslo: H. Aschehoug & Co.
- Sevatdal, H. [1989], *Forelesingar i eigedomshistorie*. Ås: UMB-Landbruksbokhandelen.
- Sevatdal, H. [1990], *Innføring i planarbeid ved jordskifte*. Ås: UMB-ILP.
- Sevatdal, H. and Hegstad, E. [2006], Norge. In: *Dannelse og transaksjoner vedrørende fast eiendom i de nordiske lande* (pp. 345–443). Et samarbejde mellem faginstitutioner og universiteter i Norden. København: Kort og Matrikelstyrelsen.
- Sevatdal, H. and Sky, P. [2003], *Eigedomsteori: innføring i samfunnsvitskapleg teoritilfang for utøving av eigedomsfag*. Ås: UMB-ILP.
- Statens kartverk [2010], *Føringsinstruks for matrikkelen*. Hønefoss: Matrikelavdelingen.
- Stavang, E. [2011], *Opphør av servitutter*. Oslo: Cappelen Damm.
- Steinsholt, H. [2005], Grunnerverv i kommuner. *Kart og Plan* 65:158–167.
- Van Rij, E. and Korthals Altes, W. [2010], Looking for the optimum relationship between spatial planning and land development. *Town Planning Review* 81:283–306.
- Webster, C. [2005], The New Institutional Economics and the evolution of modern urban planning. Insights, issues and lessons. *Town Planning Review* 76:455–484.
- Williamson, I., Enemark, S., Wallace, J. and Rajabifard, A. [2010], *Land Administration for Sustainable Development*. Redlands, Calif.: ESRI Press Academic.

Siedlungsumbau aufgrund des demographischen Wandels

am Beispiel von Dörfern in ländlichen Räumen

1. Trends des demographischen Wandels in Deutschland

Für Deutschland wird je nach angesetztem Szenario eine Reduzierung der Bevölkerung zwischen 12 und 22%, also von derzeit ca. 82 Millionen auf 64 bis 74 Millionen Einwohner bis 2060 in Abhängigkeit der Veränderung der Fertilitätsrate, der durchschnittlichen Lebenserwartung und der Zuwanderung nach Deutschland erwartet [Statistisches Bundesamt 2009, 12]. Bei der in Abb. 1 dargestellten „mittleren Bevölkerung“ wird angenommen, dass die Fertilitätsrate bei 1,4 stagniert, die Lebenserwartung für Jungen um 8 und für Mädchen um 7 Jahre steigt sowie ein jährliches Außenwanderungssaldo von 100.000 (Untergrenze) bzw. von 200.000 Menschen (Obergrenze) eintritt.

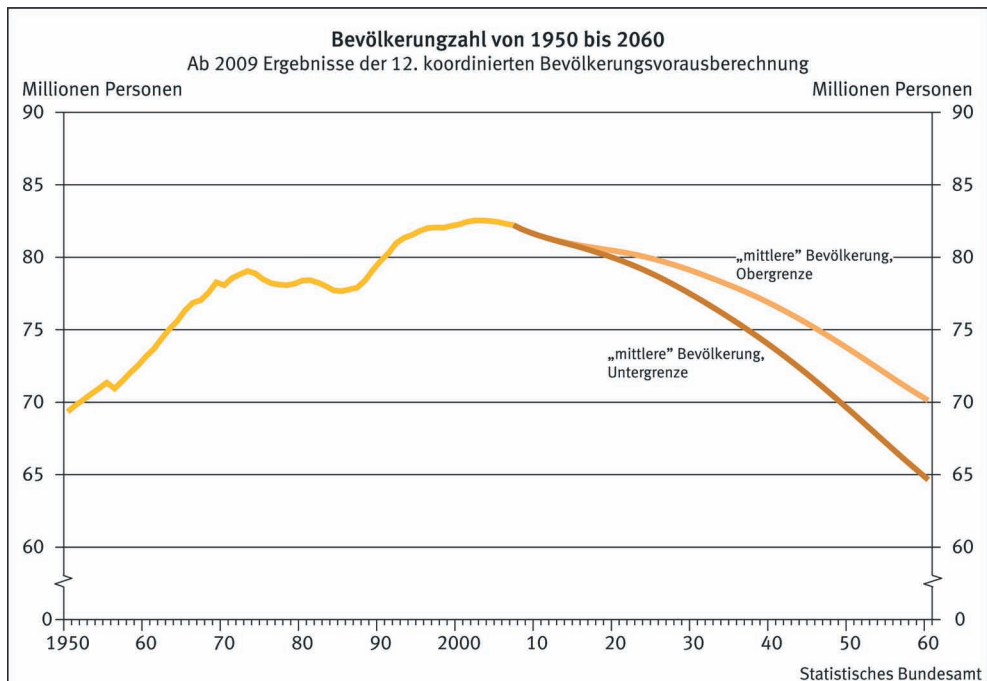


Abbildung 1: Aktuelle Vorausberechnung der Bevölkerungszahlen
(Quelle: Statistisches Bundesamt 2009, 12).

* Fachgebiet Landmanagement, Institut für Geodäsie, Technische Universität Darmstadt, Germany.

Viele ländliche Gebiete in Deutschland, vor allem die peripheren, haben bereits in den letzten beiden Jahrzehnten einen erheblichen Bevölkerungsverlust hinnehmen müssen (bis zu 30% in ländlichen Kreisen und bis zu 47% in kleinen Städten im ländlichen Raum [Statistik Sachsen]). Die bisher erstellten Prognosen zeigen ein Fortschreiten dieses Bevölkerungsverlustes vor allem in den Flächenbundesländern mit kleinen Agglomerationsräumen (z.B. Sachsen-Anhalt: > 20% bis 2030) [Statistisches Bundesamt 2009: 12].

Eine Ursache des Bevölkerungsverlustes in Deutschland, wie in vielen europäischen Ländern, ist die niedrige Fertilitätsrate und der daraus entstehende Überschuss bei der Zahl der Verstorbenen relativ zu der Zahl der Neugeborenen. Dies trifft insbesondere auf die strukturschwachen ländlichen Räume zu [BBSR 2009b: 6]. Während im ländlichen Raum früher aufgrund einer hohen Fertilitätsrate ein Bevölkerungsüberschuss entstand, der teilweise an die städtischen Räume abgegeben wurde, hat sich mit dem Angleichen der Lebensverhältnisse im städtischen und ländlichen Raum auch die Fertilitätsrate angepasst. Darüber hinaus haben insbesondere die strukturschwachen ländlichen Räume aufgrund fehlender Arbeitsplatzangebote Verluste vor allem im Bereich der erwerbsfähigen Bevölkerung zu verzeichnen (Abb. 2). Diese Bevölkerungsgruppe ist an Standorte mit entsprechendem Arbeitsplatzangebot (vor allem Agglomerationsräume wie Stuttgart, München, Frankfurt/Rhein-Main) verzogen, um dort ihren Lebensunterhalt sicherzustellen. Da insbesondere jüngere Menschen und hierbei überproportional viele Frauen im gebärfähigen Alter aus diesen Räumen abgewandert sind, schließt das die Möglichkeit aus, die absolute Zahl der Neugeborenen in diesen Räumen in den nächsten Jahren merklich zu steigern.

Hinzu kommt, dass auch junge Erwachsene aus ländlichen Räumen, die zu Ausbildungs- oder Studienzwecken in die Metropolregionen ziehen, nach ihrem Abschluss wegen fehlender Arbeitsplatzangebote bzw. Aufstiegsmöglichkeiten mehrheitlich nicht in die ländlichen Räume zurückkehren (Bildungswanderung). Da der Anteil der Erwerbstätigen mit Studienabschluss an der Gesamtzahl der Erwerbstätigen zukünftig weiter steigen soll [BMBF 2011], wird auch der Anteil junger Erwachsener weiter steigen, die die ländlichen Räume endgültig verlassen, insbesondere solche mit höherer Berufsqualifikation.

In diesen Räumen steigt damit der Anteil der älteren Menschen jenseits der Erwerbstätigkeit. Durch eine nach wie vor steigende Lebenserwartung (die Lebenserwartung neugeborener Jungen beträgt jetzt mehr als 77 Jahre, die der Mädchen mehr als 82 Jahre) [Statistisches Bundesamt 2011] wird sich diese Bevölkerungsgruppe anteil- und zahlenmäßig vergrößern und insbesondere die Gruppe der Hochbetagten deutlich zunehmen.

Mit der Reduzierung der Bevölkerungsanzahl und der Änderung des Bevölkerungsaufbaus verändern sich auch die Bedürfnisse und Anforderungen an die Siedlung und ihre soziale und technische Infrastrukturausstattung. Deutschland hat sich als Sozialstaat das Ziel der Schaffung gleichwertiger Lebensverhältnisse in allen Bereichen gesetzt, das durch den demographischen Wandel gerade im Hinblick auf die strukturschwachen ländlichen Gebiete immer mehr unter Druck gerät.

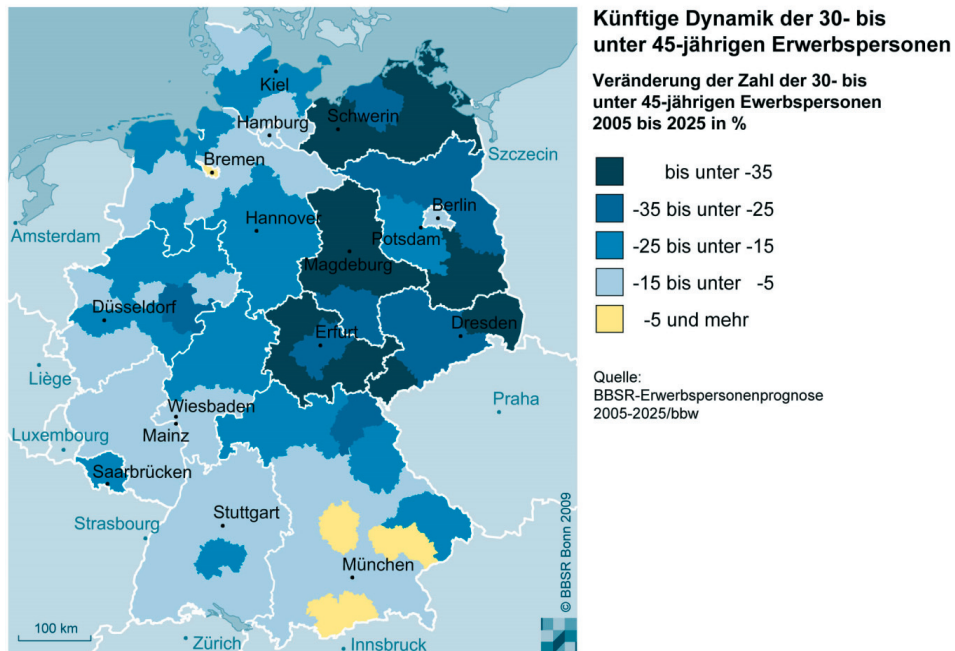


Abbildung 2: Veränderung der Zahl der 30- bis 45-jährigen Erwerbspersonen bis 2025
(Quelle: BBSR 2009a, 58).

2. Auswirkungen auf die Siedlungen am Beispiel von Dörfern in ländlichen Räumen

Die Ausprägung des Bevölkerungsverlustes ist in den einzelnen Gemeinden der ländlichen Gebiete und teilweise in ihren Ortsteilen unterschiedlich. So konnte festgestellt werden, dass periphere Ortsteile stärkere Bevölkerungsverluste erleiden als das Gemeindezentrum selbst und gerade Wanderungen aus diesen peripheren Ortsteilen in das Gemeindezentrum dortige Bevölkerungsverluste zumindest teilweise ausgleichen [Köhler 2011: 187]. Dabei wanderten nicht nur jüngere Bevölkerungsgruppen aus den peripheren Ortsteilen ab, sondern auch Senioren wählten altersgerechte Ruhesitze in fußläufiger Nähe zu kommerziellen und sozialen Einrichtungen im Gemeindezentrum. Die Binnenwanderung auf kommunaler Ebene hängt also von lokalen Gegebenheiten ab, wie der Anbindung des Ortsteils an das Straßennetz oder den öffentlichen Personennah- und -fernverkehr sowie dem lokalen Arbeitsplatzangebot.

Insofern gelten die nachfolgenden Darstellungen zu den Auswirkungen des demographischen Wandels auf die soziale und technische Infrastruktur sowie die Siedlungs- und Wirtschaftsstruktur nicht zwingend für jede Gemeinde oder jeden Ortsteil.

2.1 Soziale Infrastruktur

Im Bereich der demographiesensitiven sozialen Infrastruktur verändert sich gerade in strukturschwachen Gemeinden die Nachfrage nach Einrichtungen für Kinder und

Jugendliche, wie z.B. Kindergärten und Schulen. Die Anzahl der zu versorgenden Kinder hängt zwar insbesondere von der Fertilitätsrate ab, von erheblichem Einfluss auf die Nachfrage nach Versorgungsleistungen im Kinderbetreuungsbereich ist jedoch auch die Erwerbsbeteiligung von Frauen und der daraus resultierende Bedarf nach Ganztagsbetreuungsangeboten für alle Altersgruppen. Daher könnte sich trotz sinkender Geburtenzahlen ggf. sogar eine höhere, aber auf jeden Fall andersartige Leistungsnachfrage ergeben [Seitz 2005: 28].

Die Nachfrage nach Einrichtungen für ältere Mitbürger aufgrund der geburtenstarken Jahrgänge 1950 bis 1970 und der steigenden Lebenserwartung in den nächsten Jahrzehnten wird ansteigen, wobei insbesondere eine Anpassung an die Bedürfnisse der größeren Zahl von Hochbetagten, die immobiler sind, im Auge zu behalten ist (z.B. Versorgung und Pflege am Wohnort) [Seitz 2005: 28; BBSR 2011a: 80 f.].

Aufgabe der Gemeinde ist es, den bestehenden und zukünftigen Bedarf an sozialen Infrastruktureinrichtungen abzuschätzen und, sofern nicht Dritte entsprechende Angebote unterbreiten, bedarfsgerechte soziale Infrastruktureinrichtungen unter Berücksichtigung sich weiterhin ändernden Anforderungen bereitzustellen. Eine dauerhafte Subventionierung unterausgelasteter und unwirtschaftlicher sozialer Infrastruktureinrichtungen wird sich allenfalls für besondere Härtefälle durchsetzen lassen. Benötigt werden Immobilien, die geeignet sind unterschiedlichen Anforderungen gerecht zu werden (z.B. sowohl als Kindergarten wie auch als Seniorenbegegnungsstätte) und zwar an Standorten, die für die Nutzer möglichst günstig zu erreichen sind (d.h. zentrumsnah und fußläufig oder mittels öffentlichen Personennahverkehr erreichbar). Unterschreitet der Bedarf in einer Gemeinde die Tragfähigkeitsgrenze einer solchen Einrichtung, ist es geboten, durch interkommunale Kooperationen eine gemeinsame und wirtschaftliche Auslastung sicherzustellen [Hesse und Götz 2006].

2.2 Siedlungsstruktur

Neben der veränderten Nachfrage nach sozialen Infrastruktureinrichtungen reduziert sich mit sinkenden Bevölkerungszahlen, trotz Remanenzeffekt und wohlstandsbedingt durchschnittlich steigender Ausstattung eines jeden Einwohners mit Wohnraum, zumindest mittelfristig die Nachfrage nach Wohnraum in ländlichen Gemeinden [BBSR 2011b]. Übersteigt das Angebot die Nachfrage dauerhaft, führt dies zu strukturellen Leerständen, d.h. nicht durch Mieterwechsel/Renovierung etc. vorübergehend auftretender Leerstand. Solche Leerstände konzentrieren sich auf Objekte, die entweder eine ungünstige Lage aufweisen (z.B. durch Lärmbelastung einer nahe gelegenen Durchgangsstraße) oder die sich nicht oder nur eingeschränkt bzw. aufwändig an heutige Standards hinsichtlich der Raumaufteilung (z.B. Raumgröße), des Energiebedarfs (z.B. Außenwanddämmung) und der technischen Ausstattung (z.B. Heizungsart) anpassen lassen. Bei den Letztgenannten sind solche Objekte ausdrücklich auszunehmen, die aufgrund ihrer Originalität und Einzigartigkeit als sog. „Liebhaberobjekte“ am Immobilienmarkt gehandelt werden.

So finden sich strukturelle Leerstände derzeit vor allem in historischen Ortslagen im Bereich aufgegebener landwirtschaftlicher Gebäude (insbesondere leer stehende landwirtschaftliche Nebengebäude) aber auch Wohnhäusern (vor allem bei kleinen Gebäuden und geringer Grundstücksfläche). Zukünftig sind strukturelle Leerstände auch in den Wohngebieten der 60er und 70er des letzten Jahrhunderts zu erwarten. Aufgrund der für den ländlichen Raum typischen Wohnform der eigentümergenutzten Einfamilienhäuser und der üblichen Phase der Bildung von Wohneigentum im Alter zwischen 30 und 45 Jahren wohnen dort verstärkt Bewohner in der Altersgruppe zwischen 60 und 80 Jahren [Schaffert: 2010]. In einem solchen Wohngebiet erfolgt derzeit bereits ein Generationswechsel, der sich durch altersbedingte Aufgabe oder Tod der bisherigen Bewohner in den nächsten Jahren intensivieren wird. Die Einfamilienhäuser aus dieser Bauphase weisen üblicherweise neben erheblichem energetischen Sanierungsbedarf auch heute nicht mehr nachgefragte Zuschnitte (z.B. übergroße repräsentative Wohnzimmer bei kleinen Nebenräumen) auf.

Da sich diese von strukturellem Leerstand bedrohten Gebiete entwicklungsbedingt vor allem im Kern der Siedlung und daran anschließend befinden, konzentrieren sich auch dort die Niedergangserscheinungen und es entstehen, sofern keine geeigneten Gegenmaßnahmen ergriffen werden, perforierte Siedlungen. Daher bedarf es geeigneter Strategien, um die von Leerständen betroffenen oder bedrohten Bereiche einer neuen (städte-) baulichen Nutzung zuzuführen.

2.3 Technische Infrastruktur

Der demographische Wandel und die daraus resultierende Perforierung der Nutzungsstruktur von Siedlungen wirken sich auch auf die technischen Infrastruktureinrichtungen aus, wie z.B. die Wasserversorgung, die Abwasser- und die Abfallentsorgung oder das Verkehrsnetz (z.B. Straßen und ÖPNV). So liegen die Abwassergebühren in dünn besiedelten Gemeinden um bis zu 100% über den in dichter besiedelten Gemeinden [Pecher 1992: 638 f].

Die Querschnitte der Leitungen der Wasserversorgung und Abwasserentsorgung sind beispielsweise auf bestimmte Durchflussmengen ausgelegt, die wieder aus der vormals geplanten angeschlossenen Nutzerzahl abgeleitet wurden. Bleibt die tatsächliche Durchflussmenge aufgrund einer geringeren Zahl angeschlossener Nutzer oder eines geringeren pro Kopfverbrauchs hinter der kalkulierten zurück, erhöht sich bei der Trinkwasserleitung die Standzeit des Trinkwassers in der Leitung und damit steigt das Risiko der Verkeimung, während sich bei einer Schwerkraft-Abwasserleitung die Abflussgeschwindigkeit reduziert und damit im höheren Maße Ablagerungen auftreten. In beiden Fällen bedarf es daher zusätzlicher Reinigungen der Leitungen durch Spülungen, welches zu einer Erhöhung der von den Nutzern zu tragenden Fixkosten führt [IRS 2008: 47]. Ebenso steigen die Fixkosten zum Betrieb der Trinkwasserproduktions- bzw. Abwasserbeseitigungsanlagen, die aufgrund ihrer Auslegung auf eine höhere Abnahme von Wasser bzw. Anlieferung von Abwasser mit Unterlast gefahren werden müssen. Da die Anlagen einschließlich Leitungen in der Regel für eine Betriebsdauer von 50 bis 100 Jahren ausgelegt wurden und vielfach

erst in den letzten Jahrzehnten errichtet oder in wesentlichen Teilen erneuert wurden, würde ein Wechsel des derzeit zentral ausgerichteten Infrastruktursystems auf ein ggf. kostengünstigeres dezentrales System (z.B. gemeinsame Pflanzenkläranlage einer Hausgruppe) hohe Abschreibungen und Neuinvestitionen erfordern und damit unrentabel sein. Auch erfordern solche dezentralen Abwasserentsorgungssysteme fachlich qualifizierte Betreiber, um die geforderte Reinigungsqualität zu erreichen. Auch bei dezentralen Systemen in gemeinschaftlicher Nutzung besteht grundsätzlich das Risiko, dass durch Aufgabe der Nutzung bei einzelnen angeschlossenen Gebäuden die Fixkosten für den Betrieb der Anlage steigt, allerdings lässt sich deren Funktionsfähigkeit ohne erheblichen Aufwand erhalten.

Das auf Abfalltrennung ausgerichtete deutsche Abfallentsorgungssystem basiert mengenmäßig gesehen insbesondere auf Holsystemen (z.B. Restabfall, duales System, ggf. Bio-, Papier- oder Glasabfall), bei welchen der Abfall getrennt nach Chargen beim Erzeuger abgeholt wird, während bei Bringsystemen (z.B. Batterien) der Abfall an bestimmten Sammelpunkten abgegeben wird. Reduziert sich die Abfallmenge und die Zahl der Abholstellen in einem Entsorgungsgebiet mit einem Holsystem, wie bei einer perforierten Siedlungsstruktur, so erhöhen sich die Entsorgungskosten je Kubikmeter Abfall, da der Aufwand zur Einsammlung des Abfalls für dieses Gebiet weitgehend gleich hoch bleibt [Hessischer Rechnungshof 2009]. Der Erfolg eines Bringsystems hängt von der Erreichbarkeit einer solchen Sammelstelle durch die Abfallproduzenten ab (Maximaler Abstand 300 m [Köhler 2011, 178 f.]). Daher darf die Anzahl der Sammelstandorte in einer perforierten Siedlung auch bei niedrigem Abfallaufkommen nicht wesentlich verringert werden. Dies erfordert aber bei sinkenden Bevölkerungszahlen eine steigende Anzahl von Sammelstellen je Bewohner und dadurch entstehen auch hier höhere Fixkosten [Salhofer 2001].

Auch das Verkehrsnetz einer unternutzten Siedlung ist aufgrund größerer räumlicher Ausdehnung überdimensioniert und damit steigt der Aufwand je Bewohner für die Instandhaltung der Verkehrsanlagen (insbesondere der Straßen und Wege) und für den Betrieb des öffentlichen Personennahverkehrs gegenüber einer Siedlung ohne rückläufige Bevölkerungszahl und Zahl an Arbeitsstätten.

2.4 Wirtschaftsstruktur

Für Unternehmen aus dem produzierenden und dem Dienstleistungsgewerbe sind gut qualifizierte Arbeitskräfte in ausreichender Anzahl heute ein wichtiger Standortfaktor [Jung 2006: 68]. Gerade in peripheren ländlichen Räumen sind solche Arbeitskräfte aber in den letzten Jahrzehnten aufgrund fehlender Arbeitsplatzangebote abgewandert. Daher und aufgrund der geschilderten Effekte der Bildungswanderung reduziert sich das Angebot an bedarfsgerecht qualifizierten Arbeitskräften im ländlichen Raum weiter, insbesondere aber bei den hochqualifizierten Arbeitskräften. Deshalb fehlt nicht nur die Attraktivität zur Neuansiedlung im ländlichen Raum sondern auch für bestehende Gewerbebetriebe sinkt das Potenzial an Arbeitskräften als wichtige Grundlage für deren Verbleib am Standort.

Über verbesserte Aus- und Weiterbildungsangebote sowie Kooperationen zwischen Unternehmen und Bildungseinrichtungen wollen hier die einzelnen Bundesländer dem sich mit der Besserqualifizierung verstärkenden Trend entgegen wirken [z.B. Baden-Württemberg 2011].

Signifikante Bevölkerungsverluste im ländlichen Raum führen aber auch zu einer Reduzierung der Nachfrage nach Gütern bzw. Dienstleistungen. Werden diese für den jeweiligen Ort hergestellt bzw. dort angeboten, hat dies unmittelbar Auswirkungen auf den Arbeitskräftebedarf und damit die Anzahl der Arbeitsplätze.

2.5 Szenarien für die Siedlungsentwicklung

Aus den vorstehenden Darstellungen zum Rückgang der Bevölkerung im ländlichen Raum und zu den daraus erwachsenden Konsequenzen für die Siedlungs- und Wirtschaftsstruktur sowie die soziale und technische Infrastruktur lassen sich folgende Szenarien einer zukünftigen Siedlungsentwicklung ableiten und hierzu Anforderungen an Instrumente für einen Siedlungsumbau formulieren:

Dörfer mit ungünstiger Verkehrsanbindung bei geringer touristischer Attraktivität

Dörfern mit ungünstiger Verkehrsanbindung sowohl an den überörtlichen Verkehr als auch an zentrale Orte (periphere Lage) bei gleichzeitig geringer touristischer Attraktivität fehlt das Potenzial zur Ansiedlung neuer Gewerbebetriebe. Auch als Wohnstandort für außerhalb des Dorfes arbeitende Bevölkerungsgruppen ist der Standort wegen seiner ungünstigen Verkehrsanbindung unattraktiv. Dementsprechend wird sich der Bevölkerungsverlust in dem Dorf aufgrund geringer Geburtenzahlen, Bildungswanderung und arbeitsplatzbedingtem Wegzugs in den beiden nächsten Jahrzehnten beschleunigen. Dadurch reduziert sich die Auslastung der sozialen und technischen Infrastruktur mit der Folge einer Reduzierung des Angebots und/oder eines Anstiegs der Benutzungskosten. Dies führt wiederum zu einem verstärkten Wegzug von Teilen der Bevölkerung. Fehlen den lokalen Gewerbebetrieben sowohl die Auftraggeber als auch die Arbeitskräfte aus dem Dorf (zu geringes regionales Bevölkerungspotenzial), so kann dies zur Aufgabe oder Verlagerung des Betriebes führen mit daraus folgendem weiterem Abbau von Arbeitsplätzen im Dorf. Insofern entsteht ein „Teufelskreis“, der über mehrere Jahrzehnte zur vollständigen Entleerung des Dorfes führen kann [Beirat für Raumordnung 2009], bzw. dessen Bevölkerungszahl sich auf eine Größenordnung reduziert, die ihr Auskommen in der Land- und Forstwirtschaft einschließlich möglicher Veredelungsbetriebe finden, ergänzt um die Arbeitsplätze, die zur Deckung der Grundbedürfnisse der Bevölkerung erforderlich sind [Linke/Köhler 2010: 107]. Das Potenzial an diesen Arbeitsplätzen wird maßgeblich bestimmt durch die natürlichen Rahmenbedingungen für die Land- und Forstwirtschaft und die vor Ort realisierbaren Wertschöpfungsketten. Bei dieser Entwicklung entstehen grundsätzlich strukturelle Gebäudeleerstände, die einen zeitlich gesteuerten Rückbau der bisherigen Siedlung entsprechend dem laufenden Verlust an Haushalten erfordern. Um die technische Infrastruktur wirtschaftlich betreiben zu können, bedarf es keiner perfo-

rierten Siedlung, sondern einer möglichst kompakten Siedlungsform, die sich dabei an vorhandenen Einrichtungen (z.B. Hauptleitungssträngen) orientiert.

Dörfer mit ungünstiger Verkehrsanbindung bei hoher touristischer Attraktivität

Verfügen Dörfer mit ungünstiger Verkehrsanbindung über eine hohe touristische Attraktivität so wird dies den Bevölkerungsverlust abschwächen, wenn dieser Vorteil zum Erhalt oder zur Schaffung von Arbeitsplätzen im touristischen Gewerbe genutzt werden kann. Zudem sind diese Dörfer auch für das Wohnen von Menschen im Ruhestand attraktiv. Zusammen mit dem Arbeitsplatzangebot in der Land- und Forstwirtschaft einschließlich möglicher Veredelungsbetriebe und ergänzt um die Arbeitsplätze, die zur Deckung der Grundbedürfnisse der Bevölkerung erforderlich sind, ergibt sich der Bedarf an Wohnraum und sozialen Einrichtungen und daraus die Siedlungsgröße. Auch hier ist ein Siedlungsumbau hin zu einer kompakten Siedlungsform unerlässlich. Hierbei sind die besonderen Anforderungen zu berücksichtigen, die sich aus der touristischen Attraktivität ergeben (z.B. Erhalt historischer Ortslagen mit entsprechendem Ortsbild). Daher bedarf es besonderer Strategien zum Erhalt tourismusrelevanter Bereiche bzw. zu deren bestandschonender Umstrukturierung.

Dörfer mit günstiger Verkehrsanbindung

Dörfer mit günstiger Verkehrsanbindung an den überörtlichen Verkehr und an zentrale Orte haben sowohl Potenziale zum Erhalt und zur Ansiedlung gewerblicher Betriebe als auch als Wohnstandort. Dabei ist zu berücksichtigen, dass der Begriff einer günstigen Verkehrsanbindung zeitlich dynamisch ist und von verschiedenen Faktoren abhängt (z.B. Höhe der Transportkosten, Veränderung der Transportmedien). Auch wenn solche Dörfer derzeit nicht nur einen geringen Bevölkerungsverlust sondern sogar ein gewisses Bevölkerungswachstum erfahren, z.B. weil Zuzüge aus angrenzenden Dörfern mit ungünstigerer Verkehrsanbindung den natürlichen Bevölkerungsverlust ausgleichen, müssen sich die Gemeinden langfristig auf einen Bevölkerungsverlust mit einem entsprechenden Anpassungsbedarf an die Siedlung einstellen. Insofern bedarf es bei diesen Gemeinden einer vorausschauenden Siedlungsentwicklung, die möglichst auf neue Siedlungsflächen im Außenbereich verzichtet und stattdessen Entwicklungspotenziale im Innenbereich (Dorfinnenentwicklung) nutzt. Hierbei ist der sich verändernden Altersstruktur der Bevölkerung Rechnung zu tragen.

Die Möglichkeiten der Dorfinnenentwicklung sind derzeit Gegenstand vielfältiger Forschungsaktivitäten und Umsetzungsbemühungen. Hierbei werden beispielsweise einzelgebäudebezogene Untersuchungen angestellt, wie für landwirtschaftliche Zwecke nicht mehr benötigte Gebäude umgenutzt werden können [Henseler 2011: 67; Voß 2010]. Ein anderer Ansatz untersucht Möglichkeiten der Schaffung neuer zweckmäßig nutzbarer Baugrundstücke durch Nachverdichtung [Kötter 2011: 57f] oder Neuordnung mehrerer heutigen Bebauungsansprüchen nicht mehr genügender Grundstücke nach Beseitigung wirtschaftlich nicht mehr nutzbarer Gebäude [Schumann 2008: 175f].

Ansätze zu einem Siedlungsumbau im Sinne einer Reduzierung des Gebäudebestandes hin zu einem dem Bedarf zukünftiger Bevölkerungszahlen entsprechenden (Rückbau) sind für den Bereich kleinteiliger Siedlungen, wie diese in Dörfern vorzufinden sind, bisher nur in geringem Umfang Gegenstand der Forschung. Insbesondere in der Konkretisierung der tatsächlichen Umsetzung von Rückbaukonzepten fehlen bisher geeignete Vorschläge. Zu den wesentlichen Voraussetzungen für ein Rückbaukonzept gehört nicht nur eine gemeindeinterne sondern auch eine interkommunale Abstimmung, um den für alle beteiligten Gemeinden ruinösen Wettbewerb um Bewohner zu vermeiden [Büchs/Magel 2010: 274]. Bei der Erstellung solcher Konzepte und deren Umsetzung ist aber insbesondere die Einbindung der tatsächlich von einem Umbau Betroffenen unerlässlich, nämlich der Grundstückseigentümer [Linke/Köhler 2010, 108]. Dass die Gemeinde bei der Durchführung von Rückbaumaßnahmen auf eine freiwillige Beteiligung der Grundstückseigentümer hinwirkt, ergibt sich schon aus den allgemeinen Grundsätzen der Zulässigkeit staatlichen Handelns. Gleichwohl bedarf es hoheitlicher Instrumente, die nur dann zum Einsatz kommen, wenn Konflikte zwischen den individuellen Interessen Einzelner mit den Interessen der Allgemeinheit nicht einvernehmlich gelöst werden können („Partizipation braucht Krallen“ [Davy 2005: 70]).

3. Ansätze für ein Konzept zum Siedlungsumbau

Um einen Rückbau zu erreichen, bedarf es

- fundierter Kriterien zur Festlegung der Rückbaugebiete,
- geeigneter Partizipationsinstrumente zur Förderung der Akzeptanz der Bevölkerung,
- Möglichkeiten der intensiven Einbindung der Grundstückseigentümer, einschließlich finanzieller Anreize,
- hoheitlicher Instrumente zur Sicherung des Siedlungsrückbaus im Falle fehlender freiwilliger Vereinbarungen,
- Finanzierungsinstrumente des Siedlungsrückbaus.

3.1 Bewusstseinsbildung der Bevölkerung

Da der Bevölkerungsverlust nur langsam voran schreitet, zeigen sich auch die Auswirkungen auf den Gebäudeleerstand nur schleichend, in Abhängigkeit der weitgehenden zeitlichen Zufälligkeit des Freiwerdens einer Immobilie (z.B. Tod des Nutzers). Es ist daher für die Bevölkerung, die Eigentümer bzw. Nutzer schwierig, eine solche Verschlechterung rasch wahrzunehmen, wenn er in diesem Gebiet lebt. Erst ein erheblicher Gebäudeleerstand wird für ihn erkennbar. Unklar dürfte ihm auch bleiben, warum sich die Kosten für die Nutzung der Infrastrukturen laufend erhöhen und warum bestimmte soziale Infrastrukturen vor Ort nicht mehr angeboten werden. Hier bedarf es einer partizipativen Erarbeitung des Wissens über die Auswirkungen des demographischen Wandels im Allgemeinen und auf die Siedlungsstruktur im besonderen. Hierzu kann in einem moderierten Bottom-up-Prozess mit den Bürgern eines Dorfes oder eines räumlich abgegrenzten Teiles eines Dorfes der zu erwartende Bevölkerungsverlust und seine Auswirkungen, z.B. bezüg-

lich Gebäudeleerstandentwicklung, mittels Geoinformationssystemen, 3D-Ortsmodell und Szenariotechnik lokalisiert werden [Schaffert 2011]. Hierauf aufbauend können gemeinsam in einer Planungswerkstatt zukünftige Siedlungsumbaubereiche, notwendige Umbaustrategien und ggf. zu ergreifende Einzelmaßnahmen entwickelt und dem Gemeinderat zur weiteren rechtlichen Umsetzung vorgeschlagen werden.

3.2 Hoheitliche Instrumente

Ein kurzfristiges Freiziehen eines rückzubauenden Siedlungsteils wäre weder finanzierbar noch würde dies von der dort lebenden Bevölkerung akzeptiert werden. Vielmehr muss die natürliche Bevölkerungsfuktuation in diesem Siedlungsteil genutzt werden, um mittelfristig, also z.B. über einen Zeitraum von 10 bis 20 Jahren, einen Rückbau zu erreichen. Gleichwohl bedarf es hoheitlicher Instrumente, die diesen Rückbau sichern und unterstützen. So sollten Rückbaubereiche in Bebauungsplänen festgesetzt werden können. Durch die Festsetzung von Rückbaubereichen mittels Bebauungsplänen werden die Siedlungsteile bestimmt, in denen die nachfolgenden Sonderregelungen gelten:

- Im Falle der Aufgabe der Nutzung durch den Eigentümer, der zum Zeitpunkt der Festsetzung als Rückbaubereich im Grundbuch als Eigentümer eingetragen ist, entfällt das Recht auf Wiederaufnahme der Nutzung.
- Der Eigentümer kann im Fall der Aufgabe der Nutzung ein Übernahmeverlangen gegenüber der Gemeinde gegen Entschädigung geltend machen.
- Der Gemeinde steht das Vorkaufsrecht und ggf. auch das Enteignungsrecht an einer solchen Immobilie zu.
- Im gesamten Siedlungsbereich steht der Gemeinde zur Förderung von Rückbaumaßnahmen ein preislimitiertes Vorkaufsrecht zu, z.B. um freiwillige Umsiedlungen aus Rückbaubereichen zu ermöglichen.
- Der Entschädigungsbetrag im Falle der Übernahme, der Enteignung oder der preislimitierte Kaufpreis entspricht dem Verkehrswert der Immobilie ohne Berücksichtigung der Festsetzung eines Rückbaubereichs in der Gemeinde zum Zeitpunkt der Übernahme, der Enteignung bzw. der Ausübung des Vorkaufsrechts.

Zur Unterstützung des Rückbaus erfolgt eine verursacherspezifische Verteilung der Infrastrukturkosten, d.h. statt einer durchschnittlichen Umlage der Betriebs- und Unterhaltungskosten z.B. über den Wasserverbrauch, werden diese anlagenspezifisch von den jeweiligen hierdurch erschlossenen Eigentümer erhoben. Damit sollen Eigentümer an im Sinne der technischen Infrastruktur peripheren Standorten zu einem Umzug an günstigere Standorte angehalten werden.

3.3 Finanzierung

Für einen Siedlungsrückbau werden finanzielle Mittel erforderlich, die aufgrund des großen Bedarfs allenfalls in geringen Teilen aus dem Steueraufkommen der Gemeinde

und/oder über eine Bundes- oder Landesförderung bereit gestellt werden können. Die Finanzierung muss daher überwiegend von den durch den Rückbau bevorzugten Grundstückseigentümern getragen werden. Durch die Festlegung von Rückbaubereichen reduziert sich das Angebot am Immobilienmarkt im Gemeindegebiet, da die dort gelegenen Immobilien vom Geschäftsverkehr ausgeschlossen werden. Dies führt zu einer Erhöhung des Immobilienwertes der übrigen Immobilien in der Gemeinde (siehe Abb. 3). Durch den Rückbau von Teilen der Siedlung entsteht in den übrigen Siedlungsteilen eine kompakte Siedlung ohne das Risiko eines strukturellen Leerstands. Immobilien in solchen Siedlungsteilen haben einen höheren Wert als solche in perforierten Siedlungen. Durch die kompakte Siedlungsstruktur reduzieren sich außerdem die Infrastrukturkosten. Alle diese Vorteile wachsen den Grundstückseigentümern zu, deren Grundstücke in nicht vom Rückbau betroffenen Siedlungsteilen liegen. Diese wirtschaftlichen Vorteile erwachsen diesen Grundstückseigentümern ohne eigene Investitionen, sondern ausschließlich aufgrund gemeindlicher Aktivitäten. Analog zur städtebaulichen Sanierungs- und Entwicklungsmaßnahme nach dem BauGB sollten diese Wertvorteile der Allgemeinheit zur Deckung der Kosten des die Wertvorteile auslösenden Siedlungsrückbaus verfügbar gemacht werden.

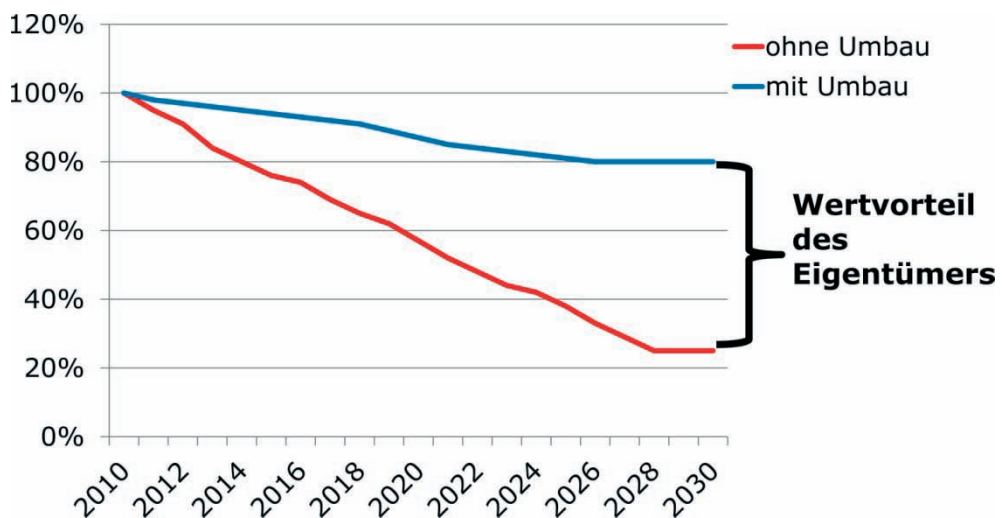


Abbildung 3: Wertentwicklung der Immobilien außerhalb des Rückbaubereichs mit und ohne Rückbau (Quelle: eigene Darstellung).

4. Offene Fragen

Mit den hier vorgeschlagenen Ansätzen für ein Konzept zum Siedlungsumbau wird auf eine Vielzahl bereits bekannter partizipativer und hoheitlicher Instrumente der Baulandentwicklung zurück gegriffen. Dennoch fehlt beispielsweise bisher die planungsrechtliche Möglichkeit, Teile bestehender Siedlungen als Rückbaubereich mit den beschriebenen

Folgen festzusetzen. Hier besteht der Auftrag an den Gesetzgeber, die bisherigen rechtlichen Vorschriften an die neuen Aufgabenstellungen anzupassen.

Bisher fehlen daher auch konkrete Erfahrungen hinsichtlich der Mitwirkungsbereitschaft der Eigentümer beim Siedlungsrückbau auf Grundlage solcher gesetzlicher Regelungen. Erste Bemühungen zur Positionierung des Themas in einem Gemeinderat für dessen Gemeinde in den nächsten 40 Jahren ein Bevölkerungsverlust von 30% erwartet werden kann, haben zu keiner Problemerkennntnis geführt. Aus Sicht des vor allem mit Männern in fortgeschrittenem Alter besetzten Gemeinderates sind Veränderungen, die nicht kurzfristig, sondern über einen Zeitraum von mehr als 30 Jahren wirken, weniger interessant, da für die aktuelle politische Arbeit eher Nachteile (z.B. durch Auseinandersetzung mit Eigentümern von Immobilien in Rückbaubereichen) als Vorteile bei einer Thematisierung des Siedlungsumbaus entstehen [Linke/Köhler 2011]. Hier muss es gelingen, die zukünftig tatsächlich von den Auswirkungen des Bevölkerungsverlustes betroffenen Bürger und Grundstückseigentümer zur Mitwirkung zu gewinnen, also die derzeit 30- bis 50-Jährigen.

Zur Bestimmung der den einzelnen Grundstückseigentümern durch einen Siedlungsumbau entstehenden Vor- und Nachteile kann grundsätzlich auf die bekannten Methoden zur Ermittlung maßnahmenbedingter Wertveränderungen durch die städtebauliche Sanierungs- und Entwicklungsmaßnahme zurück gegriffen werden. Allerdings ist die Bestimmung der Wertveränderungen und deren Akzeptanz bei den Betroffenen ungleich schwieriger, da die Vorteile eines Siedlungsumbaus vornehmlich aus geschätzten nicht entstehenden Verlusten herrühren. Zur Steigerung der Akzeptanz sollten die möglicherweise entstehenden Verluste deutlich gemacht und die vorteilhabenden Eigentümer daher vom Beginn des Siedlungsumbaus an in mehreren Raten zur Mitfinanzierung heran gezogen werden.

Aus der Beteiligung der vorteilhabenden Grundstückseigentümer ergibt sich letztlich auch die finanzielle Tragfähigkeit eines Siedlungsumbaus. Da bisher keine Erfahrungen zum Finanzmittelbedarf für einen Siedlungsumbau vorliegen, bietet sich an, auf der Basis von Planspielen und Szenarien zur Bevölkerungsentwicklung Pläne zum Siedlungsumbau zu entwickeln und deren Umsetzung durchzuspielen.

Bei der Entwicklung von Lösungen zu den vorstehenden Fragestellungen bietet sich die Analyse der bisher beim Stadtumbau Ost und West gewonnenen Erkenntnisse an [BBRS 2012].

Literatur

Beirat für Raumordnung [2009], Demographischer Wandel und Daseinsvorsorge in dünn besiedelten peripheren Räumen. Stellungnahme des Beirats für Raumordnung, verabschiedet auf der Sitzung vom 29.6.2009.

BBSR [2009a], Raumordnungsprognose 2025/2050. Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (Hrsg.): Berichte, Band 29. Bonn: BBSR.

- BBSR [2009b], Ländliche Räume im demografischen Wandel. Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (Hrsg.): BBSR-Online-Publikation 34/09, November 2009.
- BBSR [2011a], Wohnen im Alter – Marktprozesse und wohnungspolitischer Handlungsbedarf. Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (Hrsg.): Forschungen Heft 147, Berlin: Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMVBS).
- BBSR [2011b], Wohnungsmarktprognose 2025. Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (Hrsg.), Analysen Bau.Stadt.Raum, Band 4, Bonn: BBSR.
- BBSR [2012] Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (Hrsg.), www.stadtumbau-portal.de.
- BMBF-Pressemitteilung (Nr. 152/2011), Schavan nennt Steigerung der Studienanfängerzahlen „sehr gutes Zeichen“. 23.11.2011.
- Büchs, S./Magel, H. [2010], Weniger – aber wie? Anmerkungen zur strategischen Entwicklung schrumpfender Dörfer. Flächenmanagement und Bodenordnung, Heft 6, S. 268–275.
- Davy, B. [2005], Grundstückswerte, Stadtumbau und Bodenpolitik. vhw Forum Wohneigentum, Heft 2/2005:67–72.
- Henseler, A. [2011], Strategien für landwirtschaftliche Altgebäude, Zeitschrift für Flächenmanagement und Bodenordnung (FuB) 73(2): 67–73.
- Hesse, J.J. und Götz, A. [2006], Förderung interkommunaler Zusammenarbeit in Niedersachsen – Endbericht. Untersuchung im Auftrag des Niedersächsischen Ministeriums für Inneres und Sport. Berlin: Internationales Institut für Staats- und Europawissenschaften.
- Hessischer Rechnungshof (Hrsg.) [2009], Überörtliche Prüfung kommunaler Körperschaften – Neunzehnter zusammenfassender Bericht 2009, Wiesbaden: Landtagsdrucksache 18/939.
- Institut für Regionalentwicklung und Strukturplanung (IRS) (Hrsg.) [2008], Forschungsprojekt: Entscheidungssystem zur Abschätzung des langfristigen Infrastruktur- und Flächenbedarfs. Endbericht. Erkner: IRS.
- Jung, H. [2006], Allgemeine Betriebswirtschaftslehre, 10. Auflage, Oldenbourg: Wissenschaftsverlag.
- Köhler, T. [2011], Verwaltungsreform im ländlichen Raum. Schriftenreihe Fachrichtung Geodäsie, Fachbereich Bauingenieurwesen und Geodäsie, Heft 34, Darmstadt: Techn. Univ., Geodätisches Inst.
- Kötter, T. [2011], Aufgaben in Städtebau und Stadtentwicklung. In: Kummer, K. und Frankenberger J. (Hrsg.), Das deutsche Vermessungs- und Geoinformationswesen 2012, Berlin: Wichmann Verlag, S. 57–66.

- Landtag von Baden-Württemberg [2011], Drucksache 15/84 vom 09.06.2011.
- Linke, H. J./Köhler, T. [2010], Ansätze zum Siedlungsumbau bei sinkenden Bevölkerungszahlen im ländlichen Raum. Flächenmanagement und Bodenordnung (FuB), 72, Heft 3: 102–109.
- Linke, H. J. / Köhler, T. [2011], Zum Umgang mit den Auswirkungen des demographischen Wandels auf Siedlungen im ländlichen Raum - Erfahrungen aus einem studentischen Projekt. In: Jahresgabe der Hessische Akademie der Forschung und Planung im ländlichen Raum. Kassel.
- Pecher, R. [1992], Abwassergebühren – Quo vadis? Korrespondenz Abwasser 39, Heft 5.
- Salhofer, S. [2001], Kommunale Entsorgungslogistik – Planung, Gestaltung und Bewertung entsorgungs-logistischer Systeme für kommunale Abfälle. Habil. Abfallwirtschaft in Forschung und Praxis Bd. 121. Berlin: Erich Schmidt Verlag.
- Schaffert, M. [2010], GIS-basiertes Leerstandsmanagement für ländliche Wohngebäude. Szenarien im Spannungsfeld öffentlicher und privater Interessen. In: Hepperle, E., Dixon-Gough, R.W., Kalbro, T., Mansberger, R. and Meyer-Cech, K. (eds.), Core-Themes of Land Use Politics: Sustainability and Balance of Interests/ Kernthemen der Bodenpolitik: Nachhaltige Entwicklung und Interessenausgleich. Zürich: vdf.
- Schaffert, M. [2011], Szenariotechnik und GIS - Ein Beitrag zur demografierobusten Planung in Kommunen. Schriftenreihe Fachrichtung Geodäsie, Fachbereich Bauingenieurwesen und Geodäsie, Heft 32, Darmstadt: Techn. Univ., Geodätisches Inst.
- Schumann, M. [2008], Baulandbereitstellung und Dorffinnenentwicklung in der Flurbereinigung. In: DVW-Schriftenreihe Band 55, Umlegung in Stadt und Land. Grundlagen und Praxisbeispiele (pp. 175–186). Augsburg: Wißner-Verlag.
- Seitz, H. [2005], Auswirkungen der Bevölkerungsentwicklung auf politisches Handeln: Finanzpolitik vor dem Hintergrund der demographischen Entwicklungen in Ostdeutschland. Vortrag DHV, Speyer Februar 2005, TU Dresden.
- Statistisches Bundesamt (Hrsg.) [2009], Bevölkerung Deutschlands bis 2060. 12. Koordinierte Bevölkerungsvorausberechnung, Wiesbaden: Statistisches Bundesamt.
- Statistisches Bundesamt [2011], Sterbetafel Deutschland 2008/2010. www.destatis.de (Zugriff 11.01.2012).
- Statistisches Landesamt des Freistaates Sachsen[o.J., zit: Statistik Sachsen], Demografiemonitor Sachsen, www.demografie.sachsen.de/monitor/ (Zugriff 11.01.2012).
- Voß, W., Güldenbergh, E., Jürgens, A., Kirsch-Stracke, R. und Streibel, N. [2010], Modellprojekt Umnutzung landwirtschaftlicher Altgebäude und Hofanlagen als Beitrag zur Vitalisierung von Ortskernen, Abschlussbericht der wissenschaftlichen Begleitforschung.

Factors Influencing Land Consolidation Success: Lessons Learned in Lithuania

Abstract

Effective land management instruments are currently available to solve rural problems involving land fragmentation, lack of infrastructure, alternative energy resources, nature protection, land abandonment, etc. This powerful tool – land consolidation – has already been tried and evaluated in many Western European (WE) countries. Central and Eastern European (CEE) countries are especially interested in this tool as immediately after the collapse of the Soviet regimes the initial land reforms were the cause of many problems, especially in regard to maintaining rural sustainability. Many CEE countries have already introduced training in how to deal with simple voluntary land consolidation (LC) and are familiar with best practice as presented by western experts. However, what is valid in one country, is not necessarily valid elsewhere, as historical backgrounds, traditions and culture need to be taken into consideration. It is, therefore necessary to consolidate fragmented best practices from both WE and CEE countries and to prepare international guidelines for LC experts. In order to do that, land consolidation experts should work hand in hand to exchange all the necessary information regarding practice in their country to consolidate and create the guidelines for this uniform system. This paper is based on findings from Lithuania and reveals aspects which might be taken into account for CEE countries preparing their LC methodology. The paper is structured to run through the project process, analysing every player involved in it. The authors suggest evaluating all success factors before launching the project.

Keywords: land consolidation, rural sustainability, land consolidation projects in Lithuania

1. Introduction

The countryside has always held a variety of attractions for people from the cities; as a place for peaceful retirement, or as a weekend retreat for those still working who wish to spend their leisure time just having contact with the earth or walking barefoot through grass etc. To sustain the viability of this rural environment so that future generations may also enjoy its bucolic delights calls for the adoption of a strategic vision now to prevent the gradual erosion and degradation of the countryside as a natural, social and aesthetic asset.

Such visions, and the means of achieving them, should ideally be generated from within the countries to which they apply, the countryside being far too culturally significant (and

* School of the Built Environment, Faculty of Technology and Environment, Liverpool John Moores University, UK.

** Formerly of the School of the Built Environment, Liverpool John Moores University, UK.

sensitive) to be amenable to solutions imported from abroad. However, many of the CEE countries face common problems to which a set of common solutions may be acceptable. For example, the land reforms brought in after the collapse of the Soviet era arrangements have bequeathed a system of land ownership which can at best be described as 'inconvenient'. If a comprehensive system of land development and associated conservation is to be introduced, then a means has to be found of moving away from this inherited structure. Land consolidation offers one such approach. Problems which are related to land fragmentation, land abandonment, lack of infrastructure, the creation of public zones, environmental protection etc. can be addressed using this tool. A comprehensive land consolidation plan could work (and should work) in conjunction with a comprehensive development plan in areas where the latter is being applied.

Many Western European countries have long traditions of dealing with land consolidation. Twenty years ago, land consolidation in some Western European countries developed from being an agricultural farm-focused instrument to being an instrument that is likely to cover public demand for land and to solve land use conflicts (Thomas 2004; Maliene and Weiß 2004); from a landscape-destroying vehicle to an environment friendly and sustainable land management instrument (Thomas 1998). Another impetus came from the EU cohesion policy within which land consolidation was investigated as an indispensable measure for integrated rural development (Thomas 2006). Practice and traditions using different types of LC models (voluntary, simplified, complex and compulsory) and well written legislation provided encouragement for land owners to participate in LC projects. Western European countries are now spreading this practice to Central and Eastern European countries. The authors have noticed that LC experts share their experience with CEE countries land managers during training programmes and projects supported by the World Bank, the FAO, under UN etc. In many conferences and symposia experts are sharing their own best practice and discussing the preconditions of successful project implementation.

CEE countries have little experience in dealing with land consolidation. The focus on it has only arisen in the last decade. It is unfortunate that it has tended to be used only in its very narrow sense, mostly focused on economic concerns, eg. farm enlargement, without taking into account climate change, environmental protection measures, alternative employment creation, etc. (Pašakarnis and Maliene 2009).

This research is based on the authors' experiences of implementing LC projects in Lithuania (2005–2008), interviewing local and international experts, and participants at every level, from government agencies down to the individual land owners. The paper is structured around the stages of land consolidation project implementation and identifies the different attitudes of the project participants.

2. Land consolidation process peculiarities in Lithuania

2.1 Initiation of land consolidation projects

To expect a bottom-up land consolidation approach, active land owners are essential. Land owners' activeness directly depends on their understanding of the objectives that could be

achieved through the application of this new land management instrument. The mass media in Lithuania are quite passive regarding LC. In public articles, only basic matters-of-fact about LC are provided, accentuating the possibility that during the land consolidation process farmers can enlarge their holdings. It is commonly held by public opinion that LC will create large collective style farms again, as during the Soviet years, thereby making the main message even less appealing (Pašakarnis and Maliene 2011). Many governmental institutions (municipalities; road, forest, environmental administrators etc.) lack the knowledge as well as the skills that would enable them to mount an effective public awareness campaign. Many think that LC is simply the merging of land parcels. They do not know that they can participate in such projects and solve important issues from their point of view. Interviewed, the experts agree that public involvement could be achieved by talking about complex land consolidation projects and the multipurpose objectives which have been achieved.

Local land management authorities are not very active in the promotion of LC. For many of them this is an unexplored area. Those 10 of all 48 who have experienced LC projects during 2005–2008 are not showing much enthusiasm to take on new projects now that they know what to expect. This could be related to the fact that after starting a project the duties and responsibilities of the specialists involved begin to escalate, whereas their salaries stay the same. In almost every part of the country there are many cases where ineffective land reform in the 90's introduced a set of problems that will require the application of LC to resolve. For local land management authorities who are inexperienced in LC the prospect of having to initiate a scheme and deal with the consequential uncertainties is not a happy one, and is indeed regarded as a problem best avoided.

Many problems appeared as a result of there being no requirements for precise measurements in the project brief. Such measurements as were made were performed using only measuring tape, without precise geodetic instruments. Where the topography is hilly, there are, as a rule, many inaccuracies. Analysing the data, one can observe, that measuring land for neighbours' different marginal distances is provided on preliminary plans. Only by performing precise geodetic measurements are land owners able to detect land reform mistakes. The most common and painful problem is that the land owner actually has less land (*de facto*) than is written in the documentation (*de jure*) (Fig. 1) (in this case the shortage has to be compensated in other place using free state land), and vice versa. When a land parcel is found to be larger in area than its *de jure* extent, then the surplus land reverts to the state.

A second type of problem occurs when a land owner detects that his land parcel is designed without access to the road network and he has no rights-of-way over neighbouring land parcels. A possible solution to problems such as these is to perform geodetic measurements for every land plot and use land identified as surplus to rectify access difficulties. Without such action, 'island' plots would gradually drop out of cultivation and ultimately be abandoned altogether.

ture, create a more convenient road network, repair drainage, establish new farmsteads, and develop electricity networks. More active farmers were expecting to consolidate surplus land (free state land) from their own or neighbours' land surplus into their own holdings and to acquire private title to such acquisitions. ("Sharing the experience...." 2008).

The inclusion of the SLF in LC projects is entirely rational. State land is in an even worse situation than farmers' land – it is spread chaotically over land reform project territories and consists in the main of unattractive land, which was not privatized, irrationally shaped plots without functioning drainage systems, failed farms, scrubland etc. These unattractive land areas could be consolidated and, with support from the government could be returned to the market. Alternatively they could be used where appropriate to ease some of the problems (such as access) that appeared after the land reform.

Project success is directly related to the detailed examination of the project territory and at the preparatory stage it is very important to have as much actual GIS data and documentation as possible. The SLF as project organizer should use all possible means to create a comprehensive data base of the features that may have a bearing on the success of the project. Field visits and engagement with land owners are also a pre condition for success. Just making contact with the affected owners also has its difficulties; contact details (at least phone numbers) are not routinely held by the local authorities, the land owners may no longer live in the area (or may have emigrated), and individual sites may have changed ownership using informal arrangements which have not been notified to the authorities (Fernandez and Eberlin 2010). Situations such as these leave gaps in the area covered by the project which may severely hamper the scope for efficient reallocation.

2.3 Land consolidation project planning stage

After the area to be included in the LC project has been investigated and approved, the SLF selects the project contractor using the usual public procurement processes. In Lithuania there are 24 land surveying companies that are accredited to implement LC projects (Fig. 2) and 82 specialists having qualifications in this field (NLS 2012). Only eight of these companies have so far had practical experience of implementing consolidation projects. Interviewing surveyors it has been observed that generally more effective outcomes result when the project planner is from outside of the area and has had no previous association with the land reform process. A reason for this may be that land owners are able to credit such people with more objectivity and professionalism and to negotiate with them accordingly.

Land surveying companies wishing to tender for LC project work must frame their bids to be within a maximum budget of 260 Euro per ha (according to the standing order approved by the Ministry of Agriculture regarding rules of LC projects implementation), and once an overall sum has been agreed for a project it cannot be changed. However, experience suggests that the rigidities of this tendering process may cause gaps and tensions to appear in the delivery of the project itself. For example, being tied to a fixed global

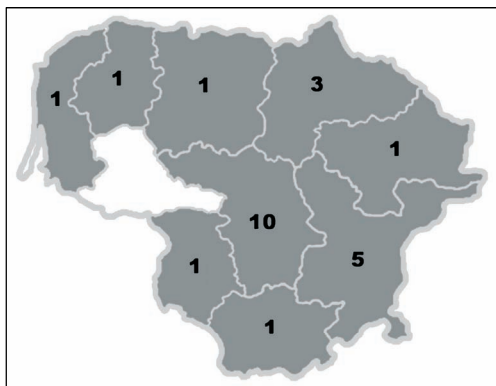


Figure 2: Map showing numbers of surveying companies accredited to implement LC projects in each county.

budget for the scheme means that land owners who may have been hesitant or absent at project initiation cannot be accommodated should they wish to join in later. Similarly, the precise area of the scheme may only be established after a comprehensive survey has been completed. Should the area be bigger than originally thought, the global budget will remain fixed and will simply have to be spread more thinly. Again, adverse topographical details may only become apparent after the detailed surveys which the project requires have taken place. They still have to be dealt with within the fixed global sum. By way of an example, Fig. 3 illustrates a case where the bed of a river was assumed (from the ortophoto map) to be in one location, but which turned out in reality to be somewhere else.

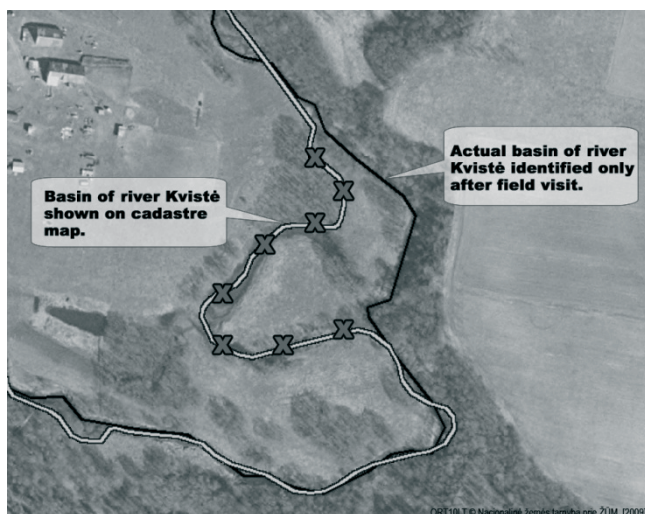


Figure 3: The project planner can expect inaccuracies if data is analysed without recourse to a field visit.

There may also be cases where a landowner dies and drops out of a scheme, or where a new landownership comes into being through inheritance and the new owner wishes to

join an existing scheme. In cases such as the above, there ought to be flexibility built into the legislation which would allow (with appropriate safeguards) the adjustment of the global budget to take account of changed circumstances.

All planning activity starts with the collection of all the necessary data: raster (orthophoto maps, drainage system plans, land usage identification maps, soil quality maps, land reform plans, restrictions of activities plans, forest taxation maps) and vectors (land cadastre and other). The land consolidation project planners may use this data to inform their discussions with affected land owners concerning their expectations for the project. Subsequently a land mobility map may be drawn up showing the actual location of the affected land parcels together with supporting notes about the owner's expectations and any problems to which the parcels may be subject. To assure transparency and to avoid any misunderstandings, every verbal transaction is recorded on tape (Dictaphone) or video.

LC in Lithuania is implemented on a voluntary basis, is free of charge for land owners who are free to decide to participate in a project or not. Some land owners do not want to participate in LC projects in spite of the incentives to do so (Jagt et al. 2007). Their holdings are not included in the project territory which makes gaps appear the LC project plan. When the holding of a non-participating land owner is in the project territory, the project planner has to investigate it anyway, just to be sure, that the owner has a viable plot, properly defined in the property documents with appropriate access to road and other necessary infrastructure. If the excluded holding is of greater extent than is defined in the property documents, the LC planner has to fix this land reform mistake and redesign the boundaries accordingly. As might be expected, land owners affected by such diminution of their holdings can become very angry after such corrections.

Having gathered the opinions of all parties, the project planner analyses how to realize the scheme. Should exchanges of land between owners become necessary to a project, then a series of land valuations will be undertaken. The law requires that land exchanges should involve the transfer of plots of equal value regardless of their area. Only appropriately licensed valuers may undertake such land valuations which are carried out using the Market Value and Income Capitalisation approaches.

The valuations have to be approved by those participating in the project. If there is an active local community then it is realistic to elect a committee of stakeholders who could reflect the wishes of all the community. The purpose of the committee is to reflect the wishes of all participants, organize meetings with the project planner, participate in the valuation process etc. However, when the project includes land owners who live at a distance (or are entirely absent from the area), such committees tend to be ineffective; the local land owners rarely have enough contact to act as a conduit into the committee, and the project planner must spend valuable time and money travelling to meet every affected landowner and securing from each properly formalized agreement to the plans. All of which adds to cost.

2.4 Land consolidation project implementation stage

This stage covers plan preparation, cadastral measurement, notary services and registration in the cadastre. Project planners have to have the plans approved at public meetings with all participants. Although many in society express a passive interest in undertaking LC projects, it is difficult to translate this into active participation. This may be particularly the case when the documentation presented at the meetings is unfamiliar and complex.

The project plan has to be approved by 12 different institutions (municipality, institutions responsible for infrastructure and utilities, environment protection, etc.). The planner has to be a person who helps all of these institutions to reach a common conclusion in the territory covered by the project. It is critical to open communications with all institutions at the earliest possible stage of the project if the planner wants to finish the project on time. Even before the detailed planning starts, at the initiation stage, these institutions could offer advice as to the best areas to be included in future projects. Currently there is no single body designated to coordinate effective communication between all institutions. Although Environmental Impact Assessments (EIA) are prepared, examination of the available evidence suggests that these amount to little more than “tick box” exercises. Whilst it could be reasonably expected that there would be some negative aspects arising from LC projects whose sole objective was the merger of land holdings, none were found. However, every possible positive impact was reviewed and publicised.

After the successful implementation of a LC project it can be expected that the value of the affected land will rise and it will attract investment which will in turn lead to further rises in value, all of which is good for the viability of the surrounding local environment. Successful projects work like beacons, attracting neighbours to start similar projects. Publicising individual success stories therefore becomes an important part of the process as a whole. A good example of this is provided by one project planner who launched a website (www.konsolidacija.lt) at project inception. Here, in the project blog, interested parties were able to find pictures, maps, project progress reports, local government contacts and other useful information which might be useful to other land owners thinking of starting a similar project in their own area.

3. Changes in land consolidation process are crucial

The first wave of LC projects (14 of them) disappointed many of the participating land-owners. Whereas they had seen plans being drawn up to develop local road networks, repair drainage systems, improve electricity supplies etc, the available budget only covered the administrative costs of the project such as land valuation, preparation of the plan, cadastral measurements and the legal costs of revising the cadastre (Pašakarnis and Maliene 2010).

The size and scale of the area included in the LC project exert a considerable influence upon what can be achieved. At the lowest level (100 ha) only the simplest reforms can be made such as geodetic measurement and voluntary mergers of holdings to produce more

sensible ownership configurations. To achieve the objective of long term sustainable economic development requires that the project planners have the flexibility in resource allocation and access to investment funds that only much larger areas can offer. Upon completion of a project it is only logical that measures should be put in place to prevent landowners from subdividing or fragmenting their holdings in a way that may jeopardise this development process.

A sensitive issue for the planners to contemplate (if not resolve), is that of the age structure of the existing land owners. The presence within a scheme of farmers who are nearing retirement age may inhibit the full working out of the scheme dynamics. Not only is the time frame of their commitment going to be shorter than for younger farmers, but the newly enlarged holdings may be more than they can physically manage. This would suggest that a scheme of assisted early retirement should form a part of the LC development plan.

Finally, there is a need to sharpen up the provision of LC specialists within Lithuania. The professional bodies could play their part by setting standards for those seeking to enter the profession and by acting as the agents of knowledge / good practice transfer between practitioners in Lithuania itself, and between Lithuanian practitioners and the wider international community. The country's Universities and Colleges might also be induced to make LC planning more central to their core curricula in conjunction with the professional bodies.

4. Results and discussions

In the Lithuanian context, the viability of a strong and vibrant rural economy depends in large part upon the existence within it of strong and vibrant family farms. Land consolidation, in combination with other rural development programs should be the instrument whereby such family farms are able to put down deep roots in the rural areas. There is a danger that the consolidated holdings will become the means whereby agribusinesses may extend their dominance over rural employment with resultant rural depopulation. The presence of an intimate and long term connection between a successful family farm and the land itself is seen as a necessary prerequisite to the ultimate goal of long term sustainable rural development.

There is a clear need to engage the stakeholders (public, private, national and local) in the LC process as a precursor to the implementation of long term sustainable rural development policies. A series of case studies could be worked up to show the benefits at the individual and societal level of successful project implementation. The results could then be marketed to the public and private decision makers whose support is necessary to see a LC project through to a successful conclusion.

Presently, LC is understood in its narrowest sense, namely the simple merging together of land parcels and their coincident geodetic measurement. This rather limited ambition for the instrument needs to be raised to a much more sophisticated level if, as is inevitable, the

question of ‘value for EU money’ is to be convincingly addressed. This suggests the need for Institutional involvement at the very highest level.

The “State Land Fund” has a proactive part to play in the early stages of a LC project. Only at the level of the SLF is it possible to take a strategic overview of a LC proposal and, if the proposal is thought worth pursuing, the SLF is ideally placed to iron out the legal and financial issues which need to be resolved before detailed planning can commence. The SLF also has a key role to play in coordinating the efforts of the government departments and acting as a communications hub for the project once it is underway.

The Universities and Colleges have a contribution to make in that it is they who will provide the next generation of project planners. Not only can their networks, both at home and internationally, be used to enhance the understanding of land consolidation, but also their curricula should reflect the centrality of LC planning to all rural planning and the critical contribution that it has to make to ensuring a sustainable future for the countryside.

References

- “Sharing the experience from first implemented land consolidation projects” [2008], Private seminar sound record, November 6–7. Gabšiai village, Raseiniai district, Lithuania.
- Fernandez, C.Z. and Eberlin, R. [2010], Galicia (Spain): BanTeGal: Main successes and difficulties after 3 years of working. Presentation at regional workshop on land tenure and land consolidation, land banking and public land management June 21–24. Prague, Czech Republic. http://www.fao.org/fileadmin/user_upload/Europe/documents/Events_2010/Prague2010/BanTeGal_en.pdf [Accessed 13th November 2011].
- van der Jagt, P., van Holst, F., Thomas, J., van den Brink, A., Reyniers, J., Jongeneelen, O., van Dijk, T., Timmermans, W., Daugaliene, V., Crecente, R., Ambar, M. and Flachner, Z., 2007. *Far Land Near Future*. Budapest: FARLAND.
- Maliene, V. and Weiß, E. [2004], *Flurbereinigung in der Bundesrepublik Deutschland*. Vilnius: Technika.
- National Land Service under the Ministry of Agriculture of the republic of Lithuania (NLS) [2012], Register of certificates of qualification for land management documents preparation. <http://www.nzt.lt/nzt/selectPage.do?docLocator=B0D5CFE03ACB11E19386746164617373&inlanguage=lt> [Accessed 6th May 2012].
- Pašakarnis, G. and Maliene, V. [2009], Land readjustment for sustainable rural development. In: Grasserbauer, M., Sakalauskas, L. and Zavadskas, E.K. (eds.), *Knowledge-based technologies and OR methodologies for strategic decisions of sustainable development* (pp. 169–174). 5th International Vilnius Conference – EURO Mini Conference September 30–October 3. Vilnius: Technika.
- Pašakarnis, G. and Maliene, V. [2010], Towards sustainable rural development in Central and Eastern Europe: Applying land consolidation. *Land Use Policy* 27: 545–549.

Pašakarnis, G. and Maliene, V. [2011], Land consolidation in Lithuania: Aspiration and actuality. In: Cygas D. and Froehner K.D. (eds.): The 8th International Conference Environmental Engineering, 8th ICEE, selected papers, May 19–20, Vilnius, Lithuania (pp. 1424–1431). Vilnius: Technika, 2011.

Resolution No 1824 [2010], Resolution No 1824 of the Government of the Republic of Lithuania regarding replacement of resolution No 697 of 27 June 2005 on the approval of the rules of preparation and implementation of land consolidation plans. 15th Dec. 2010. http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=389967&p_query=&p_tr2= [Accessed 13th November 2011].

Thomas, J. [1998], Non-polluting land use and sustainable development in rural regions – support through land consolidation and village renewal. In: Developing the profession in a developing world. XXI International Congress: FIG '98, Brighton, UK, 19–25 July 1998. International Federation of Surveyors: Reigate Press.

Thomas, J. [2004], Modern land consolidation – recent trends on land consolidation in Germany. In: Proceedings of the FIG Commission VII symposium on modern land consolidation (aménagement foncier modern), 10–11 September Volvic/France. Frederiksberg: International Federation of Surveyors.

Thomas, J. [2006], What's on regarding land consolidation in Europe? In: Shaping the change. Proceedings of the XXIII International FIG Congress, 8–13 October, Munich, Germany.

Peri-urban Problems around Kraków

With Particular Respect to the Commune of Michałowice

1. Introduction

The need for new living space coupled with improved living conditions have driven people to seek alternative housing that provides 'territorial' house units that are a far cry from inner city urban dwelling. These will often take the form of low-rise, detached or semi-detached house units that are surrounded by land and that have the luxury of a car parking space that is, in many instances, a reaction against out-dated, cramped and inner city apartments. This desire for changes in living space is not a new phenomena but one that has continued in cycles in most European countries from Post-Medieval times particularly as socio-economic conditions change and visible signs of wealth are more accepted.

Since the age of the railway, these developments frequently followed railway routes thereby creating the corridor concept of 'Metroland' – an expression coined by the Metropolitan Railway of London, which was instrumental in developing the land through which its 'new extension' was constructed in the late nineteenth century. This type of development was typified by the suburban development that took place between 1850 and 1950 around most cities in Britain (Mitchell 1964; Jackson 2003; Stewart-Bearsley 2006). More recently, this development has been more random – dictated only by road networks giving access to hitherto undeveloped segments situated close to urban areas, thanks to the relative independence generated by the internal combustion engine (Hilton 1969; Howley et al. 2009) leading to larger conurbations of less densely populated areas (Kasanko 2006), often with no traditional transportation links.

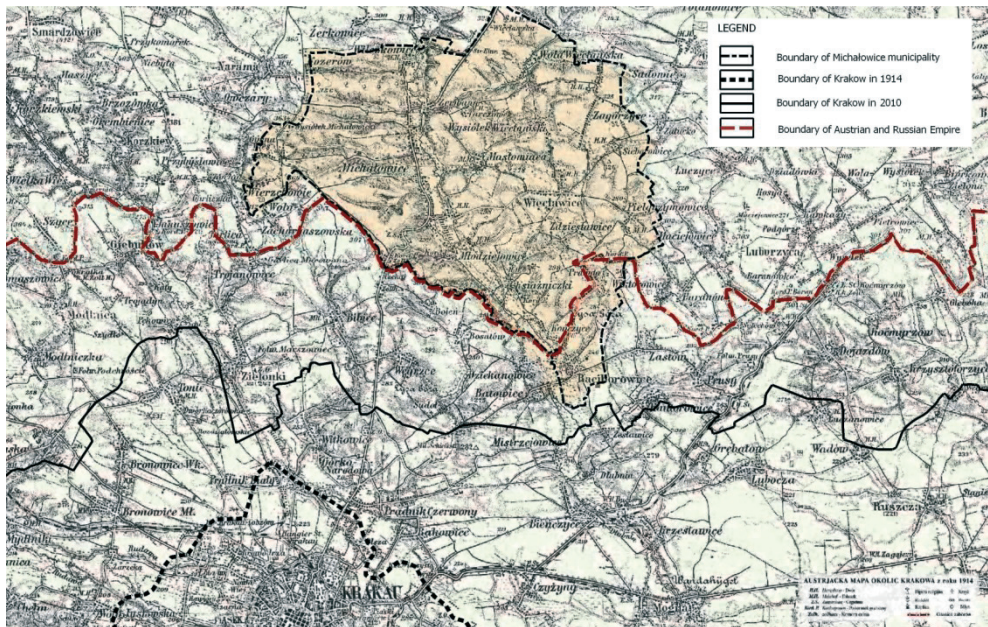
Such a situation exists around the city of Kraków, particularly those areas to the north of the city typified by the commune of Michałowice. Historically this commune was in Russian territory between 1772 and 1918, the consequence of which is that it did not enjoy the convenient road links to the nearby city found with those communes situated to the south of Kraków, all of which enjoyed the benefits of being part of the Austro-Hungarian Empire. Those road links have not been developed and still exist in a form and location that is similar to the situation in 1919 (Map 1).

2. Michałowice

This commune is situated on high ground to the north of the main conurbation of Kraków (Map 1). The development of Michałowice during the period from 1945 to 1989

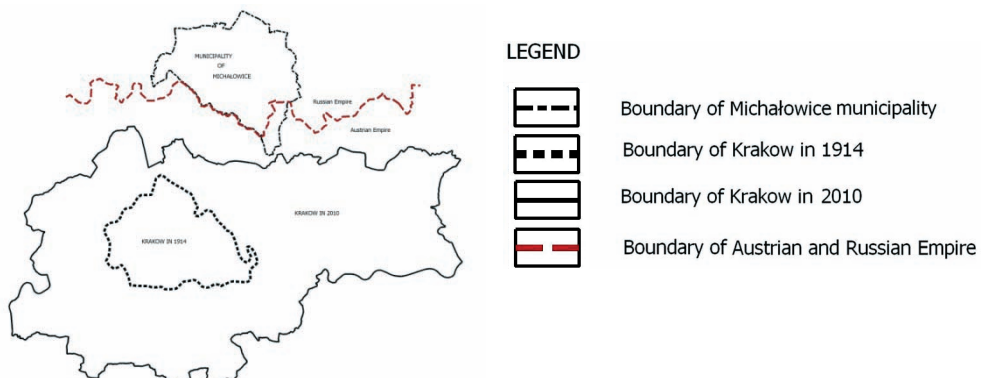
* Corresponding Author. Visiting Researcher of the University of Agriculture in Kraków, Poland.

** University of Agriculture in Kraków, Faculty of Environmental Engineering and Land Surveying, Kraków, Poland.



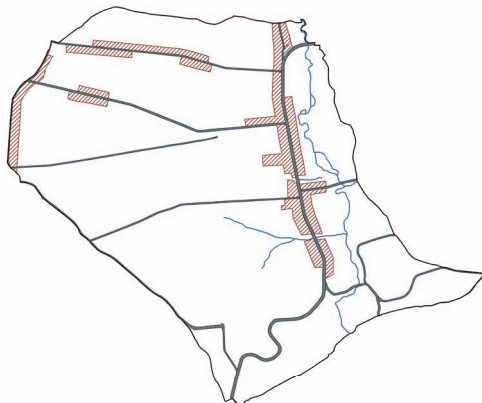
Map 1: The relative positions of Kraków and Michałowice in 1914 showing the existing international boundary.

has been relatively slow due, in part, to its' relatively poor links to the city, as discussed above. Other suburbs to the east, west and south of the city enjoyed far better communication links and were easier and cheaper to develop with rail and tram connections being important catalysts for urban development prior to the 1960s and 1970s. During this period and until 1989 Michałowice was an agricultural commune but during the 1990s, its close proximity to Kraków (10 kms) led to it becoming one of the most important dormitory communes for the city. Rural areas in Poland such as Michałowice have been undergoing significant changes over the past two decades. Its location, has allowed it to have become a peri-urban development has had significant and rapid direct consequences to the demographic, economic and social structures.



Map 2: Changes in the size of Kraków between 1914 and 2010.

More recently, Michałowice has undergone significant social and economic changes, the most visible of which are the developments in housing and out-of-town services along the main roads leading into urban areas (Łowicki 2008). This has frequently involved rapid changes in land use away from agriculture, which has increased pressure upon the cultural landscapes in most rural regions of Poland where agriculture represented the primary function of rural areas and villages being dominated by farmstead buildings present at varying densities and in different spatial arrangements according to the regional norm. The effects of this change from agriculture to urbanisation in Michałowice may be assessed through the observation of maps that illustrate the urban development of the commune in 1983, 1999, and 2003 respectively (Maps 3, 4, and 5) which clearly show the changes that have resulted in a relatively short period and the implications that these will have upon the social and technical infrastructure in this peri-urban region. This 'improvement' has led to a rapid diversification away from agriculture that is also reflected in many other communes throughout Poland that are close to urban centres (Bański and Wesołowska 2010). During



Map 3: The extent of urban development in Michałowice in 1983.






Map 4: The extent of urban development in Michałowice in 1999.



Map 5: The extent of urban development in Michałowice in 2006.

LEGEND

-  THE EXTENT OF THE BUILT-UP AREAS BASED ON THE DEVELOPEMENT PLAN FROM 2006
-  THE EXTENT OF THE ROADS BASED ON THE DEVELOPEMENT PLAN FROM 2006
-  THE EXTENT OF THE STREAMS AND RIVERS BASED ON THE DEVELOPEMENT PLAN FROM 2006

the latter part of the 1990s, even the most remote regions were becoming more urbanized with an increase in residential developments, amenities, and infrastructure that have all led to significant changes to the cultural landscape but also to large increases in the area of impermeability and changes to the hydrological cycle. There is now little difference in the price of an apartment in Kraków to a house in Michałowice. This presents problems concerning the management of land within the commune, especially as conflicts that develop between new and local inhabitants mainly in the scope of the lack of such an infrastructure. Also, given the differences in the value between building land and agricultural land, there is also competition between farmers to have their land re-classified as building land. Furthermore, as the population Michałowice increases, their reliance upon the tenuous transportation links increases with resulting serious problems especially during the morning and evening rush periods.

The expansion of Michałowice and Kraków may be assessed in Map 2, which illustrates the expansion of the two entities and exemplifies the problem of peri-urban development in the region through both the increased development and, when compared to Map 1, the potential transportation links that act as constrictions to the increased flow of traffic generated by the developments.

Although there is a great deal of autonomy that may be practiced at a local level concerning the design and evolution of local development plans and the re-assignment of land from agricultural to building purposes, there are distinct spatial planning regulations that must be complied with at both National and Vivoidship levels.

3. Spatial Planning Instruments

The development of spatial planning in Poland effectively evolved from the Law on Spatial Planning of 1961, which was revised and re-adopted in 1984. Following the political transformation in Poland, the government enacted two laws, which regulate land use planning issues dating from 1995 and a further act to regulate spatial planning in 2003. In fundamental terms, the Spatial Development Act from 1995 (and the subsequent Act) vested the power of decisions on the use of local land to the individual communes. There are three levels of spatial planning policies: National and governmental programmes; regional planning within the Vivoidships; and, at a local level, the local zoning and development plans of the communes.

At a National level, the emphasis is to achieve public goals of national significance whilst defining the conditions, objectives, and directions of sustainable level within the country and at a European level. Through this concept, the national spatial policy provides the basis whereby programmes for investment for public purpose are developed and implemented. At this level, there is very little implication on either the causes and consequences of peri-urban problems.

The basic act of planning at a regional level is through the provision of a spatial plan for the Vivoidship, which determines the overall direction of development including the basic

elements of the settlement patterns, the protection of designated areas, the distribution of investments for infrastructural developments on a supra-regional basis, the identification of specific problem areas and the provision of support and, finally, the identification of areas in danger of flooding and any remedial action needed. The Regional Spatial Development Plan (RSDP) is the basic document that defines spatial planning throughout the entire Vivoidship, the findings of which are transferred to the Local Spatial Development Plan (LSDP). Apart from the RSDP, the Vivoidship can work on other acts of more specific planning such as road network planning, the technical infrastructure, and landscape conservation and preservation all of which could have a direct impact on the causes and consequences of peri-urban problems.

It is at a local level that the causes and consequences of peri-urban development have the greatest implications through the direct management of the land of communes through the instrument of LSDPs. At this level, spatial planning has two roles: the formulation of the function and purposes of planning for specific zones; and the determination of the purposes and principles of planning of building areas. This is achieved through the creation of two basic types of planning acts: the Spatial Development Plan which constitutes a legal act; and the planning acts, which define the spatial planning within the commune and are referred to as Studies of Condition and Directions of Spatial Management. These data are transferred to 1:10,000 maps that define the concepts of spatial management and which are preceded by the adoption of the Local Zoning Plan. This has led to the creation of local regulations based upon the passing of spatial development plans. The importance of this plan is that the municipal authorities ensure the impact of the development on future spatial solutions even before the enactment of any municipal regulation that is defined by the local plan. It is at this level that the cause of peri-urban developments may be found, although the consequences of those developments may have consequences upon adjacent municipalities and upon particular aspects of the RSDP, particularly with respect to infrastructural improvements.

Although zones are defined within the Local Zoning Plan, these are not absolute since it is possible for a landowner to apply to have changes made to this plan whereby agricultural land may be re-zoned as building land. This process is referred to as the transformation of agricultural land to residential land and is the single, most significant cause of peri-urban development in Poland.

One of the most fundamental impacts of this spatial planning policy is that the ultimate control lies in the hands of the local community through the election of the Mayor of the commune who has an important influence upon the implementation of policies that will benefit the local community. Although the Mayors of adjacent communes may work together, it should always be emphasised that they are democratically responsible for the well-being of their own commune and are not required to take a broader picture of spatial planning – although such considerations could be part of the RSDP that has to be incorporated within the LSDP.

4. The transformation of agricultural land to residential land

In practical terms, the transformation of agricultural land to residential land (once the Spatial Development Plan has been passed into legislation) is possible but only through the introduction of the concept of re-zoning fees that are directly connected (at a local level) with preparing or changing the local spatial management planning. If a change to the local spatial development plan is agreed, and the value of the property has increased, the owner wishing to sell it within 5 years from the enactment must pay a 're-zoning fee'. This is determined while preparing or amending the development plan and it may equal maximum 30% of the increase in the property value.

Clearly, this has a significant influence on the local development of a commune and is far more sensitive to local feelings and local participation than the more rigid system such as that, for example, adopted in England. Since part of the profit from changing the function of the land in Poland goes into the budget of the commune, this Act has been instrumental in making clear changes to the landscape and also increasing the tax revenue of the commune, which directly contributes towards the wealth of that commune. In Michałowice, for example, the tax has been set at 10% of the increased property value in a deliberate attempt to encourage development.

The enactment of the local spatial management planning was the first step in the evolution of the effective management of Michałowice. The administration of the commune has utilized its income to develop a spatial information system, which was commissioned to create a complex tool for the management of the entire commune to permit a more efficient management of the community. The greatest challenge for the Michałowice commune in the coming years will be striking the balance between the pursuit of the land-owners to expand the areas for development, whilst maintaining the rural character of the community, through a programme of conservation and preservation of the cultural landscapes of this area and, simultaneously, considering factors such as the increased run-off of precipitation from the enlarged urban areas, which will have impacts on other communes and built-up areas.

5. The problems resulting from agricultural transformation

Rural areas in Poland have been undergoing significant changes in recent decades. Those areas situated close to large urban centres have found themselves in a situation in which peri-urban development has had significant and rapid direct consequences to the demographic, economic and social structures (Czarnecki 2009). The Michałowice community is an example of such an expansion, in which the city of Kraków has rapidly developed into the rural areas of the commune resulting in sharp decline in the agricultural function of the community. Furthermore, this has had a pronounced negative impact on the natural environment since a significant proportion of the most valuable natural lands with the highest production value are decreasing. In addition, the new developments have also had a significant impact on the water management because they halt a natural retention.

The development of the Michałowice commune is controlled through the development of a local spatial management plan in 2006 for the entire area of the commune. As a result of this development plan the commune has witnessed large-scale investment particularly in housing and more specifically in the single-family housing. Some 1,700ha of the land (approximately 33% of the total land area) was designated for such housing, a factor that will determine the direction of future developments of the commune over the next two or three decades. As a result of this local development plan, the population of the Michałowice commune has increased significantly. Between 2006 and 2010, 1,124 building permits were issued and a number of the registered residents rose up to 1000. As a direct result, the income to the commune through local taxation has increased by 109% to 2,720,000 zł, (approximately £0.6 million).

These housing developments have also contributed to a significant increase in the income of the landowners. As the small farms cease to exist and their owners invested the money obtained from selling them in other forms of business and in their properties. Between 2006 and 2010, 1,204 real property transactions were completed throughout the commune of Michałowice with a total sale price exceeded 300,000,000 (almost £67 million). This has a significant value to the commune since local taxes raised against these property transactions resulted in an increase in the commune's income of over 6,000,000 (approximately £1.4 million) through re-zoning fees and taxes on the civil law transactions. This re-zoning fee is set by the local commune and, in the case of Michałowice, it has been set at 10% increase of the property value. This is considered to be both socially and economically acceptable and as, a result, the number of appeals to the Municipal Appeals Council (Samorządowe Kolegium Odwoławcze) is small one – some 6% of all applicants.

One of the greatest problems associated with this development in Michałowice is that of traffic. The most direct route to Kraków is single carriageway with properties in close proximity to the road, making any plans for an increase in the road width both controversial and expensive. Without any increase in road width there is little possibility of creating special bus lanes. Furthermore, local roads that provide alternative routes are completely congested. There are no rail or tram/rapid transit routes and no plans to construct any. Sadly, those moving out of the city have exchanged their improved living conditions for increased journey times on heavily congested roads, which is a problem common with virtually all peri-urban developments.

6. Conclusion

Most rural areas throughout Europe up to the beginning of the First World War had a population in occupations primarily related to the land, and even in those areas where there were other industrial activities, the majority of the land was used for farming. The main occupants fell into four main categories: landowners, tenant farmers, small independent farmers, and farm labourers. Changes began across Europe from the 1920s although these changes were mainly in northern and Western Europe. The changes that took place in Poland were, in part, political and once the opportunity arose from the

1980s, change has been very fast – often faster than many other comparable parts of Europe. This is particularly noticeable in areas that were defined as agricultural prior to Transformation and the impetus of change has turned many communes to peri-urban areas.

Michałowic is one such commune that has taken advantage of its position close to the city of Kraków to change from being an agricultural commune to an urban commune. This process of transformation has taken full advantage of Poland's spatial planning regulations that give a great deal of autonomy to the individual communes. This is not without problems since such developments invariably impact upon other adjacent communes and, indeed, the nearby urban area – both environmentally and through the direct problems of traffic congestion. This situation is now typical of many peri-urban problems that create consequences far beyond those originally envisaged and may, in the future, call for changes in the spatial planning regulations of Poland that permit a more holistic planning process,

References

Bański, J. and Wesołowska, M. [2010], Transformations in housing construction in rural areas of Poland's Lublin region – influence on the spatial settlement structure and landscape aesthetics. *Landscape and Urban Planning* 94: 116–126.

Czarnecki, A., [2009], Rola urbanizacji w wielofunkcyjnym rozwoju obszarów wiejskich. Instytut Rozwoju Wsi i Rolnictwa Polskiej Akademii Nauk, Warszawa.

Hilton, G. [1969] Transport technology and the urban pattern. *Journal of Contemporary History* 4: 123–135.

Howley, P., Scott, M. and Redmond, D. [2009], An examination of residential preferences for less sustainable housing: Exploring future mobility among Dublin central city residents. *Cities* 26: 1–8.

Jackson, A. [2003], The London railway suburb 1850–1940. In Evans, A. and Gough J. (eds.), *The Impact of the Railway On Society in Britain. Essays in the Honour of Jack Simmons*, (pp. 181–198). Aldershot, Ashgate.

Kasanko, M., Barredo, J., Lavalle, C., McCormick, N., Demicheli, L., Sagris, V. and Brezger, A. [2006], Are European cities becoming dispersed? A comparative analysis of 15 European urban areas. *Landscape and Urban Planning* 77:111–130.

Łowicki, D. [2008], Land use changes in Poland during Transformation: case study of Wielkopolska Region. *Landscape and Urban Planning* 87:279–288.

Mitchell, B. [1964], The coming of the railway and United Kingdom economic growth. *The Journal of Economic History* 24:315–336.

Stewart-Beardsley, R. [2006], The impact of the Great Western Railway on the social structure of five rural parishes in the Thames Valley 1830–1875. Presented paper at the Economic History Society Annual Conference. www.ehs.org.uk/ehs/conference2006/.../StewartBeardsleyNRIID.doc (Accessed 15/01/2012).

Changes in Land Use Capability and Impacts on Ecosystem Functions

Abstract

Land capability identifies the potential to use an area of land for different purposes. Using the concept of land capability, assessment procedures were developed to represent dynamic changes in land quality due to climate change. The different limitations of land capability need to be assessed together with their interactions to produce an integrated output to be used in planning procedures. The uncertainty of results needs to be taken into account and communicated to potential end users. Soil properties and their interaction with climate are a particularly important component of this process, with further work required to understand both risks and opportunities in a spatial and temporal context.

1. Introduction

Land capability classification identifies the potential to use an area of land for different purposes, based upon biophysical limitations of the land such as soils, climate and topography that cannot be removed or improved by reasonable management. This concept is similar to the definition of land function in the ecosystem services literature (e.g. Willemen et al. 2010), but was originally referred specifically to agricultural production.

Land with higher capability has more options for use, therefore demonstrating a greater versatility and resilience to adaptation to climate change impacts. It is also likely to be more productive. However land capability can change in time and the options can therefore be modified. Land capability classes can provide a basis for land-use planning and the most favourable utilisation of land resources.

Climatic constraints are important for land capability classification, by restricting ecological processes such as plant growth rate, or by limiting management activities such as ploughing, sowing or harvesting. A change in climate implies that new opportunities or risks could become evident. Therefore exploration of climate change impacts on land capability can identify areas where the range of options is changing or may be expected to change in the future.

This paper summarise the direct and indirect impact of climate change on some ecosystem services (water availability, organic soils and carbon sequestration and forest habitat connectivity). The indirect impacts are assessed through the changes in land capability.

* The James Hutton Institute, Aberdeen, UK.

2. Methodology

2.1 Land Capability for Agriculture

The present study has used baseline and future scenario projections of land quality based upon the Land Capability for Agriculture (LCA) classification system that is widely-utilised in Scotland (Bibby et al. 1982). The highest classes and divisions in the LCA system identify the best quality land, known as 'prime land' with ca. 85% of it is used for arable agriculture due to the high productivity and economic value.

Changes in land capability linked to climate change and to interactions between climate and soil have been explored in previous studies (respectively Brown et al. 2008; Brown et al. 2011).

Table 1: LCA classes and associated land uses (Bibby et al. 1982, Brown et al. 2011).

<i>Class</i>	<i>Category</i>	<i>Land use</i>
1	Prime	Very wide range of crops with consistently high yields
2	Prime	Wide range of crops, except those harvested in winter
3.1	Prime	Moderate range of crops, with good yields for some (cereals and grass) and moderate yields for others (potatoes, beans, other vegetables)
3.2	Not prime	Moderate range of crops, with average production, but potentially high yields of barley, oats and grass
4.1	Not prime	Moderately severe narrow range of crops, especially grass due to high yields but harvesting may be difficult
4.2	Not prime	Narrow range of crops, especially grass due to high yields but harvesting difficulties may be severe
5	Not prime	Improved grassland, with mechanical intervention possible to allow seeding, rotation or ploughing
6	Not prime	Rough grazing pasture only
7	Not prime	Very limited agricultural value

2.2 Test Area

The Grampian region covers the whole NE of Scotland (Figure 1) with a variety of landscapes and land uses. It includes the Dee and Spey catchments and the Cairngorm mountains, with some of the highest peaks in Scotland.

2.3 Land Use Change Scenarios

Brown et al. (2008) showed that continued climatic warming and the shift to drier summers suggested by the UKCIP02 scenarios (HadCM3 and HadRM3 climate models) could remove some of the existing climatic restrictions leading to an expansion in the areas

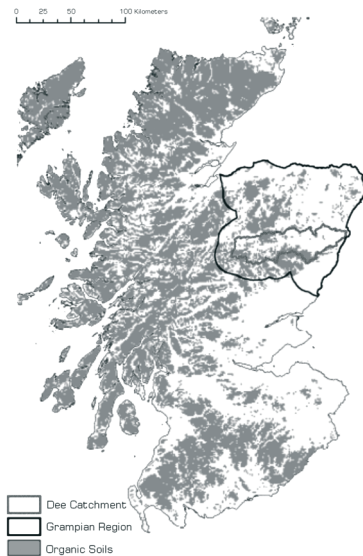


Figure 1: Test area: Grampian region in the NE of Scotland and the Dee catchment.

defined as 'prime land', by the year 2050. This was based on the approach illustrated in Bibby et al. (1982) which relies on the soil moisture balance and accumulated temperature as main drivers, applied in the 2050 climatic projections. A reanalysis using UKCIP09 data (Brown et al. 2011) produced similar results.

These future projections would also be accompanied by an increase in drought risk for some soil types with lower available water capacities. Hence, for some areas, classification as 'prime land' would be conditional on adaptation measures such as irrigation to reduce drought risk (Brown et al. 2011b).

Areas identified as potential future 'prime land' (Brown et al. 2008, Brown et al. 2011) were identified as zones that may be under pressure to be converted to arable land if not already under this use, (see Figure 2), contingent on issues such as commodity prices and food security concerns.

The scenarios considered are illustrated below:

- *Present land use:* this represents the baseline situation at the present moment in time and climatic conditions. It is entirely based on the enhanced dataset previously described.
- *Future scenario.* All land that has the potential to become prime land was assumed to be under intensive agriculture in 2050. The existing woodland patches were not modified, assuming that present broadleaved woodland would not be affected by land use change.

These scenarios assume a prevailing market-driven attitude among future land managers, and deliberately disregards factors such as possible payments of ecosystem services. The

scenarios should not be considered as predictions, but as tools to explore the effect of land use change and habitat loss in a spatially explicit manner.

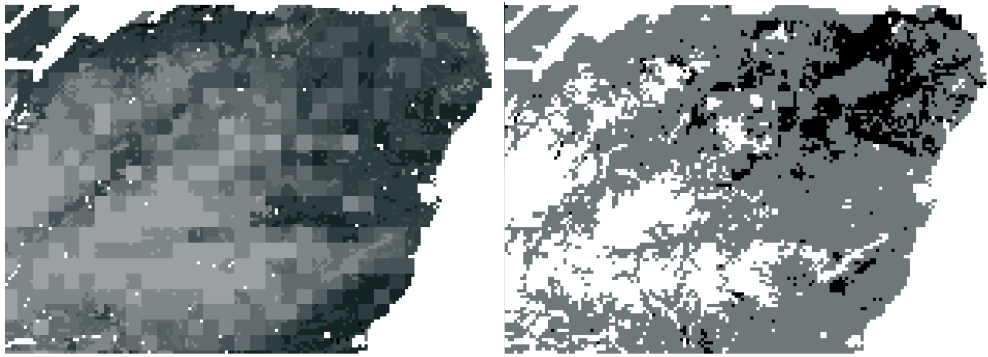


Figure 2: Present and future land capability scenarios. Darker colours indicate better quality land.

3. Impact on Ecosystem Functions

The direct and indirect impacts of climate change on some ecosystem services (water availability, organic soils and carbon sequestration and forest habitat connectivity) are assessed through the changes in land capability.

3.1 Water availability

The water content of soil has a major role in many hydrological processes such as infiltration and runoff (Bardossy and Lehmann 1998; Herbst et al. 2006), soil erosion and flooding (Fitzjohn et al. 1998; Wang et al. 2001; Nunes et al. 2009). It is also playing an important part in pedogenic and geomorphological processes (Beven and Kirkby 1993).

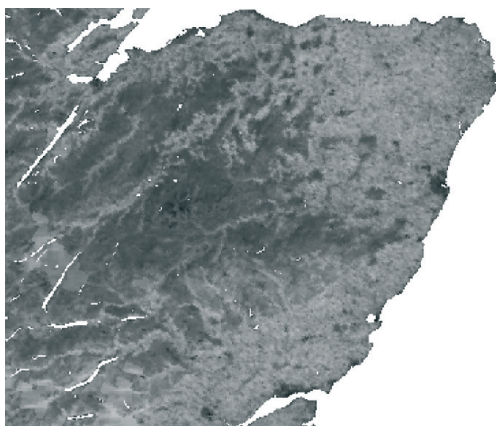


Figure 3: Soil available water capacity. Lighter colours indicate higher capacity.

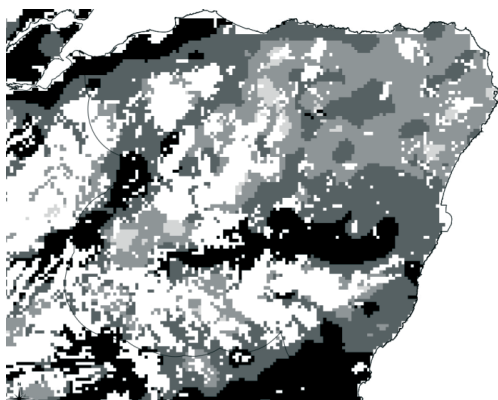


Figure 4: Drought risk from soil/climate interactions in 2050. Lighter colours indicate a lower risk. White areas are organic soils excluded from the evaluation.

Drought risk for each crop is based upon mapping of moisture balance (MB) values grouped into 4 classes (Bibby et al. 1982; Brown et al. 2011). Positive values indicate an absence of moisture stress and negative values imply water availability is insufficient to sustain evapotranspiration and hence plant growth is restricted. Based upon the drought risk classes, the guidelines of Bibby et al. (1982) suggest that the basic LCA classification should be modified by downgrading if drought risk for indicator crops (potatoes and winter wheat) is below a threshold MB value. To achieve LCA Class 3.1 (i.e. prime land), at least one of the indicator crops must be classified no worse than ‘slightly droughty’, whereas for LCA Class 2, the two indicator crops must be ‘slightly droughty’ or better.

Table 2: Drought risk classes based upon MB values

Status	Drought class	MB	Description
Prime Class	I	>+50	Non-droughty
Prime Class	II	>0	Slightly droughty
Non-prime Class	III	>-50	Moderately droughty
Non-prime Class	IV	<-50	Very droughty

Figure 3 shows the distribution of AWC for soils in the Grampian, while Figure 4 presents the risk for agricultural drought in 2050. Reduction in the supply of water through increased soil moisture deficits could therefore develop whilst there are additional pressures from increased water demand due to agricultural expansion or intensification as the climate warms.

3.2 Organic soils and Carbon sequestration

An important ecosystem service is the storage and sequestration of carbon that would otherwise contribute to global warming through increased radiative forcing by atmospheric CO₂. Some Scottish soils already have a high organic content (e.g. peat) and can be considered as a pool of carbon. The pool capacity can be further extended with appropriate

land use management. The land capability principle is being extended to include these soils, therefore defining capability for carbon sequestration. Soils with high capability will be included within the spatial planning system with other land uses, and therefore protected from inappropriate actions that would degrade their present and future capacity. This assessment also includes interaction with the changing temperature, precipitation, evapotranspiration, and CO₂ concentrations of the future. All the considered interactions are rather complex and their uncertainty can be potentially high. The communication and inclusion of uncertainty estimation is particularly important for planning measures.

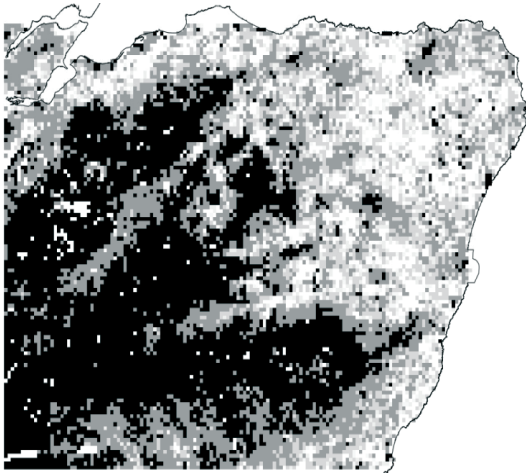


Figure 5: Soil Organic Map. Darker colours indicate a higher content of organic matter.

3.3 Forest connectivity and habitat networks

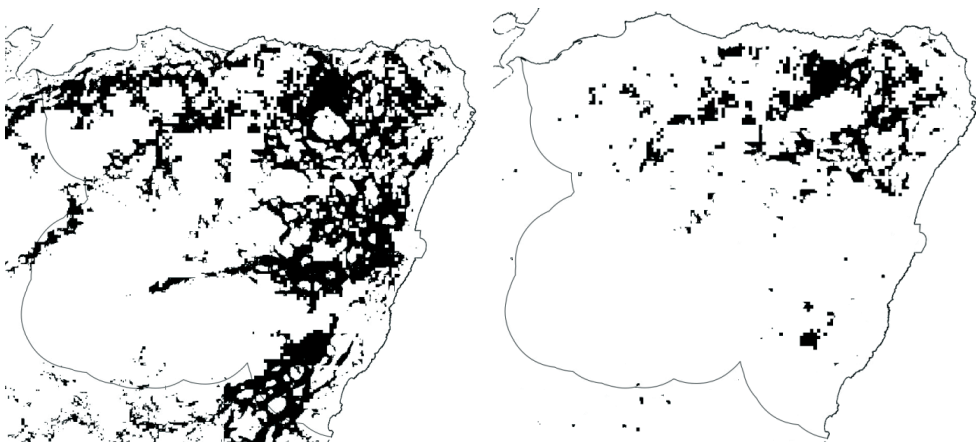


Figure 6: Habitat connectivity as baseline (now, left) and in the future (2050, right) considering all land that has the potential to become prime land under intensive agriculture management.

In most of Europe, and increasingly in other parts of the world, semi-natural ecosystems are fragmented and embedded in a landscape matrix which often makes species dispersal difficult (e.g. Gimona et al. 2009). Persistence of many species in the landscape is also made difficult by climate change which is inducing range shifts that species cannot track due to habitat fragmentation. As a consequence, policy measures to improve habitat connectivity and landscape permeability are being proposed as planned conservation schemes. However, very few of these actually consider the indirect effects of climate change. In particular, changes in land capability and water resources may lead to changes in land quality that could impact on habitat distribution. This in turn suggests that the design of habitat networks also needs to be aware of other land use requirements and incorporate future projections. By combining future land capability with proposed habitat networks, it is possible to assess habitat network options and identify those that are most at risk of being at competition with other demands, notably food security.

The results of soil moisture balance, and land capability models (Gimona and Birnie 2002; Poggio et al. 2010; Brown et al. 2008; Brown et al. 2011) together with an understanding of the various drivers and of land manager's attitudes (e.g. Burton 2008; Sutherland 2011) were used to explore the consequences for landscape.

The analysis of woodland connectivity was based on Circuit theory (CT). Circuit Theory, is an advance in graph theory-based methods which include least cost path (e.g. Sutcliffe et al. 2003). CT accounts for multiple dispersal pathways in the landscape (e.g. McRae et al. 2006). Resistance values that reflect the possible ease of dispersal are assigned to raster map cells to simulate a conductive surface. Effective landscape resistance can then be calculated between pairs of nodes, based on the properties of random walks on electrical networks. The effective resistance of a landscape is then a measure of isolation between cells of a raster grid. The final result of the model is a continuous surface that incorporates all potential movement pathways. Broadleaved forest patches > 0.5 ha, were defined as "sources" (i.e. patches from which current/random walkers originate). The output of the model is a cumulative current raster map. The term current is defined as the density of random walkers between habitat patches. The cumulative current is therefore negatively correlated with the resistance (Koen et al. 2010), and is proportional to the number of random walks traversing each cell. The software tool CIRCUITSCAPE (McRae and Shah 2009, <http://www.circuitscape.org>) was used to produce cumulative current maps.

Figure 6 shows how the potential connectivity can be greatly reduced by expansion of land with good productivity potential (Gimona et al. 2012).

4. Concluding remarks

Using the concepts of land capability, digital integrated assessment procedures that can represent dynamic changes in land quality were developed. This is particularly important in incorporating climate change, both present and future, so that resource planning for the future is not made on historic assessments. The procedures were derived with an

agricultural background, but are now being extended to cover a wider range of ecosystem services. The different inputs need to be assessed together with their interactions (Figure 7) in order to produce an integrated output that could be used in planning procedures. The uncertainty of the single inputs and of their interactions needs to be taken into account and communicated to potential end users.

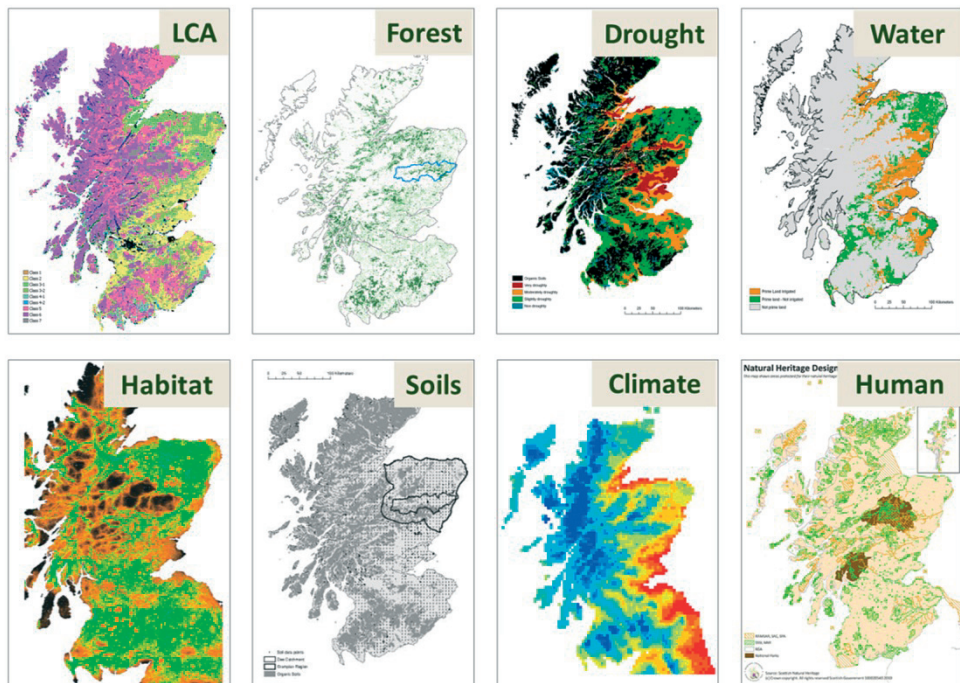


Figure 7: Integration of inputs and their interactions.

Knowledge of soil properties and their interaction with climate are a particularly important component of this process, with further work required to understand both risks and opportunities in a spatial and temporal context. Other key interactions include changing water availability and their implications for coordinated land-water resource planning, and the implications of changing fire risk on land quality and carbon storage.

References

- Bardossy, A. and Lehmann, W. [1998], Spatial distribution of soil moisture in a small catchment. part 1: geostatistical analysis. *Journal of Hydrology* 206:1–15.
- Beven, K., Kirkby, M. [1993], *Channel network hydrology*. Chichester: John Wiley.
- Bibby, J.S., Douglas, H.A., Thomasson, A.J. and Robertson, J.S. [1982], *Land Capability Classification for Agriculture*. Aberdeen: Macaulay Institute for Soil Research.

- Brown I., Poggio L., Gimona A. and Castellazi M.S. [2011], Climate change, drought risk and land capability for agriculture: implications for land-use in Scotland. *Regional Environmental Change* 11:503–518.
- Brown, I., Poggio, L., Gimona, A. and Castellazzi, M.S. [2011b], Land capability classification to plan for a changing climate. In: G. Toth and T. Nemeth (eds.), *Land Quality and Land Use Information – in the European Union* (pp. 289–296). EUR – Scientific and Technical Research Series. Luxembourg: Publications Office of the European Union.
- Brown, I., Towers, W. Rivington, M. and Black, H.I.J. [2008], Influence of climate change on agricultural land-use potential: adapting and updating the land capability system for Scotland. *Clim. Res.* 37:43–57.
- Burton, R.J.F., Kuczera, C. and Schwarz, G. [2008], Exploring farmers' cultural resistance to voluntary agri-environmental schemes. *Sociologia Ruralis* 48:16–37.
- FAO [2007], *Land Evaluation: Towards a Revised Framework*. Land & Water Discussion Paper 6. Rome : Food and Agriculture Organization of the United Nations.
- Fitzjohn, C., Ternan, J.L. and Williams, A.G. [1998], Soil moisture variability in a semi-arid gully catchment: implications for runoff and erosion control. *Catena* 32:55–70.
- Gimona, A. and Birnie, R. [2002], Spatio-temporal modelling of broad scale heterogeneity in soil moisture content: a basis for an ecologically meaningful classification of soil landscapes *Landscape Ecology*, 17:1–15.
- Gimona, A., Poggio, L., Brown, I. and Castellazzi, M. [2012], Woodland networks in a changing climate: threats from land use change. *Conservational Biology*, 149:93–102.
- Gimona, A., Poggio, L., Castellazzi, M. and Brown, I. [2009], Vulnerability of forest habitat networks to direct and indirect climate impacts. In: Catchpole R. et.al., *Ecological Networks: Science and Practice*. Proceedings of the IALE UK Conference, 16th, Edinburgh University, 1–3 September 2009.
- Herbst, M., Diekkgrger, B. and Vanderborght, J. [2006], Numerical experiments on the sensitivity of runoff generation to the spatial variation of soil hydraulic properties. *Journal of Hydrology* 326:43–58.
- Jones, R.J.A., Zdruli, P. and Montanarella, L. [2000]. The estimation of drought risk in Europe from soils and climate data. In: J.V. Vogt and F. Somma (eds.), *Drought and Drought Mitigation in Europe* (pp. 133–146). Dordrecht (NL): Kluwer Academic Publishers.
- Julia, M.F., Monreal, T.E., Jimenez, A.S.D. and Melendez, E.G. [2004], Constructing a saturated hydraulic conductivity map of Spain using pedotransfer functions and spatial prediction. *Geoderma* 123:257–277.
- Klingebiel, A.A. and Montgomery, P.H. [1961], Land capability classification. *Agricultural Handbook* 210. United States Department of Agriculture. Washington DC: U.S. Gov. Print. Office.

- Koen, E.L., Garroway, C.J., Wilson, P.J. and Bowman, J. [2010], The Effect of Map Boundary on Estimates of Landscape Resistance to Animal Movement. *PLoS ONE* 5(7): e11785.
- McRae, B.H. [2006], Isolation by resistance. *Evolution* 60:1551–1561.
- McRae, B.H. and Shah, V. [2009], Circuitscape User Guide. <http://www.circuitscape.org>.
- Nunes, J.P., Seixas, J., Keizer, J.J. and Ferreira, A. J. D. [2009], Sensitivity of runoff and soil erosion to climate change in two mediterranean watersheds. Part ii: assessing impacts from changes in storm rainfall, soil moisture and vegetation cover. *Hydrological Processes* 23:1212–1220.
- Poggio, L., Gimona, A., Brown, I. and Castellazzi, M. [2010], Soil available water capacity interpolation and spatial uncertainty modelling at multiple geographical extents. *Geoderma* 160:175–188.
- Schindler, U., Steidl, J., Mueller, L., Eulenstein, F. and Thiere, J. [2007], Drought risk to agricultural land in northeast and central Germany. *Journal of Plant Nutrition and Soil Science – Zeitschrift für Pflanzenernährung und Bodenkunde* 170:357–362.
- Schwarzel, K., Feger, K.-H., Hantzschel, J., Menzer, A., Spank, U., Clausnitzer, F., Kostner, B. and Bernhofer, C. [2009], A novel approach in model-based mapping of soil water conditions at forest sites. *Forest Ecology and Management* 258:2163–2174.
- Sutcliffe, O.L., Bakkestuen, V., Fry, G. and Stabbetorp, O.E. [2003], Modelling the benefits of farmland restoration: methodology and application to butterfly movement. *Landscape and Urban Planning* 63:15–31
- Sutherland, L.A., Barnes, A., McCrum, G., Blackstock, K. and Toma, L. [2011], Towards a cross-sectoral analysis of land use decision-making in Scotland. *Landscape and Urban Planning* 100:1–10.
- Wang, J., Fu, B., Qiu, Y., Chen, L. and Wang, Z. [2001], Geostatistical analysis of soil moisture variability on Da Nangou catchment of the 596 loess plateau, China. *Environmental Geology* 41:113–120.
- Willemsen, L., Hein, L., van Mensvoort, M.E.F. and Verburg, P.H. [2010], Space for people, plants, and livestock? Quantifying interactions among multiple landscape functions in a Dutch rural region. *Ecological Indicators*, 10:62–73.
- Zdruli, P., Jones, R.J.A., and Montanarella, L. [2001], Use of soil and climate data to assess the risk of agricultural drought for policy support in Europe. *Agronomic* 21:45–56.

Urban Land Evolution in Medium Size Hellenic Cities

Abstract

The 2011 census confirmed the predictions that Hellenic population will be rather stagnant in the future, despite the increase recorded in 2001, which was predominantly due to the influx of quite a large number of migrants. In that respect it is somewhat surprising to observe that cities in the country continue today to expand, some at rapid paces. Urban development takes place both within city limits and in land out the city limits. In the latter case it is harder for the government to assure that the preconditions set by the related legislation (that are mainly geometrical and land use) are not neglected. As a result, it is frequent to observe illegal development out of the cities that takes the form of buildings in banned areas or in exceeding the legal building dimensions or its use. Earth observation can capture urban sprawl. However, it is difficult to distinguish between legal and illegal development because permit and land use information must be available. In this context, and after an introduction concerning the meaning of the terms, the geographic/historical background and the population of Hellenic cities, as well as the most interesting spatial legislation landmarks, the present study focuses on urban sprawl both in and out of city limits for some selected urban areas. Earth observation is used to quantify the evolution of built up space with respect to city limits. The trends observed in expansion are discussed.

Keywords: Urban Development, Urban Sprawl, Spatial Planning, Hellas, Earth Observation

1. Introduction

1.1 Theoretical approach in brief

After their first appearance, almost 7 thousand years ago, the cities changed dramatically in the late eighteen century, because of the Industrial Revolution. It has been pointed out that, during the last two centuries, the hope for a better life attracts the rural population to the towns and the cities, at an accelerating rate (Thomas 1956; Mumford 1961; Derruau 1976).

The term '*urbanization*' describes the result of this process, by which the population living in urban areas is increasing rapidly.¹ The old cities become bigger and new ones are devel-

* Technological Educational Institute of Athens, Spatial Analysis Lab., Athens, Hellas.

** University of Thessaly, Department of Urban and Regional Planning, Volos, Hellas.

¹ It is noticeable that the urban population was the 28,8% of the total world population in the middle of 20th century. This rate became 37,2% in 1975 and 46,4% in 2000. It is supposed that it over passed 50% during 2007. The most reliable estimations maintain that urban population will reach 55% just after 2020, 60% ten years later and 68% around 2050 [UN 2010].

oping; in a planned way, but not seldom without officially approved plan. At the beginning of this process, the leading paradigms were located in the developed countries; nowadays mega-cities are emerged mostly in the developing countries. This massive flow of people to the cities causes significant loss of rural land, consumption of even more resources for urban infrastructure, but also (indirectly) degradation of the urban environment (UNFPA 2007; UN-Habitat 2008).

The lately (second half of 20th century) appeared term of '*urban sprawl*' could be thought as the deterministic outcome of urbanization; the next phase after the previous one of suburbanization. One of the first definitions of '*urban sprawl*' was this offered by United Nations (1997), according to which it means "the expansion of an urban area to accommodate its growing"; approach adopted by OECD (2001), as well.

According to a more modern approach (promoted by European Environment Agency), urban sprawl is "the physical pattern of low-density expansion of large urban areas, under market conditions, mainly into the surrounding agricultural areas. Sprawl lies in advance of the principal lines of urban growth and implies little planning control of land subdivision. Development is patchy, scattered and strung out, with a tendency to discontinuity because it leap-frogs over some areas, leaving agricultural enclaves" (EEA 2011).

Therefore, urban sprawl is connected with the physical expansion of urban areas; it is usually unplanned, low density and incremental urban development. The extended use of private car and the lower prices of rural areas fuelled this expansion of the city limits. These driving forces are related to the existence of poor slums in the periphery of the cities, but also to the rich satellite settlements. Additionally, urban sprawl is associated with huge commercial establishments, in both the developed and the developing world (UNFRA 2007).

On the other hand, the European territory is traditionally more close to the opposite idea, this of the '*compact city*', as this last one is strongly "supported" by the walls around the medieval cities. But even the existence of this historical pattern, urban sprawl is determined aspect in Europe of 21st century, because of many contemporary motivations. Population growth, the will for improving living standards and the private car ownership are among the most crucial. In general, macro- and micro-economic factors, demographic factors, urban problems, transportation availabilities and policy weaknesses are the main causes for urban sprawl in Europe (EEA 2006).

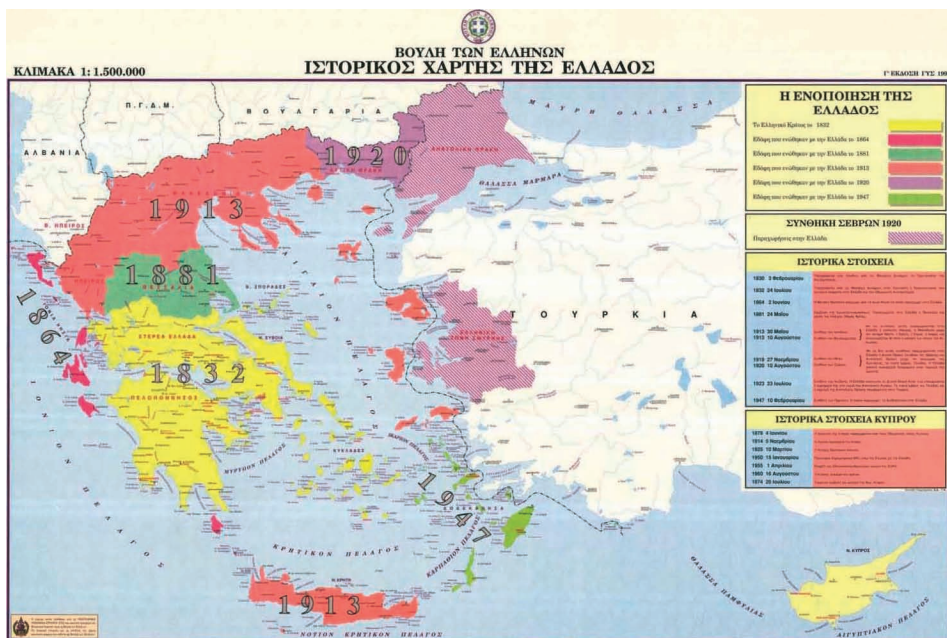
1.2 Hellenic historical-geographical framework.

The Hellenic territory (nearly 132.000 sq. km) covers the south end of the Balkan Peninsula, in the south-east of Europe. More than two thirds of the state are mountainous, but the majority of the Hellenes (almost 70% of the 11 million habitants) live in the plains (NSSG 2009).

After two recent administrative reformations (1997: 'Kapodistrias'; 2010: 'Kalikratis'), Hellas is divided (2011) into: 7 Decentralized Administration Units (they belong to the

central government), 13 regions (NUTS II, according to the nomenclature of Eurostat) and 325 municipalities (the previous two levels belong to the local authorities). Until the end of 2010, an intermediate administration level existed, this of (51) prefectures (NUTS III)² (YPES 2011).

During the 19th century, there was no a particular urban development policy. Apart from several isolated cases of simple town plans ('rymotomiko sxedio'), concerning the capital and numerous cities, the main goal of that era was the "construction and hygiene of the cities and the small towns" (Aravantinos 2007; Sarigiannis 1979). That weak legal regime for human settlement lasted until the early 20th century. Simultaneously, Hellas gradually extended its national borders; increasing this way the need for regulation of urban space (the last addition to the Hellenic territory happened in 1947) (Figure 1).



Source: Hellenic Parliament 1999.

Figure 1: The territorial expansion of Hellas (Greece), 1832–1947.

During the 20th century, Hellas had:

- to support a great flow of (Hellenes) refugee from the Asia Minor (present-day western coasts of Turkey), equal to the one third of its previous population, after a military operation there (1922);
- to recover after the decade of '40s, as beyond the WW II a 3-year civil war left even more ruins in the Hellenic territory.

² The now repealed prefecture level is still interesting, because their capitals are almost the only cities in Greece.

During the '50s, the '60s and the '70s, the great effort for economic recovery and social transformation kept pace with phenomenon of urbanization that increased the population of Hellenic cities. This fact was identified in time with the integration of a rather speedy reform, from agricultural economy to a no so healthy industrial sector, but mainly directly to a tertiary economy. The depopulation of the majority of small (mountainous) villages and the collapse of their local economies was the main result. Simultaneously, and until the mid '70s, political reasons and the flows of people looking for work abroad (mostly with village origin) caused a measurable retardation of the Hellenic population augmentation (Table 1). Later on, this migratory wave had stopped and the bulk of the emigrants came back. Nowadays, a new migratory wave is likely because of the economic crisis, but this time, the young scientists from the cities might be those who will probably be moved abroad.

Table 1: (De facto) Hellenic population, 1951–2011.

	1951	1961	1971	1981	1991	2001	2011*
(de facto) Population	7,632,801	8,388,553	8,768,641	9,740,417	10,259,900	10,964,020	10,787,690
Change %		9,90%	4,53%	11,08%	5,33%	6,86%	-1,61%

Source: NSSG 2009; HAS 2011. [* provisional data].

1.3 Hellenic demographic data

Historical, geographical and political reasons have contributed decisively to the creation of a large number of settlements with: very small population, weak economic base, difficult accessibility and wide dispersion in the geographical space (Kayser 1968). Beyond these settlements (villages), the rank size of the cities is not well distributed. The Athens-Piraeus agglomeration attracts almost the one third of the total Hellenic population and this of Thessaloniki follows with circa 800,000 people.

Quite far away from the previous two (mega)cities, Patra, Iraklio, Larissa and Volos follow with population between 100,000 and 200,000 people, according to the provisional data of 2011 census. As shows Table 2, five more cities/municipalities attract population a little bit over 100,000 people. Moreover, 20 cities/municipalities have 50,000–100,000 inhabitants and 35 have 30,000–50,000 inhabitants.³

Taking into consideration that the size of the Hellenic cities/municipalities is recently artificially augmented, as a result of the two recent Local Authorities' reformations (1997: 'Kapodistrias', 2010: 'Kalikratis'), which unified many small adjacent villages and towns to one central municipality-city⁴ the *medium size Hellenic cities* can be consisted from those

³ It is noticeable that the currently in force (statistical) definition of 'urban population' contains all the inhabitants of municipalities with at least one entity/component (settlement in general) with more than 2,000 inhabitants. On the other hand, the old (before 2001) related (statistical) definition of Hellenic urban population refers to human settlements with more than 10,000 people. This last one is still believed as been in force, because its simplicity.

⁴ It is obvious that the new extended municipalities will probably help the local (sustainable) development process, but on the other hand, they might act against the "compact city" notion.

they had population 60 to 130 thousand people, during the 2001 census. Consequently, Larissa, Volos, Ioannina and Kavala etc. can be thought as medium size Hellenic cities, as it is widely accepted in the Hellenic community of specialized urban and regional planners (Table 2).

Table 2: The main Hellenic cities

Municipalities	1991 de facto population*	2001 de facto population	2001 permanent population**	2011 permanent population***	2001–2011 Change %
Greater Athens	3,072,922	---	---	---	-
Greater Thessaloniki	749,048	---	---	---	-
Athens	772,072	745,514	789,166	655,780	-16,90
Thessaloniki	383,967	363,987	397,156	322,240	-18,86
Patra	155,697	163,446	210,494	214,580	1,94
Iraklio	120,563	137,711	163,115	173,450	6,34
Larissa	114,334	126,076	145,981	163,380	11,92
Volos	77,192	82,439	142,923	144,420	1,05
Rodos	43,558	53,709	115,334	115,290	-0,04
Ioannina	63,725	70,203	103,101	111,740	8,38
Chania	50,077	53,373	98,202	108,310	10,29
Chalkida	51,646	53,584	92,809	102,420	10,36
Kerkyra	40,966	39,487	108,652	101,080	-6,97
Agrinio	52,081	54,253	96,889	93,930	-3,05
Katerini	48,673	56,434	83,387	86,170	3,34
Mytilini (/ Lesvos)	32,157	36,196	90,436	85,330	-5,65
Trikala	48,962	51,862	75,720	80,900	6,84
Serres	51,682	56,145	76,472	76,240	-0,30
Lamia	55,445	58,601	74,939	74,720	-0,29
Alexandroupoli	41,860	52,720	66,125	72,750	10,02
Kozani	43,426	47,451	70,220	70,420	0,28
Kavala	60,187	63,293	74,186	70,360	-5,16
Kalamata	50,693	57,620	70,006	70,130	0,18
Veria	42,910	47,411	65,530	66,630	1,68
Komotini	45,934	52,659	61,501	66,580	8,26
Xanthi	41,779	52,270	56,383	64,450	14,31
Giannitsa (/ Pella)	27,433	31,442	64,847	63,080	-2,72
Drama	49,725	55,632	57,367	59,010	2,86
Korinthos	33,435	36,555	58,523	58,280	-0,42
Karditsa	36,168	37,768	57,089	56,460	-1,10
Rethymno	26,560	31,687	47,272	54,900	16,14
Kilkis	19,358	24,812	54,750	51,990	-5,04
Chios	22,894	23,779	51,773	51,320	-0,87

* Data have been adjusted to the size of municipalities of 2001

Source: HSA 2011

** Data have been adjusted to the size of municipalities of 2011

*** provisional data

2. Spatial Approach

2.1 The urban/spatial legislation

The Legislation Degree of 17.7.1923 was the first major Hellenic legal effort concerning urban development. It established the responsibility of the central government (and the local authorities) in the process of planning the “cities, villages and settlements/suburbs”. Its main goal was to organize the housing needs just after the great flux of refugees from Asia Minor (1922).

Even if it was groundbreaking for its era (Christophilopoulos 1983), and also was the only legal rule for more than half a century, it failed to contribute significantly to the integrated development of the Hellenic cities. This is because it limited its range on *street planning* and it did not support the holistic concept of an urban master plan. Additionally, it was not fortunate enough to “absorb” unexpected evolutions as the post-war incredible urbanization rates and the social-economic transformations in the Hellenic cities; the ‘invasion’ of the car included.

Moreover, what is notable is that L.D. 17.7.1923 has established progressively a deep conviction to all Hellenes concerning their ability to build all over the Hellenic territory, even outside the legal limits of the cities (‘ektos sxediou’). This side-effect originates from:

- the farmers capability to build up small lodgings for agricultural use outside the city limits. This specific possibility became gradually general rule, provided that someone possesses a minimum of land area (usually equal to 0,4 ha),
- the legal capability to build up outside the city limits on an even smaller land area, provided that this land is located roadside (national, regional, agricultural road, railway axes included),
- the weak administration control that accepts a parallel private (non legal) system of land development outside the city limits, which is strongly supported by the market conditions (finally the citizens), as it satisfied existing housing demand.

At the same time, buildings' development in the already existed villages (on the time of L.D. 17.7.1923) was encouraged, by mitigating the strict normative build conditions applied in cities and by avoiding setting up and approving an up to date plan concerning those pre-existed villages. That policy aimed at retaining the local population and at respecting the local traditional architecture. But even under the good will of the above policy, the result was the gradual expansion of the size of small (‘pre-existed 1923’) villages, as many citizens built buildings outside the official/legal villages’ limits, using the favourable build conditions they are in force inside the ‘pre-existed 1923’ villages. So, those villages started to expand, without plan and without respect to the normative rules.⁵

⁵ In order to stop this unplanned evolution of small settlements with less than 2,000 inhabitants, P.D. 24.4.1985 [G.G. D’181/1985] established a procedure to determine their limits. As a result, during the

Later on, the Hellenic Constitution of 1975 has limited the responsibility of urban, regional and environmental issues to the central government (and not to the local authorities). But, what is very important is that after the approval of the laws 940/1979, 1337/1983 and 2508/1997, the urban planning process in Hellas incorporates a second level of planning, this of the greater area master plans ('geniko poleodomiko sxedio' or 'rythmistiko sxedio', depending to the size of the city) (European Commission 2000).

In Table 3 the main legislation milestones concerning urban and regional planning are mentioned. It is clear that the decade of '80s was very fruitful concerning city planning legislation in Hellas, even if this legal system seems to be both exhaustive and rather complicated (additionally, several of the already approved plans are not yet implemented on the ground).

Table 3: List of main Hellenic legislation concerning urban and regional planning.

URBAN LEGISLATION		REGIONAL LEGISLATION
L.D. 17.7.1923, Concerning Plans of Cities, Villages and Suburbs.	1923	
<i>half a century</i>		
New Constitution	1975	New Constitution
L. 947/79, Concerning Urban Areas	1979	
L. 1337/83, Transitional Ekistics Law	1983	
'ΕΠΑ', Urban Re-Establishment Project (~300 cities or municipalities)	1983/5	
P.D. 24.4.1985, Concerning the small villages' limits	1985	
L.1515, Master Plan of greater Athens	1985	
L.1561, Master Plan of greater Thessaloniki	1985	
L. 2508/97, Settlements Development & Sustainable Development	1997	
	1999	L.2742, Spatial Planning & Sustainable Development (SP&SD)
	2001	Special Framework SP&SD for Jails
	2003/4	(12) Regional Frameworks SP&SD
	2008	General Framework SP&SD (Spatial Plan of Hellas)
	2008	Special Framework SP&SD for Renewable Energy Sources
	2009	Special Framework SP&SD for Tourism
	2009	Special Framework SP&SD for Industry
Ongoing revision process of Athens & Thessaloniki Master Plans, plus new Master Plans for 4 major Hellenic cities	2009- ...	
	2011	Special Framework SP&SD for Aquaculture

Source: Hellenic Government Gazette & YPECA 2011.

decade 1985–1995 the majority of small villages acquire fixed limits (usually a polygon), outside which building up is prohibited. As a rule, these limits were generously fixed, significantly outside the outline of the then existed marginal buildings.

As a result of the previously referred legislation, the following two (at least) *outlines* (polygons) are possible to be recognized for every Hellenic city (or village):

- The officially decided outline of the legal cities' limits, according to the legal planning procedure.
- The real one limits of a city (or a village), as they are recognized (at every point of time) on a satellite image or on any other digital or non digital image that is used in earth observation.

2.2 Discussion on existed sprawl issues

After 1980, metropolitan area of *Athens* seems to stabilize its population. Simultaneously, the wave of suburbanisation that evolved in mid-'70s, caused new changes in the social geography of the city (Angelides 2000).

On the other hand, several big transportation infrastructures (in the greater Athens) during '90s, a new airport included, facilitated the mobility of commuters. In this way, Athens exceeded its previous traditional boundaries (mountains of: Parnitha, Penteli, Hymettus and Egaleo), mainly to the plain of Mesogia, where the new airport is located and where small towns near the sea pre-existed. As a result, nine municipalities located near the new airport increased their population during the last decade in very high rates (up to 61,82%), far away from the relevant mean rates of Hellas and Athens (Table 4).

Table 4: Small cities/municipalities near Athens with great population change, 2001–2011.

Municipalities	2001 permanent Population [Data have been adjusted to the size of municipalities of 2011]	2011 permanent Population (provisional data)	2001–2011 Change %
Pallini	33,611	54,390	61,82
Dionysus	32,504	40,170	23,58
Spata-Artemida	25,138	33,800	34,46
Marathon	23,974	33,560	39,98
Koropi	24,453	30,340	24,07
Saronikos	22,866	28,820	26,04
Peania	19,767	26,620	34,67
Markopoulo Messogeas	13,644	20,070	47,10
Rafina-Pikermi	13,625	19,940	46,35
ATHENS	789,166	655,780	-16,90
HELLAS	10,964,020	10,787,690	-1,61

Source: HSA 2011.

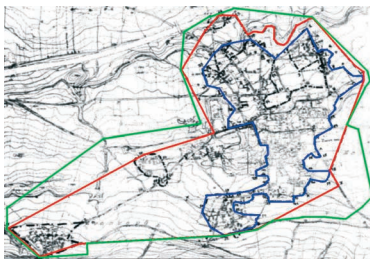
Similar phenomena can be observed in Thessaloniki, in minor scale, even if the still in force master plans of Athens and Thessaloniki (dated since 1985) contain: the notion of

many smaller centres inside the greater areas of those (mega)cities ('poly-centric development') and a rhetoric against urban sprawl.⁶

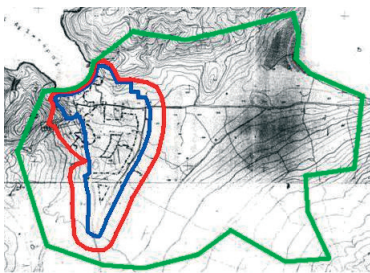
Since 2009, the previous two master plans are under revision. Simultaneously, master plans for: Patra, Iraklio, Larissa, Volos and Ioannina are prepared for the first time, under the demanding law conditions. In the above framework, the declared opinion of the ministry in charge is to "stop the urban sprawl of cities and settlements" (YPECA 2011). The meaning of compact city is strongly highlighted, especially in Athens case, and the economic crisis would perhaps be the reason to its implementation.

On the opposite side, in the very *small villages*, the sprawl effects are present with a rather similar way. Three related paradigms are displayed in Figure 2. They refer to small villages with less than 500 residents, located near the sea, in prefecture of Corinth (Peloponnese), depended on agriculture and domestic tourism.

It is obvious that in all the cases (displayed here or not) the truth expansion of the settlements existed in 2009 (green line) covers more area than the administratively decided (red line) and the existing during 1975 outline (blue line).



Ancient Corinth



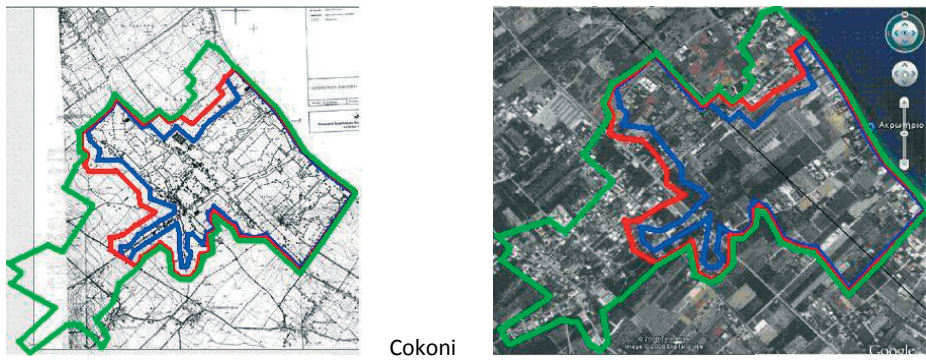
Agia Sotira



Blue outline: existed (1975), Red outline: decided (1985–1990), Green outline: existed (2009).

Figure 2 (a,b): Examples of the expansion of Hellenic villages in the prefecture of Corinth, 1975–2009 (Source: Zervou 2009).

⁶ At the same time, a common characteristic of all the Hellenic cities is the formation of cluster, inside or out of their borders. The inner ones are usually cultural clusters or clusters of entertainment. The clusters in the peri-urban area are mostly devoted to trade and less to entertainment. Anyway, both of them are the leading concept of urban sprawl and act against the concept of compact city.



Blue outline: existed (1975), Red outline: decided (1985-1990), Green outline: existed (2009).

Figure 2 (c): Examples of the expansion of Hellenic villages in the prefecture of Corinth, 1975–2009 (Source: Zervou 2009).

3. Case Studies on Medium Size Cities

Two case studies were selected in order to evaluate urban sprawl during the past decades. Urban sprawl is determined by means of remote sensing. As the source of imagery the archive of LANDSAT is selected given that it provides images since 1972. This time span results into a very convenient time-series for evaluating urban sprawl. The down side is that the spatial resolution of LANDSAT is rather coarse. Initially it was 80 meters in multispectral mode (MSS sensors) and then it became 30 meters in multispectral and 10 meters in panchromatic (TM and EMT+ sensors). However, this spatial resolution is sufficient to capture the outline of the city although in Greece the landscape is typically fragmented (due to relief, coastline etc) and higher spatial resolution would be desirable. In the case studies that follow, effort was put to select images in the same time of the year in order to minimize seasonal effects, when ever that was feasible.

3.1 Volos Case

The study area is focused around the city of Volos, which is the sixth largest city of the Hellenic Republic. It is situated in the center of the country, approximately halfway between Athens and Thessaloniki. It is an urban area, served by an important commercial and passenger port. Industry is very active in the area. On the northeast side of the city, mountain Pelion offers a very pleasant environment that serves both as international touristic destination as well as a place for Volos inhabitants to relocate in a permanent basis and commute to their work. The images used are presented in Table 5.

Table 5: Satellite imagery used.

Year	Date	Sensor	All images in this table refer to LANDSAT path 184, row 33 that contains the study area.
2009	24 JUL	LANDSAT 5 TM	
2002	5 AUG	LANDSAT 7 ETM+	
1992	2 SEP	LANDSAT 5 TM	
1984	11 AUG	LANDSAT 5 TM	
1972	8 SEP	LANDSAT 1 MSS	

The method to extract urban areas for each image contains two steps. The first step is to use the image to calculate an urban index in order to highlight urban areas. The urban index used is called *VIBI*. In a nutshell its calculation is based on measuring the relation of Normalized Difference Vegetation Index (NDVI) to the Normalized Difference Built-up Index (NDBI) per pixel, in atmospherically corrected bands. The exact formula of *VIBI* is:

$$VIBI = NDVI / (NDVI + NDBI) \quad (1)$$

The main strength of *VIBI* is its capacity not to mix barren land with urban. The *VIBI* index is described in full in Stathakis et al. (to appear). The second step is to manually digitize the outline of the city based on the urban areas extracted by *VIBI*.

Urbanization in Volos through time is estimated based on the method described above and is presented in figures 3 and 4. The general trend evident is that the city has significantly expanded during the past 40 years. The expansion follows the main road network. It also follows the coast line. In most recent years (approximately one or two decades) the expansion also follows another, scattered, pattern. But this is less evident due to the spatial resolution of the imagery used.

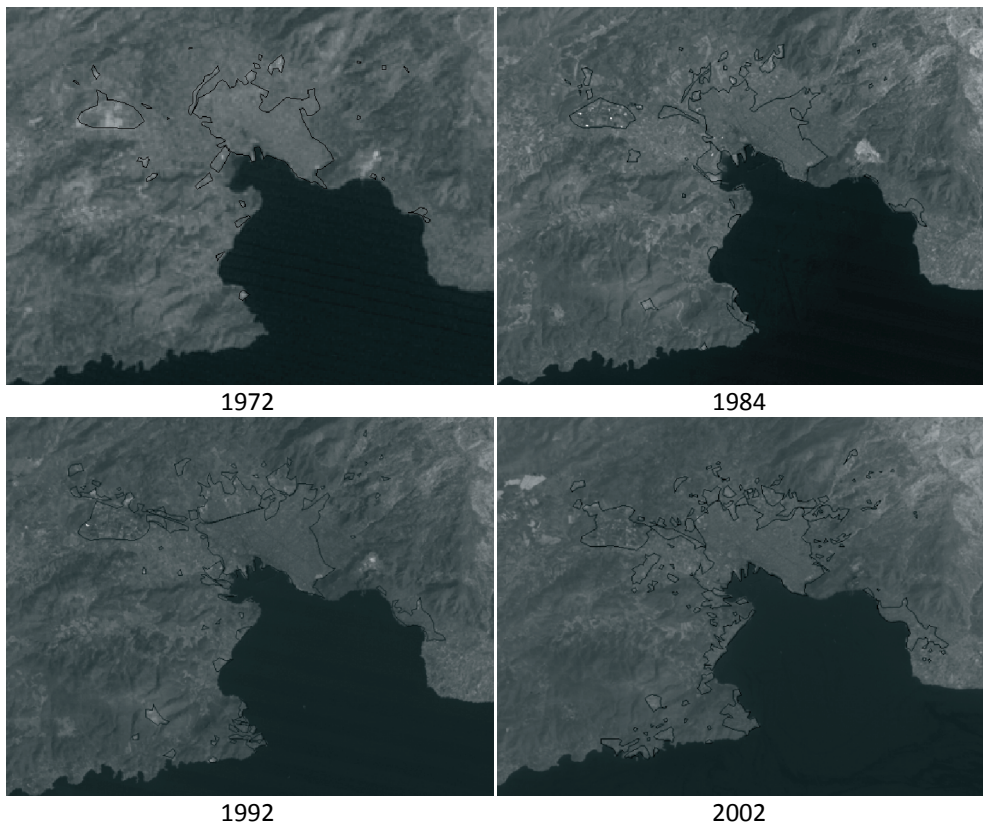


Figure 3: *LANDSAT images used overlaid with extracted urban limits for Volos.*

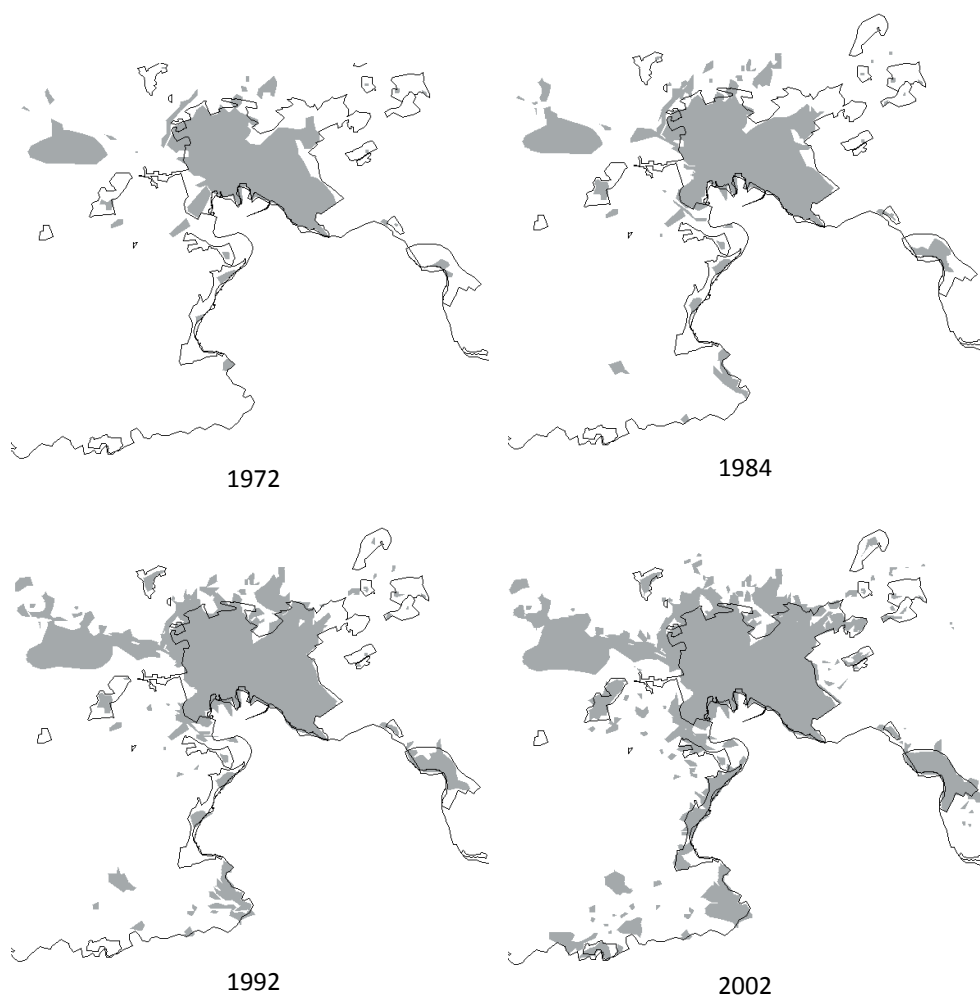


Figure 4: Urban sprawl in Volos.

3.2 Larissa Case

The second study area is focused around the city of Larissa, which is the fifth largest city of the Hellenic Republic. It is situated in the centre of the country, on the national highway and railway axis that connects Athens and Thessaloníki. It is a dynamic urban area surrounded by intensive agriculture. Main roads connect Larissa with several other significant cities in the area. In terms of relief the area is almost totally flat. The images used are presented in Table 6. These two images are optimal to show the magnitude as well as the pattern of change in a synoptic way.

Table 6: Satellite imagery used in Larissa case.

Year	Date	Sensor
2009	15 JUL	LANDSAT 5 TM
1987	19 JUL	LANDSAT 5 TM

The method to extract the city area in this case has been to use a standard classification method. Maximum likelihood classifier is used and yields the results shown on figure 5 (Papakonstantinou et al 2010). The reason why the VIBI index is not used in this case is that it had not been introduced at the time the authors performed the analysis. However, no significant alteration of the results is expected due to this difference in the method.

In this case study urban expansion area has been approximately 38%. The pattern however is quite different compared to the previous case study of Volos. Here the expansion clearly follows the main roads which is quite natural as the relief is constant and there are no other points of attraction (such as a coastline etc).

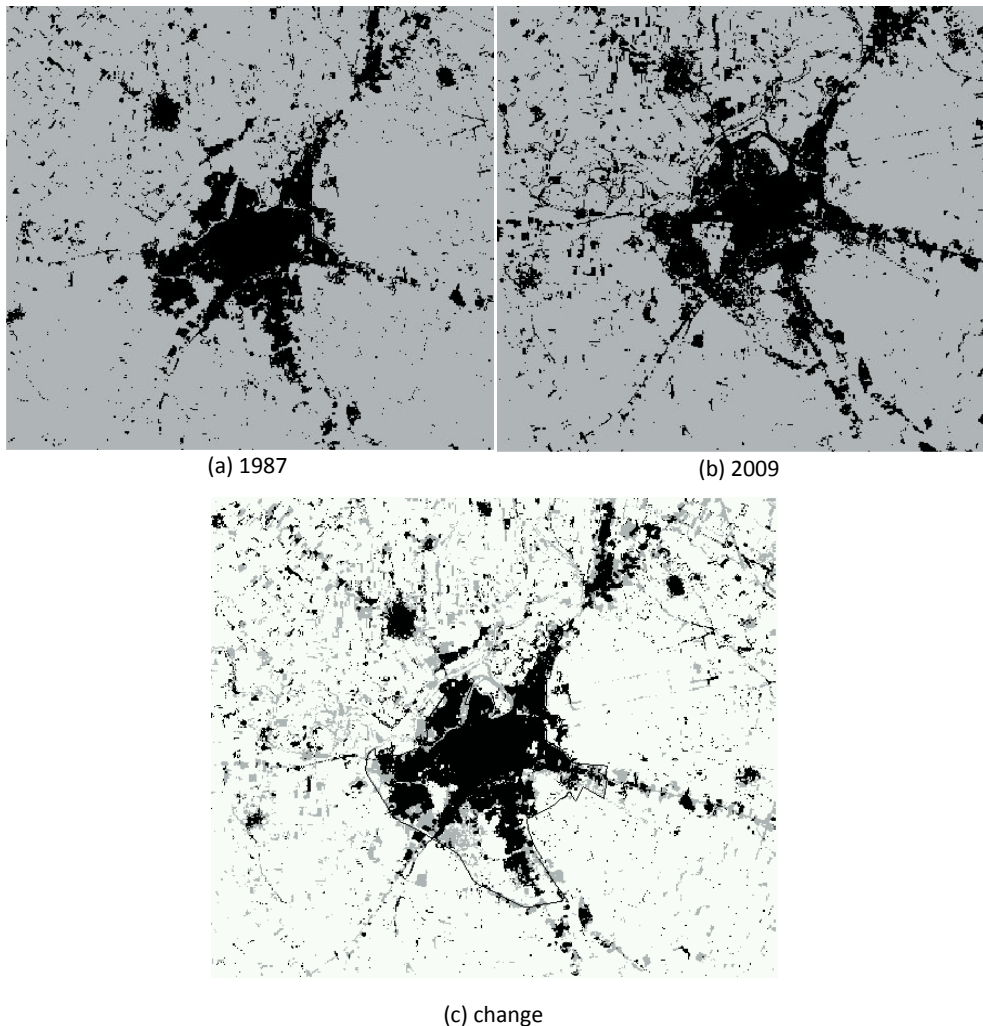


Figure 5: In (a) and (b) urban areas of Larissa are shown in black, the rest is mostly agriculture (both, irrigated and not irrigated). In (c) urban areas of 1987 are shown in black where as newly added urban areas as of 2009 are shown in grey.

4. Conclusion

Regardless the quite large number of laws, presidential degrees and other components of Hellenic legal spatial system, the expansion of the Hellenic cities/villages takes place without a clear, widely accepted and officially well applicable policy.

Additionally, it seems that there are not efficient mechanisms for the implementation and the monitoring of spatial policy been previously decided. The existing management tools are either not operational or they do not have a binding character. Consequently, illegal accommodation is rapidly expanded along Hellenic territory, especially outside settlements official limits. Sprawl effects are visible around almost all the Hellenic settlements, even if the total Hellenic population does not increase significantly.

Regarding the satellite imagery and techniques used, it can be inferred that the LANDSAT archive offers a very important information source for urbanization studies, with a good depth in time. The development of Urban Indexes needs further advancement. One direction can be by exploiting multi-temporal imagery as an aid to separate urban from barren land.

References

- Angelides, M. [2000], Physical Planning and Sustainable Development. Athens: Symmetria. (in Greek).
- Athanassios, A. [2007], Urban planning for sustainable development of urban space. Athens: Symmetria. (in Greek).
- Christophilopoulos, D.G. [1983], The town plan after the new ekistics law 1337/1983. Athens: P. Sakkoulas. (in Greek).
- Derruau, M. [1976], Géographie Humaine. Paris : Armand Colin, Collection U, Géographie.
- EEA [2006], Urban Sprawl in Europe; the Ignored Challenge. Copenhagen: EEA.
- EEA [2011], Glossary, Environmental Terminology and Discovery Service (ETDS). Available at: <http://glossary.eea.europa.eu/> (visited: 28.11.2011).
- European Commission [2000], The EU compendium of spatial planning systems and policies – Greece. Luxembourg.
- Hellenic Parliament [1999], Historic Map of Hellas. HMGS (Hellenic Military Geographical Service).
http://3.bp.blogspot.com/_dEOl4el25jw/TLWgkXy3I/AAAAAAAAAJQ/H1BJSoxjyco/s1600/001.jpg
 (visited: 28.11.2011).
- HSA (Hellenic Statistical Authority) [2011], Provisional data of the 2011 Census.
http://www.statistics.gr/portal/page/portal/ESYE/PAGE-themes?p_param=A1602&r_param=SAM01&y_param=2011_00&mytabs=0 (visited: 28.11.2011).

Kayser B. [1964]. *Eléments pour une Géographie Humaine de la Grèce*. EKKE: Athens. (in Greek, 1968).

Mumford, L. [1961], *The City in History – Its origins, its transformation and its prospects*. New York: Harcourt, Brace & World.

NSSG (National Statistical Service of Greece) [2009], *Statistical Yearbook of Greece – 2008*. Athens. http://dlib.statistics.gr/Book/GRESYE_01_0002_00060.pdf (visited: 28.11.2011).

OECD [2001], *Glossary of Statistical Terms*. <http://stats.oecd.org/glossary/index.htm> (visited: 28.11.2011).

Papakonstantinou S., I. Faraslis and D. Stathakis [2010], Multitemporal study of peri-urban land use in the city of Larissa, 10th international conference of Cefalonia “Cities and regions in Greece and the Mediterranean in 21st century – problems, challenges and perspectives”, 2–4 July, Argostoli, Cefalonia, Hellas.

Sarigiannis, G. [1979], *The meaning of town plan (“rymotomiko sxedio”)*. Athens: NTUA (in Greek).

Stathakis, D., Perakis, K. and Savin, I. [2012], Efficient segmentation of urban areas by the VIBI. *International Journal of Remote Sensing* 33: 6361–6377.

Thomas, W.L. (ed.) [1956], *Man’s role in changing the face of the earth*. (Proceedings of the “Man’s role in changing the face of the earth” Symposium, Princeton, New Jersey, 1955). University of Chicago Press.

UN (Department for Economic and Social Information and Policy Analysis, Statistics Division) [1997], *Glossary of Environment Statistics*. Studies in Methods, series F, No. 67. New York.

UN (Department of Economic and Social Affairs, Population Division) [2010], *World Urbanization Prospects: the 2009 Revision*. <http://esa.un.org/unpd/wup/index.htm> (visited: 28.11.2011).

UNFPA [2007], *State of world population 2007; Unleashing the potential of Urban Growth*. New York: UNFPA.

UN-Habitat [2008], *State of the World’s Cities 2010/2011; Bridging the Urban Divide*., London: Earthscan.

YPEKA (Hellenic Ministry for Environment Energy and Climate Change) [2011], *Legislation*. <http://www.ypeka.gr/Default.aspx?tabid=323&locale=el-GR&language=en-US> (visited: 28.11.2011) (in Greek).

YPES (Hellenic Ministry of Interior) [2011], *Kallikratis Program*. http://roadmapota.ypes.gr/index.php?option=com_content&view=article&id=53 (visited: 20.08.2011) (in Greek).

Zervou, E. [2009], *Delimitation and Structure of small Settlements of Prefecture of Corinth*. Bachelor thesis, TEI-A. Athens (in Greek).

Urban Ecological Research in Székesfehérvár Concerning the Land Use Aspect

Abstract

The aim of the research project is to analyse the interaction between natural and urban communities. The results of the research is to help designing healthier and better managed communities by understanding what threats the urban environment brings to humans. Different field of applied sciences like remote sensing, land management, hydrology, pedology and study on air pollution will provide data for further exploratory studies to build a complex model for three cities (Sopron, Szombathely and Szekesfehervar, where different faculties of the University of West Hungary is situated). All data will be processed by Geographical Information System to assure a unified data frame for the research.

This paper was supported by TÁMOP-4.2.1/B-09/1/KONV-2010-0006 project.

1. Introduction/background and objectives

Between 1800 and 1914 the population of the world has doubled. Today 80% of EU population is living in cities and in their agglomeration (EEA 2006). 67% of the Hungarian population is living in cities (KSH 2009). Therefore urban ecological researches will gain a significant role in science.

Urban ecology is an interdisciplinary field of science. It deals with the interactions between non-living factors, such as sunlight and water, and biological factors, such as plants and microbes, which take place in all environments including cities. Concentrating humans and the resources they consume in metropolitan areas alters such things as soil drainage, water flow, and light availability. For example, sidewalks and rooftops can change the hydrology of the area by increasing rainwater runoff and may contribute to higher urban temperatures by storing heat and acting as an artificial heat sink. There are many actions that can help reduce these problems in urban communities. Tree planting helps limit the total surface area of concrete in communities, allowing for groundwater recharge, reducing overall temperature, and helping purify air. Activities such as community gardens or home gardening in urban communities are encouraged by urban ecologists. It saves community members money, and limits demand from outside inputs into the city.¹

The aim of the research project of the University of West Hungary is to analyse the interaction between organisms in an urban or urbanized community, and their interaction with the community and to develop an integrated monitoring system by which the

* Faculty of Geoinformatics, University of West Hungary, Székesfehérvár, Hungary.

¹ Sources: <http://urbaneco.org/urnabecology.asp>; http://en.wikipedia.org/wiki/Urban_ecology#cite_note-0.

decision makers can establish better landscape planning and decision making. All available and collected data will be stored in one geoinformational database which will give a strong scientific background to enhance the analysis of the interference of the natural and artificial impact of urban environment with each other.

The research will help the researchers to understand the natural and artificial sub-systems of the environment, the different processes which takes place and the interaction between them. The data acquisition and the validation by remote sensing and GIS techniques give the possibility to show the spatial and thematic coherence in wider region of the three cities. The processing of the database of the different research field gives the opportunity of the governance of the different cities to establish the regional planning on scientific basement.

There is a continuous exchange of substances, energy and information, in urban settings and its surroundings, but still there is not too much information about the quality of environmental impacts. One of the objectives of this research is to discover more facts about the interaction between the natural and artificial sub-systems of the environment. The analysed three cities have different natural and artificial environment, and these cities can be characterized by different landscape elements, so the interactions also will be different. Though urban ecological research is not unique in Hungary, comparative analysis of different cities has not been done yet.

Understanding the interaction between the urban settlements and their surroundings will make it possible to examine the different landscape elements which contributes to different environmental state.

The first step of the research is the survey and evaluation of the anthropogenic impact of the cities followed by the analysis and mapping of the effects of the changed ecological system. The measured data will be implemented in a complex geoinformational system. The data will be measured according to the characteristic landscape elements and within one landscape element pedological, climatical, hydrological and biotical data will be measured.

By the establishment of geoinformational system the researcher will be able to build model for examining the change of the different parameters, later with the help of the model it will be possible to give trend analysis to to help in the urban planning process. Remote sensing will be the method which help researcher to define land cover and spatial structures of the different cities.

Research fields

In an urban ecological research project is necessarily connected to different field of sciences. Geoinformation technologies have a role in the processing of the data, remote sensing is used for characterizing landscape elements and with the help of it researchers are able to perform the landscape evaluation. Also characterizing the geology and the soil state of the analysed region is essential in measuring the status of the environment and defining the landscape characters. Characterizing the hydrology of the given area and the

examination of the built up area are also inevitable in estimating the environmental impact of the cities. Describing the state of the air (climate and noise) and the natural environment (flora and fauna) are also very important elements of the surroundings.

2. Approach and methods

2.1 Field survey data collection

The different fields of sciences are responsible to define the appropriate places for the samples. Hydrologists, pedologist and biologist took samples on the spot and they fulfilled further measurements and examination concerning the samples.

2.2 Remote sensed data

Available remote sensed data for the research project are:

1. Areal photos
 - a) Coloured, and infrared areal photos (2000, 2005, 2009)
 - b) Hyperspectral areal photos (2011, August)
2. Satellite images
High resolution images (SPOT, LANDSAT TM (1980–2011)).

Softwares used for the interpretation:

- ERDAS IMAGINE, IDRISI TAIGA
- Definiens eCognition, ENVI

2.3 Database creation

The building of the GIS Database is based on the different data produced by the different applied research fields' (like hydrology, geology, climate research etc.) the kind of attribute data they provide and what kind of other data is needed to integrate into their analysis.

Survey to elicit the database structure

Since the aim of the research is to build a complex Geoinformation system and database for the monitoring of the cities, it was essential to define the database structure. As many scientist from different field are involved in the project the GIS experts first made the survey to determine the needs of the scientists.

The main goal of the survey was to answer what is the specific aim of the research of the different fields concerning GIS.

The survey contained many questions according to database.

- What kind of exploratory data must be stored in the Geo database?
- In what kind of entities should the results of the observations (Point, line polygon, raster) provide?
- How many elements will be stored per layer?

- What kind of attribute data should be collected for the different entities?
- What type of analysis will be fulfilled within the different scientific fields? (What kind of result will be necessary to reach concerning the examined data?)
- What type of analysis will be executed with data of other sub-projects?

3. Methodology

3.1 Sampling strategy

Different amount of samples were collected according to the environmental elements and affecting factors in the examined cities. At the end of the project the following matrix will be used to define the given status of the environment.

Table 1: Impact matrix

Pollution source	Concerned environmental elements, and effect factors					
	Air	Water	Soil	Green surface	Waste	Noise
Traffic	X	X	X	X	X	X
Industry, trade	X	X	X	X	X	X
Health					X	
Wastewater management	X	X	X		X	
Agriculture	X		X	X	X	
Cities and built up environment	X	X	X	X	X	X

All data from the different applied sciences like geology, pedology, hydrology, climate biology will be stored in a single GIS system so the researchers will be able to carry out an integrated analysis of the environment and the change of the environment. A typology for the different landscape elements is also to be used.

This typology of landscape elements is based on three different characteristics of the landscape: relief-types, landcover dominance and human interaction (Swanwick et al. 2002; Konkolyné Gyuró 2003).

Based on earlier research (Konkolyné Gyuró 2003) and the three characteristics mentioned above the following landscape elements will be used:

- Ia: lake basin, low intensity of use with dominated by reed and grass
- Ib: lake basin, various intensity of use, with the dominated by water surface

- Ic: satellite lake basin, low intensity of use, various agricultural use, mosaic like surface with the dominated by grass
- Id: moorland, low intensity of use, forest-grass mosaic like cover
- IIa: drained moorland, low or middle intensity of use, dominated by arable land and grass
- IIb: flatland, middle and high intensity of use, dominated by arable land
- IIc: mildly rolling plain middle and high intensity of use , dominated by vineyards
- IId: mildly rolling plain middle and high intensity of use , dominated by heterogenic land use
- IIIa: chain of hills and pediment, middle intensity of use and of heterogenic land use
- IIIb: chain of hills and , pediment, middle intensity of use dominated by vineyards
- IIIc: mountain and piedmont low intensity of use with the dominated by forest
- IIId: piedmont and basin with historical urban cover and peripheral areas
- IIIe: piedmont and basin with middle intensity of use and, mostly arable land and grass (Source: Konkolyiné Gyuró 2003)

The researchers took samples which were used in examination of the following elements:

- *Soil*: built-up area, monitoring of the given status, detection of erosion, deflation, and heavy metals.
- *Water*: running-water supply, waste-water management, examination of the quantity and quality of the appearing water in the canal system. (It is essential to use a high resolution DEM).
- *Air*: emission sources and values, meteorological data, concentration of pollutant in the air.
- *Flora and fauna*: the detection of the composition of the flora and fauna, ecological corridors, measuring the pollutant concentration in the leaf.
- *Green surface and built-up areas* (Figure 1): trees, parks, water surface, as habitat. (Jancsó 2010).

3.2 Image classification

Remote sensed data is very important in defining the status of the environment. Different classification methods can be used in analyses

Pixel based classification: Each unknown pixel in the image is compared to the spectral signatures of the thematic classes and labelled as the class it most closely “resembles” digitally.



Figure 1: Built-up areas and green surface.

Object oriented classification method (Segmentation): Supervised classification is based on the value of the single pixel and does not utilize the spatial information within an object. Because of the complexity of surface features and the limitation of spectral information, the results of traditional classification methods (pixel-based) are often mistaken. Nowadays we have some new methods based on the group of pixel. Segmentation is a process by which pixels are grouped into segments according to their spectral similarity. Segment-based classification is an approach that classifies an image based on these image segments. One of the processes of segmentation employs a watershed delineation approach to partition input imagery based on their variance. A derived variance image is treated as a surface image allocating pixels to particular segments based on variance similarity (IDRISI TAIGA).

The role of remote sensing in the research project

Researchers will define the spatial structure of the representative land cover patterns of the given cities. The most important elements concerning the environment of the land cover are the green surface, the covered surfaces, watertight surfaces and the soil.

Remote sensing will be used in measuring the land cover and land use of the urban areas, defining spatial structures and producing thematic maps. Remote sensing has an initial role in detecting the following categories of land cover:

- *vegetation*: trees, bushes, grass, horticulture
- *water surface*: natural, artificial
- *built-up areas*: different types of buildings (tiled roof, flat buildings)
- roads
- *treeless surfaces* (temporary vegetation) (source: Verőné 2010).

Remote sensing will help to define and map water networks and pervious areas, in particular impervious surfaces, pervious surfaces and drainage system (above and under surface).

With the help of remote sensing the following categories of spatial structures will be mapped: city centre , blockhouses; family houses; industrial areas; green surfaces like parks; natural grasslands; barren land; gardens.

4. Initial results

4.1 Image classification:

The comparison of classification results obtained with different techniques (i.e. segmentation and pixel-based) showed that [see misclassification: Table 2] segmentation can be used more efficiently in an urban environment.

Table 2: Accuracy measurements (source : Verőné 2010).

Class	Pixel-based classification		Object-based classification	
	Producer's accuracy %	User's accuracy	Producer's accuracy %	User's accuracy
Building flat roof	81.2	76.1	90.4	75.2
Building tile roof	53.9	32.5	57.2	46.5
Road and associated area	20.8	78.0	32.9	83.0
Vegetation	89.1	47.2	93.4	46.5
Water	99.6	100	100	100
	Overall accuracy: 64.2		Overall accuracy: 71.5	

The main advantages of segmentation method against pixel-based method were: i) the number of false classification due to spectral variance decreased, ii) enhancement of the quality of the classification, iii) the borderlines between the different classes are less fragmented (it converges to reality), and iv) inhomogeneity inside the continuous surfaces disappeared.

4.2 Analysis of survey data

The analysis of some results of the collected samples is still going on, but mainly the soil samples have been processed.

Digital Elevation model and some results of soil and air pollution data for the three cities can be seen on the following figure (Figure 2), where in the case of Sopron green column shows the amount of CO and the yellow column means the Mn content of the soil, in the

case of Szombathely the yellow column means the Mn content of the soil, in the case of Székesfehérvár dark blue columns indicate the CO concentrate of the air, and green columns shows the Fe content of the soil.

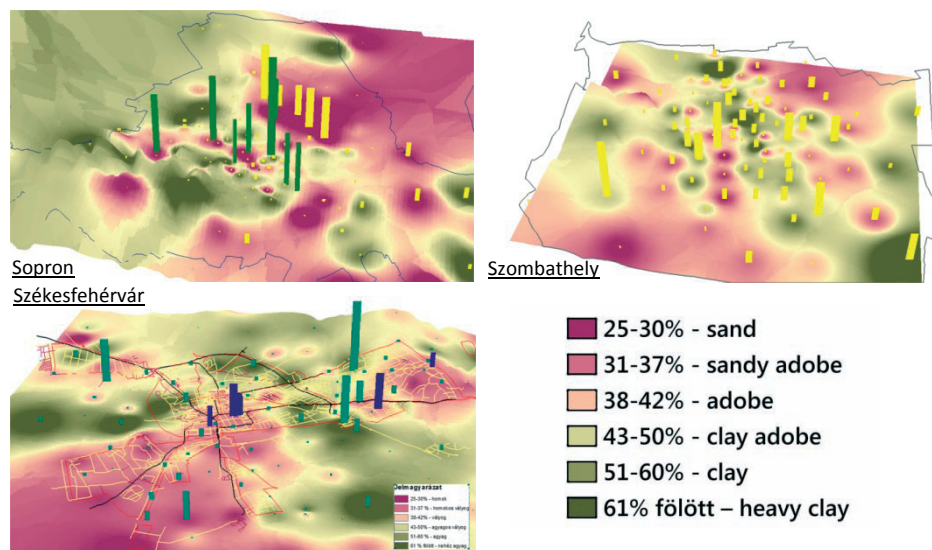


Figure 2: Maps shows the soil types and some heavy metal content of it and the per cent of air pollution.

Also some heavy metal content of the soil was measured (Figure 3). The relatively high content of heavy metals is explained by mineral content of the soil and it can be the result of traffic and industrialized areas.

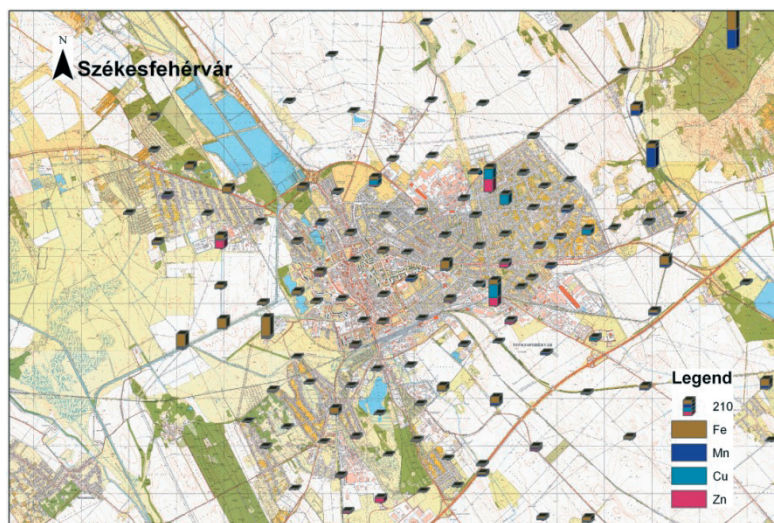


Figure 3: Soil samples show some heavy metal content.

5. Conclusions and further plans

As the researchers are at the beginning of the research project, the data acquisition phase of the project has just finished, there are further steps ahead: i) Models should be built for detecting the erosion of soil (Figure 4), the urban growth, ii) The evaluation of the data should be measured, and the results of the models also should be examined on different databases. iii) Assessment of the status of the environment should be given. iv) Promote the result to the local governance to use it in regional planning. v) Recommendation for the usage of the results.

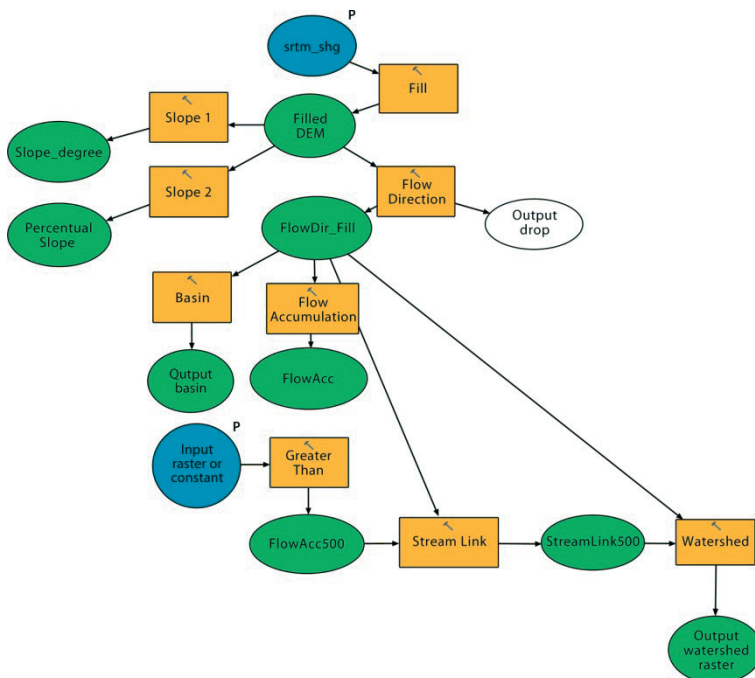


Figure 4: Modell built in ArcGIS to examine soil erosion (source: Csáfordi and Pődör 2011).

The complex analysis of the cities and surroundings make it possible to demonstrate interaction between phenomena which have not been detected. These phenomena influence the possible development the cities and its natural environment.

As the above presented thematic maps shows the geoinformatical system makes it possible to integrate the results of different field of sciences in one system to visualise and analyse them simultaneously to show hidden interactions. The expected results give new information for those border territories which have been developed very dynamically recently. The given outcomes are arranged in easily manageable databases which in the future can help the local government in creating and planning environmental protection and urban planning, in defining expansion goals and possibilities. The results will contribute to the practical effectuation of the conception of sustainable cities.

Literature

- Csáfordi, P. and Pödör, A. [2011], Eróziós modell létrehozása az ArcGIS Model Builder segítségével (kézirat). Székesfehérvár: NymE Geoformatikai Kar.
- Csóbor, J. [2004], Székesfehérvár védett fái. Szakdolgozat, UNIGIS Továbbképzés, Székesfehérvár: NymE Geoformatikai Kar.
- Jancsó, T. [2010], A városi öko-környezet komplex vizsgálata a nyugat-dunántúli régióban. c. Projekt Kutatási terve. Székesfehérvár: NymE Geoinformatikai Kar.
- Konkolyné Gyúró, É. [2003], Környezettervezés. Budapest: Mezőgazda Kiadó.
- Márkus, B. [2010], Térinformatikai döntéselőkészítés. Jegyzet. Székesfehérvár: NymE Geoinformatikai Kar.
- Swanwick, C. and Land Use Consultants [2002], Landscape character assessment. Guidance for England and Scotland. West Yorkshire: The Countryside Agency and Scottish Natural Heritage.
- Székesfehérvár Megyei Jogú Város II. középtávú Környezetvédelmi Programja 2006–2011
- Verőné W.M. [2010], A szegmentálás szerepe a távérzékelte adatok kiértékelésében. Fény-Tér-Kép 2010 konferencia Székesfehérváron.
- http://geoiq.hu/index.php?option=com_docman&task=cat_view&gid=50&Itemid=63.
- IDRISI TAIGA, GIS Image Processing Technical Specifications.
- <http://urbaneco.org/urnabecology.asp>
- http://en.wikipedia.org/wiki/Urban_ecology#cite_note-0

Land Development Potential under Conditions of Sustainable Development in the Republic of Slovenia

1. Introduction

Land use planning methods in the Republic of Slovenia have so far been focused in particular on the physical balancing of land surfaces for a specific type of land use, and have not taken into account the economic aspect in preparing the foundations for land use decision-making in the process of spatial planning. A consequence thereof is an irrational use of either agricultural or building land.

According to the law, the rational use of land in the Republic of Slovenia is connected to the rational use of space. The Spatial Planning Act (Official Gazette of the Republic of Slovenia No. 33/2007) lays down that the State shall provide with spatial planning a quality living environment with a use of space which enables the needs of the current generation to be fulfilled and does not pose a threat to the needs of future generations, taking into consideration long-term environmental protection, nature conservation and the sustainable use of natural goods and other resources and overall preservation of cultural heritage. Sustainable spatial development is provided with the harmonisation of development needs with security requirements in space by achieving the rational use of space for individual activities, taking into account the existing quality of the natural, constructed and other constituents of space and identity of the landscape.

The understanding of sustainable development mostly remains at an overall level. Any concretisation of the concept of sustainable development by stating the spatial development indicators only may be rather questionable if it is not supported by solid arguments. By defining land development potential, the well substantiated and transparent sustainable development may therefore be taken into account in the economic aspect of land use decision-making in spatial planning.

This paper rests upon the hypothesis that, taking into account the known land development potential under the conditions of sustainable development, and using an appropriate model, we may transparently decide on land use. To this end, it is necessary to develop a methodology of determination of land development potential, including the indicators of sustainable development, and a model for the decision-making on the best (optimum) land use. This paper presents guidelines only for developing a methodology to support the decision-making on land use for housing construction in the process of spatial planning.

* Municipal Economics Institute, Faculty of Civil and Geodetic Engineering, University of Ljubljana, Slovenia.

2. Consequences of use of existing methods in land-use decision-making

In the Republic of Slovenia, current methods of spatial planning, which are based on the physical balancing of land surfaces for a particular type of land use, encourage dispersed urbanisation. A most recent case study in the Republic of Slovenia was made on the Municipality of Ribnica (Rus 2011).

The municipality of Ribnica is situated about 40 km from Ljubljana, the capital of the Republic of Slovenia. In an area of approximately 150 km² there is a population of 9,300 residents in 6,028 settlements. The municipality of Ribnica may be said to be a typical Slovenian municipality with many small settlements. It would be expected that the new spatial plan would encourage construction in certain settlements only, and define the long-term priorities. Analysis of the new (proposal) spatial plan shows an opposite situation.

Table 1: Balance of land surface in the old spatial plan (1986–2011) and new (proposal) spatial plan (2011) (Rus 2011).

Land use	Old spatial plan* (1986–2011) surface		New spatial plan* (2011) surface	
	(ha)	(%)	(ha)	(%)
Building land	805.48	5.24	1,000.20	6.51
Agricultural land	4,338.65	28.24	4,258.12	27.71
Forests	10,157.22	66.11	10,043.87	65.37
Water surfaces	50.13	0.33	50.13	0.33
Other	12.56	0.08	12.11	0.008
Total	15,364.04	100.00	15,364.43	100.00

*Old spatial plan was adopted in 1986. Its validity was envisaged by 2000, and was later extended by 2011. Land use, as defined in the spatial plan, is fixed and cannot change during the entire period.

Analysis of the old spatial plan and the new proposal spatial plan shows that building land areas are increasing, whilst agricultural and forest land areas are decreasing.

Table 2: Vacant building land in the old spatial plan (1986–2011), and new (proposal) spatial plan (2011) in the year of 2011 (Rus 2011).

Land use	Old spatial plan (1986–2011) surface		New spatial plan (2011) surface	
	(ha)	Share (%)	(ha)	Share (%)
Residential	101.32	12.58	111.57	11.15
Industrial and commercial	57.96	7.20	65.20	6.52
Other	7.9	0.98	35.52	3.55
Vacant building land collectively	167.18	20.76	212.29	21.22
Building land collectively	805.48	100.00	1,000.20	100.00

It is most interesting that approximately 167.18 hectares of vacant building land within the old plan has been extended by spatial planners into 212.29 hectares of building land within the new spatial plan.

The existing demand for land in the municipality of Ribnica was made on the basis of the data from building permits (Rus 2011).

Analysis of building permits granted in the period 2000–2009 by the Municipality of Ribnica showed that 205 building permits were granted in total, and thereof 104 building permits for residential buildings, and 65 building permits for non-residential buildings. Land surface included in building permits amounts to approximately 29 hectares, and thereof 20 hectares on vacant land. Assuming that demographic, economic and other conditions in the Municipality of Ribnica will not change, which is shown also by the results of analysis (Rus 2011), we can assess the necessary amount of building land in the future: in the coming 5 years, the Municipality will need 14.5 hectares of building land. Hypothetically speaking, the amount of vacant building land within the old plan suffices for another 57 years, and the amount of vacant land within the new plan suffices for another 73 years. Therefore in such a case it is difficult to speak of the directing of settlements. It may be assumed that dispersed urbanisation in the Municipality of Ribnica will continue also in the future. The new spatial plan encourages this pattern also for the future. The one-time short-term investment costs of construction will be privatised, and the recurrent long-term costs (including the maintenance costs of technical infrastructure) will be socialised – covered by the entire community.

Within the above spatial plans, the development of settlements is still permissible on land that is originally intended for use as agricultural land only. It has been established that the scope of such land in certain cases is so large that it suffices, in relation to realistic needs for construction, for a period of 57 (73) and more years (case study in the Municipality of Ribnica). On account of inappropriate land use, proprietors of such land are for 57 and more years forced to pay higher public contributions, as they otherwise would, which is inadmissible under the conditions of the constitutionally secured private property.

In addition, the current methods of spatial planning and legal regulation encourage the sectoral planning. The best agricultural land was protected by the law (Agricultural Land Act, Official Gazette No. 59/1996). The consequence of such land protection and of directing housing construction to potentially flooded land in the Republic of Slovenia is that costs of repairing the damage caused by floods are very high. Individuals were buying cheaper land in flood zones and obtained building permits. In 2010, several floods occurred in the flood zones in the Republic of Slovenia. Damage caused by floods was covered collectively, by tax-payers.

Restrictions in construction, defined in the spatial plan, are frequently inadequate. Investors are not interested in construction on such land, where due to certain restrictions they cannot obtain any profit.

Thus, procedures and requirements (documents required) for decision-making on land use and land-use restrictions within the spatial planning process in the Republic of Slovenia need to be improved. Any such irregularities might be eliminated if land development potential were to be determined already at the level of spatial planning.

3. Land development potential model

In preparing the land use plan in Germany, the methods as the Surface Balance Method (Strukturanalyse) or the Urban Planning Calculation Method (Staedtebauliche Kalkulation) were used, taking into account only the direct costs and benefits arising from every particular use. For countries with a well-regulated system of “damage shall be paid by the perpetrator”, such calculation may be a most usable foundation for the decision-making. In Slovenia, there are no appropriate legal regulations in place, on which basis the perpetrator of damage – in our case the local community which is planning an inadequate use of land, a proprietor of land or an investor, building contrary to building permit, and similar – would pay for the damage caused. Thus, the calculation of direct costs is an inappropriate method of determining the land development potential in the Republic of Slovenia.

Land development potential in Slovenia should be equal to costs and benefits arising from every particular land use, including not only all the direct, but also all the indirect (external) costs and benefits. For this purpose it is necessary to determine the most important factors affecting the costs and benefits and to evaluate them. The most important factors may be defined objectively or subjectively. The latter depend on the mentality of the population and can be defined on the basis of a questionnaire only.

The defined land development potential shall be taken as basis for the model, which shall be founded on the evaluated additional costs and benefits ensuing from the envisaged land use. The model could be supplemented by qualitative indicators of land development potential, using an index point system (Braun).

In preparing the model, we need to take into account the fact that for the purposes of decision-making on the best (optimum) use of land, we require a model that:

- is dynamic and on which basis we will be able to monitor the developments within an extended period of time,
- facilitates the feedback information and takes into account the spatial dimension, and
- shall serve the understanding and controlling the land use planning within the spatial planning process.

This model should be used for the different purposes, in particular in designing and monitoring the particular policies, and in defining the policy development priorities (Balchin et al. 1996). Its results are not necessarily binding for the decision-making, and they may serve merely as non-binding information on the defined policy, in particular in case of policies that are destined to fail in the very nature of things. It is usable at external evaluation of policies, at definition of division of effects of the particular decisions, and it

plays an important role in designing the safeguard policies and in improving the natural environment.

It may be assumed that this model provides the necessary framework in the designated land use determination within the spatial planning process, and in the policy of legal regulation of interventions into space.

In 1989, similar model was used in decision-making on expanding the settlements onto agricultural land (Šubic 1989). Based on costs and benefits, the net present value (NPV) of the Q_i project (housing construction on plots of land of different quality) was calculated, which should be more than or at least equal to zero if the project was to be a successful one, and where the calculation was expressed as:

$$NPV = \sum_{it} \delta t (Bt(Qit) - Ct(Qit)) \geq 0$$

or upon inclusion of the impact of ecological factors (E) (environmental costs and/or benefits):

$$NPV = \sum_{it} \delta t (Bt(Qit) - Ct(Qit) - Et(Qit)) \geq 0$$

where:

$$\delta = \frac{1}{(1+p)^t} \text{ discount factor,}$$

B... benefits; C... costs; E... environmental costs/benefits; p... discount rate; t... time.

By housing construction (Q_i project), the extent of agricultural land is decreasing, and thus, at the presupposition of consequent conservation of agricultural land, such land is replaced by the melioration of the lesser quality but still adequate land. The melioration project represents the shadow project (Q_j). The above basic model was supplemented by the two-level discrete dynamic model of settlements, where the single investment costs and benefits of opening of spatial units through the homogeneous land use were taken into account at the first level, and the recurrent costs and benefits of land use were taken into account at the second level.

Using the two-level dynamic model proved advantageous (Šubic 1989) in the decision-making on the direction of settlements, on the designated land use, and in the regulation of interventions into space at the stage of technical expertise preparation within the spatial planning process. Most problems were encountered at input data acquisition.

Salih (2003) upgraded the classical model of costs and benefits

$$NPV = \sum_{it} \delta t (Bt(Qit) - Ct(Qit) - Et(Qit)) \geq 0$$

with an additional condition that was to guarantee the sustainable development. This is based on the presupposition that, by maintaining the sustainability, the quality of

environment cannot change more than within a negligible extent. This implicitly means that policymakers have to develop a shadow project or projects (Q_j) with the purpose of counter-balancing the environmental depreciation (environmental costs/benefits (E_i)) caused by other projects which do degrade the ecological basis. In order to maintain the sustainability, societies shall:

$$\sum_j A(Q_j) \geq \sum_i E(Q_i)$$

where:

A ...environmental benefits of a shadow project (Q_j).

Environmental benefits of a shadow project (Q_j) shall be equal to or higher than the costs incurred by the original project (Q_i).

Based on net present value maximisation, using the Lagrange multiplier, Salih (2003) (detailed model exposition presented in: Šubic Kovač 2010) exposes a conclusion the net marginal benefits from the project are equal to the costs of environmental damage, plus the shadow price, or:

$$\frac{dB}{dQ_{it}} - \frac{dC}{dQ_{it}} = (1 + \mu) \frac{dE}{dQ_{it}}$$

where:

μ ...price of sustainability constraint, which equals the decrease in the net present value of all the projects, when the values of the maximum admissible net environmental damages are decreased (even) by a minimal value

This shadow price represents the sustainability factor, i.e. the replacement and aversion. Thus, a shadow project (Q_j) could have a negative net present value, but its output (A_j) impact on the environment could be as high as to justify the project in terms of its contribution to fulfilling the sustainability constraint. In that case, the project would benefit and help sustain economic development through time (Salih 2003).

It may be concluded from the above that the classical model, supplemented with the two-tier discrete dynamic model and with the additional conditions concerning the sustainable development, may be of use also in the decision-making on the land use in spatial planning.

4. Decision-making factors in spatial planning

In the Republic of Slovenia, the Spatial Planning Act lays down the institutions authorised for performing the spatial planning, the spatial planning document producer, the expert methods of spatial planning, and the participation of all the interested parties in the procedures of drafting and adopting the spatial planning documents. However, the above Act does not specify the responsibilities of any individual participants, indicating only that:

- institutions authorised for performing the spatial planning are the Ministries, Local Community bodies, public servants, and holders of public offices, participating in the drafting of spatial planning documents,
- the spatial planning document producer is a National or Local Community body responsible for the drafting of spatial planning documents,
- spatial planning acts must be based on expert findings regarding the properties and capacities of space, and be drafted according to the expert methods of spatial planning and quality urban, architectural and landscape planning, and
- everyone has the right of being informed on the procedures of drafting spatial planning acts, and of participating in such procedures, with initiatives, opinions and in other ways, in accordance with the provisions of the Spatial Planning Act.

However, as there is no responsibility for wrong decisions, each method for determining land use is suitable in practice. The result of the proposed land-development model is only one of the decision-making factors within the spatial planning process.

In general, many different parties are involved in the land-use decision-making process, and they should be in a position to select and decide on the basis of appropriate professional information (documents), in addition to having the (intellectual, physical and material) capacity of making that selection and/or decision.

In setting up the model it should be kept in mind that a person in the process of pinpointing on a decision and selecting among the possible variants does not decide on the factually most effective variant, but on the variant that he/she thinks to be a most effective one. In focusing on a final decision, the volition of the person making a decision plays an important role.

Though the person is familiarised with all the variants and knows well, which variant is a best one, and despite any physical and/or material means, the person does not invariably select a variant that is best from the point of view of its economic effect. However, taking into account the entire benefit (prosperity), economic and non-economic, the selection may be optimal anyway, though neither from the point of view of its economic effect nor its objective aspect. Thus, a final decision on the use of land is a whole of all the outlined decision-making factors, and the results of the model constitute the function only of the documentation in support of the decision-making. Thus, the proper qualification and information of the public in the land-use decision-making process are of major importance.

5. Decision-making and principle of partnership

More than half a century ago, spatial planning had passed from the passive consideration of the needs of individuals and of the community to the active techniques of incorporating the interested individuals and groups (stakeholders) into the creation of projects. At present, these endeavours are supported by the paradigm of sustainable development, along

with the strategic land management. In both the cases, the developmental role of an individual is emphasized, and the different models of cooperation in the planning, managing and land use are required.

The principle of partnership has been emphasized in the EU after 1988 as one of the leading principles of the reform of the then existing structural funds. Later, the Regulation on the structural funds (Regulation (EC) No 1260/1999) required that national and local authorities should be involved in preparing the programmes and in the implementation thereof, as well as the economic and social partners and other relevant and competent organisations, representing the different groups of civil society.

In designing the rules and methods of such consultations, the Member States had freedom of decision, and therefore, Slovenia took into account the minimum standards only, for which reason Slovenia was within the Cooperate and ECAS projects classified among countries using the principle of partnership as rhetoric only, and where the participation of the public in the period between 2000 and 2006 was mostly manipulation so as to obtain apparent support and formal confirmation of cooperation. Such a method was called the “illusion of including”. In this respect, an improvement of the situation in spatial planning may additionally be stimulated by incorporating the ICT tools into the spatial planning process and into land use planning, by modelling and simulation of the particular decisions.

In making a theoretical model operational, the data involved may rather frequently constitute a problem. For this reason, it is important to define within this complex the data required for using the model in land-use decision-making. Thus, it is necessary to analyse the usability of data at hand in the existing geodetic and other records and databases, and to establish the methods of acquiring other data required for the land-use decision-making model.

6. Conclusions

In order to improve the current practices in the Republic of Slovenia, which are based on the physical balancing of land surfaces for a particular type of land use, it is necessary to develop a methodology of land use potential in the field of spatial planning, and to define: (1) the main factors and their impacts on social costs and social benefits, arising from every particular land use, (2) a dynamic model that will include the consequences of individual decisions, (3) a method of public participation, and a method of educating the stakeholders involved in the process, and finally, (4) it is imperative to define the data required for use in the land-use decision-making model. Only on the basis of transparent costs and benefits resulting from specified land use, the process of land-use decision-making can be transparent in the short-term and/or in the long-term period.

Thus, the principle of professional competence, laid down in the Spatial Planning Act, would be satisfied. This means that “spatial planning acts will be based on expert findings regarding the properties and capacities of space, and be drafted in accordance with the expert methods of spatial planning”.

In theory, this transparent way of determining land use should interest all the parties involved in the spatial planning process. However, in practice, the model is intended to be applied in cases only, where the concrete responsibility for a wrong decision on land use in the Republic of Slovenia is to be determined by the law.

Literature

- Agricultural Land Act, Official Gazette, No. 59/1996, 31/1998 Odl.US: U-I-340/96, 1/1999-ZNIDC, 54/2000-ZKme, 68/2000 Odl.US: U-I-26/97-8, 27/2002 Odl.US: U-I-266/98-72, 58/2002-ZMR-1, 67/2002, 110/2002-ZUreP-1 (8/2003 Corr.), 110/2002-ZGO-1, 36/2003, 55/2003-UPB1, 43/2011, 71/2011-UPB2).
- Balchin, P.N., Isaak, D. and Chen, J. [1996]. *Urban Economics – A global perspective*. Basingstoke: Palgrave and Macmillan.
- Braun, H.G., *Inventing the wheel: Designing the GPR – and why not as a CBA*, DEG.
- Rus, S. [2011], *Assessment of required building land area in the municipality of Ribnica in the period 2010–2015*. Ljubljana: University of Ljubljana, Faculty of Civil and Geodetic Engineering.
- Salih, M.T. [2003]. Sustainable economic development and the environment, *International Journal of Social Economics* 30:153–162.
- Spatial Planning Act (Official Gazette of the Republic of Slovenia, No. 33/2007, 70/2008-ZVO-1B, 108/2009, 80/2010-ZUPUDPP (106/2010-Corr.), 43/2011-ZKZ-C).
- Šubic, M. [1989], *Housing construction and agricultural land protection*. Ljubljana: University of Ljubljana, Faculty of Civil and Geodetic Engineering, Municipal Economics Institute.
- Šubic Kovač, M. [2010], *Encroachment on agricultural land between capital profitability and sustainable development*. In: Zavodnik Lamovšek, A., Fikfak, A., Barbič, A. *Podeželje na preizkušnji: jubilejna monografija ob upokojitvi izrednega profesorja dr. Antona Prosenca*. Ljubljana: University of Ljubljana, Slovenian Geodetic Institute.

The Development of Land Taxation during the Development of a Market Economy in the Russian Federation

The Problems and Methods of Solution

1. The effects of the land reform of 1990

The government's absolute monopoly on the ownership of land was canceled in 1990, when land reform was established. This reform legitimized the system of state and private land ownership and gave a legal basis for the development of a land market. Land plots were distributed to citizens and, as a consequence, this reform created suitable conditions for the development of different forms of land ownership. The transition from government land ownership to private land ownership led to the objective necessity of establishing a basis for revenue collection based upon the usage of land resources in the Russian Federation.

In 1991, land taxes were introduced as a means of payment for the usage of land resources and the procedure of collecting the land taxes was established. The main reason for the implementation of the land payment system was intended to stimulate people to use the land rationally, to protect and reclaim the land, and to improve soil fertility. In addition, the land payment system equalizes the socio-economic conditions of land ownership and ensures infrastructure development in the settlements.

The amount of land tax did not depend on the economic performance of landowners and land users and the taxes were levied in the form of stable payments per unit of land area per year, referred to as the "land tax rate". Land tax rates were revised following changes in economic conditions that were beyond the control of the landowners. Overall, the land tax rates were quite low.

The stimulator for the rational use of land was to apply double the normal tax rate for land plots that exceeded the established norms of area, were unused, or used inappropriately.

This system of land taxation is characterized by location and size of land plot. The tax was calculated from normative set value. For example, the tax for urban land was calculated through the application of the average land tax rates normatively set for each economic region of the Russian Federation with special adjustment coefficients levied upon the category of city with regards to their population, status and levels of welfare potential (indicated in special law). It also made allowance for taking into account during the taxation

* Financial University under the Government of the Russian Federation, Moscow, Russia.

process the difference in actual and potential economic development of the city. Sometimes, the coefficients for the historical and recreational worth of the territory were used if it was necessary. The information about the tax rates, statuses and levels of welfare potential coefficients are indicated below (Table 1 and 2).¹

Table 1: Average rates of the tax rate in cities and other settlements.

<i>Average rates of the tax rate in cities and other settlements in RBL/m² per year</i>								
Economic region	Population (thousand)							
	< 20	20 – 50	50 – 100	100 – 250	250 – 500	500 – 1000	1000– 3000	> 3000
Northern	0.5	1.1	1.2	1.4	1.5	–	–	–
Northwest	0.9	1.4	1.6	1.7	1.9	–	–	3.5
Central	1.0	1.5	1.7	1.8	2.0	2.3	–	4.5
Volgo-Vjatsky	0.8	1.3	1.5	1.6	1.8	–	2.4	–
Tsentrarno-Chernozemnyj	0.9	1.4	1.6	1.7	1.9	2.2	–	–
Volga region	0.9	1.4	1.6	1.7	1.9	2.2	2.5	–
North-Caucasian	0.8	1.3	1.5	1.6	1.8	2.1	2.4	–
Ural	0.7	1.2	1.4	1.5	1.7	2.0	2.3	–
Western-Siberian	0.6	1.2	1.3	1.5	1.6	1.9	2.1	–
East-Siberian	0.5	1.1	1.2	1.4	1.5	1.8	–	–
Far East	0.6	1.2	1.3	1.5	1.6	1.9	–	–

Table 2: Coefficients of increases in the average tax rate of the status of the city, welfare potential.

<i>Coefficients of increases in the average tax rate of the status of the city, welfare potential</i>								
Groups of cities	Population (thousand)							
	100– 250	250– 500	500–1000		1000–3000		> 3000	
			In the city	In the suburb	In the city	In the suburb	In the city	In the suburb
Capitals of republics of RSFSR, the regional centers, cities with the developed welfare potential	2.2	2.3	2.4	1.9	2.6	2.2	3.0	2.5

¹ The law "About land reform", dated 23 of November 1990.

Overall, the above-mentioned system of land taxation is characterized as being simple, easily understood by taxpayers, leading to an even distribution of the tax burden on adjacent territories without taking into account the value of the land plots.

The advantages and disadvantages of this system of land taxation in the Russian Federation are presented in the table below (Table 3):

Table 3: Advantages and disadvantages of 1991 land taxation system.

<i>Advantages</i>	<i>Disadvantages</i>
Transparency of the tax calculation	Impossibility to take into account the uneven development of the territories
The regulation of the process of the tax calculation by special law	Neglect to take into account the value of the land plots
Detailed system of the tax deductions	

2. Transitional period

During this time, the principles underlying the property taxation system have evolved with development of the real estate market. Now they are based on the effectiveness of the usage of land and other real estate properties by the implementation of economic methods based on valuation of land.

Between 2000 and 2005, the cadastral value of land was calculated for the first time in the Russian Federation using market data and data from different cadastres (land, water, forest and other natural resource inventories cadastre). The new system of land taxation that is based on the value of land was implemented from January 1, 2006.

The cadastral value could be set as a percentage of the market value. However, the rules of the percentage calculation were not determined. As a result, it sometimes led to significant increases in the cadastral value of land above its market value. The reasons for this were due to a number of systematic problems within the Institute of Cadastral Valuation, such as a weak development of the real estate market and its attribute data, the lack of reliable information relating to the characteristics of the land plots, and a lack of sufficient experience of cadastral valuation. These problems in the Institute of Cadastral Valuation damaged the public confidence in the reliability of the results of cadastral valuation.

In addition, a further problem presented itself inasmuch as the Russian legislation stipulates that the cadastral value of land is used not only for tax purposes but also for the calculation the rent rates for public land or the purchase price of public and municipal land. Because the results of the cadastral valuation of land were used broadly, it required a high

quality of cadastral land valuations. Thereby, there was a need to link the cadastral value to some value indicator. This value indicator became a market value.

3. Present

Significant changes were made to the cadastral valuation regulations in 2010 and the definition of cadastral value was clarified. The cadastral value is understood as the market value, which is determined by methods of mass valuation but in certain cases, if market value is impossible to determine by methods of mass valuation, the market value of land is determined individually for a specific case.

The cadastral value is calculated using two methods. The first method is a mass valuation through groupings of similar land objects based on market value analysis and the setting for each group of objects to determine a model of cadastral value. The second method is an individual valuation.

In those cases in which there is disagreement with the land value and can prove the unreliability of information received from cadastral valuation agency, it is possible to appeal against the cadastral land valuation results at special committees in each region of the Russian Federation. These special committees have the right to set the cadastral value of land in conformity with the market value of land by using individual valuation methods initiated by the land user.

4. The Near Future

At present, there is a new stage in the reform of land taxation. It is being developed in preparation for the implementation of all property taxations being based on the market that includes not only the land but also capital construction objects. The plan is to temporarily tax land plots and capital construction objects separately, the aim being to pass on the taxation and valuation of real estate items, include plots and capital construction objects in future. Thus, the cadastral estimation of land and capital construction objects separately complicates the procedure of cadastral valuation and requires a high quality of works for calculation of cadastral value.

5. The Problems of Transition and Ways of Its Solution

Transition to the market value as a basis for the calculation of land payments and land tax for countries with a weak infrastructure of real estate market can lead to a dysfunctional system of the property taxation and land payments. Therefore, it requires a smooth transition to market value for both property tax and land payment as the same time.

Thus, the reform of the system of the taxation of property in the Russian Federation should include several important and necessary actions.

First, it is necessary to have control over the local government that establishes the tax rates within the tax range that is set at federal level by the introduction of a differentiation of the tax base and corresponding tax rates with its eventual statement at the level of a law or

bylaw, as it is in Slovakia. The example of real estate taxation in Slovakia might be very useful for the Russian Federation to adapt. In Slovakia the local government agencies play an important role in establishing land tax rate at normative value. The federal law establishes the basic normative values of land and tax rates. The local government establishes the tax rate in a particular municipality to comply with the basic tax rate. The difference between basic tax rate and tax rate in particular municipality cannot exceed 5 times (previously – 20 times) (Volovich and Chupova 2011).

Thus, in Slovakia the most important role in the distribution of tax burden is left to the local authorities. It enables them to regulate the process of the development of its territories. The usage of the normatively set value of property does not preclude the possibility of the regulation of territorial development on the basis of tax. In this case, the cadastral value is set not close to market value and the main role in territorial development goes to setting tax rates. The Slovak experience in property taxation is relevant and helpful for countries with an undeveloped real estate market. On the other hand, since the local government agencies play a big role in establishing the tax rates, there is a possibility of risk that they could misuse their authority in setting the tax rates.

The one of the constraints in the reform of property taxation in the Russian Federation is the legal possibility of replenishment of local budgets that is obtained from financial subsidies from regional budget or the federal budget in the form of intergovernmental transfers. These transfers are provided in order to align the financial stability of local budgets.

Municipalities have to seek the financial resources, because the “aggregate proceeds from local taxes are only a few percent of total local budget revenues (0.6% of personal property tax and 3.6% of land tax). This amount of tax revenues does not provide the financial independence of local budgets.” (Nikiforov 2011).

Experts indicate that, “There is a high dependence of local budgets on intergovernmental transfers (in 2009 the average level of inter-governmental transfers from other budgets was about 46.6% of the revenue base of local budgets).” (Nikiforov 2011).

Thus, in this case municipalities have to seek their own decisions in providing of their financial independence.

But experts consider that, “the main defect of the current system of local government and the Russian municipal system is the discrepancy a legal model of local government with the fiscal model. The legal model declares a large enough autonomy to local government, and fiscal and tax legislation provides for strict hierarchy. And, despite the fact that for municipalities’ sources of revenue today are not enough, the fiscal policy we have is not incentive, but leveling.” (Babichev 2011).

Therefore, now there is a need to create conditions that will sufficiently promote the interest of local authorities in the reform of property taxation. The local authorities must implement an effective system of real estate taxation not only in the form of formal requirements for cadastral valuation but also in the form of an improvement of the quality

of cadastral valuation by participation in analyzing the information available concerning real property and the market of real property and the establishment of economically proven rates of the tax for simultaneous stimulation of investments and regulation of the real property market.

Secondly, it is necessary to have reliable information about property objects and real estate market information, verified by independent professionals. From this point of view experience of Latvia in the field of the development of system of cadastral valuation can be useful. The Latvian experience shows that the construction of the market-oriented system of property requires detailed information about the characteristics of real estate in public registration systems and the developed real estate market. Cadastral value is calculated by the process of price zoning in Latvia, the value of the objects within the price zone being comparable. It takes place every four years in order to establish basic cadastral values of land. The basic cadastral values are indexed annually on market price bases by index to changing market conditions.

For zoning, land plots are divided into two groups: rural land (agricultural land, forest land and water bodies) and land for construction (all land plots, which are in the rural land). The basic cadastral value of land plot that is prepared for construction is understood as the value of one square meter of land plot that is intended as typical for appropriate zone (standard area, type of use). For the calculation of the cadastral value of land plots, that specific area is more than the standard area is used a special area adjustment coefficient. In addition, it is important to include the adjustment for air pollution (reduction of up to 100% depending on the area of contamination) and encumbrance (up to 45% discount) for land plots that are intended for construction.²

The government analyzed the features of the calculation of cadastral value and concluded that the cadastral value in Latvia is too high. In 2011, initiatives to change the system of property taxation were introduced. These changes were associated with the improvement of the cadastral evaluation towards a more detailed valuation and analysis of tax rates on real estate tax (Телеграф 2011).

Thus, with the knowledge of the practice of cadastral value in Latvia, the relevance and consistency in real estate database that contains the descriptive information about these objects must be ensured and in the Russian Federation, because a real estate database is the main source of information that is used in state cadastral valuation in mass valuation and individual valuation.

Nowadays, the main database that contains information about real estate is the Federal Real Property Cadastre. It is used in determining the list and reflects the characteristics of the objects for cadastral valuation. It should be pointed out that this cadastre was originally designed as a pure registration system and was not designed for purposes of cadastral

² "Rules of cadastral valuation", enacted by the Cabinet of Ministers of Latvia in April, 18 2006, http://www.likumi.lv/doc.php?id=134568&version_date=23.02.2011.

valuation. Thus, to use only this database in valuation process may lead to a lack of information necessary to establish the cadastral value of the property close to the market value. To fill it with required information at federal level difficult enough. Thus, there is a need to develop some additional source of the characteristics of the objects of cadastral valuation on municipal level that contains additional information that is oriented especially for cadastral valuation.

Firstly, according to the legislation, planning municipalities are authorized to set out and approve the schemes of territorial planning and the implementation of territorial zoning, to set out town-planning regulations, to issue permits for construction and renovation of real estate, provide permits for commissioning after construction, to change the permitted type of use of a property, to register public easements, and to manage information systems for urban planning. Furthermore, the existence of municipal and state property in the Russian Federation and the ability of local authorities to surrender it for public lease at the market rates and to sell municipal property at its market value, gives the source of information about the real conditions of actual transactions of sales and lease, which might be used to improve quality of the results of cadastral valuation.

The more difficult task is to provide information about the conditions of actual transactions in the transmission of property rights to municipal agencies. In this case, the government must ensure the legal and economic clarity of property transactions. The municipality agencies from their side must increase the role of professionals in researching new information for cadastral valuation database.

Thus, setting up the reliable information resources at a local level and the regulation of tax rates as mentioned above would allow a smooth transition to a new property tax system that meets the modern requirements of land and property relationship.

References

- Babichev I. [2011], A strong local government – that is what the Russian Federation needs. Moscow: The magazine “Budget”, 08.07.2011. <http://bujet.ru/article/142115.php> (date of access: 31/08.2011).
- Nikiforov, S. [2011], Local budgets: whether to wait for improvements? Moscow: The magazine “Budget”, 15.01.2011. <http://bujet.ru/article/108099.php> (date of access: 31/08.2011).
- Телеграф [2011], Налог на недвижимость изменят в 2013 году. April 21, 2011. Riga: Telegraf.lv; <http://www.telegraf.lv/news/nalog-na-nedvizhimosty-izmenyat-v-2013-godu> (date of access: 31/08.2011).
- Volovich, N. and Chupova, K. [2011], A useful lesson about the problem tax. Bulletin “Valuation activities”, <http://smao.ru/ru/magazine/2011/02/11.html> (date of access: 31/10.2011).

The Conflicts between the Systems of Public and Private Land Law

Causes and Solutions in Current Market

1. Introduction

It is clear that the transformation of land policy in European countries relates to all constituent parts but although it is virtually impossible to consider a uniform system across Europe, the core objectives of the systems of land law within all countries are similar and, without any conscious effort, the differences are diminishing. In this respect, it is important to consider the examples of those countries that have made the transition from central to market economy and to analyze the respective systems. The choices made by countries in Eastern Europe in favour of the benefits, levels, and quality of life in western Europe, which includes the appeal of living in these countries, has also led to fundamental reforms of land policy.

New countries themselves were willing to learn from the experience of countries with developed land markets and this became possible through discussions with other newly independent countries, those countries with a mature land market, and from international organizations such as the European Economic Community (through TACIS projects), the World Bank, and the International Monetary Fund, and also leading universities and research centres.

In Russia, for example, through the assistance of European colleagues – particularly from Sweden, an effective land cadastre was created (although, not without shortcomings) together with a property rights register. What was much more difficult was the issue concerning the transition to a new system of taxation. For the first time since the nationalization of land in 1917, land tax in Russia was introduced but has only been in existence for 20 years. Since 2006, this form of taxation has become more effective since it is now based upon the cadastral value of land, which in theory should focus on its market value. In so doing, buildings are excluded from the cadastral valuation and are assessed at a standard cost. It is intended to move towards ad valorem taxation of all property in the near future. At the same time it is possible to that is generally in advance of an undeveloped real estate market, whilst ignoring the principle of gradual change in favour of political declarations. However, if the effect of such changes in the legal framework is noticeable immediately, the change of the policy itself in the part of development is more remote in character.

* Institute of Property Valuation and Financing Activities, Tomsk, Russia.

This essay addresses some of the inter-related problems currently being experienced in Russia using the case study based upon the intended expansion of the development and expansion of Moscow.

2. The problems of urban development

Due to the fact that these transformations objectively lead to the change in the role of authorities in the centre and local levels, and that their effect is not immediately obvious, such transformations in Russia are unfortunately carried out based not upon the interests of the general population, but as a compromise to the elite elements of society.

A more difficult problem is solved by the authorities through spatial planning policy – rapid changes in the requirements of new social and industrial environments. It is possible that normal changes can be limited through consideration of amendments to the spatial planning legislation whereby their realization in the system of administration and determination of modern building specifications of building can be reduced. One of the overriding problems experienced in Russia is similar to those found in other countries undergoing land reform: namely the competition for investments and the lack of qualified personnel. In modern Russia, the authorities – having faced a collapse in transport infrastructure and the problems spatial planning in large urbanized territories – have already recognized that basic errors in territorial planning have been made, but are determined to continue the increase of urban development. Russia, certainly, has the greatest potential for such extensive developments. During the Soviet and proceeding Imperial periods, the greatest emphasis was the development of the open spaces of Siberia. However, in the current conditions of market forces, it is impossible to make businesses to create infrastructure and for people to move to such remote and unfavourable regions. The government is gradually solving this problem through the expense of making available new areas for development in more favourable and acceptable regions closer to the heartland of Russia.

3. The need to develop and expand Moscow

The most obvious example is Moscow, where rapid and extensive development has led to a degradation in the quality of the city's environment as a direct result of a spatial planning policies pursued for last 20 years. Although Moscow is one of world's leaders in the creation of high density buildings (currently about 7,000 m² on 1 hectare), the capital is has a lack of habitable dwellings. The following occupancy levels of worth examining below in Table 1.

This problem, in cities such as Moscow, can only be extensive urban development. For example, in July 2011, the decision was taken to increase the area of Moscow at the expense of adjoining territories by a factor of 2.4, thereby incorporating a number of Federations within the Moscow Region.¹ This expansion will occur in southwest of the

¹ "Agreement about modifying the boundaries between the regions of the Russian Federation: Moscow city and Moscow region" from 29.11.2011 (approved by Enactment of the Moscow City Duma from 07.12.11 No 372, Moscow Regional Duma from 07.12.11 No 1/177-P).

Table 1: Comparison of average occupancy space.²

Location	Average occupancy space in m ²
Moscow	19
Russia	22
Germany	60
The Netherlands	74
Great Britain	62
France	37
Europe	35
USA	65
China	22.7

current city and was chosen because of the low level of urbanization in this sector. Within this area there are currently about 250,000 inhabitants, with a building fund consisting of only 12 million m². The development potential of this new territory will allow to provide living space for almost 2 million residents from Moscow and to create more than a million new workplaces for highly-skilled workers. This decision was accepted immediately with no public discussion since there was an economic justification that fully satisfied the analysis of the consequences.

Within the new territories of Moscow, it is intended that the locations of federal authorities be determined, which will act as international financial centres, with scientific-educational and innovative clusters, including the innovative centre, “Skolkovo”. However, it is estimated by the Mayor’s Office that it will take between 5 and 17 years to fully prepare for the new building project and to complete some of building work. However, it is the opinion of the development community that business activities will still be concentrated within the boundaries of “old Moscow” and, therefore, the real population density will only decrease slightly.

4. The reasons for such opinions are two-fold:

1. The potential availability of finance to the Federal Government allows them to plan the layout of buildings on the new land around the inner core, placing the Federal Enforcement Authorities and also locations of the more prestige projects such as the creation of a special innovative zone or an international financial centre. Linked to this, and no less important, is the desire to provide officials and important employees of these developments in low-rise habitation close by, largely through an unwillingness to lose full control over the development of suburban territories to

² Newspaper “Kommersant” No 149/P (4690), 15.08.2011.

- private buildings close to government or prestige structures. Therefore, the desire to create the system whereby the organization of the process in the two subjects of federation has appeared to be administratively inconveniently;
2. The purpose for the removal of the majority of governmental agencies, together with the associated dwellings for the families of their employees, is intended to decrease the transport needs and to reduce those impacts upon the centre of Moscow. The fact that government limousines have the right of priority, which includes stopping any movements of other drivers, has led to the feeling of exclusion of the majority of the inhabitants of Moscow, who are made to feel 'second class'. One of the intended consequences of this relocation is to reduce the volume of traffic from Moscow's historic centre.

Moscow is in great need of new developments in public transport, social housing, areas for the construction of new residential districts, and also for locating new business and administrative centres. This requires a significant departure from the historical concept of a common city centre (encompassing political, business and cultural sectors) in favour of a more harmonious polycentric structure. The occurrence development of the new strategy and the simultaneous cancellation of the general plan for Moscow, which was confirmed in 2010, mean a fundamental change of strategy. As an earlier alternative to the extensive development of undeveloped land, the redevelopment of former industrial sites and redundant developments was considered, which would have made available approximately 20,000 hectares for building. Theoretically, Moscow has resources for building such volumes of habitation but the policy of the new Moscow mayor's office is committed towards a decrease in the volume of new residential buildings in the city in favour of construction of roads and other infrastructure. There reason for this decision is that building density in Moscow is one of the highest in the world, between 1 and 5.2 times greater than found in Europe. The considerable increase the area of habitation without essential deterioration of life will not be possible. Average cost of living in Moscow thus already averages \$5,000 per m².

Theoretically, Moscow's housing stock could be doubled providing that housing stock could be constructed as suggested above and also on those sites that contain liquidated enterprises. However, there is a simple fact that the present infrastructure is incapable sustaining such a volume of development. Even at its current state of development, Moscow is overdeveloped with a population density of 10.5 thousand per km², compared to Paris – the most densely populated European city (20.1 thousand per km²), London (5.1 thousand per km²), and Rome (2.21 thousand per km²).³

Furthermore, the investment of funds into the development of new areas around Moscow aggravates the problem of the existence of economically-depressed areas elsewhere in Russia. This is particularly so when linked to the simultaneous economic investments

³ Newspaper "Kommersant" No 149/P (4690), 15.08.2011.

needed to fund the developments for prestige projects such as the Winter Olympic Games in Sochi during 2014, the FIFA World Championship ball in 2018, or the construction the Zone of Innovative Development and the International Financial Centre. Thus, new capital construction projects have served to disrupt resources away from the primary goal in most Russian settlements, namely the reconstruction of worn-out buildings and to improve their attractiveness to new businesses and for their inhabitants.

5. The reform of spatial planning regulations

Overall, it is impossible to systematically consider a system whereby decisions are made concerning the allocation of new land for development purposes. In general, the particular authority defers decisions relating to the question of regeneration of out-of-date buildings, the ecology and climate issues to following generations. Therefore, the experience of those countries with extensive historical experience of the market conditions relating to the development and redevelopment of urban areas is important for us. The attractive appearance of centres of many European cities and urban centres is clear proof for investors and for the inhabitants to the merits of solving spatial planning issues in market conditions. At the same time, that experience is only the initial stage for a full scientific analysis to consider the dynamics of problems arising at each historical stage and the results of their decision.

This spatial planning policy concerning the development of new areas or the regeneration of existing urban areas is in constant transformation. The rate of change of such policies evolve to satisfy the demands of politicians who attempt to solve problems to in providing the population, business community, and public bodies with comfortable buildings with the financial support of the state. However, whilst politicians may plan ideal solutions, it is often difficult to overcome, adapt or replace established traditions.

The recent evolution of spatial planning policies is part of a much wider range of land and legal reforms in Russia. Its legal system was insufficiently developed so that by the 1990s, the pre-socialist legislation was so outdated and virtually forgotten, that it was impossible to use it. It was, therefore, necessary to resort to comparative rights. It became necessary to understand the rights of the Romano-German countries and those using general law. Nevertheless, national legal cultures are not always ready to integrate innovative laws. However, Russia recognized the principles of international law which, as well as international contracts, are the supreme laws in relation to the accepted Russian laws – what is fixed in the Constitution and is really being executed.

As a whole the successful framework of the legislative upholding of spatial planning activities was created. In the case of land planning it is related through the assignment to municipalities of the functions of land planning and land zoning. Spatial planning legislation now develops in a direction similar to those of European rights – the basic document defining the possibilities of change of an existing building is the planning project. However, it does not have such obligatory force for the owners of the land, as for example, in

Germany, and the prospect for the compulsory purchase of real estate from private land owners for social needs is very limited. Nevertheless, it is not possible to realize the potential of spatial planning development even with attraction of huge government funds. As an example, the General layout of the Bright project in Moscow was accepted in 2010 only to be cancelled with arrival of the new mayor (see below). The problem has appeared not to be the planning, but as a result of legal issues. Who receives the rights to the new properties from the state? How can corruption be avoided in the distribution of resources and can corrupted institutions be transformed?

In modern conditions the most important factor in reforming spatial planning policies is the process of globalization. For example, the marketing of real estate is substantially transformed because of the special case of a common market – that of finance (for example, through a global mortgage). Even China with its large finances admits that it is impossible to solve the questions of maintenance with social housing for its population through state resources only: private investments are necessary. For example, in the first year 1.3 trillion yuan is needed (the cost of building 10 million units, excluding relocation fees) and only 400 billion yuan can be allocated for subsidizing from local government, from China Development Bank, and from revenues from land sales. The basic part (a funding gap of 900 billion yuan) is expected to be provided from private banks, trusts, insurance or social funds. However, the globalization issue is not the only access to the world's financial market, but also formation of common standards of consumption (including the environment of urban areas).⁴ Thus, the necessity of convergence – rapprochements of systems of regulation by spatial planning policy, relating to the interests of global investors and association of standards of level and quality of life, and also the possibility itself, dictated by raised mobility of the population and technical progress, make the association of systems a reality. Thus to single out unequivocally, which system is more preferable to global investors, is impossible. Between them there are systematic distinctions in market organization, initially between private funds of the developed countries or the state funds of developing countries.

Developing countries are in a blind alley – the necessity of participating in a competitive struggle for investors makes it very urgent to introduce a system based upon those of developed countries. However, the necessary reforms can do nothing to changes of attitude resulting from an absence of historical experience. Despite this, it is hoped that the best practices in land laws can be progressively introduced, so that decisions relating to questions of spatial planning would not discredit the stated strategy. The Russian tradition of rights accepts the need for a standard compliance, which would be obligatory to all applications throughout the whole country. However, at present neither scientists or politicians are able to define the practices of any particular country that is ideal for us regarding the spatial planning regulations.

⁴ <http://www.cdb.com.cn/english/index.asp>.

This very question might be considered to be improbable, considering that the development of land management is part of a gradual, organic process of transforming cultural-historical traditions. Conversely, others will cite as an example the practices of a specific country or group of the countries as an ideal example for imitation. However, in former case there is insufficient time and, the latter there is always a question as to which is the most suitable. There must always be a balance between the necessity to provide the realization of common land planning under the direction of the government (taking into consideration direct or reconciled accounts of interest of the entire population) whilst permitting some degree of freedom for private investors in land market. Any governmental decisions concerning the rules of land use lead to changes of the price for real estate that, in turn, leads to critical risks for investors. Thus the conflict of decision is structured in opposing movements:

1. How can private investors participate in projects concerning land use and how can this function of the public authority be privatized?
2. To what extent can the introduction of new spatial planning regulations provide compensation to legal owners?

In the first case the decision is found (or is being sought) in the private-public partnership in the field of spatial planning and use of land (building regulation). It takes the form of convergence between private and public law. The commune and an investor may jointly undertake to create a project and to carry out it. In this case, the commune realizes this problem on a normal basis, whether it is published in the corresponding local plan, or not. If it is accepted, the investor makes no demands from a commune – he simply requests it to consider specific questions. The community saves funds and time; however it has a duty to publish certain administrative certificates (for example, the granting of a building license). If it is concerned only with land that is already in the ownership of the investor or the commune, the major problem that might occur is the investor's inability to complete the project, which is often connected with problems beyond the control of the commune, such as environment implications. The real conflict exists when the commune attempts to change the lay-out project on land already owned by other individuals. This form of conflict may be exemplified in the case of spatial planning regulations in Spain, which permits developers with help of communes to develop the lay-out of projects and simultaneously expropriate land from private landowners. There is widespread practice – a desire by developers aided by the communes to acquire that land which essentially improves market prices. In other Europe countries, for example Germany, such possibilities of expropriation also exist, although there are very few applications owing to the extensive legal security of the participants in the market.

The spatial planning regulation of Russia has such a possibility connected with the need to attract of private investors in order to develop urban areas. However, the potential for communes to expropriate real estate from the third parties in favour of an investor is limited only to those multi-room apartment buildings that are in poor condition and threaten

the lives of people, particularly those living in the buildings. Until now, this potential for investors has not been realized since investors do not anticipate any significant levels of profit for large social projects.

A further direction in which spatial planning decisions must be resolved is in the respective interests of the private and public sectors, in particular the introduction by public authorities the new restrictions of land use which will be applied to private property. The application of new rules of land tenure and building (zoning) essentially reduces the value of many land parcels and actually means the withdrawal of a significant proportion of rights to them. The question concerning the level of compensation granted according to the unused potential of land is being considered in relation to different legal practices in different ways. For example, in Germany the effect is for a limited term, and when land is withdrawn due to changes in zoning, its owners have the right to compensation for up to 7 years and only in case of a critical (more than 15%) fall of its market price in a result of introduction of the new restrictions on the use of the land. Other legal systems apply more strict exemption to compensations to the unused potential, for example, in Holland. This practice has the effect of equalizing the value of private property within common zones. The Russian simplified representation of such a system means that it can be compared, for example, to Nigeria where in the case of the withdrawal of the built-up land parcel compensation is only given for the expenses of building the structure – taking into account the span of its extended use – without taking into account the cost of the ground area, which is exclusively in government control. As a whole, such a simplification in terms of comparative rights gives the illusion that spatial planning regulations in Russia can solve all development conflicts through simple decisions and, when it is impossible so to do, to resort to additional surrendering to the market the vacant land.

In reality, the developed and developing systems of public law in European countries could be considered as complex judicial systems, with processes and levels of understanding that would permit a level of harmony between private and public interests. In contrast, modern Russian legislation and judiciary practice leaves this question open. However, the practice of carrying out the removal of land for the government needs shows that it is possible for land speculators to obtain compensation in the volumes, which are often limited only by their own representation in relation to justice.

The paradox is obvious. While one proprietor should compensate losses from restrictions in land use or its withdrawal from development, other private proprietors receive obvious financial benefits from such measures, as a result of the growth in cost of their real estate. Within the bounds of spatial planning contracts it is possible that the partial redistribution of benefits from increases in investment and market prices of land and other objects of real estate favour the communes. However, in normal practice even where there are legislative guidelines as, for example, in the spatial planning regulations of Germany, it is not possible.

Thus, the convergence of public and private law within the limits of private-public partnership remains the most effective tools of combining economic and social interests

between the associations of citizens and separate private proprietors. For Russia, in particular, the arrangement of direct government regulations of the major spheres becomes ineffective. Attempts to solve the decision using of privatization were also ineffective.

To take an example, the need to increase the provision of water and power supplies to the housing sector – even to the rather low Russian quality standards – it will cost a minimum of approximately 200 billion euro. An attempt to solve this problem through the privatization of the municipal enterprises has led to an annual increase in the respective tariffs for the users by between 15–25% without any notable growth of its quality. As a result this has led to a decrease in the standard of living for some groups of the population. Such methods are now recognized as unsuccessful and, as the case of the majority of questions in municipal housing sector in Russia a decision has been made to limit the level of privatization (even to the extent of considering a return to nationalization) by a transition to exclusively concessionary agreements. However, the absence of experience in the realization of such agreements can discredit even this condition. We are, therefore, very interested in any practical experience of the successful realization of such programmes in Europe.

The legal mechanism for the regulation of land development itself, based on spatial planning zoning, has not been called into question since this methodology has spread to most countries that have private land ownership. Also it is possible to compensate for deficits in the budgets of municipalities through private investors participating in programmes of land development. But legal or budgetary restrictions on land development only underlines the importance of developing agreement on the main aim – which type of building corresponds best to the modern social and cultural requirements of society. Whether the issue concerns liquidation of urban slums or the improved cleanliness of old industrial buildings, the preservation of architectural monuments, or the creation of natural parks, the experience of many countries with a developed land market gives us wide spectrum of tools for effective city environment regulation.

It is more difficult, when the authority due to a variety of reasons is unable to formulate long-term objectives for urban development. And, if in western countries this problem receives considerable attention, Russia fundamentally needs to change its spatial planning concept now. The paradox is as follows – the country has the mechanism for the solution of the problems (legal and economic), but the authorities do not know how to apply it, since politicians cannot formulate the social goals for the future. Respectively, the experts in the field of spatial planning, the location of manufacturing and residential settlement cannot provide the concept of territorial planning.

In the absence of a definite purpose, the mechanism of solving of acute spatial planning problems becomes the hostage of political declarations and inevitably reverts to primitive forms. Instead of more effective utilization of existing built up areas, the solution was found in the expansion of land for urban development.

6. The development and expansion of Moscow

In June 2011, the Russian President (Dmitriy Medvedev) proposed that Moscow be considerably expanded by a factor of 2.4 into the neighbouring land of another region of the Federation. The new Moscow Region, having been created as a special capital district, as a means of determining the problems of transport, environmental and other problems. As a result, this decision was supported by parliaments of both interested parties of the federation – Moscow City and Moscow Region. The city government has proved the necessity of the expansion in that all land around the city is being developed and the only the ‘bottleneck’ in a southwest direction should stay vacant. In this case, as an example of successful solution of development problems, the experience of ‘extended’ Paris concerning the regulations of the development of the entire conglomeration, was a good model.

However, it is clear that the Russian authority had many options for the legal solution of the problem concerning the ban on building in suburbs: it has both the legal and economic mechanisms for this. So either the authority hides the concept of land development, or it simply doesn’t have it, and the decision concerning city expansion was accepted in order to show the existence of some development ideas by the authorities. Thus it is necessary to emphasize that the long years of Soviet spatial planning science development did not permit a theoretical concept for the transition to a new type of society and its land distribution.

This can be seen clearly in the example of the centre of Moscow. The real concept behind development of the capital city has not changed in Moscow since the formation of Russian principality during the 15th to 16th centuries. The transfer of the capital to Saint Petersburg by Peter the Great in the early 18th century only preserved the development strategy of the city as the place of residence of nobility and their support. The dynamic development of the city has continued with the return of metropolitan functions to Moscow following the victory of communism. Thus, the concentration of functions within a limited area of capital city blended into the socialist model of land development, with its belief in the development and the capacity to dramatically change the way of life of all mankind.

However, during the initial period of romantic belief in the victory of communist ideals, architectural theorists had many ideas of the layout of a new socialist city. The basis of this concept was the socialization of labour and life of all citizens, together with the elimination of distinctions between wealthy centre and the poor suburbs. Thus, the development of the capital was considered to be inseparable from the development of the entire country (may be even all the world) – industrialization, socialization of the village, and elevation of all the outlying ex-colonial districts.

However, all the innovative ideas came from the perceived advantages of urban settlement that determined the sharp rise of the centre. There were two innovative concepts:

1. The first concept was to protect the locational function of the industrial enterprises and farm management for the former city region. As such, the business centre was

liquidated as unnecessary in the conditions of a planned economy and cancellation of market interactions. The main attention should be paid to the living comfort for working families by creating a ring of low-rise residential houses around the industrial zone (suburbs gardens). Furthermore, it was proposed to separate the capital from other urban areas by a belt of forests and parks. This principle was also proposed for the development of other urban areas, connecting them with expressways and creating a unified urban environment of factories as working places and residential areas for the working population on what was formerly rural land; whilst

2. The second innovative concept involved the concentration of building between the two capitals consciously, creating not a system of expanding rings around Moscow and Leningrad, but one megalopolis in the form of a giant ellipse. Moscow had to take the form of a comet with historical city centre as a core. With the lapse of time, evolving in a north-westerly direction, Moscow could eventually merge with Leningrad.

However, political expediency won. The area of the city was less than 300 km² at that time. The capital was intended to become an ideal socialist city, which propagandizes communist ideas. The concentration of political and economic power in the centre of the capital fully corresponded to ideas of planned construction of a new society. The General Plan of 1935, as a result of a decision made by the Leadership of the Communist party was expected neither to break the existing ring principle of construction of the city by a completely new plan on its place, nor to replace the old buildings by creating a new city outside the existing one. The possibilities of the planned economy permitted a solution to this problem of redevelopment by the radical expansion of city streets and even the construction of typical multi-floor houses. At the same time the city expanded to 600 km², and in terms of the gap between the quality of life in the capital and other cities and villages it was necessary to introduce prohibitions for the migration of new residents to the capital. This measure existed up to the beginning of the 1990s.

Between the 1960s and 1980s, the concept of model housing construction received its full development. In 1971 a new General plan was adopted which took into account the forecasts for a more distant future – up to 2,000. However, its quality components for improving the quality of life in the city have remained on paper only. The implementation of all the proposals was hampered by the deceleration of the economic development of the country during the last 20 years of existence of the USSR. Therefore, instead of the intensification of urban development greatest emphasis was upon the expansion of industrial zones, which for their part demanded the mass inward movement of new migrants to the city who also required living space. The territory of Moscow, already overcrowded in 1930s, covered an area of more than 1,000 km² by the end of the existence of the USSR. The monopoly of state land ownership made intensive development the easiest way to solve the problems of industrial development.

With the transition to a market economy, the situation changed radically. Between 1990 and 2010 the chaotic development of Moscow continued. A new spatial plan became urgent requirement following the economic crisis in the early 2000s. The New General Plan of Moscow – considering spatial development until 2025 – was adopted by the Moscow Municipal Duma in May 2010, and was intended to solve the problems of the new economic conditions. However, it immediately became clear that this General Plan fails to satisfy the needs of both the citizens and politicians. Firstly, there was no scheme to improve and develop the transport infrastructure, preserve the historical environment and improvement the ecological situation. By putting into place a mechanism to service the commercial interests of private developers and related officials, architects were made hostages to such demands. They began to serve the demands of those with greatest economic with a goal of making a maximum profit. As a result, there are no scientific schools that could offer modern concept of land development any more.

Due to the removal (in the autumn of 2010) from his post of the Mayor of Moscow (U. Luzhkova) this General Plan was not implemented, thereby preventing any progress on the zoning of the city. Against this background (in June 2011) the President of Russia (D. Medvedev) adopted the decision to establish the metropolitan area. The innovation does not include the addition of another ring of development to the city, but the expansion of Moscow in one direction due to the vast south-western sector of the Moscow region. The main argument in favour of this annexation to Moscow of this area (Moscow region) is that the area includes a considerable proportion of undeveloped land. Approximately 160,000 ha with a population of 250,000 was annexed from the Moscow region to the City of Moscow. It is worth noting, however, that there was (at that time) between 15 and 20 million inhabitants living in the modern borders of Moscow covering an area 107,000 ha.

However, there is an opinion that the growth of the capital is only a political statement. The terms of realization of the project are such that none of the current team will witness the execution of this project since it can take up to 20 years for Moscow to develop and the land. At the same time the schematic of Moscow's expansion adopted by the authorities raises many questions, the answers to which are yet unknown. For the present it is clear that there is a great desire to move the federal bodies of power from the overcrowded centre to the green zones of the suburbs. They will be moved not to a single area of "city officials" as was expected, but to several "government villages". It is planned to sell the buildings of the ministries in the centre of old Moscow, and to build new offices for the money made from their sale. They will only need the land for government agencies – but there is insufficient free land owned by the state in new area.

It should be noted that the idea of increasing the capital area at the expense of suburban areas, as well as creating special zone for the government outside the city boundaries is not new. Such plans were discussed even at the times of Stalin. However, the scale was today's plan is so great that it exceeds all soviet plans. It can be said that the direction of the flight of a comet has changed to the direction not of industrial development, but for the comfortable residence for officials. Meanwhile, the expansion in the south-west direction, in

principle, cannot solve the chronic transport problems of the capital, since it has no affect upon the interest of those adjacent to Moscow suburban districts, which today create the main pressure for the transport infrastructure of the city at the expense of daily streams of the labour force. We are talking about the eastern and north-eastern directions, in which the densely populated areas are concentrated, which de-facto have already merged with Moscow in a single agglomeration. At the same time the suburban east does not have a chance to change its dependence on journeys to the capital.

Perhaps due to the relatively good ecology and transport accessibility of the south-western direction, a significant proportion of Moscow pensioners (with the members of the families – up to 2 million) will want to move there. They will create a new demand for the service, which will create a number of jobs that do not exist in Moscow today. The creation of enterprises and office spaces simultaneously with the construction of the new Moscow remains a big problem: an unexpected increase of the city to several tens of kilometres creates serious transport and logistics problems, and for that reason most businesses will not find the new areas attractive. The creation of appropriate transportation and other infrastructure will take many years, and until it is established, there is no point in anticipating new employment opportunities. If the settlement of new territories begins in spite of the lack of employment, the vast majority of new settlers will have to travel to work to the “old” Moscow and instead of the expected resolution of the transport situation it may aggravate it.

It is only possible to theoretically discuss who will benefit most from the expansion of Moscow. The main beneficiaries will be the largest landowners – Moscow banks, corporations and a number of individuals who own large lots of land in Moscow region. Other potential winners are the developers who will have to construct the new areas with the potential to earn enormous amounts of money: the development of new territories presupposes the construction of a large number of social housing and hundreds of kilometres of roads and communications. Taking into consideration the scope of work and estimated volume of budget investments, there is no doubt that the queue of developers and builders to appropriate structures will the line up both from the front door, and from the back door. Concerning the possible extent of the associated corruption, we can only guess.

At the same time, Moscow is unlikely to be able to buy the land from private owners, at least at the market price: its value is too high, especially if the forecasted sharp growth of prices for new territories is taken into consideration. When the purely economic levers of influence on current owners of the land are taken into consideration, the expected introduction of real estate tax, the inevitable increase of its market value will turn into a burden for many families of new Muscovites.

The environmental risks of the project are also very relevant in the opinions of the experts. The prevailing south-western winds have traditionally been significant for ecology, this rural area being the green lungs of the capital. Already for this reason the prospect of mass construction of the new land causes understandable concern not only for professional

environmentalists. The Mayor (S. Sobyanin) claims that the high-rise buildings are not planned in this sector, and the existing areas of forest will be retained as far as possible. However, the practice of building of the “old” Moscow proves exactly the opposite. Even now in the “new” area it is possible to observe typical samples of ‘Moscow’ development: 16 floors and above, since from every square metre developers seek to get the maximum profit.

The adoption by the authorities of the scheme for Moscow’s expansion raises many questions, for which there are not answers either for the Muscovites, both the ‘old’ and ‘new’ but, in all probability even by the initiators of the ‘doubling of Moscow’. The reason is that there has been insufficient preparation and a lack of discussion with and within the expert community. It is impossible to justify the secret adoption to prevent the expected struggle for the purchase of land by speculators. Therefore, today’s ‘New Moscow’ has all the signs of utopian project, which solves the tactical political problems of current Federal and Moscow authorities, but fails to give any real detail of this metropolis during the next decade. Moscow remains the concentration of all possible and impossible functions – it is the political and financial centre, a huge area of obsolete large-scale industry, the historical and cultural monument, all of which are crumbling under the pressure of the commercial interests of big finance.

However, to consider the positive role of spatial development in the applied sense, it is necessary to have some model of sustainable formation of a society and clear aims of strategic development. In a society where there is no problem of optimizing socio-economic relationships and structures, it is impossible to determine the acceptable parameters of economic development and to submit a model of GDP and as a consequence of the spatial distribution of the area. This determines the chaotic and unsystematic building, into which is Moscow is immersed Moscow together with other large cities in Russia, with signs of a domination of commercial interests of individuals.

In this respect, the response of urban architects fails to correspond to the expectations of society. The reason is in the legacy of the soviet school of architecture, when the task was not the formation of a cohesive, attractive environment for inhabitants, but the creation of an industrial complex with the project documentation for the placement of labour resources. The problem lies in the fact that the transfer of western experience does not work in Russia. The problem is not in cultural differences and cumulative urban development potential, but the restructuring which requires a considerable time, which in conditions of global competition does not exist. The problem is not in the identification of a new social utopia, in whose framework it would be possible to link an urban programme. The politicians can set some prospective concept but they cannot rely on the absence of alternatives (for example, the idea of the victory of communism throughout the world). However, in Russia the modern politicians even hide their short-term plans (it is not coincidentally, and the idea of expansion of Moscow appeared so suddenly). Urbanization must offer a concept of a single area of development in a country that is part of the modern world. However, the habit of waiting for an order from the top deprives the architects of creativity. Because of the constant necessity of involving fundamental changes

into the concept of urban planning development, bureaucracy together with big businesses are the main winners.

7. Conclusion

From the above discussion it is make the following conclusions:

Society is in such an urgent need for constant work on the long-term forecasting of the needs for resettlement and the organization of work places, as well as the possible implementation of the concept of spatial planning.

The schools of architecture should perform such an order, and also model the emerging social structure of society. At the same time the politicians (because of the short maturity of challenges they face) can only create the conditions for the creative work of such scientists.

The aim of other specialists – lawyers or economists – is to identify opportunities for the execution of the proposed ideas and to develop tools for the implementation of an active urban policy.

Does Urban Sprawl into the Nature Jeopardize Sustainable Development in Turkey?

1. Introduction

In order to be able to answer such a question, it is first necessary to clarify several concepts such as urban sprawl and sustainable development. Thorndike Dictionary defines sprawl as “spreading out in an irregular or awkward manner”. In other words sprawl is understood as a kind of movement that does not take into account the considerations of planned intervention. In the context of either rural to urban migration or centrifugal expansion of the population from city centres, the cost of haphazard, irregular and unplanned population movements increases considerably. Urban sprawl is not only a costly process, but it also creates socio-cultural and environmental consequences. Some believe that urban sprawl has a number of positive economic effects such as increasing local economic growth, local property values and demand for automobiles.¹

On the other hand, sustainable development is defined as the kind of development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Therefore, the problems caused by urban sprawl have to be assessed both from intragenerational as well as intergenerational equity viewpoints.²

Rural to urban migration and urban sprawl have been the most important phenomena for sustainable use of natural resources. In particular, the fertile agricultural land and almost all elements of that ecosystem are damaged as a result of the haphazard movements of the population and businesses. During the process of urbanization several interrelated changes take place in the use of landed property. Dwellings vacated by one occupant may be adopted for use by new occupant families, in accordance with a filtering-down process, or they may be demolished and replaced by different uses and structures. At the same time, businesses expand or decline according to the general macro-economic conditions.

Of course, it is the function of the land market to bring about the adjustment necessitated by urban growth or decline of urban activities and populations. If the urban growth brings an increase in demand for residential accommodation (houses, dwellings), housing prices rise in the short run. If the price rise is sufficiently high, construction firms will be able to earn huge amounts of profits. This certainly would encourage an increase in the supply of houses as vacant land is converted to residential use and certain sites are redeveloped for residential purposes.

* Faculty of Political Sciences, Ankara University, Ankara, Turkey.

¹ Gonzales (2009) pp. 50 and 107.

² The World Commission on Environment and Development (1987) pp. 8–9

Everywhere in the world, urban growth takes place either in a planned manner or spontaneously. The choice of urban areas as local or regional centres through political decisions, as in the cases of Ankara, Brazil, Canberra or Islamabad, is that they may promote the further growth of the selected urban centres. But there are also numerous examples of unplanned growth of capitals or other metropolitan centers. Elimination of all kinds of inequalities requires planned intervention in the development process, because growth does not affect all urban areas equally. While some areas will be increasing faster than others, some may be declining. Urban growth and structure are also affected by changes in the economic base of an urban area, such as basic industries, exports, etc.

Normally, urban growth proceeds centrifugally (horizontally) along major transport routes. This leaves the core of the city as the oldest part of the urban area. The growth of an urban area is not a continuous and homogenous process. There are ups and downs in this process. It generally consists of a succession of stages which may be related to the indivisibility of certain basic investments in infrastructure that are essential for growth.³ Economic rationality or the cost factor determines both the extent of vertical or horizontal expansion under normal conditions.

2. Patterns of unplanned growth

Sometimes, particularly in societies and at times where planning instruments are not regarded as the guiding principle, physical growth takes the form of urban sprawl. Infilling predominates where the areas previously by-passed in the urban expansion of an urban area normally depends on the following factors: a) the size of the urban area, b) the rate of the urban growth, c) the proportion of demand channelled into suburban preferences, and finally, d) the density of new development.⁴ In the absence of planning, the patterns of urban expansion are the direct outcome of haphazard growth. Expansion is the initial improvement of vacant land. This is usually confined to residential and industrial uses.

A major feature of outward expansion under the price mechanism is that there is a tendency towards discontinuity. This is the sprawl of haphazard development, which results in unplanned growth or urban diffusion. This phenomenon is also called leapfrog sprawl which means that areas of underdeveloped land separate new developments from one another and from the continuously built-up area. Dormitory settlements are examples of sprawl, and the economic and non-material cost will certainly be ultimately borne by the inhabitants of those settlements.

Ribbon development occurs when land on either side of a main road is converted from mainly agricultural uses to urban uses. This is also called conversion and would constitute a potential threat, if not appropriately controlled, to sustainable agriculture. This is one of

³ Goodall (1972) pp. 185–187.

⁴ Lean (1969) pp. 147–165.

the major drawbacks of urban sprawl for sustainable development in Turkey. It happens at the same time as low-density continuous development.

Potential urban development has been a real threat to the existence of agriculture in the rural-urban fringe during the last decades in Turkey. It results from underdeveloped land in the periphery that is taken out of farming and allowed to lie idle until such time as it is developed for speculative purposes. Such land derives its value from expectations of development. As a result, as we have witnessed in many regions in Turkey, successful farming becomes increasingly difficult. Sprawl is largely determined by the scattering of manufacturing plants and residential blocks away from areas already too crowded into districts with good transport facilities. This is also called *spatial diffusion process*.

3. Criticisms of urban sprawl

Several criticisms have been levelled to urban sprawl that is relevant for the clarification of our subject matter. Firstly, it is considered that sprawled or discontinued urban development is more costly and less efficient than a mere compact form of urban expansion. Ribbon development can lead to congestion along radial routes and consequently to higher transport costs. Perhaps this is one of the reasons behind the suggested guiding principles of the European institutions favouring *compact development*.

Secondly, where new development occurs at the periphery, it bypasses large areas of usable lands in outward expansion. As a result, urban area may become unnecessarily large and, as a result, transport, utilities and public services may all become less efficient and less economic.⁵

Thirdly, prime farmland, market gardens and dairy farms may also be lost, which also coincides with the potential loss of urban agriculture. In other words, a greater agricultural output is sacrificed since the better land is used for urban development instead of farming. This is what happens in major cities of Turkey, which puts the goal of sustainable development in peril.

Fourthly, sprawl is further criticized because it paves the way for land speculation. Sprawl, which is often accompanied by land speculation, is regarded as unproductive, absorbing of capital, manpower and entrepreneurial skills.

A final point to be made in this connection is that urban sprawl is regarded as unattractive, an aimless overspill into the countryside which is not compatible with ecological considerations. Not only prime farmland, but also the quality of air, water, landscape, forests and touristic potentials are considerably affected by the sprawl.

⁵ Goodall (1972) p. 198–199.

4. Concrete examples of the impact of haphazard development on sustainability in Turkey

Urban sprawl, as a phenomenon accelerated by unplanned urban development is one of the major causes of unsustainable patterns of urbanization. Urban development that disregards the principles of sustainability and the protection of natural resources such as farmland, leads to the destruction of fertile agricultural lands, green and open spaces. In particular, in rapidly industrializing regions of the country, agricultural land is often expropriated for the purposes of industrial and urban development with no regard at all to productivity and sustainability. An agriculturally viable belt of land surrounding agglomerations along the Mersin-Adana-Osmaniye axis in the Mediterranean Region has been totally appropriated recently for urban development purposes and for industrial plants, even though it would have been possible to locate these installations on less fertile agricultural lands elsewhere and still operate them efficiently.⁶

It has also been estimated that approximately 150 thousands hectares of the best quality agricultural land has been converted into non-agricultural uses in these areas during the two decades between 1975 and 1995.⁷ In relation to this, Turkey's experience shows that squatting was an activity of genuine self-help and mutual aid during 1945 and 1965, while a partial commodification⁸ and commercialization began to establish itself in the squatter of squatter formation thereafter.

Certain policies for the encouragement of tourism and pastures throughout Turkey, disregarding the vital role of the forestry, the fertile agricultural land, and other ecological assets that have been put into practice during the last several decades. There is no doubt that such policies and practices cannot be reconciled with the strategic imperatives of sustainable development which includes reviving growth, changing its quality, meeting essential needs of human beings, ensuring a sustainable level of population, conserving and enhancing the resource base, and merging environmental and economic considerations in decision-making. Therefore, care should be taken to ensure that the necessary change in the context of growth is made in such a way as to make it less material and energy intensive and more equitable in its impact, taking into consideration the fact that sustainable development involves more than simple economic growth.⁹

Land degradation has become a worldwide problem. Nearly two billion hectares of cropland, pastures and forests have become degraded over the past 50 years (Scherr 1999). This causes economic instability, nutrition problems and political unrest in those areas. The impacts fall disproportionately on the poorer segments of the societies in the developing

⁶ Keleş (2006) p. 32.

⁷ Keleş (2000) pp. 113–128.

⁸ The process of regarding and handling natural land resources as a simple commodity to be bought and sold in the market.

⁹ Keleş (2000) p. 30.

world and efforts are badly needed to integrate measures fostering broad economic and social change to overcome the conditions that have resulted in degradation. It has been estimated that the amount of land suitable for agricultural production and the pastures decreased considerably during the last several decades.

5. The role of the planner

Since the sprawl represents a net disadvantage for the urban area and the nation as a whole, the planner must seek to redress the balance in favour of the public interest. The basic role of the planner in this process is to locate growing urban populations and economic activities appropriately. The planner has a crucial role to play in certain important issues. Firstly, it has to decide, proactively, which lands will be developed. Secondly, the purpose for which the land will be developed has to be determined. Finally, the timing of development has to be determined, taking into consideration the needs of the present and future generations. In this sense, one can justifiably argue that without making the instrument of planning operational at all levels of governance, the concept of ensuring the sustainability of the ecosystem would just stay on the paper.

6. Concluding remarks

Haphazard development taking place in the outskirts of metropolitan settlements like İstanbul, Ankara, İzmir, Bursa, Adana and other major centres is as costly as well as unsustainable form of development. It does not comply with the principle of sustainable development as defined in international legal documents. Both intra and inter-generational equity considerations are extremely important in this respect. These principles require that the needs of present and future generations be taken into consideration, limits be placed upon the use and exploitation of natural resources, and an integration of all aspects of environment and development must be ensured.

Sustainable urban development requires an integrated and multi-disciplinary approach combining aspects of land use planning, effective development control, pollution control, transport planning, environmental impact assessment, economic instruments, administrative reform and public education. Particularly, untimely and unnecessary conversion of agricultural land into urban uses may be definitely detrimental to sustainable development, as we have witnessed in metropolitan Turkey. Therefore, such practices must be avoided by all means. Ensuring urban sustainability cannot be left to the market forces alone because the market pretends to govern within a short-term perspective whereas sustainability represents a long-term concern.

I believe that the policies to protect land assets and all other natural resources from the encroachment of the harmful effects of urban sprawl can best be implemented by a dedicated political will which is not conditioned essentially by global forces. The main problem lies in the lack of a policy for national physical planning, the lack of a national urbanization policy directed to the maximization of the public interest and the lack of well formu-

lated national policy of sustainable development integrating agricultural and industrial development with ecological considerations.

The Law on Urban Development of 1985 (No: 3194) requires that cities with a population exceeding 10,000 inhabitants should develop master plans in order to ensure a balanced and healthy urbanization. When urban development plans are effectively implemented, urban sprawl may be prevented to a certain extent. However, although the city councils have the final power in the plan preparation process, in exceptional cases the Ministry of Environment and Urban Development and several other central government departments have been given the same power. Central authorities are as open as local authorities to allow land speculators to put into effect amendments in the master plans to maximize their profits out of speculative building activities in the surroundings of cities. Despite the fact that the Constitution provides, in its article concerning the right to property (Art. 35), that this right shall not be used in contravention of the *public interest*, there is no real restriction upon the rent-seeking efforts of the landowners which make the solution of the problems of balanced urban development almost impossible. Under these conditions, another provision of the Constitution regarding the right to housing is deemed to remain just on paper.

Bibliography

- Gonzales, G.A. [2009], Urban sprawl, global warming and the empire of capital. New York: State University of New York.
- Goodall, B. [1972], The economics of urban areas. Oxford: Pergamon Press.
- Keleş, R. [1996], Impact of Urbanization on Fertile Agricultural Land in Turkey. In: Ben Ali, D., di Giulio, A., Lasram, M. and Lavergne, M. (eds.), Urbanisation et agriculture en Méditerranée: Conflits et complémentarités (pp. 145–154). Ciheam, Paris: L'Harmattan.
- Keleş, R. [2000], Sustainable urbanization and its policy implications: The case of Turkey. In: Camarda, D. and Grassini, L. (eds.), Interdependency between agriculture and urbanization: Conflicts on sustainable use of soil and water (pp. 113–128). Politecnico di Bari. Tunis: Ciheam-IAMB.
- Keleş, R. [2000a], The sustainability of sustainable urbanization. Claus W. and Trappe P. (eds.), Nachhaltige räumliche Entwicklung auf dem europäischen Kontinent – Interdisziplinäre Ansätze (pp. 213–228). Social Strategies 32. Bern: Peter Lang.
- Keleş, R. [2006], Sustainable urban development under unsustainable conditions. In: Oktay, D. (ed.) [2006], Inquiry into urban environment: Issues concerning urban, housing and the built environment (pp. 27–38). Gazimağusa (North Cyprus): Eastern Mediterranean University Press.
- Keleş, R., Hamamcı, C. and Çoban, A. [2009], Çevre politikası (Environmental politics). 6th ed. Ankara: Imge Yay.

Lean, W. [1969], Economics of land use planning: Urban and regional. London: The Estates Gazette Ltd.

Scherr, S. [1999], Soil degradation: A threat to developing-country food security by 2020? Washington: International Food Policy Research Institute.

The World Commission on Environment and Development [1987], Our common future. Oxford/New York: Oxford University Press.

Considering Land Use in Rural Areas of Taiwan

A Critical Review Based Upon Experiences in Germany

Abstract

This article introduces problems of development within highly populated rural areas in Taiwan, where small scale farms and land structure prevents a concentration process of land and leads to more and more settlement of factories and houses. This situation could be characterized as urban sprawl without an urban settlement core. To aid in this review administrative tools of Taiwan and Germany are compared to strengthen an argument for a sustainable approach of Taiwanese planning authorities. A compensation measure combined with the reuse of sealed areas could be two main concepts supporting Taiwan to achieve sustainable development of land use and management policy development.

1. Motivation

Urban sprawl is an ongoing dilemma for many countries presenting a great task to seek a compromise between economic growth and nature conservation that leads in the end to the road of sustainable development. Since 1970 Germany has changed its development policy led by a broad social and environment movement, so that there are more considered regulations on land use which are embedded into environmental protection laws.¹ Additionally more instruments were established later to control the use of natural resources, such as the Environmental Impact Assessment, the Strategic Environmental Assessment and ecological offsets (Köppel et al. 2004; Kötter et al. 2010; Darbi 2010) etc.

Presently, Germany sets national goals, which shall manage both the quality and quantity of land consumption. The aim is named “below 30 hectare per day” by the Council for Sustainable Development (“Ziel-30-ha” by the Rat für Nachhaltige Entwicklung) and is an example for this policy.² This means that the German government has set a goal of losing less than 30 hectare per day to land consumption by 2020.

Based on similar trends in both Germany and Taiwan, this paper aims to consider some experiences from Germany regarding the control of development in rural areas. The main purpose of this paper is to help Taiwan tap into the transfer of ideas and instruments from the German experiences whilst avoiding misguided developments in advance.

* Graduate Institute of Hakka Political Economy, National Central University, Taiwan.

¹ Especially in the Federal Nature Conservation Act (Bundesnaturschutzgesetz).

² See http://www.nachhaltigkeitsrat.de/uploads/media/Broschuere_Flaechenempfehlung_02.pdf for more information.

2. Status-Quo in Taiwan

Through industrialization and modernization after the World War II land use of the rural areas of Taiwan have changed and have become more complex. Nowadays people use rural areas for more functions than that of the traditional agricultural society. Housing, industry, traffic, and leisure need more space than before, a development similar to those in other industrialized countries.

2.1 Spatial analysis

Geographical conditions in Taiwan, a changing life style, and the unattractiveness of agricultural land use – due to a small return on investment – offer an overview about the spatial analysis in Taiwan.

Regarding to the geographical conditions, rural areas will remain under pressure by settlement. Taiwan as an island, 394 km long and 144 km wide with an area of 35,801 square kilometres is densely populated as a consequence of a Central Mountain Range of elevations up to 3,900m. The Mountain Range is almost uninhabited with its mountains accounting for 30% of the total area of the country whilst hills and plateaus make up 40% leaving plains the remaining at 30%. With its population of 23,000,000 it is statistically a high densely populated country in world terms with a population density of 640/km². The vast majority of Taiwan's citizens are concentrated within the coastal plains and the hills.

The types of land use in the rural areas are under the influence of industrialization as traditional rural areas carry out the corresponding task of transforming to an industrialized society. With only 2% of the GDP agriculture-food production is not economically as important as it was before industrialization, when it was the leading sector in land use in rural areas. From a development of Gross Domestic Product by industry the fact tells that the agriculture sector in Taiwan has lost its economic significance.

With economical transformation, services and industrial development, rural areas are in continuous transformation (Figure 1) whilst being pressured by the need of road network development as traffic becomes congested with a desire to lengthen its roads (Figure 2). Moreover, Taiwan's population has risen steeply in decades since the 1950's (Figure 3).

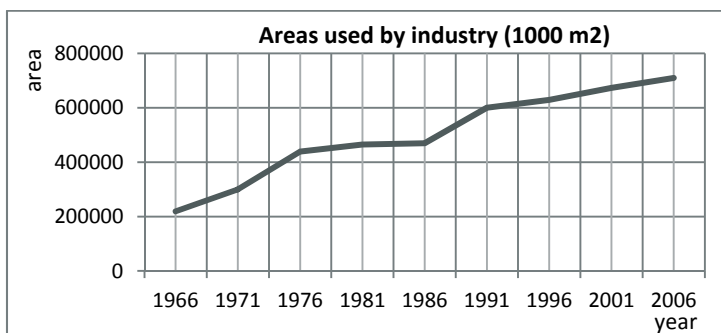


Figure 1: Areas used by industry in Taiwan (II and III sectors – in ha) [Source: Directorate General of Budget, Accounting and Statistics, Executive Yuan, www.stat.gov.tw].

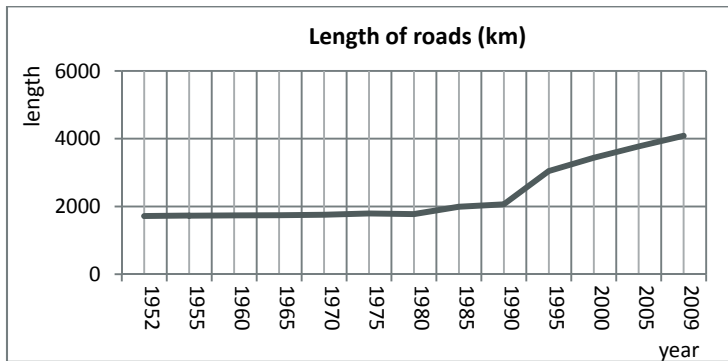


Figure 2: *Length of roads (km)* [Source: Directorate General of Budget, Accounting and Statistics, Executive Yuan, www.stat.gov.tw].

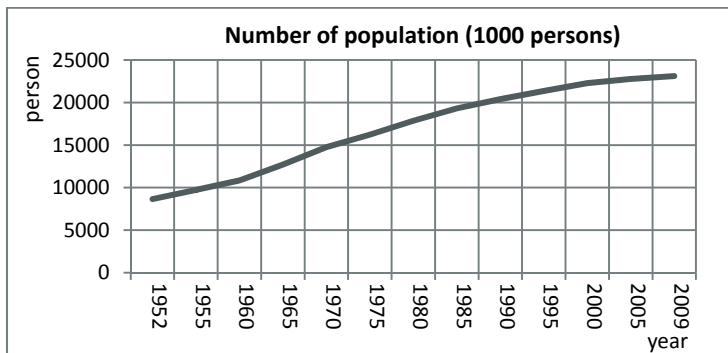


Figure 3: *Number of Population in Taiwan since 1952* [Source: *Taiwan Statistical Data Book 2010*].

Based on this industrial structure, land use in rural areas faces a different situation than fifty years ago. The land-use in the rural areas in Taiwan is now very different compared to that of Germany. Many houses, factories and roads have been built legally at the beginning, but then spread illegally into the enclosing farming land, like urban sprawl without an urban settlement core. Taiwan is not so aware of noticing appropriate measures to prevent pollution or to protect the heritage of the traditional rural landscape compared to that of Germany. The one of reasons for this development is the fairly high population density (Figure 4) and a relative good traffic infrastructure in the main settlement areas. Consequently industry, housing, and farming are in a very close spatial vicinity to each other.

The above problem of a fragmented rural landscape is getting worse: The industrial development asks for more and more building areas for manufacturing facilities; additionally the citizens that benefit from the economical growth have a higher demand for comfortable houses that consume more land and the financial capacity to afford them. More settlement in the rural area leads to a more fragmented land use. Gradually this development is leading to settlement wherever possible. Even the mountainous regions face more settlement for religion purposes (temples) or recreation (hotels).

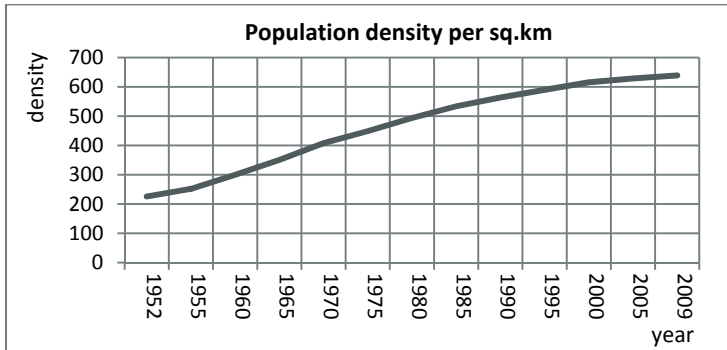


Figure 4: Population density (persons/sq.km) [Source: Taiwan Statistical Data Book 2010].

2.2 A changing life style with more space per person

The statistics tells us that both the average living space per person (m^2/person) (Figure 5), and the average living space per household (m^2) (Figure 6) have increased gradually, whilst the average number of occupants per household (person/household) (Figure 7) has gone down. This means that the average family has become smaller but in a more spacious living environment. These living conditions include a higher consumption of land, hence to build a new house outside the settlement cores to avoid the pollution in the cities is very popular, causing not only a sealing of land by houses, but also by streets and parking areas for the increasing traffic between the housing and the working place.

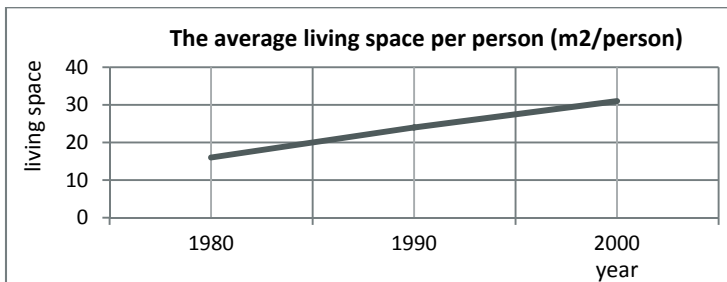


Figure 5: The average living space per person (m^2/person) [Source: Taiwan Statistical Data Book 2010].

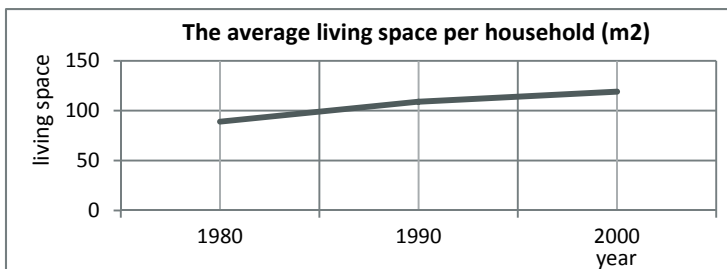


Figure 6: The average living space per household (m^2) [Source: Directorate General of Budget, Accounting and Statistics, Executive Yuan, www.stat.gov.tw].

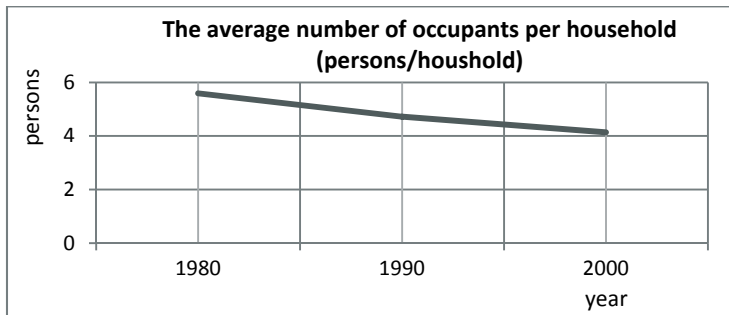


Figure 7: The average number of occupants per household (persons/household)
 [Source: Directorate General of Budget, Accounting and Statistics,
 Executive Yuan, www.stat.gov.tw].

2.3 Small farms in rural area

The structure of sizes of agricultural enterprises is dominated by small farms and a lack of big farming companies, consequently income that could be achieved by farming is quite low. In general the smaller farms typical of Taiwan are not competitive enough within the global economy and as a result the fulltime farmer has nearly vanished because the individual's income achievable in other sectors is much higher. When it is not the main source of income, agrarian land is easily turned to another type of use that seeks a better return with less costs and work. That is why some part time farmers plant 'houses' and 'factories' as same as crops in the arable land.³

The mixture of agrarian areas, housing and industrial facilities made it unattractive for other farmers, to enlarge their farms by buying new fields, because of the small scale structure of the fields, an industrialised big scale agrarian production would be impossible even for a farm with enough land. On the other hand non-agrarian land-users pay much higher prices for land than agrarian users could afford. Therefore there is no land concentration process in the agrarian sector as is the case in Germany, where a decreasing numbers of farms concentrate the usable land into big farms.

The small size of agricultural enterprises and low benefits of agricultural enterprises leads to various types of land-use in the rural area and brings more heterogeneous functions of land-use. Such trends cause degradation on rural areas with the non-agrarian economy drive in its ascendancy whilst the agriculture sector has difficulty to hold onto its assets, the

³ Moreover, most of the farmers are more than 65 years old and work with a small piece of land, while their children do not stay in the rural area and do not keep to the same occupation of their parents. The area cultivated by an average enterprise is less than 1 ha/farm. If arable land can be sold, its loss would not affect the major income of most farmers, because they mainly live on non-agrarian incomes. So, it is a common attitude that farmers are not likely to maintain farming when children have better jobs in other sectors and this makes it highly likely that farmers will sell their land if they can.

rural areas will face high pressure⁴ to change land use from agrarian to non-agrarian use resulting in more sealing of land.

3. Administration and its instruments

Zoning, the control of development and the will of the planning authorities to grow economical, even if that is only possible by ignoring all other values in the end, are the approaches by which the rural areas are administrated today. The control of development has worked for a decade, but it has not yet achieved its aim to allow the participation of all stakeholders, as community members who are affected by the changes through new industrial sites have not been involved. Moreover, there are no legal guidelines to constrain planning authorities who appear to be always willing to permit all applications. Based on such a situation, it is very difficult to manage rural areas well. There is a planning process but it is orientated towards rubber stamping than a process of true review.

3.1 Zoning

Land use planning in Taiwan divides into three categories by law: 1. National Park Law (1972), 2. Regional Plan Act (1974), and 3. Urban Planning Act (established in 1938 in Mainland China and 1964 revised in Taipei). Accordingly there are three main types of land use regulation roughly covering less-settlement areas in the high mountains, urban, and non-urban (rural) areas. In regards to land use in rural areas, it is covered by the Non-Urban Land Use Control Regulation generated by the Regional Plan Act. This regulation is a development rule for non-urban areas which plans a comprehensive development and sets out proposals for the planning authority to manage the use of land within their area in relation to the needs as they have been determined by this law. The strategy of zoning is the main instrument within the non-urban areas.

In order to meet the requirements of social-economical structural change, the Non-Urban Land Use Control Regulation permits zoning adjustment. Regularly, authorities review new proposals for the use of land seeking to accommodate to the new situation by planning appraisal. Since the establishment of the appraisal process of zoning in the 1980's, the planning authority has done a zoning-review once, which took effect in a minor portion of the non-urban land around the year 2000.

The zoning-review process works much slower than the inquiry on settlement with the zoning-renew being implemented as far as people request according to the law. However it works less far than it could work and thus caused ineffectiveness of land use management. That adjustment in zoning remains so lumbering that most extensive projects take a faster

⁴ Habitants are aware of something being wrong: after decades there are many unplanned buildings and factories in the countryside. Together with farming activities they pollute the produced food and a growing part of the population realizes the problems of disorganized settlement. However, planning authorities have experienced little pressure from public opinion to request more environment conservation. All of the pollutions within the water and soil exist, but no one claims to be a victim, although living conditions and environment have been gradually destroyed.

and easier way, a special treatment to allow settlement projects – the Development Permission (see below). Without comprehensive zoning-review as an adjustment of permitted land use, zoning in Taiwan can neither bring sufficient performance nor vitalize the non-urban land use.

Zoning-review and other correspondent measures, such as revitalization or mobilization of idle and fallow areas should be taken into account for a better coordination between the agricultural sector and other land users.

3.2 Control of development

Development Permission⁵ was created in 1993 as a special measure for controlling settlements over 10 hectares if the settlement will change the land use type from low intensive use to a higher one.⁶ Or if settlement sites should be located where they are not allowed to be developed under Non-Urban Land Use control Regulation, it needs a special permission sanctioned by a regional development commission according to the Regional Development Act (Article 9). Such a settlement lies outside of regulation of zoning and thus it needs an extra process to examine it. Special development permission cases change the principle function of spatial planning (zoning) in the rural areas whilst it offers a specific impact assessment to evaluate the settlement in order to let investments proceed quickly (“Time is money”).

In order to control the settlement in the rural areas the Development Permission (DP) is the main instrument to access the impact of development projects. The process of granting a DP includes an Environment Impact Assessment (EIA): This strategy addresses the social-economic effect, the EIA deals with environmental conservation such as air, water and soil, etc. Both processes almost always give consent and do not concern themselves with how many hectares per year are sealed by settlement. Obviously that increasing land use consumption has not been noticed as a problem which should be regulated by either the EIA or the DP.

There is a formal public examination within the EIA and DP process, however a good discussion and understanding amongst project developers is hardly reached whilst related stakeholders are not invited to participate. Consequently the public examination in above thus becomes a farce as it does not play a major role or influence upon the final result in most cases.

3.3 Having tools but losing goals

A sustainable development for rural areas relies on social, economical and ecological aspects. Until now Taiwan has adapted some instruments such as EIA (1994), Develop-

⁵ The term of development permission was an institution originally imported from the United Kingdom. In the early 1990s central government would release farming land allowing other types of land-use. In order to overcome the constraints in the zoning the government has adapted such mechanism.

⁶ It is completely established under revision of the Regional Plan Act.

ment Permission (1993), and later Strategic Environmental Assessment (SEA) (2000). In practice however few development cases have been rejected by EIA and DP. In addition, a long term consideration for settlement in different sectors as a future orientation depends on how SEA really works. Unfortunately it is just a paper tiger of law and process that people and planning authorities usually ignore, it hardly brings any performance to fulfill its target – the social and ecological dimension usually disappear in this kind of lopsided planning process.

Though Taiwan has adapted some impact assessment tools aiming to reduce the impact of settlements, such as the EIA and the SEA, it does not mean those instruments honestly correspond to the objectives as set down by the Law: In Taiwan the SEA remains inactive; the EIA and the DP give licenses to almost all applications in order to bring more investment. The planning authorities focus mainly upon economic growth and not the cost of environmental degradation.

Furthermore, planning has become a political sensitive issue in Taiwan after democratization. Planning authorities hardly say no to any settlement projects and seldom reject the applications because the Executive Yuan, the upper organization from both of them, have decided to prompt some certain investment projects already. As a result there is no governance of the government – apart from the ballot box – or the independence of the planning authorities. In order to obey supervisors, most officials fulfill objectives under the legal framework thus satisfying their superiors whilst appearing to fulfill due process. From this position the instruments of the process have themselves become emasculated open to be utilized for any purpose by the strongest stakeholder. Today the government of Taiwan longs for more economical growth and finds support with industrial representatives as other concerns are easily ignored with the rise of unemployment rates as expressed as concern by government.⁷

3.4 The pressure placed upon farm land

The demand upon rural areas for serviced land use is always growing via the want of more industrial areas, the construction of more roads and the rising population changing life style wish for more residential space. Compounding the living space issue is the control of farm land from erosion and degradation caused by intensive use and natural forces.

The above mentioned mechanisms applied in Taiwan were designed for constant, continuous economical development without concerns of land use or the limited availability of land at all. This process provides relative low costs for investments of the non-agrarian sectors, but it is definitely not a trajectory for socially fair and sustainable ecological development. The land use system, especially the control of development has to find a way to be compatible with sustainable development (Bristow 2010).

⁷ The issue of unemployment rates has to be put into context to then challenge it as a valid issue.

4. Some critical views based on experiences in Germany

Although Taiwan has adapted some tools such as EIA, SEA and Development Permission to regulate settlement, there are no mechanisms safeguarding governance that is an independent review of whether the mechanisms in place have actually achieved their stated goals and objectives. For example one of the stated objectives is to arrange different land consumption from various demands in order to realize an order that previously sealed land should be used first for development.

A Germany mechanism offers a relatively valuable experience to learn from as it recognizing the different demands placed upon land coordinated and implements the coordination of the spatial planning and spatially-relevant sectoral planning (Vallee 2011, pp. 567–571). Without such consideration, control instruments such as EIA and Development Permission could only follow guidelines but can not play their roles. In short, these instruments have little significance for guiding development.

Both Germany and Taiwan face degradation of rural areas and degrading of biodiversity because of the increasing land consumption. Germany had tried to stop the loss of biodiversity for decades – one reason why the Federal Nature Conservation Law (*Bundesnaturschutzgesetz*) was enacted in the 1970's. Regarding to reduction of land consumption and to deal with urban expansion, Germans central government (*Bundesregierung*) announced its guideline in its White Paper 2004 (*Fortschrittsbericht 2004*) (*Bundesregierung 2004*) – a qualitative development goal to reduce land consumption from 114 hectares per day to 30 hectares per day. The two instruments mentioned above are worthy strategies which could be introduced into Taiwan which as yet has not considered these intertwined issues.

4.1 Compensation (offset) Measure

The general questions for nature and cultural conservation in rural areas are:

- How to deal with the degradation where people live and work (Miller and Hobbs 2002)?
- How to resolve a conflict between the promotion of consumption and the protection of biological diversity (Wood et al. 2000)?
- How could the loss of biodiversity in the rural areas by settlement be reduced?
- Who should take essential responsibility for it?

In the 1970's in order to deal with such problems Germany had started to act more comprehensively to preserve nature resources, by introducing the so called "Impact Regulation under nature protection law (*die naturschutzrechtliche Eingriffsregelung*)" (IRNPL) whose legal foundation is given under the Federal Nature Conservation Act (*Bundesnaturschutzgesetz*). Generally speaking the IRNPL is not only a regulation to minimize the impact of settlement-development on the ecosystem but also an effective land use and sustainable land management (Difu 2008, 2009).

The IRNPL takes state-oriented models to carry targets through. “Polluter Pays Principle” instead of “User Pays Principle”. By definition the “Polluter Pays Principle” is based on the principle that those who cause the damage must bear the costs. For that, different administrative measures have been established, like a process of valuing ecological resources and payment structures like the Ecological Account (Öko-Konto). According to these measures the developer should response to the impact on the ecosystem. The damage caused by the development project should be recovered to be placed back in its natural state.

One disadvantage of the IRNPL is high administration costs, which limits the usability of this model. Taiwan on the other hand has not set in place a comprehensive land use planning strategy like Germany. In additional, it does not have so strict a bureaucratic system as Germany and the public opinion in Germany pays more attention on nature conservation and environmental protection and carries administrative measures to achieve these objectives more willingly than the Taiwanese. Last but not least, if “Polluter Pays Principle” can be accepted overwhelmingly by Taiwan enacting such a law would be problematic for both sides of politics.

4.2 Reuse of sealed areas

To achieve sustainable land use, a dual policy consisting of quality control and a land use quota is set by the German government (Bundesregierung). Their forward planning is that the development in the inner-city region will be increased to threefold that of suburban development (qualitatives Flächensparziel) with land use for housing and transport being reduced to 30 hectares per day (quantitatives Flächensparziel) (Bundesregierung 2004).

According to above notions, methodological approaches and effective planning instruments are in place in Germany (Kötter et al. 2009). To initiate a market-based approach to realize this target have been raised as well (Kötter and Weight 2006). Although Taiwan faces an even harder challenge to manage the increasing land consumption than that of Germany, both quality and quantity land use targets are not yet verbalized within Taiwan. Owing to economic development which dominates the social and ecologic dimension, it would be useful to put content and methodical aspects of survey and assessment on land use into EIA or SEA or Development Permission to assist the decision making process. This would help Taiwan to realize the value of social justice and ecology whilst implementing a sustainable development by a strict land use management process in rural areas.

5. Conclusions

Today the approaches to land use efficiency and land consumption are not considered as serious as in Germany. Since the 1970's Germany has worked on the conservation of land and biodiversity. Currently it pays more attention to the land consumption under the calling of sustainable development. Compared to Germany, Taiwan has taken few actions to preserve the functions of rural areas such as ecological effect for the nature, recreation for the people and the cultural heritage of the landscape. Taiwan as an island with not only

large mountain areas but also a higher population density than Germany and as a consequence should take a more serious attitude to the problem of land consumption and try its best to manage rural areas.

For the adoption of Germany processes there has to be a change of paradigm of both political parties to be open to governance of its own actions and be more transparent in its relationships with developers. There has to be an open debate of whether continued development has a limit in Taiwan and if so what choice should they make between long term benefit against short term financial gain. Government has to plan further than the next election to put in place strategies to protect the interest of future generations of Taiwanese before what is gone can not be replaced. The German experience has shown that processes can achieve their state goals to the benefit of all within their own worldview, what Taiwan needs to do is develop a new paradigm arising from its own grass roots.

References

- Bundesregierung [2004], Perspektiven für Deutschland. Unsere Strategie für eine nachhaltige Entwicklung. Fortschrittsbericht 2004. Berlin: Presse-und Informationsamt der Bundesregierung.
- Bristow, R. [2010], Taiwan and the global planning debate. In: Bristow, R. (ed.), Planning in Taiwan. Spatial planning in the twenty-first century (pp. 11–12). London: Routledge.
- Darbi, M. [2010], Biodiversity Offsets – a tool for environmental management and biodiversity conservation. In: Sanchez Bengoa, D. and Powell, D. (eds.), Top Biodiversity Cyprus 2010 Conference Proceedings (pp. 289–302). Cyprus: Intercollege-Larnaca.
- Difu [2008], Weg zum Nachhaltigen Flächenmanagement – Thema und Projekte des Förderschwerpunkts REFINA. Berlin: Deutsches Institut für Urbanistik GmbH (Difu).
- Difu [2009], Bock S., Hinzen, A. und Libbe, J. (Hrsg.), Nachhaltiges Flächenmanagement – in der Praxis erfolgreich Kommunizieren. Berlin: Deutsches Institut für Urbanistik GmbH (Difu).
- Miller, J.R. and Hobbs, R.J. [2002], Conservation where people live and work. *Conservation Biology* 16:330–37.
- Köppel, J., Peters, W. and Wende, W. [2004], Eingriffsregelung, Umweltverträglichkeitsprüfung, FFH-Verträglichkeitsprüfung. Stuttgart: Ulmer UTB.
- Kötter, T., Weigh, D., [2006] Flächen intelligent nutzen – ein marktwirtschaftlicher Ansatz für ein nachhaltiges Flächenmanagement. *Flächenmanagement und Bodenordnung (fub)* 2/2006:49–55.
- Kötter, T., Weigt, D., Frielinghaus, B. and Schetke, S. [2009], Nachhaltige Siedlungs- und Flächenentwicklung. Inhaltliche und methodische Aspekte der Erfassung und Bewertung. In: Hepperle, E. and Lenk, H. (eds.), Land Development Strategies: Patterns, Risks, and Responsibilities (pp. 61–83). Zürich: vdf.

Kötter, T., Liu, H.-L. and Op't Eynde, B. [2010], How to manage the impact of settlement-development on biodiversity: A comparison between the German nature protection law and the FFH-Regulation of the EU concerning flora and fauna. In: Sanchez Bengoa, D. and Powell, D. (eds.), *Top Biodiversity Cyprus 2010 Conference Proceedings* (pp. 303–312). Cyprus: Intercollege-Larnaca.

Vallée, D. [2011], Umsetzung der Raumplanung. In: Akademie für Raumforschung und Landesplanung (ARL) (Hrsg.), *Grundriss der Raumordnung und Raumentwicklung* (pp. 567–635). Hannover: ARL.

Wood, A., Stedman-Edwards, P. and Mang, J. (eds.) [2000], *The Root Causes of Biodiversity Loss*. London: Earthscan.

Die Zukunft der Allmende¹

Summary

“The Commons” or “common pool resources” (CPRs) are resources which are available to all, but too scarce to be consumed without constraint. Whilst formal regulatory mechanisms such as privatisation or state protection have often failed, communal administration models have shown to be the sometimes more resolute and more powerful options.

CPRs exist on a broad scale, ranging from the global, such as our oceans and atmosphere, to the very local or rural. Typical rural commons are mountain pastures (“alps”), forests, fishing-grounds, gravel, sand, and peat deposits as well as fresh-water aquifers.

All these CPRs, when exploited sustainably, provide a limited amount of „resource units“ for each legitimate user. But without careful and often costly regulation of output quantities and control of access rights CPRs are likely to be over exploited and will become unsustainable.

The traditional remedies to this ‘tragedy of the Commons’ brought forward by economists and other social scientists were either privatisation or strict regulation by the government. However, since the 1980s Nobel laureate Elinor Ostrom has explored a third option: the communal administration of CPRs by those with legitime claims. Her fieldwork included a large number of cases from around the world showing that communal administration could work. Some of these cases are summarized in this paper, incl. the case of the „Japanese Mountain Villages“, the case of the „Irrigation Systems of the ‚Huertas‘ in Spain“, and the case of the „Alp of Törbel (Wallis/Switzerland)“. The author has added further examples, incl. „The ‚Hauberge‘² of the county of Siegen (Germany)“ and that of “the ‚Rechtler‘³ of Oberstdorf (Bavaria)“. All of these communal administration models are still in operation today, and some have been for more than 500 years.

* Institut für Volkswirtschaftslehre und Recht, Universität Stuttgart, Germany.

¹ Der Artikel basiert auf dem gleichnamigen Vortrag des Verfassers auf dem 38. Internationalen Symposium der Europäischen Fakultät für Bodenordnung (FESF) über Herausforderungen der ländlichen Raumentwicklung vom 30.9. bis 2.10.2010 an der Westungarischen Universität in Székesfehérvár (Ungarn). Der Beitrag war nicht primär als Forschungsbeitrag gedacht; vielmehr diente er der Unterrichtung der FESF-Fakultät über die Befassung der Ökonomen mit der Thematik ländlicher Allmenden. – Herzlich danken möchte ich unserer Freundin Sissi Babich-Fritz: Auf den Alpen im Kleinwalsertal (Österreich), an denen ihre Familie beteiligt ist, lernte ich die walsersche Allmendewirtschaft kennen; auch wies sie mich auf die Allmendevereinigung der „Rechtler“ in Oberstdorf hin; und sie erläuterte mir den Lachsfang in Alaska und dessen Regulierung. Gut 25 Jahre lang hat sie mit ihrem Schiff selbst Lachsfang in Alaska betrieben. – Ebenso danke ich meinem Sohn Christian E. für zahlreiche Anregungen.

² Forest management of comprehensive mountain forests.

³ The shareholders of the common in Oberstdorf.

Ostrom's work has highlighted the critical success requirements of communal administration models, which include primarily:

- Clear definition of boundaries and entitlements
- Adaptation of rules to local conditions
- Clear mechanism of collective decision making
- Effective monitoring of the regulations
- Flexible sanctioning system
- Appropriate conflict resolution system
- Self-determination of the community fully recognised by the government

The survival of the old models of communal administration and their functional efficiency show that they still have "a future". Their strength is that they are perfectly adapted to the specific, local conditions. In some cases (e.g. Oberstdorf) communal CPR systems have even shown to be more powerful than formal legal systems, e.g. when used to protect a community's cultural or natural heritage.

1. Allmende – Begriff und globale Beispiele

Allmende ist ein seltenes Wort, für viele gar ein seltsames. Dabei ist es ein altes deutsches Wort:⁴ Denn *Allmende* geht zurück auf „all“ und „Gemeinde“, das heißt, dass ein bestimmtes Gut „allen gemeinsam“, „allen Mitgliedern einer Gruppe gemeinsam“ gehört. Die etymologische Herkunft des Wortes verrät aber noch nicht das entscheidende Charakteristikum dieses Begriffs: Denn das Besondere der Allmende ist, dass das betreffende, allen gemeinsam gehörende Gut nur von begrenzter Kapazität ist, so dass stets die Gefahr der Übernutzung besteht. Die Nachhaltigkeit des Gemeinschaftsgutes ist permanent gefährdet.

Einige Beispiele: Die Fischreserven der Nordsee sind gefährdet, weil die Fischer versuchen, möglichst viele Fische dort zu fangen, obwohl sie wissen, dass genau das dazu führt, dass es langfristig keine Fische in der Nordsee mehr gibt. Jeder Fischer handelt nach dem Motto: „Wenn ich es nicht tue, dann tun es andere. Also will ich mir doch einen möglichst großen Anteil sichern.“

Weitere Beispiele sind:

- Die Atmosphäre, die als Senke für CO₂ genutzt wird – mit der Folge der Erderwärmung und damit des Klimawandels.

⁴ Im Gegensatz zu so deutsch klingenden aber dennoch ursprünglich ungarischen Wörtern wie *Kutsche* oder *Palatschinken*.

- Der tropische Regenwald, der als „Lunge“ für die ganze Erde fungiert. Sein Holz wird von der Holzwirtschaft ungebremst abgeholzt, obwohl diese weiß, dass sie damit die Einnahme- und Sauerstoffquelle zerstört und die Zukunft aller Menschen gefährdet.

2. Lokale Beispiele von Allmenden

Aber es gibt nicht nur globale, sondern vor allem auch lokale Allmendegüter. Garret Hardin, der 1968 mit einem alarmierenden Aufsatz über „die Tragik der Allmende“ („tragedy of the commons“) auf das Thema aufmerksam machte, wählte zur Veranschaulichung bewusst ein ländliches Beispiel: Er forderte seine Leser auf, sich ein frei zugängliches Weideland vorzustellen und beschrieb für eine gedachte Gruppe rational handelnder Hirten die folgende logische Situation: Jeder Hirte profitiert unmittelbar, wenn er seine eigenen Tiere dort weiden lässt, und er erleidet einen anteiligen künftigen Schaden durch die Allmendeverschlechterung, wenn das Weideland von seinem und dem Vieh der anderen überweidet wird. Jeder Hirte hat also stets ein Interesse, mehr Tiere zu halten, weil er einen unmittelbaren Nutzen aus seinen eigenen Tieren zieht, aber nur einen Teil der durch die Überweidung entstehenden späteren Kosten trägt.⁵

Hardins Schlussfolgerung dazu lautete: „Darin liegt die Tragik. Jeder Hirte ist der Gefangene⁶ eines Systems, das ihn zwingt, seine Herde grenzenlos zu vergrößern – in einer Welt, die begrenzt ist. Verfolgt jeder seinen maximalen Eigennutz in einer Gesellschaft, die an die freie Verfügbarkeit von Allmenden glaubt, rennen alle in ihr sicheres Verderben.“⁷

Aber es lassen sich weitere Allmende-Beispiele nennen, die zeigen, dass das Thema von beträchtlicher Bedeutung für den ländlichen Raum und damit für das Gesamtthema des Symposiums ist:

Neben dem *Weideland* können das

- die *Wälder* eines ländlichen Raumes (zur Holzgewinnung, aber auch zum Sammeln von Pilzen, Beeren, Kräutern etc.) sein; ebenso
- das darin lebende *Wild*; auch
- die Nutzung der Wälder zur *Waldhute* (Hütung der Kühe, Schafe, Ziegen, Schweine);
- die *Wege* im Allmendegebiet;
- die *Fischgründe* eines Sees;
- die *Flüsse und Bäche* als Fischgründe wie auch als Senken für biologische Abfälle;
- die *Sand- und Kieslager* in Flusstälern, wie auch

⁵ Vgl. Ostrom, 1999, S. 2.

⁶ Diese Struktur wird deshalb in der Spieltheorie auch als „Gefangenendilemma“ etikettiert. Vgl. Ostrom, 1999, S. 4.

⁷ Hardin, 1968, S. 1244, zitiert nach Ostrom, 1999, S. 3.

- die Torflagerstätten und
- die *Grundwasserbecken* als Reservoirs des über Brunnen und Pumpen zu gewinnenden Trink- und Nutzwassers.

3. Logische Struktur und traditionelle Problemlösungen

Bei allen genannten Beispielen ist zu erkennen, dass die „Allmende-Ressource“ (common-pool resource) die folgende logische Struktur aufweist:

- Es liegt ein Ressourcensystem vor, das bei nachhaltiger Nutzung eine bestimmte, aber limitierte Menge an Nutzungseinheiten erzeugt, wobei
- es nur bei hohen Kosten möglich ist, unerwünschte Nutzer auszuschließen bzw. eine übermäßige Nutzung zu verhindern.

Hardin hat dieser Situation – wie bereits zitiert – eine Tragödie prognostiziert. In dem Aufsatz des Verfassers „Die Überschwemmungen der großen Flüsse Indiens – eine Frage des Bodenrechts?“⁸ wurde gezeigt, dass die Belassung der Bergwälder in staatlicher Verwaltung direkt zu einer solchen Tragödie führt, wenn der Staat die nötige Überwachung und damit den Schutz der Wälder nicht sicherstellen kann.

Die Frage ist aber, ob solche Tragödien unvermeidbar sind. Natürlich nicht!

Lange Zeit haben Wirtschafts- und Sozialwissenschaftler zwei Lösungsmöglichkeiten favorisiert, die sich aber eher konträr zu einander verhalten:

- Die einen propagierten die Privatisierung,⁹ das heißt die Parzellierung und anschließende Vergabe privater Eigentumsrechte an dem jeweiligen Gemeinschaftsgut, z.B. einem Wald.
- Die anderen forderten, dass eine zentrale staatliche Behörde die Allmende-Ressource ebenfalls parzelliert, dann aber den Mitgliedern der Gemeinschaft lediglich streng definierte Nutzungsrechte zuweist, deren Einhaltung sie kontrolliert.

Für beide Lösungsmöglichkeiten gibt es positive und negative Beispiele. So gibt es z.B. viele Wälder, die in Privateigentum stehen und nachhaltig bewirtschaftet werden. Die Frage ist aber, ob eine Privatisierung auch bei abgelegenen, schwer erreichbaren Bergwäldern in Regionen mit armer Bevölkerung – im Sinne von Nachhaltigkeit – funktioniert.

Ebenso gibt es Beispiele, wo für die jeweilige Allmende – bei staatlicher Regulierung – individuelle Nutzungsrechte zugewiesen werden. Das ist z.B. beim deutschen Jagdwesen der Fall. Jagdgebiete werden dabei abgegrenzt und an staatlich geprüfte Jäger (Jagdschein)

⁸ Hepperle und Lenk (Hrsg.), 2009, S. 17-23.

⁹ Robert, 1981, S. 467 behauptete z.B., „die einzige Möglichkeit, die Tragik der Allmende bei natürlichen Ressourcen ... zu vermeiden, (sei) es, das System des Gemeineigentums abzuschaffen und durch ein System privater Eigentumsrechte zu ersetzen.“, zitiert nach Ostrom, 1999, S. 16.

verpachtet;¹⁰ die Jagd unterliegt aber der Regulierung und Überwachung durch die Forstverwaltung (Abschusslisten für Wild, limitierte Jagdzeiten je Wildart etc.).

Auch das Sammeln von Pilzen, Beeren, Kräutern und sonstigen Pflanzen in Wäldern ist ein Allmendethema. Es wird von staatlicher Seite meist in Verbindung mit dem allgemeinen Waldbegehungsrecht geregelt. In der Regel dürfen sich „Waldbegeher“ nur für den angemessenen eigenen Bedarf solche Früchte des Waldes aneignen. Das Bayrische Naturschutzgesetz (Art. 28, Abs. 1) schreibt z.B. vor: „Jedermann hat das Recht, sich wild wachsende Waldfrüchte (Pilze, Beeren, Tee- und Heilkräuter, Nüsse) in ortsüblichem Umfang anzueignen und von wild wachsenden Pflanzen Blüten, Zweige oder Blätter in Mengen, die nicht über einen Handstrauß hinausgehen, zu entnehmen.“ Das ist zwar eine schwache Regulierung, die zudem nur selten kontrolliert wird; aber es ist eine Regulierung, die notfalls verschärft werden kann. Bei Pflanzen, die „unter Naturschutz“ stehen, wie z.B. in den deutschen Alpen der Enzian und das Edelweiß, besteht ein striktes Aneignungsverbot, das auch staatlich kontrolliert wird.

Ein anderes Beispiel für eine staatliche Regulierung ist die Lachsfischerei in Alaska, die ebenfalls eine lokale ländliche Allmende darstellt. Die Logik dieser „Allmenderessource Lachse“ besteht darin, dass sie nur dann langfristig gesichert ist, wenn von den in einem Fluss geborenen Lachsen nach deren ca. 6-jähriger Rundreise durch den Pazifik eine genügende Anzahl nicht nur zur Flussmündung (wo die Fischer sie erwarten), sondern zu den Laichplätzen flussauf gelangt.

Diese Mindestanzahl an laichenden Lachsen wird dadurch gesichert, dass

- seitens des Staates nur eine limitierte Zahl von Lizenzen an Fischer vergeben wird,
- die Fangzeiten der Fischer an der betreffenden Flussmündung limitiert werden und
- die in das Laichgebiet schwimmenden Lachse an einer bestimmten Zählstelle einzeln gezählt werden. Solange die nötige Mindestzahl nicht erreicht ist, sind die Fangzeiten stark limitiert.

Die Verletzung dieser staatlichen Regulierung wird mit gestaffelten Strafen geahndet.

Für Fälle staatlicher Regulierung wurden aber auch zahlreiche potenzielle Probleme aufgezeigt,¹¹ die die Sinnhaftigkeit einer Regulierung folglich in Zweifel zogen. Deshalb entstand die Frage, ob nicht eine dörfliche Selbstverwaltung von Allmenden erfolgversprechender ist.

¹⁰ Hier ist bemerkenswert, dass das Jagdgelände größtenteils Privateigentum ist; die Allmende ist nicht das Land, sondern ausschließlich das Wild – und nur dessen „Bewirtschaftung“ ist staatlich reguliert.

¹¹ Vgl. Ostrom, 1999, S. 11 ff.

4. Elinor Ostrom – das Konzept der Selbstverwaltung von Allmenden

Anfang der achtziger Jahre¹² befasste sich Elinor Ostrom sehr umfassend mit dieser Thematik. Sie hatte sich schon in ihrer Dissertation mit einer Allmendethematik befasst, den Grundwasserbecken in Südkalifornien. Wegen Übernutzung bestand dort die Gefahr, dass die entleerten Becken sich durch Meerwasser aus dem Pazifik auffüllten und für immer als Süßwasser-Reservoirs verloren gegangen wären.

Elinor Ostrom setzte sich zum Ziel, eine Theorie der Allmende zu entwickeln und sie ging daran mit der Idee, dass eine Selbstverwaltung von Allmenden – ohne Staat und ohne Privatisierungen – allein durch die Gemeinschaft der Allmendemitglieder möglich sein sollte. 1990 hat sie ihr Ziel erreicht und ihr Buch „Governing the Commons. The evolution of institutions for collective action“¹³ veröffentlicht. Und 2009 bekam sie für ihre Arbeiten die internationale Anerkennung, als ihr (zusammen mit Oliver E. Williamson) der Nobelpreis für Wirtschaft verliehen wurde.

Dabei war die Vorgehensweise von Ostrom kein „top-down-“, sondern ein „bottom-up-“ Prozess. Sie versuchte nicht, ein theoretisches Konzept schrittweise an die Realität anzunähern, sondern sie stellte fest, dass es an vielen Orten, verteilt über die ganze Welt, lokale Lösungen für die Allmende-Selbstverwaltung gab, die sich durch auffallend unterschiedliche Konstruktionen auszeichneten – weil sie nämlich an die jeweiligen lokalen Verhältnisse optimal angepasst waren. Je besser die Anpassung, umso stabiler das Lösungskonzept und umso länger der Bestand der Institution.

Diese verschiedenen Lösungskonzepte hat Ostrom an Hand zahlreicher Fallstudien dokumentiert und analysiert. Sie hat die Gemeinsamkeiten herausgearbeitet und die Gründe für die Besonderheiten der Konstruktionen im Einzelfall. Sie hat aber ebenso zahlreiche gescheiterte Allmende-Institutionen dokumentiert und analysiert, um herauszufinden, woran sie gescheitert sind bzw. was ihr Fortbestehen verhindert hat.¹⁴

5. Beispiele erfolgreicher Selbstverwaltung von Allmenden

Im Folgenden werden einige der erfolgreichen Institutionen der Allmendeverwaltung kurz skizziert, um ihre Vielfältigkeit zu veranschaulichen. Und wenn hier das Wort „erfolgreich“ benutzt wird, so deshalb, weil einige von ihnen seit über 500 Jahren existieren und die jeweilige Allmende nachhaltig bewirtschaften.

Die Allmenden japanischer Bergdörfer: Die Allmenden zur Bewirtschaftung von Wäldern und Bergweiden japanischer Bergdörfer bestehen seit dem frühen 17. Jahrhundert. Die Amerikanerin McKean hat Anfang der 80er-Jahre die Allmenden der drei Bergdörfer

¹² Das war auch der Zeitpunkt der Analyse, auf den sich der Aufsatz des Verfassers „Die Überschwemmungen der großen Flüsse Indiens – eine Frage des Bodenrechts?“ bezog (Hepperle und Lenk, 2009, S. 17–23). Darin wurden ähnliche Lösungen diskutiert.

¹³ Deutsche Ausgabe (1999).

¹⁴ Vgl. Ostrom, 1999, S. 187 ff.

Hirano, Nagaike und Yamanoka untersucht.¹⁵ Die dortigen Allmenden liefern ein breites Spektrum an Waldprodukten, darunter: Nutzholz und Brennholz, Stroh (zum Weben und Dachdecken), Tierfutter, verwesene Pflanzen (als Dünger) sowie Holzkohle.¹⁶

Diese Allmenden unterstanden von Anbeginn der Selbstverwaltung durch Dorfinstitutionen – mit detaillierten Regeln für die Nutzung und die Unterhaltung und eigenem Überwachungs- und Sanktionssystem. Und diese dörfliche Selbstverwaltung funktioniert bis auf den heutigen Tag. McKean stellte damals fest, dass die ursprünglich 16 Mio. Hektar umfassenden Allmenden zwar auf 3 Mio. Hektar geschrumpft waren, dass ihr aber „noch keine Allmende begegnet ist, die unter ökologischer Zerstörung litt, solange sie noch eine Allmende war“.¹⁷

Die Bewässerungsinstitutionen der spanischen Huertas – am Beispiel der Huerta¹⁸ von Valencia: Diese Allmende-Selbstverwaltung wurde 1435 als Genossenschaft von 84 Bewässerern gegründet. Die Statuten legten fest,

- „wer Wasserrechte an diesen Kanälen besaß,
- wie das Wasser in guten und schlechten Jahren aufzuteilen war,
- wer welche Instandhaltungsarbeiten zu leisten hatte,
- welche Bevollmächtigten sie wählen und
- wie und welche Geldbußen sie gegen Regelbrecher verhängen sollten.“¹⁹

Die Kanäle selbst stammten noch aus maurischer Zeit. Heute umfasst diese Huerta 16.000 Hektar, die über 8 Hauptkanäle mit dem Wasser des Turia-Flusses bewässert werden. Streitigkeiten werden von einem Wassergericht, dem „Tribunal de las Aguas“, entschieden, das seit Jahrhunderten am Donnerstagmorgen vor dem Aposteltor der Kathedrale von Valencia tagt.“²⁰ – Ähnliche „Huertas“, wie die von Valencia, gibt es in anderen Regionen, z.B. in Alicante, Murcia und Orihuela.

Siegerländer „Hauberge“²¹: Diese Hauberge sind eine für das Siegerland typische Form genossenschaftlicher Waldbewirtschaftung, insbesondere von Niederwald (von Eichen- und Birkenwäldern), der alle 18 bis 20 Jahre geerntet wird. Sie dienten und dienen der Gewinnung von Gerblohe, Holzkohle und von Brennholz. Zusätzlich zur forstwirtschaftlichen Nutzung gab es aber auch eine landwirtschaftliche: Beim so genannten „Schwend-

¹⁵ Vgl. McKean, 1986, zitiert nach Ostrom, 1999, S. 85 ff.

¹⁶ Vgl. Ostrom, 1999, S. 86.

¹⁷ Vgl. McKean, 1982, zitiert nach Ostrom, 1999, S. 85.

¹⁸ Huertas (zurückgehend auf das lateinische „hortus“ = Garten) sind fruchtbare, künstlich bewässerte Talebenen.

¹⁹ Vgl. Ostrom, 1999, S. 89.

²⁰ Vgl. Ostrom, 1999, S. 92.

²¹ Vgl. den Wikipedia-Artikel „Hauberg“.

bau“²² erfolgte nach der Abholzung des Waldes („auf Stock“) der Anbau von Roggen oder Buchweizen im Jahr nach der Holzernte sowie auch eine spätere Beweidung.

Die Hauberggenossenschaft ist eine Spezialform einer Genossenschaft, bei der die Mitglieder gemeinsam die forstwirtschaftliche Nutzung eines bewaldeten Gebietes übernehmen. Die Hauberge sind ungeteiltes Eigentum der Genossenschaft; die Mitglieder halten (vererbare) Anteile, die „Pfennige“ genannt werden.

Die sichtbare Besonderheit der Hauberge ist, dass in dem größeren Waldgebiet einer solchen Genossenschaft jeweils ein „Hauberg“ gemäß Reifegrad ausgewählt und dann komplett abgeholzt wird.²³ Früher wurde dazu ein Hauberg in eine größere Zahl von Losen unterteilt, die dann an die Mitglieder zur eigenen Abholzung verlost wurden. Heute werden meist Unternehmen mit der Abholzung beauftragt. Dann wird der Nettoertrag gemäß Anteilen auf die Mitglieder aufgeteilt.

Törbel im Wallis: Törbel ist ein Ort mit ca. 600 Einwohnern im Wallis (Schweiz); man passiert ihn auf dem Wege vom Rhonetal nach Zermatt. Trotz seiner geringen Größe hat dieser Ort internationale Berühmtheit erlangt – wegen seiner Allmendegeschichte und wegen deren wissenschaftlicher Dokumentation.²⁴ Schon im Jahre 1483 gründeten die Dorfmitglieder eine Genossenschaft zur gemeinsamen Nutzung der Almen,²⁵ der Wälder und des Ödlands.²⁶

„Insbesondere verbot die Satzung Fremden, die Land in Törbel kauften [...], irgendwelche Rechte an den[...] Allmenden [...] zu erwerben. Landbesitz verlieh nicht [...] irgendein genossenschaftliches Recht. Die Einwohner, die damals Land- und Wasserrechte besaßen, behielten sich das Recht vor zu entscheiden, ob sie einen Fremden in die Genossenschaft aufnehmen sollten“ – oder nicht.²⁷

Schon 1507 hat man die Grenzen des gemeindeeigenen Landes festgelegt und 1517 wurde verfügt, dass „kein Bürger mehr Kühe auf die Alm schicken durfte, als er im Winter ernähren konnte.“²⁸ Die auf die Alm getriebenen Kühe wurden gezählt und dann von den Hir-

²² Beim Schwendbau werden die Stubben der gefälltten Bäume nicht entfernt; sie verhindern Erosion und sie erlauben das spätere Ausschlagen des jeweiligen „Stocks“, woraus wieder ein neuer Baum entsteht.

²³ Das hat beträchtliche Kostenvorteile; insbesondere verhindert es (im Vergleich zu kleinparzelligen Wäldern), dass beim Aufforsten und Abernten eines Waldes Nachbarwälder in Mitleidenschaft gezogen werden.

²⁴ Robert McC. Netting hat die Allmende von Törbel umfassend in Aufsätzen sowie in seinem Buch „Balancing on an Alp“ (1981) dokumentiert.

²⁵ Alm und Alp sind Synonyme; „Alm“ ist die bayrische Bezeichnung, „Alp“ die alemannische für die Bergweiden.

²⁶ In Grindelwald wurde sogar schon 1404 ein „Taleinungsbrief“ zur Bewirtschaftung der dortigen Allmenden vereinbart, der auch als „Grundgesetz“ der Grindelwalder Alpen bezeichnet wird. Vgl. Der Bund (Bern), S. 11. 2009.

²⁷ Netting, 1976, S. 139, zitiert nach Ostrom, 1999, S. 80.

²⁸ Netting, 1976, S. 139, zitiert nach Ostrom, 1999, S. 81.

ten (Sennen) den Sommer über gehütet. Die Sennen stellten den Käse her, der dann im Herbst bei der jährlichen Käseverteilung nach der Anzahl der Kühe verteilt wurde. Die Genossenschaft wählte einen Bevollmächtigten, der die Mistausbringung und Instandhaltungsarbeiten von Wegen, Hütten, Zäunen und Pferchen organisierte – und der auch Geldbußen wegen Missbrauchs des Gemeineigentums verhängte (von denen er die Hälfte für sich behalten durfte). Die Kosten der Almbewirtschaftung wurden nach Anzahl der aufgetriebenen Kühe umgelegt.

Heute ist diese von Elinor Ostrom so genannte „Genossenschaft“ nur noch eine virtuelle; sie ist Teil der „Bürgergemeinde“ von Törbel.²⁹ Die virtuelle Genossenschaft wird heute von denjenigen Mitgliedern der Bürgergemeinde gebildet, die die Burgeralpen als Sommerweiden für ihr Vieh gemeinschaftlich nutzen.³⁰ Die Bewirtschaftung erfolgt dabei nach den alten obigen Regeln. Dabei ist wichtig, dass die Instandhaltungsarbeiten („Alpwerk“) auch nur von denjenigen Burgern anteilmäßig (pro Kuh) zu leisten sind, die die Almen tatsächlich nutzen.³¹ Aufgrund verminderten viehwirtschaftlichen Interesses sind die Zugangsbeschränkungen zu den Almen (Kuhrechte) heute wesentlich weniger streng als früher.

Die „Rechtler“ von Oberstdorf: Im bayrischen Oberstdorf³² war und ist die Allmendeverwaltung ähnlich wie in Törbel. Auch Oberstdorf besaß „von alters her“ eine ausgedehnte Allmendeflur (Almen, Wald, Wege, Wasser, Ödland); sie bestand als ungeteiltes Eigentum der Dorfgemeinschaft.³³

Wie in Törbel gab es aber auch in Oberstdorf zwei einschneidende Entwicklungen: 1. die Entwicklung dahin, dass nicht mehr alle Genossenschaftsmitglieder Vieh hielten und auf die Almen trieben, und 2. die Trennung der „politischen Gemeinde“ (aller Einwohner) von der „Ortsgemeinde“ (der alteingesessenen Einwohner mit Allmenderchten). Aus beiden Entwicklungen erwuchs beträchtlicher Rechtsstreit.

Zu 1: Im Jahre 1848 schon gab es 50 der damals 419 Genossenschaftsmitglieder, die kein Vieh mehr besaßen und die Allmendeweiden nicht mehr nutzten. Das Problem entstand daraus, dass diese Mitglieder aber – gemäß Satzung – voll an den Instandhaltungskosten beteiligt blieben. Erst eine Landgerichtsentscheidung im Jahre 1861 löste das Problem; künftig war die Kostenverteilung an die tatsächliche Nutzung gebunden.

²⁹ Im Gegensatz zur „Einwohnergemeinde“ umfasst die „Bürgergemeinde“ diejenigen Einwohner, denen – ganz formell – besondere Bürgerrechte zuerkannt werden; die Bürger sind quasi die Patrizier der jeweiligen Gemeinde. Vgl. das „Bürgerreglement der Gemeinde Törbel“ von 1993.

³⁰ Vgl. das besondere „Reglement der Burgeralpen“ der Gemeinde Törbel von 1989.

³¹ Vgl. Gemeinde Törbel, Reglement der Burgeralpen, Artikel 12.

³² Bekannt als internationaler Wintersportort (Nordische Skiweltmeisterschaft 2005, Vierschanzentournee, Skiflugschanze etc.).

³³ Vgl. die Website der „Rechtler“ (heutige Rechtsinhaber an der Allmende): www.rechtler.de.

Zu 2: Mit der Trennung der „politischen Gemeinde“ von der traditionellen „Ortsgemeinde“ im 19. Jahrhundert entstand der Streit um die Eigentumsrechte an den Allmenden. Dabei mag der Rechtsstreit – im Gegensatz zu Törbel – auch darin begründet gewesen sein, dass die politische Gemeinde in Oberstdorf stark wuchs, die Genossenschaft der Allmendeigentümer aber schrumpfte und die „Aufnahme“ von neuen Genossen satzungsfremd gewesen wäre. Denn die Allmenderechte waren an die Häuser („Hofstatt“) der alteingesessenen Familien (und nicht an Personen) gebunden. Das Allmenderecht trug sogar die Hausnummer des jeweiligen Hauses; bis zu fünf „Rechte“ (Allmendeanteile) konnten auf ein Haus entfallen.

Fast 100 Jahre lang zog sich der Rechtsstreit hin, mit Etappensiegen mal für die eine, mal für die andere Seite. 1951 schließlich gab es (ohne Beteiligung eines Gerichts) einen Teilungsvertrag, gemäß dem die politische Gemeinde („Marktgemeinde“)³⁴ die Talländereien mit 1.200 ha Land erhielt, die Genossenschaft der alten Rechteinhaber („Rechtler“) dagegen die Bergländereien mit 1.700 ha Land behielt. Interessanterweise hat die Genossenschaft der „Rechtler“ 1953 einen großen Besitz von 3.120 ha an Bergländereien hinzugekauft. Heute ist die Allmende von Oberstdorf in 327 Rechte aufgeteilt, die von 270 Rechtlern gehalten werden. Die Rechte sind festgeschrieben (Grundbuch), verbrieft (Urkunde), vererbbar – und: sie können nicht an Nicht-„Rechtler“ verkauft werden.

Die Genossenschaft der Rechtler erfüllt in einem internationalen Wintersportort wie Oberstdorf eine wichtige bewahrende Funktion. Sie stellt in beträchtlichem Maße sicher, dass Landschaft, Umwelt und lokale Kultur nicht durch Fremde mit reinen Wirtschaftsinteressen, die keinen Bezug zur Natur und zu den Traditionen der Region haben, zerstört, verschandelt oder verfremdet werden. Beim Bau des Eisstadions, beim Ausbau des Schattenberg-Skisprungstadions und auch bei der Errichtung des Langlaufstadions für die Nordische Skiweltmeisterschaft 2005 hatten die Rechtler ein gewichtiges Mitspracherecht. Bei letzterem Projekt ließ das Büro der „Wald- und Weidegenossenschaft“ mitteilen, man brauche den Grund als Vorweide für das Vieh. Das Stadion wurde danach an anderer Stelle errichtet.³⁵

6. Das Nebeneinander von Privat- und Gemeineigentum

Interessant ist, wie Gemeineigentum und Privateigentum nebeneinander bestehen – nicht nur in der Alpenregion, sondern auch in anderen Regionen. In aller Regel verwenden die Bauern Privateigentum für landwirtschaftliche Zwecke (Wiesen, Felder, Weinberge, Gärten), das Gemeineigentum aber für die Almen (Bergweiden), Wälder und Ödland.³⁶

³⁴ „Markt“ ist eine Zwischenstufe zwischen einer dörflichen „Gemeinde“ und einer „Stadt“, früher die Bezeichnung von Gemeinden mit Marktrecht.

³⁵ Vgl. www.rechtler.de.

³⁶ Im Mittelalter war in Deutschland die „Feldmark“ (landwirtschaftlich nutzbare Fläche) einer Gemeinde aufgeteilt in die „geteilte Mark“ (Privateigentum) und die „ungeteilte Mark“ (Allmende), die jeder Einwohner nutzen durfte, der einen „eigenen Rauch“ (Feuerstätte) hatte. Vgl. Wikipedia-Artikel „Feldmark“.

Deshalb stellt sich die Frage, was die Gründe dafür sind, dass bestimmte Ländereien gemeinschaftlich und nicht privat genutzt werden. Netting³⁷ hat gezeigt, dass gemeinschaftliche Formen des Grundbesitzes besser geeignet sind, wenn

- der Produktionswert pro Landeinheit gering ist,
- die Häufigkeit der Nutzung oder die Verlässlichkeit des Ertrags gering ist,
- die Möglichkeiten zur Ertragssteigerung und Intensivierung gering sind,
- es eines großen Territoriums für die effektive Nutzung bedarf, und wenn
- relativ große Gruppen erforderlich sind für die fälligen Kapitalinvestitionen.

Wenn es also sinnvoll und vorteilhaft ist, bestimmte Ländereien gemeinschaftlich zu bewirtschaften, so bedarf es der Gründung einer geeigneten Allmendeinstitution. Die Fallstudien haben gezeigt, dass die bekannten Institutionen der Selbstverwaltung ein sehr detailliertes, an die lokalen Umstände angepasstes Regelwerk umfassen, das den Bestand und Erfolg dieser Institutionen ermöglicht hat. Deshalb stellt sich die Frage nach etwaigen Bauprinzipien, die allen solchen Allmende-Institutionen gemeinsam sind.

7. Bauprinzipien erfolgreicher Allmende-Selbstverwaltungen

Elinor Ostrom hat aus den Fallstudien 7 wichtige Bauprinzipien herausgefiltert;³⁸ diese sind:

1. *Klar definierte Grenzen der Allmende:* Einerseits muss das Gelände der Allmende eindeutig abgegrenzt sein; andererseits müssen die Personen bzw. Haushalte, die das Recht zur Nutzung der Allmende haben, klar definiert sein.
2. *Kongruenz zwischen Nutzungs- und Bereitstellungsregeln und lokalen Bedingungen:* Die Nutzungsregeln definieren, wann und wie die Allmende von wem genutzt werden darf; die Bereitstellungsregeln besagen, welche Beiträge (Arbeitszeit, Material, Geld) die Mitglieder zum Unterhalt der Allmende leisten müssen. Beide Regelsysteme müssen zur jeweiligen Allmende passen.
3. *Arrangements für kollektive Entscheidungen:* Es muss klar definiert sein, wie Satzungsänderungen und sonstige Entscheidungen der Gemeinschaft zustande kommen. In der Regel sind alle Nutzungsberechtigten daran beteiligt. Klare Entscheidungsmechanismen sind erforderlich.
4. *Überwachung:* Zur Vermeidung einer „Tragik der Allmende“ muss kontrolliert werden, dass die Allmende nachhaltig genutzt wird. Alle skizzierten Institutionen haben Überwacher (Bevollmächtigte), die der Gemeinschaft gegenüber rechnen

³⁷ Netting, 1976, S. 140, zitiert nach Ostrom, 1999, S. 82.

³⁸ Ostrom, 1999, S. 117 ff.

schaftspflichtig sind. Teilweise erfolgt die Überwachung aber auch durch die Mitglieder selbst.

5. *Abgestufte Sanktionen:* Die Bevollmächtigten (oder die Gemeinschaft als Ganzes) verfügen über ein System abgestufter Sanktionen. Bei Geldbußen lässt man die Bevollmächtigten in der Regel partizipieren, um sie zu gewissenhaften Kontrollen zu animieren.³⁹
6. *Konfliktlösungsmechanismen:* Im Falle von Streitigkeiten zwischen Mitgliedern oder zwischen einzelnen Mitgliedern und dem Bevollmächtigten muss die Gemeinschaft einen raschen Zugang zu einer Schlichtungsinstitution haben. Sehr eindrucksvoll ist hier das bereits erwähnte „Tribunal des las Aguas“ der Huerta von Valencia, das jeden Donnerstag vor der Kathedrale von Valencia tagt – und stets sofort entscheidet.
7. *Anerkennung des Organisationsrechts:* Damit ist gemeint, dass der Allmende-Gemeinschaft von keiner staatlichen Institution das Recht streitig gemacht wird, ihre Institutionen der Selbstverwaltung zu entwickeln bzw. weiter zu entwickeln.

Diese sieben Erfolgsbedingungen waren bei den skizzierten erfolgreichen Allmende-Institutionen erfüllt.

8. Quintessenz

Um die mit dem Thema implizit gestellte Frage zu beantworten: Die Allmenden, die lokalen Allmenden des ländlichen Raumes, können sehr wohl eine Zukunft haben, wenn sie angemessen bewirtschaftet werden. Dabei hat sich gezeigt, dass lokale Institutionen der Selbstverwaltung besonders erfolgversprechend sind, weil sie maßgeschneidert konstruiert und an die Belange der Allmenden und die Interessen der Nutzer angepasst werden – und bei Bedarf geändert werden können.

Am Beispiel Oberstdorfs konnte aber auch gezeigt werden, dass die Gemeinschaft der Alteingesessenen (die „Rechtler“) eine wichtige zusätzliche Funktion haben kann: die Bewahrung des Ortes vor einer Überfremdung aus rein wirtschaftlichen Interessen. Manchem touristischen Ort sieht man auf den ersten Blick an, dass es dort an einer Gemeinschaft von „Rechtlern“ gefehlt hat. Einige der „Rechtler“ von Oberstdorf haben wohl deshalb testamentarisch verfügt, dass ihr Anteil an der Allmende niemals verkauft werden darf, auch in Notzeiten nicht. Und Leo Huber, Eigentümer von Haus und Allmende-

³⁹ Die Regelung einer hälftigen Gebührenbeteiligung von Bevollmächtigten wurde bereits zu Beginn des 15. Jahrhunderts in der Republik Dubrovnik (heute Kroatien) praktiziert. Die dortigen Straßenfeger hatten damals auch die Pflicht, darauf zu achten, dass die Bürger nicht ihre Abfälle auf die Gassen und in Ruinen warfen. Missetäter wurden den Behörden gemeldet und dann zu einer Geldbuße verurteilt. In Dubrovnik wusste man schon damals um den Zusammenhang von Unrat und Epidemien (z.B. Pest). Die Sauberkeit auf öffentlichen Plätzen hatte die Qualität einer Allmende und wurde entsprechend behandelt. Vgl. „Dubrovnik“ (1979, S. 37 f.).

Recht Nr. 285 in Oberstdorf wird zitiert: „Ich habe die Hoffnung, dass wir die Idee der ‚Rechtler‘ bis ins 21. Jahrhundert retten können.“⁴⁰ – Inzwischen sind wir im 21. Jahrhundert.

Erfolgreiche Modelle und deren Erfolgsbedingungen sollten deshalb dort propagiert werden, wo man noch keine angemessene Lösung für die ländliche Allmende-Verwaltung gefunden hat. Das gilt natürlich für ganz Europa, aber es gilt auch darüber hinaus, z.B. für die Wildbestände in Afrika und Bergregionen oder sonstigen Allmenden in vielen Entwicklungsländern.

Literatur

Hardin, G. [1968], The Tragedy of the Commons. *Science* 162: 1243–1248.

Hepperle, E. and Lenk, H. [2009], Land Development Strategies: Patterns, Risks, and Responsibilities – Strategien der Raumentwicklung: Strukturen, Risiken und Verantwortung. Zürich: vdf.

McKean, M.A. [1982], The Japanese Experience with Scarcity: Management of Traditional Common Lands. *Environmental Review* 6: 63–88.

McKean, M.A. [1986], Management of Traditional Common Lands [irriaichi] in Japan. *Proceedings of the Conference on Common Property Resource Management*, National Research Council. Washington, DC: National Academy Press (pp. 533–589).

Netting, R.M. [1976], What Alpine Peasants Have in Common: Observations on Communal Tenure in a Swiss Village. *Human Ecology* 4: 135–146.

Netting, R.M. [1981], *Balancing on an Alp. Ecological Change & Continuity in a Swiss Mountain Community*. Cambridge University Press.

Ostrom, E. [1999], *Die Verfassung der Allmende. Jenseits von Staat und Markt*. Tübingen: Mohr Siebeck.

Smith, R. [1981], Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife. *CATO Journal* 1: 439–468.

⁴⁰ Vgl. Stefan Lieser, Die Rechtler von Oberstdorf, www.internetredaktion.com/welcome/rechtler/sites/dreizehn.htm.

Bodenschutz durch Grüngürtel

1. Ausgangslage

Was die Entwicklung ihres Siedlungsraumes anbelangt, sind so gut wie alle Städte Österreichs das vergangene halbe Jahrhundert auf Expansionskurs gelegen. Das heißt, der bebaute Anteil des jeweiligen Stadtgebietes ist kontinuierlich gewachsen, während wesensgemäß der Anteil der ursprünglich vor allem landwirtschaftlich genutzten Flächen sukzessiv rückläufig war (Statistik Austria und Österreichischer Städtebund 2008, 2010). Dieser Verstädterungsprozess lief besonders dynamisch bei den größeren, strukturstarken Städten ab, sodass dieser dort längst die administrativen Stadtgrenzen übersprungen und die angrenzenden, ursprünglich noch stark ländlich geprägten Umlandgemeinden der Kernstadt miterfasst hat. Vor diesem Hintergrund war und ist es nur naheliegend, dass meist auf Druck der Stadtbevölkerung die EntscheidungsträgerInnen nach Lösungen Ausschau hielten, um die größeren noch zusammenhängenden Grünflächen auf Stadtgebiet von dem scheinbar nicht enden wollenden Bebauungsdruck langfristig zu schützen und eine klare Stadtkante zu definieren, über die die Bebauung innerhalb der Kernstadt nicht hinaus laufen sollte.

Die Idee, dem radialen Stadtwachstum durch die räumliche und rechtliche Bestimmung kreisförmig angeordneter, zusammenhängender Grünflächen eine Beschränkung zu setzen, stammt aus dem Ende des 19. Jahrhunderts. Der englische Stadtplaner Ebenezer Howard war derjenige, der unter dem Eindruck des durch die Industrialisierung ausgelösten explosionsartigen Stadtwachstums vieler britischer Städte die Sicherung des stadtnahen Grüns forderte (Howard 1898). Diese Idee stieß auch bald auf Resonanz auf dem Kontinent, wo schließlich Wien eine Pionierrolle einnahm, indem es schon 1905 auf Betreiben des Naturschützers Johann Scheffel einen großzügig bemessenen Wald- und Wiesengürtel im Gemeinderat beschloss (Machatschek 2005).

Das Wachstum der Städte Österreichs gewann nach Abschluss des so genannten „Wiederaufbaus“ nach dem 2. Weltkrieg durch die breit einsetzende Wohlstandsmehrung ab den späten 1960er-Jahren an Dynamik. Der rapide Verlust an offener Kulturlandschaft löste in der Folge mancherorts heftige BürgerInnenproteste aus und führte schließlich zur Wiederbelebung der Grüngürtelidee.

Das markanteste Beispiel für diesen Verlauf der jüngeren Stadtgeschichte ist in Österreich sicher die Landeshauptstadt Salzburg. Dort wurde 1982 als formaler Schlusspunkt jäh-

* Institute of Spatial Planning and Rural Development, Department of Spatial, Landscape and Infrastructure Sciences, University of Natural Resources and Applied Life Sciences, Vienna, Austria.

** Institute for Sustainable Economic Development, University of Natural Resources and Applied Life Sciences, Vienna, Austria.

langer heftiger Auseinandersetzungen zwischen Stadtpolitik und BürgerInnen eine „Deklaration Geschütztes Grünland“ feierlich durch eine mit einer starken Bürgerliste bereicherte Stadtregierung verabschiedet, die folgende Zielverfolgung bezwecken sollte:

- Schutz der noch bestehenden größeren zusammenhängenden Landschaftsräume;
- Sichern des Fortbestandes der Landwirtschaft;
- Erhalten der Naherholungsgebiete auch im innerstädtischen Bereich;
- Verhindern des baulichen Zusammenwachsens von Stadt- und Umlandgemeinden, das heißt Aufrechterhalten der siedlungsgliedernden Grünflächen.

Die parzellenscharfe räumliche Abgrenzung, die bestimmt welche Teile der offenen Kulturlandschaft unter den Schutz der so genannten „Grünlanddeklaration“ fallen, wurde im Voraus fachlich abgeklärt und im Zuge der Flächenwidmung zeitnah fürs erste rechtlich gesichert (Stadt Salzburg 2009).

Aufgrund dessen, dass seit Beschluss der so genannten „Grünlanddeklaration“ die Stadt Salzburg im Hinblick auf Bevölkerung, Arbeitsstätten, Gebäudezahl, Ausstattung mit technischen und sozialen Infrastrukturanlagen etc. stark wuchs und in Anbetracht relativ geringer verfügbarer Baulandreserven auf Stadtgebiet, stieg der Druck, auch auf die geschützten Kulturlandschaftsteile zumindest in Einzelfällen zugreifen zu können (siehe Abbildung 1).

Diese Umstände veranlassten die Landeshauptstadt Salzburg, vertreten durch ihren Bürgermeister Dr. Heinz Schaden, im Jahr 2007 wissenschaftliche Expertise darüber einzuho-



Abbildung 1: Prägnante Stadtkante (Salzburg) (Foto: Institut für Raumplanung und Ländliche Neuordnung, Universität für Bodenkultur Wien).

len, wie andere größere Städte im deutschsprachigen Raum erfolgreich ihre Grüngürtel rechtlich, organisatorisch, finanziell und durch die Wertschätzung ihrer Bevölkerung absichern und sich so dem Umnutzungsdruck erfolgreich entgegenstellen. Mit dieser Studie wurde das Institut für Raumplanung und Ländliche Neuordnung an der Universität für Bodenkultur Wien betraut. Die beiden Autorinnen dieses Artikels haben schließlich diese Aufgabe in enger Zusammenarbeit mit der Auftraggeberseite ausgeführt.

Methodisch wurde dabei so vorgegangen, dass gemeinsam mit VertreterInnen Salzburgs fünf Fallbeispiele aus Deutschland ausgewählt wurden, nämlich die Grünsysteme „Grüngürtel Frankfurt“, „Der Münchner Grüngürtel – Einer für Alle!“, „Kölner Grünsystem“, „Grüner Ring Leipzig“ und „Der Grüne Ring Hannover“.

Alle Städte wurden seitens des Bearbeitungsteams bereist und mit den für die Grünsysteme Verantwortlichen Leitfaden gestützte Interviews geführt. Abschnittsweise wurden Begehungen vor Ort vorgenommen, von jedem Grüngürtel eine Fotodokumentation angelegt und schließlich jedes Fallbeispiel ausführlich beschrieben, um schließlich Handlungsoptionen benennen zu können, die dazu beitragen, auch langfristig die stadtnahe Kulturlandschaft zu sichern.

Die in der Studie „Optionen zur Sicherung des Grüngürtels um die Stadt Salzburg“ (Weber und Mitter 2007) gewonnenen Erkenntnisse sollen hier nun ergänzend auch noch dahingehend analysiert werden, ob und wenn ja, auf welche Weise Grüngürtel auch auf den Bodenschutz abzielen oder diesen zumindest indirekt zu gewährleisten vermögen.

2. Bodenschutz – ein explizites Ziel?

Analysiert man die festgeschriebenen Leitlinien und Ziele, die mit einem Grünen Ring in den fünf untersuchten Städten erreicht werden sollen, so fällt diese im Hinblick auf die explizite Nennung des Ziels, den Boden als verletzliches Umweltmedium vor Beeinträchtigung oder Zerstörung zu schützen, ernüchternd aus: Wiewohl die inhaltliche Ausrichtung der Ziele weit streut, indem die etwa 30 Teilziele den Themen „Naherholung und Tourismus“, „Umwelt-, Landschafts- und Naturschutz“, „Landwirtschaft und Erhaltung der Kulturlandschaft“, „Kunst, Kultur und städtebauliche Gliederung“ sowie „Stadtklima“ zugeordnet werden können, kommt der „Bodenschutz“ oder auch nur das Wort „Boden“ in den Zielkatalogen gar nicht explizit vor.

Die Sicherung der Bodengüte, also der so genannte „qualitative Bodenschutz“ kann nur indirekt etwa mit folgenden Sprachwendungen von ExpertInnen herausgelesen werden:

- „Sicherung natürlicher Ressourcen“;
- „Qualitative Aufwertung der Freiflächen“;
- „Schutz von wertvollen Lebensräumen für Pflanzen und Tiere“;
- „Schutz von Pflanzen und Tieren“.

Der so genannte „quantitative Bodenschutz“, also die flächenhafte Ausdehnung der offenen Kulturlandschaft der Bebaubarkeit zu entziehen, wird, ohne den Boden ausdrücklich anzusprechen, in verschiedenen Kontexten auch nur indirekt als Ziel von Grüngürteln artikuliert, etwa in folgenden Wendungen:

- „Schutz der Freiflächen in und um die Stadt vor weiterer Versiegelung“;
- „Erhaltung und Weiterentwicklung der Kulturlandschaft“;
- „Verbesserung des Stadtklimas“.

Dieser Befund bestätigt, dass der Boden gegenüber der breiten Öffentlichkeit per se nicht als schützenswertes Umweltmedium angesprochen und daher auch nicht als solches von der Allgemeinheit wahrgenommen wird. Es bleibt so ausschließlich ExpertInnen vorbehalten zu wissen, dass die Bezeichnungen „natürliche Ressourcen“, wertvolle Lebensräume für Pflanzen und Tiere“ sowie „Freiflächen“ auch den offenen Boden miteinschließen, und damit nicht nur die Naturvorgänge über der Erdoberfläche, sondern auch die unsichtbaren darunter gemeint sind, auf die sich der Schutz eines Grüngürtels bezieht.

Denn aus fachlicher Sicht ist der „offene“, das heißt, der nicht mit einer wasserundurchlässigen Schicht (Beton, Bitumen) überzogene Boden „ein nicht erneuerbares, nicht vermehrbares ökologisch sensibles und kaum regenerierbares Naturgut“ (Forum Nachhaltiges Österreich 2005), das eine Vielzahl von ökologischen, gesellschaftlichen und ökonomischen Aufgaben zugleich erfüllt (Kapitel 1, Artikel 1(2) Protokoll zur Durchführung der Alpenkonvention von 1991 im Bereich Bodenschutz, Protokoll „Bodenschutz“):

Aus ökologischer Perspektive sind dies etwa die Filter- und Absorptionsfunktion, die Biodiversitäts-, die Regulierungs- (Wasserspeicher, Klimaregulator), Mineralisierungs- und die Lebensraumfunktion. Letztere ermöglicht es, dass Mensch, Tier und Pflanze überhaupt entstehen, bestehen und vergehen können.

Als gesellschaftsrelevante Funktionen des Bodens sind etwa zu nennen: die Trägerfunktion für Gebäude und technische Anlagen, die Schutzfunktion gegen Hochwasser, Dürre, Erdwärme, die Erholungs-, die Entsorgungs-, die Identitätsstiftungs-, die Vorhaltefunktion für Dispositionen nachfolgender Generationen, die Archivierungsfunktion für Zeugnisse der Natur- und Kulturgeschichte, die Krisenvorsorgefunktion. Nicht zuletzt ist der Boden auch immer ein prägendes Element des Landschaftsbildes.

Die ökonomischen Funktionen, die der Boden erfüllt, sind etwa die Hervorbringung von agrarischen Erzeugnissen wie Lebens- und Futtermittel, Energieträger, Baumaterial, er ist Rohstofflager von nichtregenerierbaren Stoffen wie Mineralien, Erze, Erdgas, Erdöl, Erdwärme, fossiles Wasser, ein essentieller Produktionsfaktor neben Wissen, Arbeit und Kapital. Er hat eine Funktion als Kapitalanlage und Wertsicherung.

Im Falle einer Bebauung wird diese Multifunktionalität des Bodens einseitig zugunsten der Träger- und Kapitalanlagefunktion aufgelöst.

3. Eigentums- und Besitzstrukturen in Grüngürteln

Die probaten Mittel, durch welche der Bodenschutz gewährleistet werden soll, hängen natürlich von der Ausdehnung des jeweiligen Grüngürtels, von den dort vorherrschenden Nutzungen und Nutzungsoptionen sowie den Eigentums- und Besitzstrukturen ab.

Die untersuchten fünf Grüngürtel sind sehr verschieden in Hinblick auf ihre Größe: So hat etwa der kleinste, das „Kölner Grünsystem“, mit 20 km² nur eine lokale Dimension (Kölner Grün Stiftung gemeinnützige GmbH), während die vier anderen regionale Grünsysteme sind, das heißt, sich der Schutz auch auf Teile der Umlandgemeinden erstreckt. Der größte ist hier mit über 800 km² der „Grüne Ring Leipzig“ (Geschäftsstelle Grüner Ring Leipzig 2007).

Es liegt in der Natur der Sache, dass ein innerstädtisches Grünsystem wie das in Köln eine andere Nutzungs- und EigentümerInnenstruktur aufweist, als etwa das vierzig Mal größere von Leipzig: Ersteres hat beispielsweise einen parkähnlichen Charakter mit künstlich angelegten Wasserflächen, Hügeln, Wäldern, Wiesen, Beeten, historischen Kleinbauten und Sportstätten. Das gesamte Grünsystem ist heute im Eigentum der Stadt Köln.

Regionale Grünsysteme sind hingegen dadurch gekennzeichnet, dass nur ein geringer Anteil der Flächen sich im Eigentum der öffentlichen Hand befindet, wie die nach Naturschutzrecht geschützten Landschaftsbestandteile (Moore, Seen, Heidelandschaften, Landschaftsparks, Stadtwälder) und die Ausgleichsflächen (siehe unten). Der andere Anteil ist jedoch in bäuerlichem Eigentum und wird entsprechend agrarisch bewirtschaftet.

Aufgrund dieser divergenten Ausgangslage verfolgt der Schutz der Grüngürtel-Kulturlandschaft vor Bebauung und damit der Schutz des nicht versiegelten Bodens im stadtnahen Bereich zwei Stoßrichtungen: einerseits zielt er auf die Aufrechterhaltung einer heute unwirtschaftlichen Landbewirtschaftung ab und andererseits setzt er auf eine Extensivierung der Intensivlandwirtschaft.

Beispielhaft gestaltet sich dies wie folgt: Im Falle Kölns werden Pachtverträge mit LandwirtInnen aus der Region sowie mit SchäferInnen, die im Besitz einer Wanderherde sind, abgeschlossen. Deren Aufgabe ist es, die stadt eigenen Wiesen im Dienste der Förderung des Natur- und Landschaftsschutzes zu bewirtschaften und so der Verwaltung zu entziehen. Je nach Aufwand und Ausgangszustand der zu pflegenden Kulturlandschaft müssen die PächterInnen entweder der Stadt eine Pacht zahlen oder sie bekommen Geld von ihr für die erbrachte Entwicklungspflege. Die parkartigen Teile des Grünsystems werden durch die Stadt selbst sowie auf der Basis von Freiwilligenarbeit in Schuss gehalten.

Beim Zielbündel, im regionalen Maßstab die Grüngürtelflächen langfristig der Bebauung zu entziehen, ein harmonisches Nebeneinander von Landbewirtschaftung und Erholung zu fördern und nicht zuletzt eine ökologisch stabile wie auch unter ästhetischen Maßstäben attraktive stadtnahe Kulturlandschaft zu sichern bzw. hervorzubringen, sind die LandwirtInnen in der Stadt und der Region natürlich die SchlüsselakteurInnen.

Die Herausforderung besteht dabei darin, dass möglichst viele LandwirtInnen die eben genannten überbetrieblichen Teilziele zu ihrer Handlungsmaxime machen und dass ihre Existenz im Grüngürtel gefestigt wird.

Am Beispiel des Grüngürtels München sind in diesem Zusammenhang etwa folgende Maßnahmen zu nennen:

Kreierung und Vermarktung von regionalen Produkten: Das Projekt „Weidefleisch erzeugt im Münchner Grüngürtel“ strebt nicht nur überdurchschnittliche Erlöse durch die Direktvermarktung von Biofleisch an, sondern zielt auch mit der Beweidung durch Rinder und Schafe auf eine extensive Grünlandnutzung ab.

Zusammenarbeit mit HobbygärtnerInnen: Manche GrüngürtelbäuerInnen sichern sich ein Zusatzeinkommen, indem sie sich am Projekt „Münchner Krautgärten“ beteiligen (siehe Abbildung 2). Das heißt, sie verpachten bis zu 60 m² große Parzellen an FreizeitgärtnerInnen als Selbsterntefelder. Die LandwirtInnen stellen neben dem Boden auch ausreichend Wasser und die Geräte zu Verfügung und kümmern sich um die Anpflanzung der gewünschten Nutz- (Gemüse, Obst) und Zierpflanzen.

Bewirtschaftung von Ausgleichsflächen: Die so genannte „Eingriffsregelung“, die im Bundesnaturschutzgesetz und im Baugesetzbuch in Deutschland rechtlich verankert wurde (§§ 18 bis 21 Deutsches Gesetz über Naturschutz und Landschaftspflege [Bundesnaturschutzgesetz – BNatSchG] in Verbindung mit § 1a Deutsches Baugesetzbuch [BauGB]), gilt heute als Schlüsselinstrument für den Schutz des Bodens vor Bebauung einerseits und der ständigen Weiterentwicklung der Landschaft sowie der Stärkung der landschaftlichen



Abbildung 2: Selbsterntefelder (München) (Foto: Institut für Raumplanung und Ländliche Neuordnung, Universität für Bodenkultur Wien)

Charakteristik andererseits. Denn sie zielt darauf ab, Beeinträchtigungen durch Eingriffe in den Naturhaushalt und das Landschaftsbild möglichst zu vermeiden sowie nicht vermeidbare Beeinträchtigungen (wie unabdingbare Siedlungserweiterungen „auf der grünen Wiese“, Absenkung des Grundwasserspiegels, Abbau von Sanden und Kiesen udgl.) durch Ausgleichs- oder Ersatzmaßnahmen zu kompensieren. Bei geplanten Eingriffen, die den Naturhaushalt oder das Landschaftsbild erheblich beeinträchtigen könnten, erfolgt eine genaue Prüfung, welche Verpflichtungen den VerursacherInnen aus dem Eingriff erwachsen. Basierend auf einer Bestandsaufnahme, bei der Natur und Landschaft erhoben und bewertet werden, erfolgt die Erfassung potenzieller Auswirkungen des geplanten Eingriffs. Als nächstes ist zu prüfen, ob die zu erwartenden Beeinträchtigungen durch gezielte Gegenmaßnahmen vermieden werden können. Unvermeidbare Beeinträchtigungen müssen von den InvestorInnen durch Naturschutz- und Landschaftspflegemaßnahmen ausgeglichen („Ausgleichsmaßnahmen“) oder in sonstiger Weise kompensiert („Ersatzmaßnahmen“) werden, wobei die Ausgleichs- bzw. Ersatzmaßnahmen im räumlichen Zusammenhang mit dem bevorstehenden Eingriff stehen soll. Da in der Praxis häufig die Kompensationen für die getätigten Eingriffe, nicht wie es der Gesetzgeber fordert in ihrer unmittelbaren Nähe realisiert werden können, ist es rechtlich möglich, auch an anderer Stelle innerhalb der Gemeinde den Ausgleich zu tätigen bzw. mittels Abstandszahlungen, die im Sinne des Gesetzes zweckgebunden eingesetzt werden müssen, durch die Gemeinde tätigen zu lassen.

Gerade für hochdynamische Großstädte wie München, die fortgesetzt an ihrer Peripherie wachsen, ist es wichtig, für die potenziellen Ausgleichserfordernisse geeignete stadt eigene Flächen zur Verfügung stellen zu können. Dieser Notwendigkeit folgend hat München ein 67 ha großes Niedermoor als „Erstes Münchner Ökokonto“ auf Eigengrund eingerichtet. In langfristigen Pachtverträgen verpflichten sich einerseits die LandwirtInnen, den nach naturschutzfachlichen sowie landschaftspflegerischen Gesichtspunkten vereinbarten Ausgleich durch Pflegeleistungen zu tätigen, und andererseits die Stadt München zur gewinnbringenden Entlohnung der vereinbarten Pflegeleistungen der Bäuerinnen und Bauern.

Regionale Zusammenarbeit: Da die den Grüngürtel prägenden Landschaftsräume meist weit über die Stadtgrenzen hinausreichen, werden über verschiedene Vereine, die jeweils auf den Schutz und die Pflege eines bestimmten Landschaftstyps fokussieren (z.B. Heideflächenverein Münchner Norden e.V., Verein Dachauer Moos e.V.), die Interessen der Stadt und der Umlandgemeinden an der Sicherung, der Weiterentwicklung und der Gewährleistung der fachgerechten Pflege abgeglichen. Zur Zielerreichung gibt es auch auf regionaler Ebene eine intensive Zusammenarbeit der Pflegevereine mit den LandwirtInnen.

Um den qualitativen und quantitativen Bodenschutz in Grüngürteln aufrecht zu erhalten und zu forcieren, scheint es insbesondere bei einer Stadtgrenzen überschreitenden, regionalen Ausdehnung zielführend, dass die Grüngürtelflächen im Eigentum der LandwirtInnen bleiben und eine ausgewogene Bewirtschaftung durch eine großzügige Dotierung der

Pflegeleistung – verknüpft mit bestimmten Auflagen (z.B. Düngeverbot, späte Mahd) – sichergestellt wird.

4. Absicherung und Weiterentwicklung von Grüngürteln

Vor dem Hintergrund der langfristigen Absicherung und kontinuierlichen Weiterentwicklung von Grüngürteln und insbesondere auch in Hinblick auf den qualitativen und quantitativen Bodenschutz in städtischen Räumen, drängt sich wiederholt die Frage auf, wie sowohl bestehende Grüngürtelflächen beispielsweise vor weiterer Bebauung geschützt, als auch zukünftige, geordnete Expansionen des Grüngürtels realisiert werden können. Als praktikable Lösung erweist sich das Zusammenspiel stabilisierender Maßnahmen auf der einen und flexibler Elemente auf der anderen Seite. Während erstere auf das Fortbestehen bereits ausgewiesener Grüngürtelflächen und deren qualitative Aufwertung abzielen, sollen letztere die Ausweitung der Flächen sowie die Hervorhebung weiterer thematischer Schwerpunkte ermöglichen. In einem modularen Aufbau können stabilisierende und flexible Elemente zusammengeführt sowie formelle und informelle, kommunale und regionale, raumordnungs- und naturschutzrechtliche, Top-down- und Bottom-up-Ansätze – jeweils der Situation entsprechend – berücksichtigt werden.

Bei der Analyse der fünf ausgewählten Grüngürtel-Managements konnten jeweils formelle und informelle Elemente zur Absicherung und Weiterentwicklung der städtischen Grün-systeme identifiziert werden. Diese zeigten sich als zentrale und zweckdienliche Aspekte hinsichtlich eines umfassenden Bodenschutzes und sollen daher im Folgenden näher erläutert werden.

Formelle Elemente: Formelle Elemente können in sachliche und territoriale Gesichtspunkte unterschieden werden. Aus sachlicher Sicht sind die Rechtsbereiche Raumordnung (Flächennutzungsplan, Regionalplan, Landesplan), Landschaftsplanung bzw. Naturschutz (Landschaftsrahmenplan, Landschaftsplan, Naturschutzgebiet, Landschaftsschutzgebiet, geschützter Landschaftsbestandteil) sowie Denkmalschutz (Schutz historischer Gartenanlagen) von Bedeutung. Beispielsweise erfährt das Kölner Grünsystem durch den Landschaftsplan – ein Großteil der Grünflächen wird darin als Landschaftsschutzgebiet ausgewiesen – und das Denkmalschutzgesetz – ihm unterliegen die historischen Grünflächen – besondere Absicherung.

Aus territorialer Sicht können zwei unterschiedliche Herangehensweisen verfolgt werden. Einerseits steht die Möglichkeit offen, den Grüngürtel von Anfang an als regionale Gemeinschaftsinitiative von Kernstadt und Umlandgemeinden zu realisieren und die aktive Zusammenarbeit der örtlichen (Kernstadt) und überörtlichen Instanz (beispielsweise repräsentiert durch einen Verein oder Planungsverband) zu fördern. Andererseits können AkteurInnen der Kernstadt beginnen, den Aufbau und die Etablierung des Grüngürtels auf kommunaler Ebene voran zu treiben und hier dessen Absicherung durch örtliche Planungsinstrumente (Flächennutzungsplan und Landschaftsplan) forcieren. Erst in weiterer Folge wird eine Zusammenarbeit mit den Umlandgemeinden angestrebt, die zur Aus-

dehnung des Grüngürtels in die Region führt. Erstere Option wurde in Leipzig und Hannover erfolgreich umgesetzt.

Informelle Elemente: Das hohe gesellschaftspolitische Gewicht eines Grüngürtels erfordert neben dessen rechtlicher Absicherung zusätzlich die Einbindung informeller Elemente. Wirksam zeigen sich in diesem Zusammenhang ein klares politisches Bekenntnis zur Entwicklung des Grüngürtels sowie die kontinuierliche Einbindung von RepräsentantInnen der Zivilgesellschaft in den Gestaltungsprozess. Beispielsweise führte die Stadt Frankfurt unter Einbindung der Öffentlichkeit einen aufwändigen Ideenfindungsprozess durch, der in der einstimmigen Verabschiedung der so genannten „GrünGürtel-Verfassung“ (1991) durch das zuständige politische Gremium (Stadtverordnetenversammlung) gipfelte. Laufende Mitgestaltungsmöglichkeiten können beispielsweise in Form von Runden Tischen, Diskussionsveranstaltungen oder Regionalkonferenzen institutionalisiert werden und sollen insbesondere einen ungezwungenen Austausch und Ideenfindungsprozess begünstigen.

Diese formellen und informellen Elemente zielen darauf ab, Argumente zu stützen, die der Stadterweiterung gewichtige Schutzziele entgegenstellen und damit dem Trend zur weiteren Versiegelung in Stadtnähe entgegenwirken. Diese Anstrengungen könnte zudem argumentativ gestärkt werden, indem die formellen und informellen Bestrebungen zur Absicherung der Grüngürtelidee dezidiert auch auf den quantitativen und qualitativen Bodenschutz ausgeweitet werden, zumal jüngere Entwicklungen – wie z.B. kurzwegige, autofreie Erholungsräume, Ernährungsgewohnheiten, die auf Regionalität der Produkte basieren, Umstieg auf erneuerbare Energieträger und Versorgungssicherheit im Allgemeinen – den Argumenten Rückhalt verleihen würden.

5. (Ein-)Bindung der NutzerInnen

Die breite Zustimmung der BürgerInnen zu Gestaltung und Ausbau des Grüngürtels, ihre Begeisterung für das Gesamtkonzept sowie ihre (emotionale) Bindung an einzelne Abschnitte sind Bausteine, um die Wertschätzung für die städtischen Freiräume zu heben und somit das öffentliche Bewusstsein für die Bedeutung des Grünsystems zu schärfen. Zudem soll der Grüngürtel als Beitrag zur Bildung und Bewahrung von lokaler und regionaler Identität etabliert werden, sodass in der Bevölkerung dauerhaftes Interesse an der Erhaltung und Gestaltung des Grüngürtels vorherrscht. Die Bevölkerung „trägt“ das Projekt und ist im Falle auch bereit, es gegen etwaige – den Schutzzielen widersprechende – Zugriffe zu verteidigen.

Die Bindung der Menschen an „ihren“ Grüngürtel kann einerseits durch die oben genannten Formen der Mitgestaltung (informelle Elemente), andererseits durch attraktive Öffentlichkeitsarbeit erreicht werden. Folgende ausgewählte Maßnahmen wurden in den untersuchten Grüngürteln erfolgreich gesetzt:

- Bereitstellung von (mehrsprachigen) Informationsbroschüren und Kartenmaterial mit thematischen Schwerpunkten für unterschiedliche Zielgruppen (beispielsweise Fami-

lien mit Kindern oder Sportbegeisterte) in gedruckter Form und zum Download (z.B. Region Hannover 2005, 2006);

- Aufbau eines thematischen „roten Fadens“ und die Verwendung eines einprägsamen, wiederkehrenden Elementes im Rahmen der Öffentlichkeitsarbeit wie beispielsweise das Grüngürteltier in Frankfurt, das dort als „Maskottchen“ dient (siehe Abbildung 3);
- einheitliche Markierung der Wander-, Rad- und Reitwege und Beschilderung von Standorten mit besonderer Bedeutung wie beispielsweise Naturdenkmäler oder Orte mit kulturhistorischer Bedeutung;
- Verteilung von Sammelpässen und öffentliche Ehrung bei Komplettierung – beispielsweise werden in Frankfurt volle Wanderpässe mit der „Goldenen Wandernadel“ belohnt;
- Errichtung von Lern- oder Fitnessstationen;
- Durchführung von Veranstaltungen für diverse Zielgruppen wie beispielsweise Sommerfeste, Kulturveranstaltungen, Sportveranstaltungen oder geführte thematische Grüngürtel-Spaziergänge (z.B. Spaziergänge: „Neue Sicht auf alte Eichen“, „Stadtklima“ beschrieben in Stadt Frankfurt am Main 2003);
- Abhaltung von Informationsveranstaltungen zur Weiterentwicklung des Grüngürtels und Anbieten einer Möglichkeit zur Mitgestaltung.

Anhand dieser Beispiele kann ersehen werden, dass der Boden als Schutzgut noch keine Beachtung findet. Diese Lücke könnte unschwer geschlossen werden, indem zum Beispiel entlang der Wegeführung die jeweiligen Bodenprofile zu Demonstrationszwecken sichtbar gemacht und beschrieben werden. Mit einem derartigen Bodenlehrpfad könnte gezeigt



Abbildung 3: Das „Grüngürteltier“ (Frankfurt) (Foto: Institut für Raumplanung und Ländliche Neuordnung, Universität für Bodenkultur Wien)

werden, dass der Boden nicht nur Fläche sondern ein dreidimensionales Schutzgut mit sehr unterschiedlichen Eigenschaften ist und eine Nutzung nur unter größter Sorgfalt erfolgen soll.

6. Schlussfolgerungen

Die Untersuchung und detaillierte Analyse bereits lange etablierter Grüngürtel zeigt, dass diese als effektives Instrument im Bodenschutz eingesetzt werden können, insbesondere auch dann, wenn städtische Gebiete mit hohem Siedlungsdruck konfrontiert sind. Bei der Initiierung eines Grüngürtelkonzepts sollen jedoch stets wesentliche Aspekte berücksichtigt werden, um sowohl quantitativen als auch qualitativen Bodenschutz gewährleisten bzw. forcieren zu können. Diese umfassen

- die wohlüberlegte Formulierung von Leitlinien und Zielen mit direkter und indirekter Anführung des Bodenschutzes,
- die Berücksichtigung der Eigentums- und Besitzstrukturen bei der Bestimmung von Nutzungsoptionen sowie die Einbindung der relevanten Akteure – insbesondere der Landwirtschaft – bei Festlegung des gewünschten Zielzustandes im Grüngürtel (z.B. Extensivierung der Landwirtschaft und Förderung des Natur- und Landschaftschutzes),
- die formelle rechtliche Absicherung des Grüngürtels und die damit verbundene langfristige Einschränkung für weitere Bebauungen,
- ein klares politisches Bekenntnis zur Realisierung und Absicherung des Grüngürtels und schließlich
- die (emotionale) Bindung der Menschen an den Grüngürtel, damit diese sich – falls erforderlich – gegen zerstörerische Eingriffe in „ihren“ Freiraum zur Wehr setzen.

Maßnahmen zur Weiterentwicklung eines Grüngürtels zielen vor allem auf den qualitativen Bodenschutz und dessen institutionelle Einbettung ab. Wichtig ist dabei, dass eine ausgewogene Bewirtschaftung mit entsprechenden Einschränkungen und Auflagen sichergestellt wird. Dies erfordert in der Regel eine ökonomische Abgeltung der Pflegeleistung. Eine quantitative Vermehrung der Grüngürtelflächen kann durch die Einbindung zusätzlicher land- und forstwirtschaftlicher Nutzflächen oder anderer Grüngebiete, aber kaum jemals durch den Rückbau von versiegelten Bereichen erreicht werden. Jegliche Weiterentwicklung des Grüngürtels basiert auf der Pflege und Intensivierung der emotionalen Bindung der Bevölkerung zum Projekt.

In jedem Fall muss ein Grüngürtel als kontinuierlicher Prozess gesehen und gestaltet werden und kann als Leuchtturmprojekt für Good Governance fungieren. Weit über den Bodenschutz und weitere festgelegte Zielsetzungen hinaus kann ein derartiges Projekt beispielgebend für nachhaltiges, politisches und administratives Handeln in Agglomerationsräumen sein.

Quellen

Forum Nachhaltiges Österreich [2005]: Nicht-nachhaltige Trends in Österreich: Qualitative Lebensraumveränderung durch Flächenverbrauch. Wien: Eigenverlag.

Geschäftsstelle Grüner Ring Leipzig (Hrsg.) [2007]: 10 Jahre Grüner Ring Leipzig. Festschrift zum Jubiläum. Leipzig: Eigenverlag.

Howard, E. [1898]: A Peaceful Path to Real Reform. London: S. Sonnenschein.

Kölner Grün Stiftung gemeinnützige GmbH (Hrsg.) [o.J.]: Leben im grünen Bereich – das Kölner Grünsystem. Bestandsaufnahme und Handlungsbedarf. Köln: Reprowerkstatt Wargalla.

Machat, R. [2005]: Ein Grüngürtel um Wien. Aus der Entstehungsgeschichte des Wald- und Wiesengürtels. In: Brunner, K., Schneider, P. (Hrsg.): Umwelt Stadt. Geschichte des Natur- und Lebensraumes Wien. Wien: Böhlau, S. 474–478.

Region Hannover (Hrsg.) [2005]: Der Grüne Ring. WasWannWieWo. Radwandern in und um Hannover. Hannover: Eigenverlag.

Region Hannover (Hrsg.) [2006]: Der Grüne Ring. – Band II. Spurenlesen in der Landschaft: Radwandern in und um Hannover. Hannover: Eigenverlag.

Stadt Frankfurt am Main (Hrsg.) [2003]: GrünGürtel Frankfurt. Stadt Frankfurt am Main – Umweltamt. Schriftenreihe Lebendige Stadt. Bd. 2. Frankfurt: Societätsverlag.

Stadt Salzburg (Hrsg.) [2009]: Die zukünftige Entwicklung der Stadt Salzburg. Räumliches Entwicklungskonzept der Stadt Salzburg REK 2007. Amt für Stadtplanung und Verkehr, Magistrat der Stadt Salzburg: Schriftenreihe zur Salzburger Stadtplanung. Heft 35.

Statistik Austria und Österreichischer Städtebund (Hrsg.) [2008]: Österreichs Städte in Zahlen. Wien: Eigenverlag.

Statistik Austria und Österreichischer Städtebund (Hrsg.) [2010]: Österreichs Städte in Zahlen. Wien: Eigenverlag.

Weber, G. und Mitter, H. [2007]: Optionen zur Sicherung des Grüngürtels um die Stadt Salzburg. Unveröffentlicht.

Urban Redevelopment East: A Programme to Handle the Problems in Shrinking Cities in Germany

1. Introduction

Cities in Germany have had to face massive population decreases, particularly those in the newly-formed states of Eastern Germany. Some municipalities have lost more than 20% of their inhabitants since the German reunification.

For this reason the responsible ministries started the programme “Urban redevelopment east” in 2002. Furthermore, the legislator introduced an amendment of the German Statutory Code on Construction and Building in 2004 to define cooperative proceedings by “urban contracts” for urban redevelopment. The first funding period ended in 2009.

The first part of this article gives a general idea of the problem of shrinking cities in Eastern Germany and the main objectives and contents of the urban redevelopment following article 171a to 171d of the German Statutory Code on Construction and Building. The second part takes a closer look at the evaluation of the first promotion period. On the whole the programme was quite successful and may be useful as an example to solve similar problems in other countries. However, the evaluation identified some problems, which need to be solved in the second promotion period. For this reason the structure of the programme has been changed but there are still some unsolved problems, which are identified in the third part of this article in order to generate an international discussion of possible solutions.

2. The problem of shrinking cities in Eastern Germany

In Germany large migration movements exist, especially from Eastern to Western Germany. This is one of the main reasons why cities like Hoyerswerda lost nearly a quarter of their population since the German reunification. In other cities (e.g. Leipzig) we have to distinguish between the city centre and the surroundings. In Leipzig we have a population loss of 11.8% in the city centre and an increase of population in the surroundings of 21.5%. For this reason it is very important to take into account the nationwide movements as well as the regional movements to develop a reasonable approach to urban planning. Following the predictions of the national experts the Eastern European expansion of the EU will only increase the development pressure in the urban agglomerations in south-western Germany because the immigrants will mostly move to those economic successful

* Institut für Geodäsie, Universität der Bundeswehr München, Germany.

regions. For this reason the Eastern European expansion will not be helpful in solving the problems in Eastern Germany.

A further problem is the birth rate in Germany. In the 1960s, the birth rate was greater than 2.2 children per couple. Because of “the pill” there was a dramatic decrease at the end of that decade. Subsequently, the birth rate in Western Germany was more or less stable at around 1.4 children per couple (cp. Figure 1, dark grey). In the eastern part of Germany there was a temporary increase in the eighties but afterwards another dramatic decrease down to only 0.8 children per couple (light grey) as a result of the German reunification. In the following years the birth rate normalized so that there is now a nationwide birth rate of 1.4 children per couple, one of the lowest birth rates in the world.

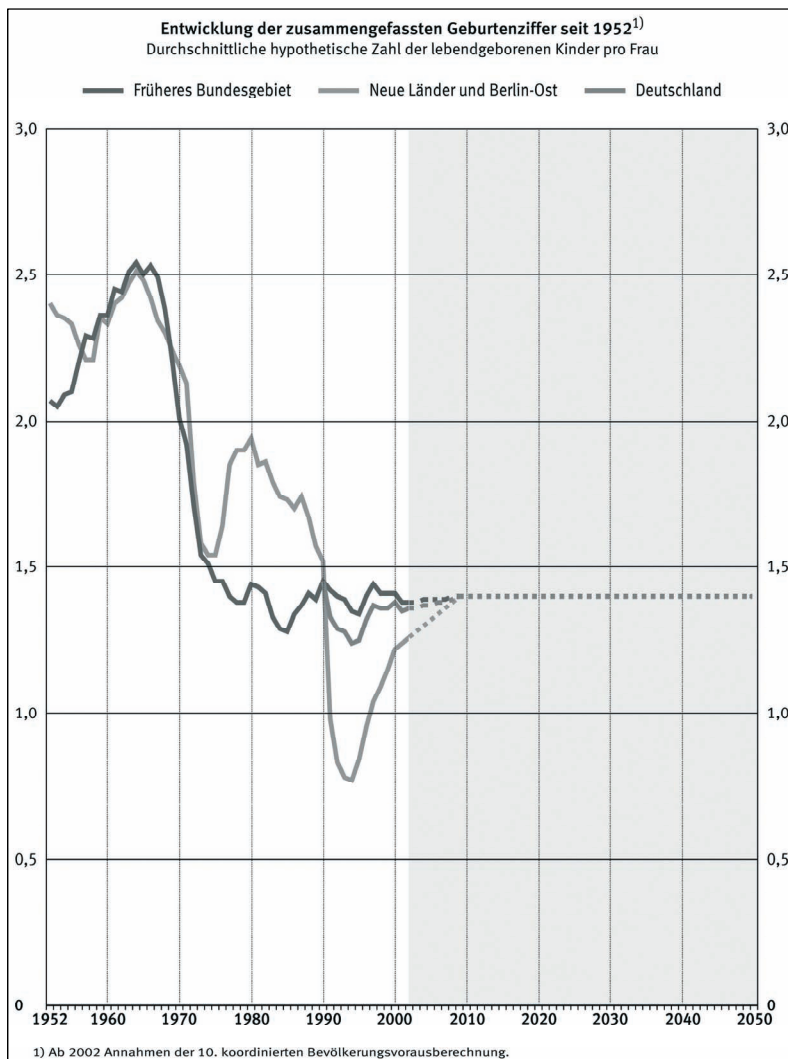


Figure 1: Birth rate development in Germany (Source: Statistisches Bundesamt 2003).

This low birth rate, when combined with large outward migration movements causes structural vacancies in Eastern Germany (cp. Hendricks 2006).

3. Legislation

3.1 “Urban contracts” in general

One of the first reactions of the German government, following the German reunification, was an amendment of the German Statutory Code on Construction and Building (BauGB) concerning the so called “urban contracts” to address the problems of urban areas. § 11 includes some basic restrictions concerning the legal objectives of these kinds of contracts. The “contracts of measures” include the contracts of planning (e.g. the draft of the preparatory or legally binding land-use plan) and the contracts to prepare the building activities (e. g. demolition of old buildings, removal of plants or contaminated soil). The “contracts of edification” may regulate the use of the plot (e.g. type and grade of the authorized use, the obligation to finish the construction of the buildings in a given period of time), the ecological compensation, the housing supply for sections of the population who have extraordinary problems to find an adequate accommodation or the housing supply for locals. The most important group of contracts are the “contracts to cover the follow-up costs”. They can be used to cover the costs of the municipality (not another territorial authority) in the past or in the future which are condition or consequence of the development of the area (e.g. infrastructure in the broader sense).

All the contents of contract have to meet two important legal principles. The first is “the exclusion of arbitrary tying arrangements”. There has to be a strict objective connection between the obligation of the private contractual partner and the urban development. Furthermore, the municipality has no right to “sell” sovereign acts. The second one is “the imperative of adequacy”. The problem is that the interpretation of “adequacy” depends on the way you look at it. The best criterion to check the fulfilment of this principle is the proportion of the surplus value of the developed land to the cost distribution. In the literature it is controversially discussed as to what proportion of the surplus value caused by the planning may be absorbed by the municipality. The prevailing opinion is that up to 50% is permitted. A permissible absorption of more than 50% has to be checked in every isolated case (cp. Hendricks 2006).

3.2 Urban redevelopment by urban contracts

After realizing the great problem of shrinking cities in Eastern Germany, the German government implemented another amendment of the German Statutory Code on Construction and Building in 2004 to define a cooperative proceeding by urban contracts for urban redevelopment. The course of action is defined in §§ 171 a–d BauGB (cp. Figure 2).

First of all the municipality has to question whether structural vacancies even exist? If the answer is yes, the municipality has to make a decision to establish an urban redevelopment concept (§ 171 a and b). In the next step it has to seek a consensus with all of the affected parties, because a successful realization of all the different measures of the redevelopment is

only possible if a consensual behaviour of all the participants is likely. Subsequently, the local authorities need to adopt a resolution of the concept and the area or redevelopment (§ 171 b). The final steps are the conclusion of urban contracts (§ 171 c), the realization of the different measures of redevelopment and the safeguarding of the whole project (§ 171 d).

§ 171 c includes some special restrictions of the legal terms of contract of this kind or urban contracts. Thus, we have take into consideration the basic rules of § 11 as well as the special rules of this paragraph so that the contracts conform to the law (cp. Ministerium für Infrastruktur und Raumplanung 2005). A possible subject is the extensiveness of demolition or deconstruction, whilst a further legal subject is the temporary use of the plot (e.g. the conservation of buildings for a while before the area will be turned into a green space). Other important points are on the one hand the cost responsibility for the demolition/deconstruction and on the other, the subsidies for the accrued costs. Furthermore, time limits for the demolition/deconstruction should be declared. It is also important that the property owner declares the relinquishment of compensation following §§ 39–44 BauGB. In Germany the municipality generally has to pay compensation if it changes the legally binding land use plan and the new planning is less economic than the previous plan. For this reason the relinquishment of compensation is an important term of contract to prevent the property owner from applying for compensation for formal reasons. One of the most important factors is the equalisation of burdens between the property owners involved. It is also one of the biggest problems, especially if we have many private property owners in the redevelopment area. We will have a closer look on this point in section 4.1.

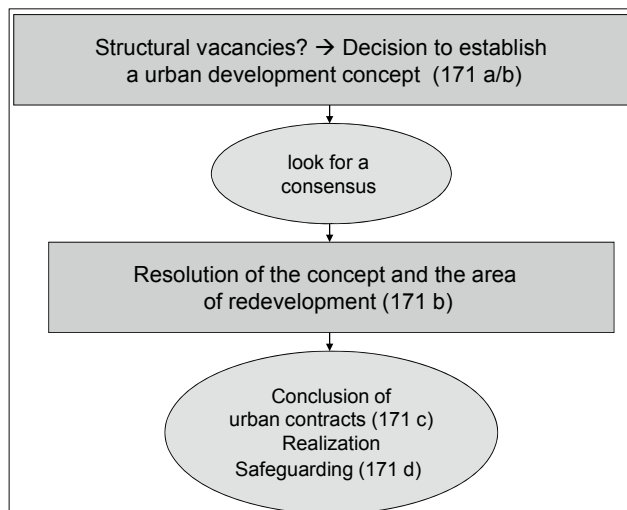


Figure 2: Course of action of the urban redevelopment following §§ 171 a–d.

The contracting parties are the municipality, the property owners of parcels and buildings in the redevelopment area, the tenants (especially those who should move), the creditors (in general the banks), the public utility companies (who have to adapt the local infra-

structure to the new situation) and the property owners of other buildings out of the redevelopment area (e. g. new apartment buildings for the tenants).

4. The programme “Urban redevelopment east”

The second measure taken by the German government to tackle the problem of shrinking cities was the initiation of the programme “urban redevelopment east”. In February 2000, a commission of experts recommended a structural change in Eastern Germany. The main objective was the demolition of 300,000 to 400,000 flats (cp. Lenkungsgruppe Evaluierung Stadtumbau Ost 2008).

4.1 First promotion period

The programme started in 2002 and the first promotion period ended in 2009. The financial amount for this period was 2.5 billion € and it was co-financed by the different levels of the German administration: the German federation, the federal states and the municipalities. The main objectives were the demolition or deconstruction of vacancies and the improvement of districts worth conserving.

413 municipalities participated in the programme (ranging from 33 in Brandenburg to 129 in Saxony). The numbers of participating municipalities show clearly that we had different strategies in the different federal states. For example, while Brandenburg preferred the promotion of a lower number of municipalities by a bigger part of the budget, the situation in Saxony was opposite.

The vacancy rate of the building companies decreased from 16.2% to 10%. As a result, it was quite a successful first promotion period, but there is still much work remaining. Regarding the improvement of urban districts, the programme was successful concerning the historic centres in the classic style of the period of industrialization (“Gründerzeit”, ≈ 1840–1870), but there are still extensive problems concerning elementary districts out of this period (cp. Bundestransferstelle Stadtumbau Ost 2010).

A more detailed analysis of the demolition activities in the different federal states shows clearly that some states were more successful than others (cp. Figure 3). On the whole more than 260,000 flats have been demolished from 2002 to 2010 (≈ 85% of the recommended quantity). While Berlin, Brandenburg and Thuringia reached the recommended quantity and Mecklenburg-West Pomerania and Saxony-Anhalt nearly reached it, Saxony still has to demolish 40,000 flats. If we consider the chronological progress of the demolition activities (cp. Figure 4), we notice that the process is slowing down. The biggest part of the demolition was realized from 2002 to 2006. Subsequently, the process slows significantly (except Berlin where we had a lot of activity in 2009). One reason for this trend is that there is no more potential for demolition covering large areas. A large part of the structural vacancies has been eliminated and now we have to face many dispersed vacancies. Furthermore, there are fewer empty unrenovated buildings and the resistance to a demolition is much higher if the property owner has invested a lot of money in the renovation. Beyond that there are many low-income households who create a demand for

cheap living space, even in unrenovated buildings. Conversely, many building companies do not have enough available flats where the tenants could move in. For this reason they try to delay the demolition until they have solved this problem because they do not want to lose tenants.

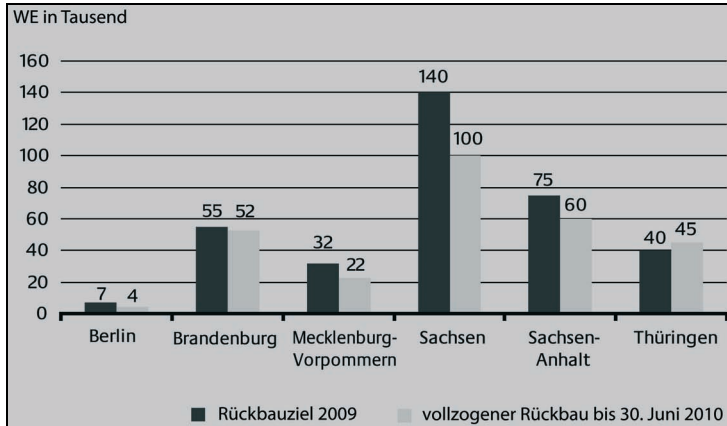


Figure 3: Balance of demolition activities in the different federal states
(Source: Bundestransferstelle Stadtumbau Ost 2010).

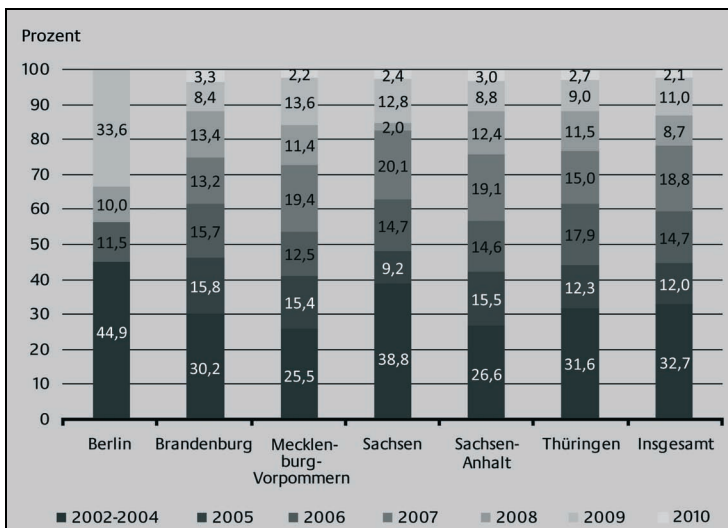


Figure 4: Chronological progress of demolition activities in the different federal states
(Source: Bundestransferstelle Stadtumbau Ost 2010).

One of the greatest problems is the fact that a large part of the remaining potential for demolition is individual private property and not property of a building company. In general it is much easier to realize a redevelopment if the buildings are property of building companies.

Example:

We have 4 buildings. Each building has 5 floors and there is one flat per floor. In total we have 10 occupied flats and 10 vacancies. We have 2 building companies and each of them owns two buildings (cp. Figure 5).

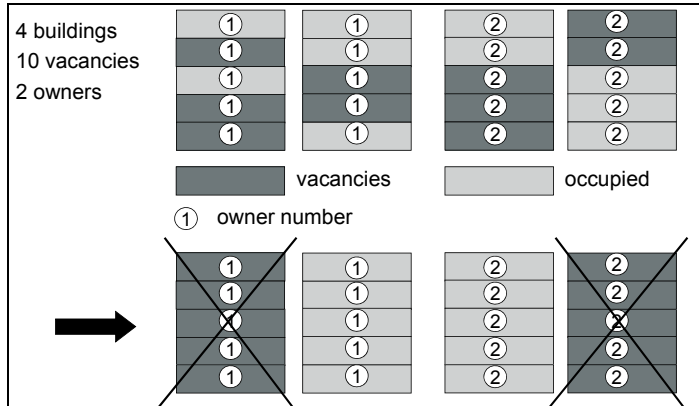


Figure 5: Buildings in property of building companies.

In this case we have optimal conditions to realize a redevelopment by the elimination of vacancies. Although the building companies have to face the loss of apartments, they have varying merits (e. g. decreasing running costs and costs of maintenance, increasing value of the remaining buildings due to the elimination of vacancies and the new green space following demolition). Furthermore, the possible promotion of the programme “urban redevelopment east” may help to convince the tenants to move.

The situation changes a lot if we have individual private property (cp. Figure 6).

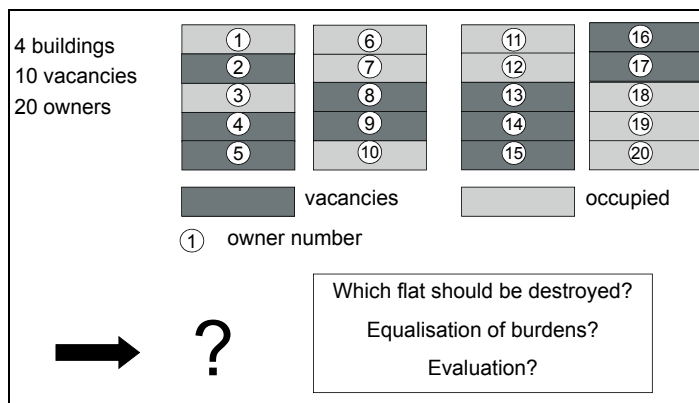


Figure 6: Buildings in individual private property.

In this case the situation is much more difficult. At first, there is the question of which building should be destroyed. In the first instance it was only the question of who has to move, because the balance of the property owners did not depend on the decision of which

one of their buildings would be destroyed. In this case we have to resolve how we can realize an equalisation of burdens between the affected property owners (cp. Bunzel 2009). Two extreme examples may be helpful to clarify the problem. If the municipality proposes that the flats in the redevelopment area have only a symbolic value of 1 € (because there is no demand on living space) and those who keep their property should pay a corresponding compensation to those who lose their property, the last-mentioned group will not agree. On the other hand, if those who keep their property should pay a compensation of 1.000.000 € to those who lose their property, the first-mentioned group will not agree. So the acceptable amount for both sides will be anywhere between 1 and 1,000,000 €. But you also have to take into account that you have to fix an “adequate” value following § 11 BauGB (cp. section 3.1). For this reason you can not fix any amount you want. This leads to the problem of real estate evaluation in redevelopment areas. In Germany there is actually a considerable scientific investigation in this area but this is not a topic of discussion in this paper.

There is a further reason why the elimination of structural vacancies worked quite well in the first founding period. This is the possibility of a partial debt cancellation. It is another measure of the German government. Following the German legislation communal building companies may apply for a debt cancellation of 77 €/m², if the borrowing was before 1990. The legislative authority made this restriction because the corresponding law is especially dedicated to the follow-up building companies of the former German Democratic Republic (cp. Bundesministerium der Justiz 2006). Other restrictions are that the vacancy of the housing stock of the company is bigger than 15% and that the economic survival of the company is imperilled (cp. Bundesministerium der Justiz 2008). 77 €/m² does not seem to be a lot of money, but it has to be taken into account that we are generally talking about old buildings which have been constructed in a low standard and for this reason the remaining value is not very high. Finally, the applied debt cancellation of 1.1 billion € from 2001 to 2010 shows clearly that there is a lot of interest in this programme.

4.2 Second promotion period

In section 4.1 we already formed the conclusion that the process of demolition activities was slowing down. Accordingly the corresponding part of the annual budget was decreasing in the last years (cp. Figure 7, 27.6% in 2009). On the other hand the part for the improvement of urban districts (59.8% in 2009) and the adaption of the local infrastructure (9.9% in 2009) was growing. These are important facts in the planning of the second promotion period.

Another important point is in predicting of the need for flats (cp. Figure 8). Generally we expect a decrease of rented flats. Furthermore, the German experts distinguish between so called one and two family houses and larger buildings. The greatest decrease is expected in the area of larger rented apartment houses (decrease from 265 million m² living space to 235 million m²) while the situation concerning rented one and two family houses probably will be stable (around 50 million m²).

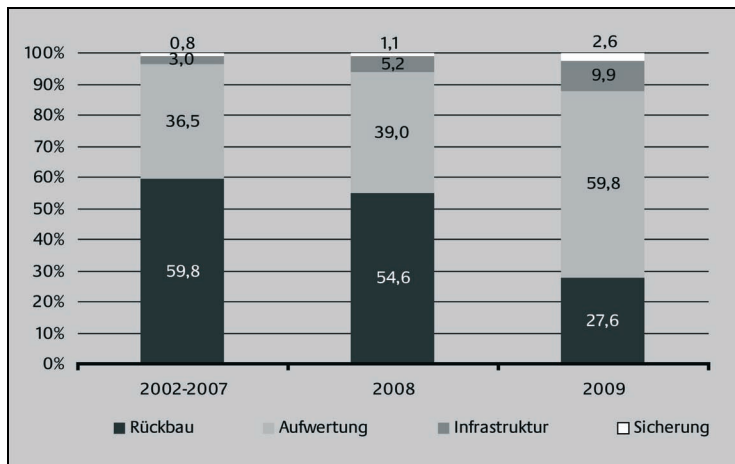


Figure 7: Apportionment of the annual budget (Source: Bundestransferstelle Stadtumbau Ost 2010).

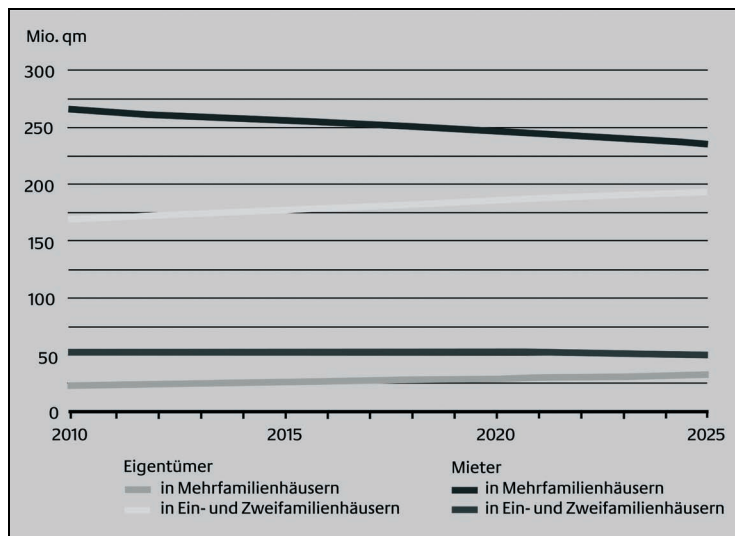


Figure 8: Prediction of need of flats (Source: Bundestransferstelle Stadtumbau Ost 2010).

On the other hand there will be an increase of owner-occupied flats/houses, especially in the sector of one and two family houses (increase from 170 million m² to 190 million m²). In total the German experts still recommend a demolition of 30,000 flats per year, especially in the sector of rented apartment houses (cp. Bundestransferstelle Stadtumbau Ost 2010).

Due to these facts, the legislative authority modified the objectives of the programme. The main objectives of the second promotion period (from 2010 to 2016) are the improvement of districts worth conserving, the demolition or deconstruction of vacancies, the improvement of singular old buildings (constructed before 1949) and the adaption of the

local infrastructure. The first two points are the same as in the first period, but now the focus is on the improvement. The budget of this promotion period is 230 million €.

5. Conclusion

The problem of shrinking cities exists in nearly the whole of Eastern Germany. Due to the improvement of the legislation and the measures of the first promotion period of the programme “urban redevelopment east” a large part of the structural vacancies were eliminated and the programme was also successful in the improvement of the historic city centres. Now, there is a particular problem in creating a more extensive participation of individual private property owners. For this reason it is very important to start an international discussion regarding the possible solutions of this problem. First of all, we have to answer the question how we can realize an equalisation of burdens between the affected property owners.

References

- Bundesministerium der Justiz [2006], Gesetz über Altschuldenhilfen für Kommunale Wohnungsunternehmen, Wohnungsgenossenschaften und private Vermieter in dem in Artikel 3 des Einigungsvertrages genannten Gebiet (Altschuldenhilfe-Gesetz). Berlin: Bundesministerium der Justiz.
- Bundesministerium der Justiz [2008], Verordnung zum Altschuldenhilfe-Gesetz (Altschuldenhilfeverordnung – AHGV). Berlin: Bundesministerium der Justiz.
- Bundestransferstelle Stadtumbau Ost [2010], Stadtumbau vor neuen Herausforderungen – 4. Statusbericht der Bundestransferstelle Stadtumbau Ost. Berlin: Bundesministerium für Verkehr, Bau und Stadtentwicklung.
- Bunzel, A. [2009], Praxiserfahrungen beim Stadtumbau Ost. Zeitschrift Landes- und Kommunalverwaltung (LKV) 6/09:241–248.
- Hendricks, A. [2006], Einsatz von städtebaulichen Verträgen nach § 11 BauGB bei der Baulandbereitstellung – eine interdisziplinäre theoretische Analyse und Ableitung eines integrierten Handlungskonzeptes für die Praxis. PhD thesis. University of Darmstadt.
- Lenkungsgruppe Evaluierung Stadtumbau Ost [2008], Stellungnahme und Empfehlungen der Lenkungsgruppe zur Evaluierung des Bund-Länder-Programms „Stadtumbau Ost – für lebenswerte Städte und attraktives Wohnen“ und zur Fortführung über das Jahr 2009 hinaus. Berlin: Bundesministerium für Verkehr, Bau und Stadtentwicklung.
- Ministerium für Infrastruktur und Raumplanung [2005], Einführungserlass zum Gesetz zur Anpassung des Baugesetzbuchs an EU-Richtlinien (EAG-Bau Einführungserlass). Brandenburg: Ministerium für Infrastruktur und Raumplanung.
- Statistisches Bundesamt [2003], Bevölkerung Deutschlands bis 2050 – 10. koordinierte Bevölkerungsvorausberechnung. Wiesbaden: Statistisches Bundesamt – Pressestelle.

Affordable Housing Policy and Practice in England

Abstract

Concern about affordable housing has never been so prominent. For decades the supply of housing has failed to keep pace with demand. Moreover, the recent economic and housing market crisis has placed further strain on those in need of affordable homes; government resources and funding have become limited and mortgage finance has become unobtainable for many wishing to get a foot on the housing ladder.

This paper will discuss affordable housing policy and practice recently employed in England. Liverpool's housing markets will also be examined, looking at local housing market issues such as low demand and its impact on affordable housing policy. Finally, using residential areas in Liverpool as a case study, an assessment method for sustainable housing affordability will be presented.

Keywords: Affordability, Affordable housing, Housing market failure, Housing policy, Low demand

1. Introduction

Decreasing housing affordability is currently a prominent issue within many developed countries, including the UK (Harriot and Matthews 2009; Jones et al. 2011). For decades the supply of housing has failed to keep pace with demand, contributing greatly to the sharp increase in house prices that occurred between the mid-1990s and 2007 in the UK (Barker 2004; CLG 2006; NHPAU 2009). Moreover, the subsequent economic and housing market crisis has placed further strain on those in need of affordable homes. Although the recession caused house prices to decrease it has also resulted in tighter mortgage markets and increased deposit requirements, making it increasingly difficult for first time buyers to get on the housing ladder (NHPAU 2009). Furthermore, government resources and funding have become limited. Although the credit crisis may have dampened demand for housing, the need for housing has not abated. In England there are currently over 4.5 million people on waiting lists for affordable housing (CLG and HCA 2011).

This paper will discuss affordable housing policy recently employed in the UK, focusing on England. Housing strategy in Liverpool will also be examined, considering local housing market issues such as low demand and the subsequent impact on affordable housing

* School of the Built Environment, Faculty of Technology and Environment, Liverpool John Moores University, UK.

** School of the Built Environment, Faculty of Technology and Environment, Liverpool John Moores University, UK. Corresponding author, email: v.maliene@ljmu.ac.uk.

policy. Finally, using residential areas in Liverpool as a case study, an assessment method for sustainable housing affordability will be presented. The main aim is to highlight the design, testing and possible benefits from applying the model. The method seeks to assess affordability not only in terms of housing costs, but by taking into consideration a wide range of economic, environmental and social criteria that account for sustainability and quality of life.

2. Affordable housing policy in England

The government has an admirable vision for housing policy stating that, “everyone should have the opportunity of a decent home, which they can afford, within a sustainable mixed community” (CLG 2006, p.1). This type of liberal policy goal has been embraced by successive UK government since 1945 (Monk and Whitehead 2010). The government defines affordable housing as including ‘social rented’ and ‘intermediate’ housing, although only specified eligible households whose needs are not met by the market will qualify (CLG 2006). The definition has recently been revised by the government to include a new tenure named ‘affordable rent’ which is available only to those who qualify for social housing (CLG 2011a). Therefore, intermediate housing is aimed specifically at households who can afford to pay more than the price of social rented housing but are unable to afford full-price open market housing (CLG 2011a; Monk and Whitehead 2010). There are a range of intermediate products available, such as shared ownership, shared equity and intermediate rent (CLG 2006). Following the house price boom and the succeeding financial crisis a growing amount of households are falling into the intermediate ‘gap’ and are unable to access traditional homeownership.

The UK has experienced a decrease in the provision of social rented housing over the last two decades (Hall and Gibb 2010). Instead there has been an increased emphasis on providing new affordable housing predominantly through market mechanisms and private sector funding (Monk and Whitehead 2010; Paris 2007). Owing to limited public funding, along with the government’s policy objectives of increasing home ownership and creating mixed communities, the emphasis on intermediate affordable housing products increased. The intermediate market has become a principal element of affordable housing policy in the UK, accounting for almost 40 per cent of new affordable housing production in 2007 (Monk and Whitehead 2010). Furthermore, the popularity of the intermediate market grew given that such housing can be negotiated through the planning system and requires modest government subsidy in comparison with social rented housing (Burgess 2010).

The land-use planning system is the primary mechanism for providing new affordable housing in England (Monk and Whitehead 2010). Section 106 (S106) planning agreements are used to deliver affordable housing alongside new private residential developments. In 2010 over 60 per cent of affordable housing was delivered through such agreements (Burgess et al. 2010). However, S106 planning agreements are largely dependent on the buoyancy of the housing market and are also subject to economic viability assessments. Accordingly, S106 was able to deliver increasing proportions of affordable housing during

the house price boom period (Burgess et al. 2010). However, since the credit crisis the economic viability of new schemes is increasingly being affected. Furthermore, shared-ownership began to be perceived as 'risky' by lenders (HCA 2009), making it ever more difficult for households to access the required mortgage finance.

3. Social housing policy reform

The government raised concerns that current levels of grant for affordable housing are unsustainable in the present economic climate (CLG and HCA 2011). Consequently, radical reforms to social housing policy have recently been made in England. The coalition government announced the end of grant funding for social housing and the introduction of funding for a new 'affordable rent' tenure. This is part of the government's major new scheme, the Affordable Homes Programme 2011–15, which intends to support the delivery of up to 150,000 new affordable homes over the next four years in England. A capital budget of £4.5 billion has been allocated for the 2011–2015 period, £1.8 billion of which will be invested through the new affordable rent model which is set to be the principal element (CLG and HCA 2011). The affordable rent model will give landlords greater flexibility and will allow them to charge rents of up to 80 per cent of local market rate (CLG and HCA 2011). Delivering this level of affordable housing in the current economic environment will be a huge challenge, further aggravated by the fact that the capital budget for affordable housing is only half of that which was allocated over the last spending review period. The government is clearly hoping that the deficit in capital grant will be compensated for by shifting to a new system of revenue funding; charging new social housing tenants 80 per cent of current market rates. However, in areas such as London rents at up to 80 per cent of market rates will be significantly higher than traditional social rents and may therefore be unaffordable for some families. Moreover, the new higher 'affordable' rents coincide with proposals for reductions to housing benefit which may further exasperate the ability to afford housing.

In addition the government has proposed a more localised approach to decision making in planning. This is reflected in the Localism Bill which will remove regional spatial strategies (RSSs) and centrally imposed house building targets which previously dictated national housing requirements (CLG 2011b). The traditional 'top-down' approach will be replaced with a requirement that individual local authorities come to their own assessment of housing need, including affordable housing. The government is hoping that financial incentives will encourage local authorities to build sufficient new homes. The 'New Homes Bonus' is a council tax matching scheme that has been introduced to reward local authorities that develop housing, with an enhancement for affordable housing, for a period of six years (CLG 2011b).

4. Case study area: Liverpool

4.1 Housing market failure

As well as areas of rising house prices and affordability problems, there are many areas within the UK experiencing low housing demand and consequently housing market fail-

ure. Such locations may have an abundance of low value properties. Therefore, lack of housing supply is not the only concern for the housing sector; problems as a result of low quality housing and undesirable neighbourhoods also exist.

Imbalances between the demand and supply of housing can create high and low demand areas; both of which can occur at the same time in different parts of a city or area (Maliene et al. 2008). In particular this has occurred in many parts of the North West of England, including Merseyside. This can, and usually does, result in polarised housing markets where areas of high demand see steeply rising house prices and areas of low demand see falling house prices and abandonment. Low housing demand and abandonment has been a feature within Merseyside since the late 1970s (ECOTEC 2005). Liverpool displays the familiar characteristics of multiple deprivation, such as poor environments, low educational achievement, high crime levels and anti-social behaviour (Cole and Nevin 2004). This has subsequently deterred inward migration from new residents. As a result Liverpool has suffered from a severe decline in population which has contributed to housing market failure and a general oversupply of housing. Furthermore, Liverpool's housing stock is significantly unbalanced; over 80 per cent of homes are in Council Tax bands A and B, resulting in substantial over supply at the bottom end of the market and real shortages of better quality homes in Council Tax bands C, D, E and above (LCC 2005). However, Liverpool also has thriving housing markets (Nevin and Lee 2003). The City therefore has a polarised housing market with both rapidly rising house prices and some of the lowest property prices in the UK (LCC 2005; LCC 2009).

4.2 Housing strategy in Liverpool

The complex nature of Liverpool's housing markets is reflected in the council's approach to housing strategy. Liverpool City Council's (LCC) housing strategy seeks to support the economic growth and regeneration of the City Region. The strategy focuses primarily on tackling deprivation, reversing the trend of depopulation, restructuring the housing market by improving tenure choice and housing quality, and building sustainable and balanced communities across the City (LCC 2009). LCC does not currently operate an affordable housing policy. A representative from the council explains the reason for this:

In essence Liverpool's housing markets, in terms of prices, are not high. There is too much low value housing which is largely obsolescence and in terms of tenure we have an awful lot of social housing. In planning terms there has never been a case for an affordable housing planning policy (Civil servant at LCC).

However, affordability is still a prominent issue within some areas of Liverpool (LCC 2009). Although the City has a significant amount of 'affordable' stock there is also a significant amount of low income or nonworking households requiring support in gaining entry to housing (LCC and GVA 2011). Accordingly, although a specific affordable housing policy is not yet in place, affordable housing need is picked up elsewhere:

Affordable housing in Liverpool is in the context of housing strategy and using the grant system and not in planning terms. What has been perused from a hous-

ing strategy point of view is to use grant funded mechanisms to regenerate (Civil servant at LCC).

LCC's Housing Strategy (LCC 2009) identifies the need for 25 per cent level of affordable housing, an even split of 50 per cent social rented and 50 per cent intermediate housing, based on their 2007 housing needs assessment. This is to be delivered through a range of non-planning policy mechanisms, for example direct grant funding of Registered Social Landlords (RSLs), area-based programmes such as Housing Market Renewal (HMR) and joint venture initiatives and other partnership arrangements using LCC land assets (LCC 2010a). However, HMR funding will no longer be available to the same degree as it has previously been. The HMR initiative was launched in 2002 in a bid to tackle low housing demand and abandonment across several parts of the North of England and the Midlands. HMR is a programme of refurbishment, redevelopment and improved area management that seeks to address housing market failure and the associated problems of poor quality housing and a lack of choice and tenure (Audit Commission 2011). The coalition government brought an end to the funding for the HMR programme in March 2011 after the 2010 spending review. This has concluded the 15-year initiative seven years before it was intended to end (Audit Commission 2011). LCC is seeking £10.53 million from a £30 million HMR transition fund in order to allow regeneration work to continue in five areas (Inside Housing 2011). What affect this loss of funding will have on the housing markets contained within the renewal areas remains to be seen and largely depends on whether funding can be sought elsewhere. It is difficult to see how the authority will be able to continue to undertake regeneration activities in the current economic climate.

A total of 283 affordable dwellings were completed in Liverpool in 2009–2010, all by RSLs; as LCC does not have an affordable housing policy there were therefore no affordable homes completed as a result of developer contributions (LCC 2010b). More recently LCC commissioned a Strategic Housing Market Assessment (SHMA) in order to identify future affordable housing need in Liverpool. The draft SHMA report (LCC and GVA 2011) indicates that Liverpool must now provide for a net annual affordable housing need of roughly 858 dwellings per annum over the next 5 years, the highest level of demand being for three bedroom properties across the city. A definitive suggestion of where and via what mechanisms this quota is to be delivered is not yet specified. However, if the council is to meet this need they will require a drastic increase in affordable housing provision in comparison with the 283 dwellings that were completed, without developer contributions, over 2009–2010. It appears that insufficient affordable housing is being delivered through non-planning policy mechanisms and initiatives. LCC are currently renewing their Housing Strategy for 2011–2015 and their Land Allocations and City Wide Policies Development Plan Documents (DPD) are also in progress; whether a specific affordable housing planning policy will be in place is not yet known. However, it has been suggested that over time the non-planning policy mechanisms (currently used for delivering affordable housing) are expected to give way to a requirement for residential developers to directly provide affordable housing as they bring forward sites for development (LCC 2010a).

5. Sustainable housing affordability assessment tool

5.1 Methodology

As Liverpool's housing market demonstrates, while some areas have an abundance of low value properties they are often in neighbourhoods where people have no desire to live, where much of the housing is outdated, in poor environments, of poor quality and even non-decent. Such properties may be thought of as 'affordable' purely because they are low-cost, but should they be considered affordable in reality? It has been suggested that a distinction needs to be drawn between low value and affordable housing (NWRA 2007). For an area to be regarded as affordable it ought to have more than relatively low house prices. Focusing exclusively on the cost of housing fails to indicate anything about the quality of the housing or the environment in which it is situated. Fisher et al. (2009) indicate that focusing on price alone may lead to inaccurate conclusions about the affordability of housing.

Affordability is not exclusively about making housing economically viable. As well as housing costs, a wider range of criteria must be taken into consideration in order to determine true housing affordability and quality of life. Such findings have been the motivation to develop a methodology that can be used to assess the affordability of different housing locations in a sustainable manner, taking into account a range of economic, environmental and social criteria that influence both the affordability and sustainability of housing. Given the complexity of the issue under consideration multiple criteria decision making (MCDM) appeared to be appropriate as the basis of an assessment method for sustainable housing affordability.

There are various MCDM methods available. The Complex Proportional Assessment (COPRAS) method was selected for this particular application due to its popularity amongst built environment and property related problems (see Maliene 2001, 2011; Zavadskas et al. 2004; Kaklauskas et al. 2007; Viteikienė and Zavadskas 2007; Banaitiene et al. 2008). Furthermore, the method can deal with both quantitative and qualitative criteria and has the ability to account for positive (maximizing) and negative (minimizing) evaluation criteria within one assessment. The COPRAS method assumes direct and proportional dependence of significance and priority of investigated versions on a system of criteria adequately describing the alternatives and on values and significances of the criteria. Application on this method will thus allow residential areas to be assessed and ranked in terms of their sustainable housing affordability, based on numerous weighted decision criteria.

The data collection process for the MCDM methodology included the following stages: determining sustainable housing affordability criteria (via literature review and interviews with professionals), determining criteria weights/importance (via questionnaires conducted with professionals), selecting decision alternatives (residential areas) for comparison, calculating criteria values for each alternative, and finally, forming a decision-making matrix with the aforementioned data (see table 1). Three alternative residential areas (housing wards) in Liverpool were randomly selected for comparison purposes. The first alternative

is Everton (A_1), the second alternative is Croxteth (A_2) and the final alternative is Allerton and Hunts Cross (A_3).

The procedure of the COPRAS method is generally carried out in the following stages (see Kaklauskas et al. 2007 and Zavadskas et al. 2004 for detailed methodology and algorithms), the results of which are displayed in table 1:

- *Stage 1:* The first step is to normalise the weighted decision-making matrix;
- *Stage 2:* Calculate the positive (S_{+j}) and negative (S_{-j}) sums of the weighted normalised criteria describing the j -th alternative;

Table 1: Normalised decision matrix and results

Criteria i		z	Measur- ement	Weight q	Alternatives j		
					A_1	A_2	A_3
1	House prices in relation to incomes	-	Ratio	6.3504	1.6	1.6	3.1
2	Rental costs in relation to incomes	-	%	6.3724	1.9	1.9	2.6
3	Interest rates and mortgage availability	+	Points	5.2651	1.8	1.8	1.8
4	Availability of private and social rented accommodation	+	Quantity	5.6537	2.9	1.7	1.1
5	Availability of affordable homeownership products	+	Points	5.1991	2.6	1.3	1.3
6	Safety (crime)	-	Points	4.8544	3.0	1.2	0.6
7	Access to employment	+	Points	5.4924	1.7	1.7	2.1
8	Access to public transport services	+	Points	4.9864	1.5	1.5	1.9
9	Access to good quality schools	+	Points	4.9498	1.2	1.9	1.9
10	Access to shops	+	Points	4.9131	2.0	1.0	2.0
11	Access to health services	+	Points	4.9718	1.7	1.6	1.7
12	Access to child care	+	Points	3.9745	1.2	1.4	1.4
13	Access to leisure	+	Points	3.6225	1.4	1.4	0.9
14	Access to open green public space	+	Points	4.1505	1.5	1.1	1.5
15	Quality of housing in area	+	Points	6.1304	1.5	2.0	2.6
16	Energy efficiency of housing in area	+	Points	5.4411	1.8	1.8	1.8
17	Waste management in area	-	Points	3.3145	1.1	1.1	1.1
18	Desirability of neighbourhood area	+	Ratio	4.3851	0.9	0.9	2.6
19	Deprivation in area	-	%	5.0524	2.8	1.1	1.1
20	Presence of environmental problems	-	Points	4.9204	2.5	1.2	1.2
S_{+j}					23.7	21.1	24.6
S_{-j}					12.9	8.1	9.7
Q_j					31.5	33.5	35
N_j (%)					90	95.7	100
Priority					3	2	1

* The sign (+/-) indicates that a greater/lesser criterion value satisfies sustainable housing affordability.

- *Stage 3:* Determine the significance (Q_j) of the comparative alternatives (A_j) on the basis of its positive and negative characteristics according to the formula:

$$Q_j = S_j^+ + \frac{S_{\min} \cdot \sum_{j=1}^n S_j}{S_j \cdot \sum_{j=1}^n \frac{S_{\min}}{S_j}} = S_j^+ + \frac{\sum_{j=1}^n S_j}{S_j \cdot \sum_{j=1}^n \frac{1}{S_j}}$$

- *Stage 4:* Determine the prioritisation of the alternative residential areas under consideration. The greater Q_j the higher is the priority of the alternative;
- *Stage 5:* The degree of project utility (N_j (%)) can also be determined to show as a percentage the degree to which one alternative is better or worse than other alternatives.

5.2 Results

Using the MCDM method COPRAS three residential areas in Liverpool were assessed in terms of their sustainable housing affordability (see Table. 1). A ranking of the alternative areas was as follows: priority 1 = A_3 (Allerton and Hunts Cross), priority 2 = A_2 (Croxteth), priority 3 = A_1 (Everton). Thus, the residential area that best satisfies sustainable housing affordability is A_3 (Allerton and Hunts Cross). A_1 (Everton) was determined as the worst performing alternative. Conversely, if affordability had been assessed exclusively on the basis of housing costs in relation to income this area would have been prioritised as the most affordable. Housing costs in this area were lower than the other alternative areas considered. Thus, the area would benefit from improvements to the quality of the location, e.g. reducing crime and deprivation and increasing job opportunities. This area may not be particularly suitable for the development of affordable housing until the quality and sustainability of the community is increased. In comparison, A_3 (Allerton and Hunts Cross) was calculated to be the optimal alternative. This area may be the most suitable for the development of affordable housing, out of the three areas considered, as it best satisfies all of the decision criteria.

6. Conclusions

It is imperative that affordability issues are tackled in order to create thriving communities and to contribute to the government's sustainability agenda. Although a drastic increase in new affordable housing is required, simply building more homes is not the only answer to tackling the affordable housing shortage in all areas of the UK. High quality housing must be developed in appropriate locations and sustainable communities. 'Affordable' (or low-cost) housing may be available in low demand areas but the properties are generally not desirable, whether it be because of location, quality or design issues. It is thus essential that affordable homes are made decent and decent homes are made more affordable, located in attractive and sustainable communities where people aspire to live. In certain areas it may be the case that it is not only the housing that needs to be addressed; the quality of a

housing location, e.g. amenities, facilities and local infrastructure may need to be improved to create attractive and sustainable living environments.

The presented sustainable housing affordability assessment tool could be utilised as a potential planning indicator for shaping local housing markets and for developers selecting sites for new affordable housing development between competing locations. Identifying appropriate areas for affordable housing development would assist in ensuring high quality of life for sustainable communities. The case study assessment is presented for Liverpool; however the model could be used in other regions across the UK. The criteria system is flexible; criteria can be added or removed and weightings may be amended to reflect the local situation, thus the model could also be applied internationally.

References

Audit Commission [2011], Housing market renewal: programme review 2010, London: Audit Commission.

Banaitienė, N., Banaitis, A., Kaklauskas, A. and Zavadskas, E. K. [2008], Evaluating the life cycle of a building: a multivariant and multiple criteria approach. *Omega: International Journal of Management Science* 36:429–441.

Barker, K. [2004], Review of housing supply: final report – recommendations, London: HMSO.

Burgess, G. [2010], The impact of the economic downturn on low-cost home ownership in the UK. In: Monk, S. & Whitehead, C. (eds.), *Making housing more affordable: the role of intermediate tenures* (pp. 247–260). Oxford: Wiley-Blackwell.

Burgess, G., Monk, S. and Whitehead, C. [2010], *How can the planning system deliver more housing?* Cambridge Centre for Housing and Planning Research, University of Cambridge.

CLG (Communities and Local Government) [2006], *Delivering affordable housing*. London: The Stationary Office.

CLG (Communities and Local Government) [2011a], *Planning policy statement 3 (PPS3): Housing*. London: The Stationary Office.

CLG (Communities and Local Government) [2011b], *New homes bonus: final scheme design*. London: Communities and Local Government.

CLG and HCA (Communities and Local Government and Homes and Communities Agency) [2011], *Affordable homes programme 2011–15*.

<http://www.homesandcommunities.co.uk/sites/default/files/our-work/affordable-homes-framework.pdf> [Accessed on 27th July 2011].

Cole, I. and Nevin, B. [2004], *The road to renewal: early development of the housing market renewal programme in England*. York: Joseph Rowntree Foundation.

- ECOTEC [2005], Understanding the drivers of housing market change in the new heartlands housing market renewal area. Birmingham: ECOTEC.
- Fisher, L.M., Pollakowski, H.O. and Zabel, J. [2009], Amenity-based housing affordability indexes. *Real Estate Economics* 37:705–746.
- Hall, D. and Gibb, K. [2010], Increasing supply within the social rented sector. York: Joseph Rowntree Foundation.
- Harriot, S. and Matthews, L. [2009], Introducing affordable housing. Coventry: Chartered Institute of Housing.
- HCA (Homes and Communities Agency) [2009], Our vision: real actions. Corporate Plan 2009/10–2010/11.
http://old.homesandcommunities.co.uk/public/documents/HCA_Corporate%20Plan_English.pdf [Accessed on 16th October 2010].
- Inside Housing. [2011], Council seeks third of HMR transition fund.
<http://www.insidehousing.co.uk/ihstory.aspx?storycode=6516725> [Accessed on 18th July 2011].
- Jones, C., Watkins, C. and Watkins, D. [2011], Measuring local affordability: variations between housing market areas. *International Journal of Housing Markets and Analysis* 4:341–356.
- Kaklauskas, A., Zavadskas, E.K., Banaitis, A. and Satkauskas, G. [2007], Defining the utility and market value of a real estate: a multiple criteria approach. *International Journal of Strategic Property Management* 11:107–120.
- LCC (Liverpool City Council) [2005], Housing market renewal initiative Liverpool delivery plan. Liverpool: Liverpool City Council.
- LCC (Liverpool City Council) [2009], Liverpool City Council's housing strategy statement 2009–2011. <http://liverpool.gov.uk/Images/HousingStrategyStatement.pdf> [Accessed on 17th September 2010].
- LCC (Liverpool City Council) [2010a], Liverpool core strategy preferred options 2010, <http://liverpool.gov.uk/Images/CoreStrategyPreferredOptionsReport.pdf> [Accessed on 8th April 2011].
- LCC (Liverpool City Council) [2010b], Local development framework annual monitoring report, <http://liverpool.gov.uk/Images/AMR2010.pdf> [Accessed on 16th February 2011].
- LCC and GVA (Liverpool City Council and GVA Grimley) [2011], Liverpool strategic housing market assessment: draft report.
[http://liverpool.gov.uk/Images/DraftSHMARReport\(Final\)\(240111\)Jan2011.pdf](http://liverpool.gov.uk/Images/DraftSHMARReport(Final)(240111)Jan2011.pdf) [Accessed on 14th June 2011].
- Maliene, V. [2001], Valuation of commercial premises using a multiple criteria decision-making method. *Property Management* 5:87–98.
- Maliene, V. [2011], Specialised property valuation: multiple criteria decision analysis. *Journal of Retail and Leisure Property* 9:443–450.

- Maliene, V., Howe, J. and Malys, N. [2008], Sustainable communities: affordable housing and socio-economic relations. *Local Economy* 23:267–276.
- Monk, S. and Whitehead, C. [2010], Making housing more affordable: the role of intermediate tenures. Oxford: Wiley Blackwell.
- Nevin, B. and Lee, P. [2003], Understanding the Liverpool housing market: reversing decline and managing change. Birmingham: Centre for Urban and Regional Studies.
- NHPAU (National Housing and Planning Advice Unit). [2009], More homes for more people: building the right homes in the right places.
<http://www.communities.gov.uk/documents/507390/pdf/1276301.pdf>
[Accessed on 17th November 2010].
- NWRA (North West Regional Assembly) [2007], North West Housing Statement 2007. Wigan: NWRA.
- Paris, C. [2007], International Perspectives on Planning and Affordable Housing. *Housing Studies* 22:1–9.
- Viteikienė, M. and Zavadskas, E.K. [2007], Evaluating the sustainability of Vilnius City residential areas. *Civil Engineering and Management* 13:149–155.
- Zavadskas, E.K., Kaklauskas, A., Banaitis, A. and Kvederyte, N. [2004], Housing credit access model: the case for Lithuania. *European Journal of Operational Research* 155:335–352.

The Implementation and Impact of Green Leases on Commercial Leasing Practices in the UK

1. Introduction

Whether a building is in the public or private sector its use and occupation must be viewed in terms of a green real estate policy. At the very beginning of a building's life cycle it may be regarded as having the correct green credentials but these can be rapidly lost if the use and occupation of such buildings is not sustainable. Therefore, there is now a real need to investigate approaches to develop a green real estate management policy for existing buildings in order for them to achieve an environmentally sustainable status or to retain its existing green rating. The purpose of this paper is to review the implementation and relative success of one particular area of this management strategy. The paper will examine the extent of the implementation of green leases in to standard UK leasing practices for commercial property. The paper hopes to identify the impact if any, that green leases are having on the commercial letting market and ascertain the drivers that will influence the move to a more sustainable leasing practice.

Commercial buildings in the UK account for approximately 18% of the total UK carbon emissions (BRE 2005), and all buildings account for 40% of green houses gases in the UK(Energy Directive 2002/91/EC). Therefore, is it any wonder that the Government are fixed upon the task of reducing these emissions and improving energy performance in commercial property? The UK Government and Europe are determined to improve energy efficiency and stimulate more sustainable management of buildings and this is evidenced by the legislation and policies that have been issued and continue to be developed. The UK Government introduced The Energy Performance of Buildings Directive in 2006 which subsequently led to a change in building regulations and the energy performance targets for new and refurbished buildings. This Directive resulted in mandatory energy performance ratings by 2007, commonly referred to as Energy Performance Certificates and Display Energy Performance certificates. By 2008 the Government had introduced the Climate Change Act which had the effect of making the UK Government legally committed to reducing CO₂ emissions by 80% by 2050, measured against a 1990 baseline. Other initiatives have been introduced that either monitor or assess the sustainable performance in commercial buildings; for example the Carbon Reduction Commitment Energy Efficiency Scheme. The UK is not alone in the introduction of environmental legislation as in 2010 the European Commission established a European wide definition of "net energy buildings", In addition by the end of June 2010 the European Commission were ready to adopt guidelines on minimum standards for content, language and

* School of the Built Environment, Liverpool John Moores University, UK.

presentation of EPCs. The Commission intends to create new finance instruments to support energy efficiency improvements. Europe and its member states are only too aware of the need to improve the level of sustainability in all aspects of the property industry and a range of directives and financial instruments are currently being developed to satisfy this need.

Property owners, occupiers, investors and developers have to think seriously about how much energy is used in their buildings and whether that building is being managed in a sustainable manner to promote energy efficiency and improve overall building performance. Other legislation has increased the need to address energy efficiency in buildings through indirect methods. The Companies Act 2006 plays on the Corporate Social Responsibility aspect of owning a property and under sec 172 a Company Director has to have regard to "The impact of the Company's operations on the community and the environment". This piece of legislation follows a series of EU directives to force companies to be more environmentally aware and it covers the use of premises by the company and whoever may occupy that property. It is likely that corporate carbon reporting by Company Directors on environmental issues within their companies will be compulsory by 2012 and more legislation is expected when the EU review the Energy performance of Buildings Directive in the near future.

It has been clearly identified that the landlord and tenant relationship is a crucial part of any strategy to improve energy efficiency in buildings. There is a definite need to create a greener relationship which will govern the use and management of existing buildings. The focus for improvement falls on the contractual relationship between the parties and the concept of a green lease as a tool for reducing a building's carbon foot print. A range of other tools have been introduced to try and achieve some form of sustainable relationship between the landlord and tenant and to make the parties more environmentally aware of energy use and costs. The British Property Federation introduced the LES-TER initiative; a Landlord's Energy Statement which enables a landlord to assess energy use and carbon emissions in those areas of a building that they have responsibility for, such as common areas. The Tenant's Energy review allows the tenant to measure, monitor and benchmark their own energy use and carbon emissions. However, the landlord and tenant relationship still does not enjoy a mutually beneficial consideration of energy efficiency in the on going management of their buildings and for many parties a "Circle of Blame" exists between the major stakeholders to the building. These stakeholders include landlords, tenants, investors and developers and they blame each other for the poor energy performance of the buildings. To overcome this blame mentality the concept of a green lease for commercial properties has been considered as a way forward to improve relations and to build on improving energy efficiency policies and long term sustainability in commercial buildings.

The traditional landlord and tenant relationship is currently acting as a barrier to the environmental improvement in the efficiency of commercial buildings. In addition, there is some confusion about what exactly a "Green Lease" is and how it is structured. Many believe a green lease to be a completely new form of contract, but surprisingly a green lease

can be just a simple amendment to an existing lease document. The lease can be as complex or as simple as the parties want depending upon the extent of the drive for sustainability in the building. The difference between a green lease and a traditional lease is that the green contract incorporates environmentally sustainable requirements in the form of green covenants which will ensure that the ongoing operation of the building minimises any environmental impact. The commercial lease should be an ideal vehicle to set down a mutually beneficial contractual relationship that will improve the green credentials of the building and the parties to that contract. Standard traditional leases are currently not structured to offer sustainable advantages and tend to ignore the issues that are required to address a sound long term environmental policy for the building. The lease contract will have to change which means a corresponding movement in the relationship between the landlord and tenant; this is the human impact that has the capacity to prevent the implementation of green leases in global commercial leasing practices.

2. Green leases: the landlord and tenant relationship

Presently, there is a distinct lack of green leasing agreements being used in commercial practice and this is more evident in the medium to small occupier leasing markets rather than the corporate institutional letting market. The vast majority of standard commercial property is currently let on either old fashioned institutional leases or modern short flexible leases but what is common to both types of lease is that there is very little if anything within the contents to reflect environmental policy. In fact, it is reasonable to suggest that current commercial leasing practices act as a barrier to effective environmental management systems in commercial property. With the likely increase in environmental regulation, the aim of most building owners should be to promote the long term environmental performance of the asset which in turn should reduce operating costs and make the property more attractive to occupiers. However, the current lease situation appears to be contrary to this aim and to how buildings are generally being developed, i.e. to the highest green specification, with the very latest environmental technology resulting in BREEAM excellent ratings. It is essential that all new buildings should try to retain their green credentials but the continuation of environmental excellence will ultimately depend on how the buildings is used and occupied. In addition, newly developed buildings only increase building stock on average by 1–2% pa. (This figure is currently slightly lower due to the recession and lack of development activity). Therefore, the majority of leases are being agreed on existing building stock which can range in age and condition and make the incorporation of green policy very hard to achieve. Essentially, any move towards a strategy for improved environmental property performance has to come from the parties to the lease. This was recognised by the All Party Urban Development Group in the 2008 report; they stated that the landlord and tenant relationship needed to take on board green issues by looking at factors such as energy use, waste management and carbon footprints. This report identified that current UK leasing practices often hindered good environmental practice but as Susan Bright highlighted in her 2008 article for the *New Law Journal* green leases can be used to support and encourage greener environmental policy in the manage-

ment of buildings. Therefore, as Hinnells et al recognised it will not just be the change in environmental legislation that will force a change in building management practices it is also the relationship between the landlord and tenant which is fundamental to how the building is used and the impact on the environmental performance of that building.

However, the environmental performance of buildings is slowly becoming more important to the stakeholders involved in property. Recent research undertaken in 2010 by GVA Grimley reflects this change in attitude, when occupiers of commercial buildings were questioned about the importance of environmental and sustainability issues. 75% of respondents stated that it was important to their business and 48% of those respondents stated that these issues were more important to their business than 12 months ago. The office sector in particular demonstrated a more intense interest in environmental and sustainability issues. However, 89% of occupiers were dissatisfied with their landlords' interaction on sustainability issues. This reflects that there is still a fundamental flaw in the landlord and tenant relationship that needs improving and one possible solution is the introduction of green leases to open up an environmental avenue for communication between the parties. These results seem to back up the results found from other research in to occupier satisfaction for commercial property. A survey is undertaken in 2010 by the Property Industry Alliance and CoreNet Global which measures the satisfaction of commercial occupiers in the UK, produced similar results to the GVA survey. Nearly 50% of occupiers stated that there was room for UK landlords to improve their level of service and sustainability remained a key concern with many occupiers feeling that landlords need to significantly increase their levels of interaction with tenants on this issue. However, it was important to note that sustainability was more important to larger companies than to smaller organisations. This viewpoint is apparent when considering the introduction of green leases, as it is the larger landlord organisations and the blue chip tenants who are more comfortable with the incorporation of green lease terms in to their standard letting practice.

3. What is a green lease?

When considering research on occupiers views on sustainability in commercial property it is evident that landlord and tenants must work together to improve the sustainability of the property asset. For a landlord the property represents a considerable financial investment and they expect to receive a return on that investment in the form of income and capital growth. At present there is no direct evidence that a green building will give greater value (RICS) but many believe that in the long term a green building has the potential to offer higher investment returns although that extra value has yet to be seen. In the latest survey conducted by CoreNet Global and Jones Lang LaSalle 2010, 42% of companies expect to pay the same or less for sustainable space and another 21% said that they would be willing to pay a higher rent only if it was offset by lower operating costs. As Hinnells et al suggests regardless of environmental credentials poor performance is strongly likely to affect the capital value of investment properties and a building which has a controlled environmental management strategy is less likely to experience poor physical performance.

Many in the property industry view the introduction of green leases with some scepticism; many landlords and tenants take a suspicious view when considering the incorporation of green lease terms in to their standard lease package. It is important to understand what a commercial lease means to the parties, for the tenant the lease allows occupation and use to profitably run a business within cost and for the landlord it offers investment return, income and growth potential. Both parties want to retain the benefits of existing lease structures but they are cautious that this may not be possible if the lease is focused on green issues. Tenants have not universally welcomed green provisions as they feel it will increase their cost of occupation, whilst landlords are not convinced that the energy saving improvements will provide them with better returns. Furthermore, the practicalities of inserting green provisions into existing traditional leases can be quite problematic and the parties to the lease often feel that the lease will become too onerous thus reducing income for the landlord and flexibility of business use for the tenant. Sayce believes that a building that enjoys good energy performance is likely to be future-proofed as time passes and less vulnerable to depreciation in property value.

The problems of introducing green leases are further amplified by the nature of the building and before any lease or amendments to a lease are considered certain questions have to be asked such as:

- Is the building modern or is the building old and just how old?
- Is the building single occupation or is it multi let?
- What is the extent of the landlord's responsibility, will he retain common parts, provision of services, etc.
- What is the use of the building, office, shop, factory, leisure?
- Is the building in town or out of town?

All these points must be considered because they will influence the nature of the green lease terms that will be inserted in to the lease structure. For example, a large industrial property will generally have minimum green requirements if it does not require heating or air conditioning for its use. Retail properties are very difficult because the majority will have heating and air conditioning systems but the doors to the unit will be open most of the day thus increasing energy usage. City offices have to establish whether they have issues with parking and therefore require a green transport policy whilst out of town offices will have a very different approach to green transport. These areas represent the physical problems associated with the incorporation of a green lease structure but there is another more fundamental issue about green leases and that relates to lack of definition.

4. What actually is a green lease?

The words Green Lease are referred to more frequently in letting practice but the most common question is what is actually meant by the term "Green Lease". The problem experienced by many professionals in the property industry is that this term covers a vari-

ety of different explanations as it covers a range of definitions. There is not just one type of green lease, there are many types and what they offer has to be understood before they can be incorporated in to leasing practice. Several authors have tried to clearly identify what a green lease actually is as in the case of Sinreich, he defines a green lease as one that “provides for the sustainable construction, operation and renovation of a property and allocates the costs, benefits and responsibilities for sustainability in a manner that facilitates achievement of the desired green results”. However, this definition is very prescriptive and not all authors agree, Garris argues that “a green lease is just a term for a lease that takes in to account sustainability goals that the landlord or the tenant might have, and /or the inherent green attributes of the building. Generally, you start with a green building, and that’s what drives the need for a green lease.” A green lease will differ with every tenancy, with every building and the parties to a lease will have their own ideas about what they consider to be a green lease. However, there is general agreement between professionals “that the purpose of a green lease is to encourage the building owner and the tenants to adopt and maintain environmentally friendly, sustainable business practices in an effort to reduce energy and water use, reduce waste and create a more comfortable and healthy environment for the building occupants”.

Hinnells et al accepts that there is no clear definition of what a “green lease” is but he argues that all leases can be made greener. This argument is supported by the contents of the Green Lease Toolkit produced by the Better Building Partnership in April 2009. The Green Lease Toolkit offers a range of options to incorporate green lease terms in to standard lease structures and it provides a more flexible approach thus removing some of the concerns raised from professionals about onerous agreements. The toolkit presents a comprehensive range of information and guidance to assist the parties when formulating green terms for a new lease, lease renewal or insertion in to an existing lease. The toolkit was produced to make green leases more acceptable in commercial letting and it was subsequently supported with the BBP Green Building Management Toolkit which was produced in January 2010. The green lease toolkit provides three main areas for assistance, these are as follows:

1. Non prescriptive best practice recommendations.
2. Model Memorandum of Understanding.
3. Model green lease clauses.

The BBP recognises that a large proportion of commercial property is already let on standard non environmental lease terms and they promote the toolkit as a way to adapt existing leases rather than negotiating new green leases. The parties to an existing lease will want to know how they can incorporate green lease terms in to this existing lease framework as different situations will require a different approach to a green lease.

Fahy describes green leases as basically traditional leases with environmentally friendly clauses included. Green leases are often divided in to shades of green to reflect the level of

commitment to environmental policy, the darker the shade of green the more detailed it is likely to be on environmental procedure. One shade of green unfortunately does not fit all and therefore it is recognised that the varying shades add flexibility to the promotion of green leases in letting practices across the UK. The shade of green will also reflect the mandatory or regulatory level of the green clauses, the terms in a lighter shade of green may not be as legally binding when compared to a dark green lease.

5. Light green leases

Hinnells et al describes this type of lease as a gentle approach and it is likely to be the first stage in the incorporation of green lease terms into a standard lease. The light green lease will tend to promote co-operation and communication on environmental matters between the landlord and the tenant but it is unlikely to be legally binding but used to encourage a more sustainable approach to the use and operation of the building. The lease will take on board the individual objectives of the parties to the lease including any CSR objectives and business priorities and it can even set targets for environmental improvement at the property. However, as these targets become more binding and formal the shade of the lease goes darker as the commitment level of the parties to environmental improvement increases. Generally, the light green will be concerned with improving the sustainability of a building with little commitment required.

6. Mid green leases

These leases tend to contain more requirements for commitment to targets and environmental improvement at the building by the parties. Although these types of leases will contain targets it is unlikely that there will be penalties if these targets are not met by either party. However, a mid green lease should contain a formal action plan setting out the responsibilities of the parties, providing deadlines and monitoring the programme of action.

7. Dark green leases

The light green and mid green leases tend to be adjustments or memorandums to the original lease, the dark green tends to be more formal and can be designed as a lease in its own right. A dark green lease tends to be legally binding with set targets which will usually have penalties if the targets are not satisfied. These types of leases will require a significant level of environmental commitment from the parties and could even set energy and waste targets to improve the EPC rating of the building. Due to the imposition of targets and penalties, the dark green lease should also include access to dispute resolution.

8. The global approach to green leases

The concept of a green lease was introduced in Australia who is ahead of the game when it comes to green leasing arrangements. The green lease scheme was an initiative taken by the Australian Government Department of Environment and Water Resources. The Austra-

lian Government's solicitor produced a template for a lease to be used by government agencies and it was referred to as the Green Lease Schedule (GLS). The GLS is used for the letting of all new and refurbished buildings and it was designed to attach to a standard commercial lease. The important elements to this schedule are the targets for environmental performance under the Australian Building Greenhouse Rating Scheme. This schedule has been adopted as the basic structure for dark green leases in the UK and Europe, but it is unlikely that it will be as prescriptive as the Australian model. The Australian schedule is an onerous document and if followed by Europe it could lead to serious implications for rent review. However, the schedule does provide good indicators for environmental performance and could form the foundation upon which environmental targets and goals could be developed in dark green leases on a global basis. However, work on the adoption of green leases in to standard UK leasing practice was underway as early as 2007 (CRiBE) The Centre for Research in the Built Environment based at Cardiff University published a set of model green leases clauses referred to as Incorporating Best Practice into Commercial Tenant Lease Agreements – Good Practice Guide Part 1 produced by Langley and Stevenson.

9. Green lease structure

The structure for green leases whether dark or light can cover the same clauses but to varying degrees of compliance depending upon the shade of the lease. As stated it is unlikely that a green lease would be a stand alone document but more of an adaptation of a standard lease agreement but it may cover additional clauses such as:

- Obligations between landlord and tenant governing tenant use of the property and landlord's improvements to the building.
- Rent review incorporating energy efficiency measures.
- Requirements for assignment and subletting that the assignee or sub tenant would comply with the landlord's environmental policy at the property.
- Requirements on tenant fit out, and alterations including works to meet energy efficiency targets and standards.
- Adjustment provision for service charge calculations, i.e. penalties for tenants who have not met specified energy saving targets.
- Requirements for the landlord to keep the property in good and efficient working order, e.g. plant, boiler, heating systems.
- Building management provisions.
- Waste and recycling targets.
- Green transport policy.
- Cleaning provision.

(Green leases in the UK letting market Malcolm Dowden).

The substantial difference between a traditional non green lease and a green lease will be found in the clauses that relates to a shared environmental responsibility for the running of the property. A green lease is more likely to have an ethical dimension to its structure with more shared costs and shared building targets. The concept of Corporate Social Responsibility will be much stronger in a green lease than in a standard letting. The questions that the parties to a green lease will ask are what advantages does it offer both landlord and tenant. The Low Carbon Research Institute identified the following benefits to the parties.

Landlord's Benefits	Tenant's Benefits
1. Improved control over the environmental management of the building.	1. Potential flexibility at lease renewal stage.
2. The Environmental liabilities clearer defined.	2. More control over monitoring of works programmes.
3. Reduced environmental risk.	3. Increased communication with the landlord.
4. Improved building performance/ improved energy ratings.	4. More opportunities to discuss lease issues and to negotiate matters of a financial nature.
5. Improved landlord and tenant communication.	5. Improved CSR and image.
6. Increased tenant satisfaction.	6. Recognition for environmental improvement in business.
7. Less turnover of agents.	

It has been recognised that to place all these changes in to existing leases could prove impossible and therefore, it is likely that existing leases will see a phasing in of green clauses, containing simple green targets and shared environmental responsibility for the management of the building. However, even a Memorandum of Understanding will go some way to promote the sustainability credentials of the building and could lead to a more environmental collaboration between the parties to a lease. This could lead to a new era of green communication and negotiation which at present is seen as one of the basic weaknesses of the landlord and tenant relationship; lack of communication. There is still a difference in opinion between the main stakeholders to leases as identified by Seth Love-Jones in his recent article on green leases; two thirds of commercial property owners feel that their existing leases are inadequate for meeting their sustainable needs. However, many tenants do not expect to see any change in lease structures over the next 12–18 months

There are also perceived disadvantages for the incorporation of green lease terms and these are clearly viewed as barriers to implementation. To fully understand how green leases can be implemented in to commercial leasing practices in the UK, it is necessary to understand the Drivers and Barriers to implementation.

10. Drivers for the implementation of green leases

1. Improving Energy Efficiency in the property, reduction in energy usage could see a direct reduction in energy bills.
2. Compliance with Corporate Social Responsibility policies, this could even help the parties to get new contracts, borrow funds and even impact on share values. It is also acknowledged that CSR is becoming increasingly crucial due to the impact of the Companies Act 2006 and the requirement for the company to have regards to environmental issues in their business activities.
3. Carbon Reduction Commitment Energy Efficiency Scheme (CRC) implemented under the Climate Change Act 2008. This is a mandatory trading carbon emissions scheme for large businesses and public sector organisations. It is a legally binding energy saving scheme that came in to force in April 2010 and it is expected that it will produce league tables of energy consumption that may have an impact on the CSR of the businesses taking part in the scheme.
4. Kyoto Protocol, the UK has committed to reducing greenhouse gas emission to 12.5% below 1990 figures by 2012. This coupled with the EU target to reduce greenhouse gas emissions by 20% by 2020 and by 80% by 2050; this has been translated into UK policy and requires property owners and occupiers to think carefully about their carbon foot print and energy usage in the buildings.
5. Energy Performance of Buildings Directive introduced Energy Performance Certification in 2007 and Display Energy Performance Certification in 2009. It is likely that size requirements for a DEC will change and by 2013 there will be smaller size criteria thus expanding the use of DEC's. Green leases may be able to improve significantly the energy certificate at the property and maintain a building energy rating (e.g. BREEAM rating or SKA).
6. Part L: Conservation of Heat and Power, revisions to the UK building regulations from October 2010 saw a target for the reduction of CO2 emissions for commercial and residential buildings.
7. Financial Incentives, tax breaks, rating relief, this could be compared with the threat of green taxation for non compliant buildings.
8. Improvement in Corporate Image.
9. Triple Bottom Line business benefit's that link in to financial incentives and corporate image.
10. The enhancement of the building environment and producing a better place to work which improves productivity and staff turnover.
11. More effectively managed buildings with improved flexibility in the working environment.

12. Drive down costs and get value for money from the occupational space.
13. Tenant selection, government bodies are prevented from occupying non-environmental buildings but many landlord's actively seek government departments as good quality low risk tenants.
14. The possibility that in the future a two tier investment market will arise and those buildings that are not environmentally friendly will have a lower value and could prove difficult to let. The Australian market has shown that there has been a 10% increase in the market value of green property and a 5% increase in rental value. To date green property in the UK has shown no such changes in value to due its green credentials.

These points are all drivers for the need to consider the incorporation of a green agenda in to leasing practices. The dominant area for most owners and occupiers is the legislation and fiscal measures that are being rapidly introduced and have the potential to incur extra costs to the parties.

There is still a certain amount of caution when considering the introduction of green leases and memorandums of understanding. Although there are comprehensive advantages for pursuing the green approach not all parties are convinced as they can recognise some of the barriers to implementation.

11. Barriers to the implementation of green leases

In the current economic climate, the concept of green has lost ground as many landlords and tenants are trying to keep their businesses from falling in to insolvency. Any action which could be regarded as potentially increasing costs will not be pursued or it will be looked at with a certain amount of scepticism. The barriers to green lease implementation are very apparent to the main stakeholders to the lease and as such they will consider their position before making a firm decision about the introduction of green leases. Some of these barriers are as follows:

1. Costs; there are additional costs involved in the implementation of a carbon reduction programme due to design changes in the building, introduction of green technology and the use of specific materials in accordance with environmental policy. These costs usually fall to the landlord who takes on the responsibility of setting up the environmental changes to reduce the carbon emission. To reduce these costs the landlord could have some form of financial sharing arrangement with the tenant to cover part of the costs. However, a tenant will not be interested in sharing costs if they only have a short lease and there is little time to achieve capital recoupment. The tenant may also be unhappy with any increase in service charge costs due to the energy savings programme developed by the landlord. Existing tenants could prevent the introduction of green lease terms due to changes and the landlord could lose a new tenant because they do not wish to pay for the increased environmental costs incurred.

2. Lease Terms: A tenant may be put off from agreeing to a new green lease due to the structure of the lease and the contents. Green lease terms can seem rather alien to a tenant, the possibility of paying a higher rent and service charge. Plus there is the additional concern that the terms are more onerous and less flexible for occupying tenants who are running their business efficiently at a profit. Equally the landlord may view the lease terms as restrictive which they understand can lead to a reduction in the rent negotiated because of the arduous terms contained within the lease agreement. Furthermore, the green lease terms need to be clear and precise as poor wording and confusion on definitions could lead to the lease being void for uncertainty.
3. Time; Fahy in his article on green leases identified time as a possible barrier to the implementation of green lease. The time taken by the parties to satisfy the requirements for energy savings targets could take one or both of the parties away from their business activity thus losing money through lack of productivity.
4. The property market and economic activity; as mentioned the present recession has pushed sustainability considerations to the rear of most property peoples' minds due to the need to keep their businesses afloat in hard times. Until the market returns to some form of positive activity it will be difficult to push through green negotiations which are likely to lead to an increase in costs.
5. Legal implications of dark green leases: This type of lease adopts the Australian structure and consequently the dark green terms and clauses tend to be legally binding with penalties that could lead to the prospect of breach of contract and loss of the lease. Many tenants see this approach as harsh and are not comfortable signing up to this type of agreement, however, it should not prevent the introduction of light to mid green leases which are not as unforgiving on the tenant. These same principals apply to stringent building management agreements which provide for severe penalties in the event of non compliance.
6. Legal framework: the legal framework for traditional leases in the UK and Europe is sophisticated and consists of an intricate structure providing leading law cases and precedents for the majority of disputes. Green leases are a new concept and as of yet the law views it as an unknown area from the negotiation of a lease to the dispute in the event of breach. Drafting green leases is not going to be easy and solicitors in the UK are only in the early stages of clearly understanding what is required and what actually works within the contract. More expertise is needed in this field of law but we should be looking to the Australian experience as they are openly the acknowledged experts.
7. Existing short term leases; these will give insufficient time for payback on energy saving initiatives and tenants are unlikely to be interested if they cannot reap the benefits or get their money back

12. Research on greening commercial leases derived from the North-West of England, Liverpool John Moores University

This research was undertaken as part of the BSc (Hons) Real Estate Management Degree by Thomas Baker a final year students on the programme. He undertook interviews of office and retail agents in the North-west to establish views on the implementation and use of green leases in commercial practice.

The general opinion from research undertaken in the North-west of the England suggested that one of the biggest barriers to the implementation of green leases was a perceived lack of knowledge on the subject and a sense of uncertainty about what actually is a green lease agreement. This research also highlighted that the lack of standardisation in the green lease structure caused further confusion and increased the risk profile of the legal agreement when in use which in turns affects the risk profile of the investment. The lack of a standard template, regardless of the contents of the “Green Building Tool Kit”, was a hindrance to acceptance. Furthermore it was highlighted that a lack of Government incentives to pursue a green path did not help acceptance particularly when one of the biggest problems associated with the green lease was increased costs to the parties. In addition, it was emphasised that leases of large multi-tenanted buildings pose an increasing threat to implementation of green leases due to the intricate relationship with the landlord and the managing agents. Those interviewed stressed that there continued to be a significant landlord and tenant divide and this requires a major change in attitude if any form of green lease is to be successfully negotiated. Transparency between the parties to any agreement is crucial for success and therefore this is of paramount importance when trying to negotiate a green agenda.

The interviewees were asked about their current adoption of green leases in practice and it came as rather a surprise, given the amount of academic research that has been undertaken in the field, that they had very little experience with any aspect of green leases or leases with sustainable performance targets. It was discovered that the only leases that contained any aspect of a green agenda was negotiated with an Institutional body and these green terms came in the form of energy performance targets. However, it was interesting to note that more tenants were becoming familiar with ISO14001 and were looking at providing an effective environmental management strategy for their occupational space.

13. Conclusions and future expectations

What impact will green leases have on commercial leasing practice in the UK, at present very little depending upon the nature of the landlord and tenant. In the future, the impact could be quite different. As of yet the value question is still unanswered as there is little evidence to suggest that green buildings, leases, technology or design will increase capital or rental value. However, evidence in Australia and USA is now starting to appear suggesting that there is a link between green and property value. With the likelihood of increased environmental legislation and fiscal policy from the EU and the UK Government, there is an urgent need for building owners and occupiers to take a serious look at

their energy consumption and green credentials. However, there is some movement towards the adoption of green leases. AXA Real Estate Investment Managers are one of the leading asset managers in Europe with over 40 billion Euros of assets under management. This company has recently introduced green leases for all its commercial lettings in Germany. The model for this action had already been tried in France and proved to be successful. The company want to ingrain the concept of sustainability in to all their commercial lettings and for it to become part of their asset management process. The company are committed to the environmental improvement of its portfolio and ultimately would like to roll out green leases for its entire investment portfolio. AXA are not alone in the response to the environmental needs of the building management process; IVG Immobilien a German listed property group has announced that it intends to start issuing green leases for all new German lettings. The Company hope to continue with this sustainable approach to letting as they manage 22 billion Euros of property across Europe.

Landlords everywhere should start to consider the implementation of a green lease strategy whilst tenants should be more aware of their environmental and sustainable occupational requirements. All green lease models have the potential for managing the energy performance of building thus reducing costs, improving energy efficiency and enhancing corporate image and reputation through commitment to sustainable concepts. Maybe the challenge ahead for the property industry is to find a model that could be accepted as an industry standard. The Better Building Partnership has tried to produce guidance and model terms that will assist in achieving this industry standard but as of yet this has been focused on London and is not wide spread through the remainder of the UK. The adoption of green leases relies on the property sector to pursue an environmentally friendly attitude towards property ownership, occupation and management, only this change in attitude will provide long term sustainability in the property investment asset.

It is not fair to say that all areas of the UK and Europe are not implementing the concept of green leases as there are organisations heavily involved in the development and execution of green leases within their portfolios as examined above. Green leases are already evolving in the following areas:

1. Institutions, Hermes, British Land, Prudential, AXA Real Estate and IVG Immobilien these companies are already heavily involved in the use of green leases within their property portfolios.
2. Large retailers, such as Marks & Spencer, John Lewis, Tesco, the Co-operative retail organisations rely on their corporate image and to be regarded as environmentally aware improves their Corporate Social Responsibility.
3. Government bodies and the public sector, it has already been mentioned that these organisations are only able to locate in buildings which are considered as sustainable or "green". This will continue to be a Government requirement as the public sector will be seen to be leading the way in environmental policy.

The impact of green leases on the secondary and tertiary market is very limited as this sector represents the biggest challenge to greening property occupation. Medium to smaller landlords have yet to show any interest in the incorporation of green leases terms and in this current economic climate this attitude is unlikely to change as they struggle for survival.

All sectors of the property market will come under pressure at some point in the future as the UK Government and the European Commission announce more legislation due to a growing need to do something about sustainability in the real estate management strategy. Each property sector will have its own agenda on environmental policy and this will be to varying degrees but the human element is the main factor; communication and negotiation is the key to success.

References

- Atkins, J. [2009], Sustainability in commercial property. Property briefing, June 2009. London: RadcliffesLeBrasseur.
- AXA Real Estate [2011], AXA Real Estate continues European roll out of green leases. Press Release at www.axa-realestate.com.
- Baker, T. [2010], An Investigation into the concept of the Greening of Commercial Leases within the UK. Liverpool John Moores University: unpublished dissertation.
- Better Building Partnership [2009], Green lease tool kit. London: The Building Centre.
- Better Building Partnership [2011], Managing agents sustainable toolkit. London: The Building Centre.
- Better Building Partnership [2011], Green building management toolkit. London: The Building Centre.
- Boyd, T. [2005], Assessing the triple bottom line impact on commercial buildings. Sidwell, A.C. (ed.): QUT Research Week 2005. Conference proceedings. Brisbane, Australia: RICS, Queensland University of Technology.
- Bright, S. [2008], Going Green. at [www.newLawjournal.co.uk/nj/content/going-green](http://www.newlawjournal.co.uk/nj/content/going-green).
- Bright, S. [2010], Carbon reduction and commercial leases in the UK. *International Journal of Law in the Built Environment* 2(3):218–231.
- Brundtland, G. (ed.) [1987], Our common future: World Commission on Environment and Development, Oxford: Oxford University Press.
- Cadman, D. [2000], Sustainable construction task group, 2000.
- CCW. [2011], Green Lease Workings, CCW Business Lawyers www.ccw/legal.co.uk/legal-services/green-lease-workings.aspx.
- Langley, A. and Stevenson, V. [2007a], Incorporating environmental best practice in to commercial tenant lease agreements – good practice guide 1. CRIBE: Cardiff University.

- Langley, A. and Stevenson, V. [2007b], Incorporating best practice into commercial tenant lease agreements – good practice guide 2. CRIBE: Cardiff University.
- Commonwealth of Australia. [2007a], Green lease schedule (GLS), Fact Sheet 2 of 12. Australian Government, Department of Environment and Water Resources, Australian Greenhouse Office.
- Elder, B. [2011], Sustainability Measures could impact on property value, RICS Press Release, London.
- Ellison, L. and Sayce, S. [2006], The sustainable property appraisal project. Kingston University.
- Ellison, L. and Sayce, S. [2007], Assessing sustainability in the existing commercial property stock. *Property Management* 25:287–304.
- Ellison, L., Sayce, S., and Smith, J. [2007], Socially responsible property investment: quantifying the relationship between sustainability and investment property worth. *Journal of Property Research* 24(3):191–219.
- European Union (EU) [2002], European Directive 2002/91/EC on the Energy Performance of Buildings. www.dfni.gov.uk.
- Fahy, M. [2010], Ahead of the game. *Solicitors Journal*.
www.solicitorsjournal.com/story.asp?storycode=16471&encCode=4958322351.
- Fahy, M. [2009], Green leases. Steeles Law, Steeles Solicitors.
- Garris, L. [2009], Build a greener lease. *Buildings Journal* 103: 24 et seqq.
- GVA Grimley [2007a], Sustainability – towards sustainable offices. London: GVA Grimley.
- GVA Grimley [2007b], From green to gold. An unique insight into sustainable investment attitudes. London: GVA Grimley.
- GVA Grimley [2010], Occupiers and landlords: the sustainability gap. London: GVA Grimley.
- GVA Grimley [2010], From green to gold 2010 – key findings. London: GVA Grimley.
- Hammonds Built Environment Group [2008]. Alert July 2008: A guide to green leases. London: Hammonds.
- Hinnells, M., Bright, S., Langley, A., Woodford, L., Schiellerup, P. and Bosteels, T. [2008]. The greening of commercial leases. *Journal of Property Investment and Finance* 26:541–551.
- Property Investor Europe News [2012], IVG Introduces green leases for German Properties. <http://www.pie-mag.com/articles>.
- Jackman, S. [2010], A war of attrition. *Estates Gazette*, 17th June, 2010. London.
- Jansen, M. [2008], Hermes lays down green lease gauntlet. *Property Week*, April 4th. London.

- Jones Lang LaSalle [2008], Global trends in sustainable real estate: An occupier's perspective. A Jones Lang LaSalle / CoreNet Global survey. London: JLL.
- Jordan, M. [2010], Owners and tenants collaborate on green leases. Environmental Leader, September 13th, 2010. Fort Collins.
- Kirk, R. [2010], Green leases are set to become more common. Harrogate Advertiser, September 24th. Harrogate: Ackrill Media Group.
- Krol, R. [2008], Green Leases, Law Fact Sheet. London: Clarks Legal.
- Langley, A. and Hopkinson, L. [2009], Guidance: green commercial leases. Cardiff University: Low Carbon Research Institute (LCRI).
- Love-Jones, S. [2010], Thorny issue. A survey of commercial landlords and tenants about their views on Green Leases. Sustainability, July/August, 2010. London.
- Manches [2010], Green leases. manches.com/news-publications/green-leases.
- Mocatta, J. [2010], What shade of green suits you. Bristows Solicitors. www.bristows.com/?pid=46&clevel=2&nid=1628
- Nappi-Choulet, I. and Decamps, A. [2011], Is sustainability attractive for corporate real estate decisions? ESSEC Working Paper 1106, ESSEC Business School Research Centre, France.
- Oberle, K. and Sloboda, M. [2010], The importance of greening your commercial lease. Real Estate Issues, Vol 35, Issue 1, pp 32–41.
- Pivo, G. & McNamara, P. [2005], Responsible property investing International Real Review 8:128–143
- Plimmer, F. [2009], Responsible property investment: making a difference. 7th FIG Regional Conference, Vietnam.
- Ray, O. [2010], What is a green lease? East Anglia Daily Times, Feb 16th, 2010.
- Rice, P. and Cross, S. [2009], Sustainability toolkit series, Part 3 – the development of green leases. London: Pinsent Masons LLP.
- RICS [2005], Green value. London: RICS.
- RICS [2007], Financing and Valuing Sustainable Property: we need to talk, Findings in Built and Rural Environments. London: RICS.
- RICS [2008], Breaking the vicious circle of blame – making the business case for sustainable buildings. London: RICS.
- RICS [2008], Public sector property asset management guidelines. London: RICS.
- RICS [2009], Greening make good Australia. RICS Oceania
- RICS [2010], Is sustainability reflected in commercial property prices: a review of existing evidence. Findings in built and rural environments. London: RICS.
- Savills. [2010], The value of green, Sustainability Research. London: Savills.

- Sayce, S. [2009], Greening leases: do tenants in the UK want green leases? *Journal of Retail and Leisure Property* 8:273–284.
- Sayce, S. Ellison, L. and Parnell, P. [2007], Understanding investment drivers for UK sustainable property. *Building Research & Information* 35(6).
- Sinreich, E. [2009], Greening retail leases. *ICSC Research Review* 16(2):61–64.
- Staheli, J. [2008], Green leases. *Real estate briefing*. Legal Week, September 2008.

Preservation of Farmland in the Urban Fringe

A Critical Review of Planning Instruments Implemented

1. Introduction

This paper is about the goals and instruments of farmland preservation in the intermediate zone between rural and densely built up urban areas, referred to as the urban fringe. Landscapes of the urban fringe are characterised by a mix of urban and rural land uses shaping a mosaic of built up space and farmed land (Bickmore 2003, Sieverts 1997). Spatial development in these areas is widely influenced by agglomeration impacts and by ongoing social and spatial urbanisation processes. Open spaces, of which agricultural land is the largest part, do not differ considerably from those in other rural areas. Due to different framework conditions, however, agriculture in the urban fringe is more than a rural leftover. It represents *an area type of its own*.

This contribution is based on findings of two interdisciplinary projects about the situation and the development options of agriculture in the urban fringe of Vienna (Maurer et al. 2002, Maurer et al. 2004) which the authors were involved in. Within these projects surveys were conducted, one to assess the working conditions of farmers in the urban fringe, and the other to analyse the impacts of land use planning on development options of agriculture as well as on the preservation of open space. In this paper we want to address the reasons and objectives as well as the possibilities and limits of farmland preservation whereby the relationship between agriculture and land use planning is taken into consideration.

All remarks to agriculture in the urban fringe in this paper refer to traditional commercial farming activities outside of or adjacent to the built up area excluding emergent types of intra-urban agriculture like micro farms or community gardening.

2. Agriculture in the urban fringe of Vienna

Historical development of Vienna resulted in a pattern of partly fragmented, partly contiguous farmland at the edge of the densely built up areas but still within the municipal borders of the city. The area under cultivation (6,350 ha) amounts to 15.3% of the total municipal area (Landwirtschaftskammer Wien 2009). Arable farming, horticulture and viticulture are the main types of agricultural production. Crop land covering about 75% of Vienna's agricultural area is the central resource for development. Vegetable gardening accounts for 13% and has proved to be a spatially adaptive type of farming. Due to the demands of housing and infrastructure development a considerable number of both

* Institute of Spatial Planning and Rural Development, Department of Spatial, Landscape and Infrastructure Sciences, University of Natural Resources and Applied Life Sciences, Vienna, Austria.

greenhouses and garden plots were relocated to other areas. 12% of the farmland in Vienna is covered by vineyards. Most of them are protected from development by specific zoning regulations.

Almost all of the agricultural land in Vienna (approx. 5,700 ha) is part of Vienna's Green Belt, which covers an area almost four times the size of the area under cultivation (close to 23,000 ha). The Green Belt is a city wide plan of more or less contiguous greenways (mostly forested land) aiming at the preservation of open spaces for reasons of conservation, urban structuring and recreation.

3. Functions of agriculture in the urban fringe

The importance of agriculture and its functions in city development has undergone several changes, always reflecting different socioeconomic demands. Having been the immediate urban food supply zone for centuries agricultural areas gained additional importance with the rapid city growth at the end of the 19th century. In Vienna the idea of a green belt was developed and implemented as early as 1905 responding to the adverse effects of urban expansion. The green belt was also viewed as an instrument of land use planning. The incorporated farmed land was hoped to fulfill agricultural functions such as landscaping, urban structuring and provision of recreation areas (Lohrberg 2001).

Within Ebenezer Howards "garden cities" agriculture was perceived as a structuring element to restrain city growth but also ensuring short distance food supply for city dwellers. The only consequence of this concept in Vienna was the allotment movement which both legally and illegally – the latter an early type of squatting – promoted and implemented food self supply by gardening on small plots. The supply function of agriculture in the city and the urban fringe became even more important immediately after World War II, when besides fields and allotments public open spaces were cultivated to cope with food shortage (Ziegler 2009). In the following decades agriculture was displaced by urban growth resulting in a considerable reduction of farmland within Vienna's municipal borders. Induced by a changing supply situation the importance of agriculture in the urban fringe declined in terms of productive functions.

It is predominantly the multifunctional aspect of farming which nowadays is important in land use planning concepts for the urban fringe. Besides the productive function of agriculture – supply of food and natural resources – four groups of non-productive functions are worth mentioning:

- urban structuring and climatic regulation
- provision of recreation sites
- cultural and educational functions
- reserving areas for housing, commercial and infrastructure development

Currently land use planning concerning agriculture is focused on non-productive assets, such as the environmental and social benefits of farming, which are preserved and

improved by public (planning) interventions. Vienna's Green Belt, reissued by the city government in 1995, is an example of that. The productive function of agriculture is of secondary importance in the planners' point of view as long as the desired external effects are provided.

The perspective of the farmers that were interviewed in the above mentioned research projects (Maurer et al. 2002, Maurer et al. 2004) is different: they attribute the productive function the most importance. On the level of farmers' organisations on the other hand a more comprehensive view is expressed, strongly emphasising the multiple functions of farming, including the productive function. The concept of multifunctional farming is used to underline demands for additional funding or compensatory payments. In the urban fringe – this was also proven for the urban fringe of Vienna – it additionally serves as a justification for keeping up farming, a land use whose mere existence has been viewed as anachronistic for the past decades if its only purpose was food production. With the emergent topic of food security and renewable natural resources, however, preservation of farmland in the urban fringe for the purpose of production might increase in importance again. So far this issue is not reflected in urban land use planning instruments in Vienna.

In the farmers' perspective all the functions mentioned above are sufficiently fulfilled by agricultural cultivation currently in operation. Farmers' organisations refer to the manifold benefits for society not forgetting to mention that those benefits request an economically viable way of farming and a minimum of land use restrictions.

4. Challenges for agriculture in the urban fringe

The preservation of farmland in the urban fringe has to take the site specific challenges of agriculture in this location into consideration. As a result of analysing the viewpoints of Viennese farmers one can state that agriculture in the urban fringe differs from its rural counterpart in locational and structural framework conditions rather than in terms of approaches to cultivation and farmers' self-conceptions. Farming in the urban fringe faces a wide array of site specific challenges which include:

- land demands for building and open space land uses,
- high real estate values and land prices,
- a high percentage of farm land based on a leasehold,
- cultivation obstacles, like land fragmentation or adverse effects caused by traffic, and
- conflicts specific to the location, such as neighbourhoods disputes, illegal trespassing on farmland and vandalism.

Additionally the farmers' position is different to rural areas in terms of public appreciation, cultural influence and political representation which results in a lower level of influence on public decision making and as a consequence on land use planning. On the other hand farmers in the urban fringe have favourable conditions for diversification (e.g. farm door sales, short distance supply, "agritainment" or many kinds of alternative income sources).

Most of the farmers in the urban fringe basically intend to stay farmers. They regard their land as their property that can be used for production of food and other natural resources as well as for gaining real estate profits. The farmers' perspective is to keep both options alive. These to some extent contradictory interests are represented by farmers and even more by farmers' organisations turning them into challenging counterparts for planners in land use planning processes. This is the most important reason for Bickmore (2003) to identify a serious dichotomy between the interests of agriculture and the planning system in the urban fringe. The causes of this dichotomy, that mainly lie in the types of farmland preservation measures and how they influence the relationship between agriculture and land use planning are subject of the following reflections.

5. Measures of farmland preservation and their impact on the relationship between agriculture and land use planning

Measures of farmland preservation in the urban fringe can be divided into two main approaches: on the one hand the land use planning approach whose main objective is to preserve open space (in general and farmed land in particular) and the economic development approach on the other hand, which aims at ensuring an economically viable agriculture.

5.1 Land use planning and land management

Land use planning regimes

Land use planning instruments include policy papers stating goals and measures for the preservation and design of agricultural land, regulation instruments such as urban growth boundaries and protective zoning categories. In Vienna there are planning documents on the level of the whole city such as the above mentioned Vienna's Green Belt 1995, the City Development Plan 2005, the Agricultural Master Plan Vienna 2005 and the Vienna Zoning Plan. On a smaller scale these documents include numerous landscape plans.

Protective zoning categories are enacted for reasons of:

- *Settlement structure and recreation:* Vienna's City Development Plan 2005 identifies open spaces of high importance (some of them farmed land), 13 areas of urban development, superior traffic arteries as well as spatial and functional relations between Vienna and its outskirts. In the Vienna Zoning Plan a distinction is made between building land, green land and traffic space.
- *Nature conservation and recreation:* Vienna's Green Belt is implemented by means of public real estate purchase, protective zoning and contractual nature conservation and supported by public landscape design interventions.
- *Preserving farmland:* The Agricultural Master Plan Vienna 2005 (s. Fig. 1) identifies three categories of prime agricultural land, namely 1) spacious areas for agricultural production, 2) spacious areas with foreseeable change of use and 3) smaller areas with special local importance.

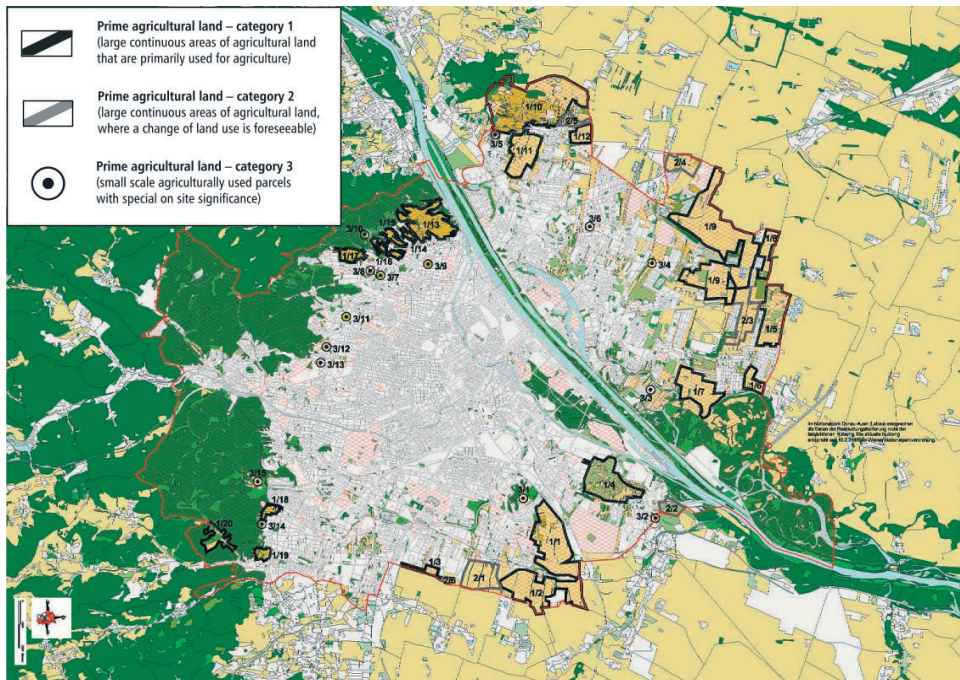


Figure 1: *Agricultural Master Plan Vienna* (Source: *Stadtentwicklung Wien* 2005).

The goals of the upper level plans (such as the Green Belt, the above mentioned City Development Plan and the Agricultural Master Plan) are concretised in the Zoning Plan. There is a whole set of green land zoning categories with varying intensity in protecting open space: some are unconditionally binding (e.g. “prime agricultural land”) others quite prone to rezoning (e.g. “ordinary” green land). The implementation of green belts or other instruments of open space preservation substantially depends on the intensity with which land use planning is able to intervene in existing property rights (e.g. the right to build), but at the same time the more rigorous zoning categories are opposed more fiercely by agricultural stakeholders (and therefore sometimes not enacted in the first place).

Existing zoning regimes influence property values as well as development options for farming. In urban fringe areas property value is what is left to farming businesses when production incomes decline. All planning attempts aiming at farmland preservation are critically observed by farmers concerning their impact on future development options. Zoning categories that intend to safeguard the productive farming basis but obstruct expected options for building land in the long run or lead to a decline in property values and therefore reduce securities for taking out bank loans, are rejected by farmers’ organisations as obstacles to necessary adaptations concerning the competitiveness of farming businesses. This simultaneity of interests is difficult to understand for planning authorities being used to more or less top-down decision making.

Implementation gaps and lacking acceptance not only accompany the quantitative protection of agricultural land. When looking at the proposals for increasing the recreational

quality of farmed land, e.g. in landscape plans, an implementation gap and little or no understanding by farmers can be found frequently. Many ambitious projects – especially concerning landscape design – issued by planning departments are not implemented, because the above mentioned dichotomy between the interests of agriculture and the planning system in the urban fringe (see also Bickmore 2003) was not taken into consideration.

The arising difficulties are not due to the goals of ensuring open space functions such as recreation but rather due to the methods to achieve them. Quite often the measures do not fit to the existing type of cultivation. Some types of farming found in the urban fringe are more compatible to the needs – such as access to the fields or possibilities for recreation – of (peri)urban dwellers than others. Usually grassland shows the highest accordance with those demands, followed by viticulture, then crop farming and finally greenhouse gardening.

Another reason for failing implementation can be the property and ownership structures on site. Some measures that have far-reaching effects on the form of cultivation require public land ownership for them to work, for example tree planting programs (e.g. community forests).

Private sector instruments

Among the private sector instruments are contracts that the authority places with land owners in which for example specific cultivation methods are agreed upon and financially reimbursed. In Vienna the so-called “contractual nature conservation” operates that way. Yet in some cases the goal of nature conservation overrules the goal of preserving agriculture and one might agree on the abandonment of the plot along with the duty of mowing it once a year.

Public acquisition of land is another private sector instrument. The Green Belt Vienna proposes that the public authorities purchase 1,000 ha of the area designated by the Green Belt. Due to financial restrictions only 70 ha have been acquired so far. The establishment of farmland trusts are another example in this context (see Bengston et al. 2004).

Compulsory purchase, farm relocation and land consolidation might also be viable instruments to enforce public interest, yet with very low acceptance by landowners and farmers’ organisations, particularly in the urban fringe.

A set of measures that does not have a tradition in Austria are the “possibilities to share the cost of protecting productive open space between the producers and the beneficiaries of farmland protection through compensatory programs” (Grossi 2001), like the purchase of development rights. Bengston et al. (2004) call this set of measures “incentives” and also include the transfer of development rights. Both authors also mention taxation and fees, these last two are known in the Austrian planning system but not used in this context.

5.2 Economic development

Aside from the necessity to preserve farmland, which the above illustrated approach of land use planning and land management focuses on, it is crucial to enable and support an

economically viable farming business, so that it will be able to cope with the challenges arising from structural changes and its special situation in the urban fringe. Therefore this section deals with a second approach of maintaining farm land, namely measures of economic development.

Measures to increase competitiveness and broadening

Farms that are competitive in the urban fringe usually have certain characteristics (see for example Heimlich and Anderson (2001), who developed a model of urban farm adaptation to urbanisation). Huhn et al. (2002) identified a higher rate of organic farms, well established market gardens, orchards and vineyards in urban agriculture. Diversification supports and increases the competitiveness of agriculture. Leinfelder (2005) views “broadening” – which he defines as emergence of new functions and activities – as a survival strategy for agriculture. Agriculture in the urban fringe has proven to be a very innovative type of farming. The concept of multifunctional farming is strongly emphasised. Educational farms (in Vienna a four ha “Children’s Educational Farm” was established by the City of Vienna Forest Department in cooperation with an organic farmer and a baker), pick-your-own operations (there are several in Vienna for vegetables, fruit and flowers throughout the city), “agritainment” offers (e.g. farmyard parties or the maize labyrinth in Vienna) and agri-tourism have evolved without any special support by public authorities. But the economic viability of farming options like that is clearly limited to a rather small number of farms. In Vienna the full potential of organic farming and direct sales has definitely not been tapped into yet.

Agricultural abandonment and new forms of community based agriculture

Situations of shrinkage and agricultural abandonment are very common for peripheral rural areas and small towns in Austria. Larger urban agglomerations such as Vienna are not confronted with this phenomenon. Still, on an international level more and more major cities are facing the fact that former farmland is not cultivated anymore. Yokohari et al. (2010) describe several projects in Tokyo in which semi-professional farmers or even non-farmers indulge in agro-activities on abandoned farm land. The projects include community gardens that are cultivated by citizen’s groups as well as public support programs that bring together volunteers with farm households which are unable to harness the labour power necessary to cultivate their land. The urban farmers do not pay rent, rather the farm household that owns the land lends its farm equipment and guidance. The primary goal in these projects is not profit. Motivators are rather cultivation of soil, supply of fresh fruits and vegetables in a community effort and establishing new forms of economic activity.

In Vienna one also can find new forms of community based agriculture. One example is a six ha farm producing vegetables and herbs in small quantities that has embraced the concept of community supported agriculture (CSA). A CSA consists of a community of individuals who support a farming operation and where the growers and consumers share the risks and benefits of food production. CSAs usually consist of a system of weekly delivery or pick-up of vegetables and fruit.

6. Concluding remarks and recommendations for farmland preservation in the urban fringe

6.1 Consistent definition of objectives

First, when talking about the preservation of farmland in the urban fringe it is necessary to clearly specify the functions it aims to fulfil. Is it the objective to produce for the global, the regional or the local market? Or should the agricultural enterprises and the land they cultivate fulfil non-productive functions such as contributing to landscape conservation or settlement structure? The functions need to be clearly identified and named.

Second, depending on the interests of the various stakeholders and stakeholder groups the objective of preserving agricultural land has a different meaning. It must be clearly stated, what preservation is aimed at: preservation of open space or protection of farmland? Protection from land use changes (e.g. housing development) or from the consequences of economic and structural changes in agriculture? The objectives of preservation determine the nature of the instruments applied.

6.2 Localisation of farmland functions

An appreciation for agriculture requires spatially referenced, explicit descriptions of the functions it fulfils or should fulfil. For example forest development plans in Austria and Bavaria locate the functions of the forest, namely production, protection, public service and recreation. Similar information for farmland in the urban fringe can provide a valuable basis for land use planning. Regarding the situation in Austria a methodological basis for defining and localising farmland functions was developed by Wagner (2006).

6.3 Low level land use planning interventions

Land use planning interventions, such as master plans and zoning categories specifically aimed at agriculture rather than open space protection in general, contribute to the preservation of farmland. But these interventions should be kept at a moderate yet effective level. Long term planning agreements, namely binding land use plans, without restrictive zoning interventions are more effective in integrating farmers into farmland preservation as the Viennese example has demonstrated (see Maurer et al. 2002, Maurer et al. 2004). They should be results of participation processes including the relevant stakeholders.

Market liberalisation and deregulation in public administration result in decreasing relevance of administrative planning. Possibilities for planning authorities acting against important stakeholders are reduced significantly (Lohrberg 2001). The challenge for planners is to react appropriately to the wide spectrum of interests in urban fringe farming. This calls for a consistent objective in land use planning as well as for modified land use planning approaches ensuring farmers' participation in long term land use decisions.

6.4 Linear and punctiform interventions

Farmed land perceived not just as a land reserve for development but appreciated for all the other functions it might fulfil, is much easier to preserve. Project oriented interven-

tions can assist in improving the image of periurban farmed land. Upgrading of agricultural areas by linear and punctiform interventions can specifically serve recreational purposes, e.g. establishing walking, biking and riding infrastructure, or it can provide a basis for the appreciation of agriculture as a “scenic resource”, e.g. by land art interventions. In this context Sieverts (1997) calls for a visualisation of what he refers to as “Zwischenstadt”. Linear and punctiform infrastructure and landscape interventions along field borders ensure that farmers further dispose of their land and decide on the way of cultivation but also set incentives for opening up additional sources of income from recreation activities.

6.5 Making better use of the location in the urban fringe

Development of requested types of farmed open spaces has to be obtained predominantly by an increase of agricultural value added. With sinking prices for conventional products given, innovative and high quality products for a regional market are an interesting way of improving farm incomes. Periurban areas with a high number of open-minded consumers in close distance are a very favourable environment for that. To facilitate those opportunities public authorities are requested to improve framework conditions under their responsibility.

Public authorities are able to contribute to increasing the sales of innovative farming enterprises by committing public institutions (e.g. hospitals, kindergartens) to use regional organic products, by improving conditions for local farmers on public urban market places or by providing special funding and development programs for urban fringe farmers.

6.6 Regional development measures and incentives

Project oriented funding fostering bottom-up approaches and self-organisation of periurban farmers should be preferred to individual subsidies for special (environmentally friendly) farming techniques. Concerning open space protection in periurban areas in general there is great demand for agricultural and landscape funding programs taking regional and structural characteristics of farming into account. A combination of regional funding programs that is able to support development options for periurban farms, and land use planning for the special features of agriculture in the urban fringe is expected to ensure open space quality.

Economic viability of farming businesses is undoubtedly the key factor to preserve agriculture and its various functions. A common recommendation in order to enhance farming incomes is diversification, even more in the urban fringe. Diversification definitely is an interesting option but no universally applicable solution. Adapting to a changing market situation and making use of the advantages given by the location of the urban fringe requires abilities and qualifications of farmers as well as investments in farming technology and product marketing. Not every farmer may be willing to do so particularly if long term disposition on farm land is not guaranteed due to urban development. Planners are requested to understand respective concerns about costs, farming requirements and land tenure security.

6.7 Dialogue boards for stakeholders

Landscape images created by traditional cultivation are in opposition to the implementation of modern farming techniques (e.g. intensive greenhouse gardening), multifunctional approaches stand against concentration on the productive function of farming. Those differences frequently occur when zoning decisions are concerned or special supports for farming are discussed. To bridge these gaps there is a need for intensified communication between the stakeholders within periurban land use decisions, not only for ensuring participation in planning processes but also for understanding each other's viewpoint and for trust building among planners and farmers.

A recent example for a successful stakeholder dialogue is the development of the Agricultural Master Plan Vienna (s. 5.1.1) providing long-term planning perspectives for farmland. This master plan was the result of institutionalised discussions between representatives of farmers' organisations and planning authorities. Governance mechanisms like that are helpful to facilitate dialogues between stakeholders to better understand the type of development that will best combine commercial viability, social benefits and the maintenance of landscape character.

6.8 A mission statement for agriculture in the urban fringe

Finally there is need for a specific mission statement for agriculture in the urban fringe, a mission statement that integrates urban impacts rather than excluding them. The economic dynamics of periurban landscapes have to be taken into consideration. Instead of sticking to fixed historic conceptions of landscapes Gallent et al. (2005) emphasise the necessity of re-imagining the urban fringe, in terms of a search for new qualities in periurban spatial development.

References

- Bengston, D., Fletcher, J. and Nelson, K. [2004], Public policies for managing urban growth and protecting open space: policy instruments and lessons learned in the United States. *Landscape and Urban Planning* 69:271–286.
- Catherine Bickmore Associates [2003], The state and potential of agriculture in the urban fringe. Cheltenham: Countryside Agency.
- Gallent, N., Bianconi, M. and Andersson, J. [2005], Planning on the Edge: England's Rural-Urban Fringe and the Spatial Planning Agenda. Handout at the AESOP Congress 2005 – The dream of a greater Europe. Vienna: Technical University.
- Grossi, R. [2001], Smart Growth and Farmland – National Policy Trends. In: Libby, L.W., Abdalla, C. (Eds.), *Protecting Farmland at the Fringe – Do Regulations work? Strengthening the Research Agenda*, Conference Proceedings September 5–7, Baltimore (Maryland) (pp. 35–38). Columbus (Ohio): The Ohio State University, Department of Agricultural, Environmental, and Development Economics.

- Heimlich, R. and Anderson, W. [2001], Development in the urban fringe and Beyond: Impacts on Agriculture and Rural Land. Agricultural Economic Report No. 803. Washington DC: USDA, Economic Research Service.
- Huhn, W., Knievel, M., Kretschmann, S. and Voß, J. [2002], Freiraumschutz und landwirtschaftliche Nutzung in Verdichtungsräumen – Widerspruch oder gemeinsame Zielsetzung? Final Report. Im Auftrag des Sächsischen Staatsministeriums für Umwelt und Landwirtschaft. Sächsische Landsiedlung GmbH.
- Landwirtschaftskammer Wien [2009], Wiener Landwirtschaftsbericht 2009. www.lk-wien.at/netautor/napro4/appl/na_professional/parse.php?id=2500%2C1486090%2C%2C, Stand: 13.01.2012.
- Leinfelder, H. [2005], The impact of the alternative concept of “public open space” on the planning of agriculture in rural areas and urbanized and urbanizing regions. In: Technische Universität Wien (Ed.), AESOP Congress, Book of Abstracts (pp. 289–290). Vienna: Österreichischer Kunst- und Kulturverlag.
- Lohrberg, F. [2001], Freiraumplanung und Landwirtschaft – Synergien, Konflikte und Strategien. In: Stadtentwicklung Wien, Magistratsabteilung 18 (Ed.), Landwirtschaft in Wien – zwischen Stadtplanung und Ökonomie. Werkstattbericht Nr. 52 (pp. 7–27). Wien: Stadtentwicklung.
- Maurer, L., Meyer-Cech, K., Seher, W. et al. [2002], Optionen für die Entwicklung von Landwirtschaft und Gartenbau in Wien. Final Report. Wien: Bundesministeriums für Bildung, Wissenschaft und Kultur und der Stadt Wien, MA 22 – Umweltschutz.
- Maurer, L., Seher, W. et.al. [2004], Möglichkeiten der Umsetzung von Optionen für Landwirtschaft und Erwerbsgartenbau in Wien. Final Report. Wien: Stadt Wien, Magistratsabteilung 22 – Umweltschutz.
- Sieverts, T. [1997], Zwischenstadt. Bauwelt Fundamente 118. Braunschweig/Wiesbaden: Vieweg.
- Stadtentwicklung Wien, Magistratsabteilung 18 [2005], STEP 05, Stadtentwicklungsplan Wien 2005. Wien: Stadtentwicklung.
- Wagner, K. [2006], Multifunktionale Landwirtschaft als Teilbereich der Regionalplanung. Agrarpolitischer Arbeitsbehelf Nr. 23. Wien: Bundesanstalt für Agrarwirtschaft.
- Yokohari, M., Amati, M., Bolthouse, J. and Kurita, H. [2010], Restoring Urban Fringe Landscapes through Urban Agriculture: The Japanese Experience. *disP* 181 (2): 51–59.
- Ziegler, R. [2009], Stadtfrucht. Urbane Landwirtschaft und Gärtnern als Raumnutzungsstrategie. Masterarbeit. Wien: Fakultät für Architektur und Raumplanung der Technischen Universität.

Integrative Sustainable Land Management: Trains of Thought

An Approach from an Interdisciplinary Angle

1. Introduction

Land is claimed by different users for different purposes. However, any change in land use will affect environmental processes, particularly those in soils. Soils form an interface between water and air. The chemico-physical and the biological processes in soils are of high importance as they provide services essential to sustain life. These services cannot be replaced by technological progress. In view of that, soil is increasingly seen as one of the most important cross-cutting issues of environmental protection. The preservation of such a resource needs an integral policy that involves all stakeholders.

The Swiss Federal Office for the Environment (FOEN) is currently developing an appropriate strategy for soil resource management by integrating soil protection and land use (Wenger 2011). The aim is to formulate the basic features of such a policy in order to find a way to ensure that available land resources retain their ability to what we expect of, and absolutely need. For this purpose FOEN works together with other federal offices, but also with the cantons and affected industries

If land management is understood to be a strategy that combines the requirement for rational use of land with the rising and varied demands on spatial resources placed by the society, then this includes the need to recognise both types of spatial variability, ecological as well as societal. Concrete spatial settings play an important role when thinking about the way land use and development could be managed in a sustainable manner. Characteristics of sites might appear differently depending on the scale we are looking at. Figure 1 shows population percentage change in two different spatial resolutions. Gradients appear on both, the European as well as the regional scale. However, they refer to different issues. Important factors that drive the regional “micro-migration” are infrastructure, city centre leisure facilities, public investment and encouragement of residential land use (Crouch et al. 2009). On a European scale other indicators such as economic growth, income, unemployment rate and level of education seem to be the dominant migration drivers (see e.g. de Haas 2011, Bailey 2009; Rodriguez-Pose and Gill 2006). Nevertheless, in terms of decisions on land use and development what appears in the continental view is the result of what happens on regional and local level.

All economies – and also the high living standards of citizens – depend on goods and services provided by the natural environment. These are strongly related to the particular soil

* Institute of Terrestrial Ecosystems, Swiss Federal Institute of Technology Zurich (ETH Zürich), Switzerland.

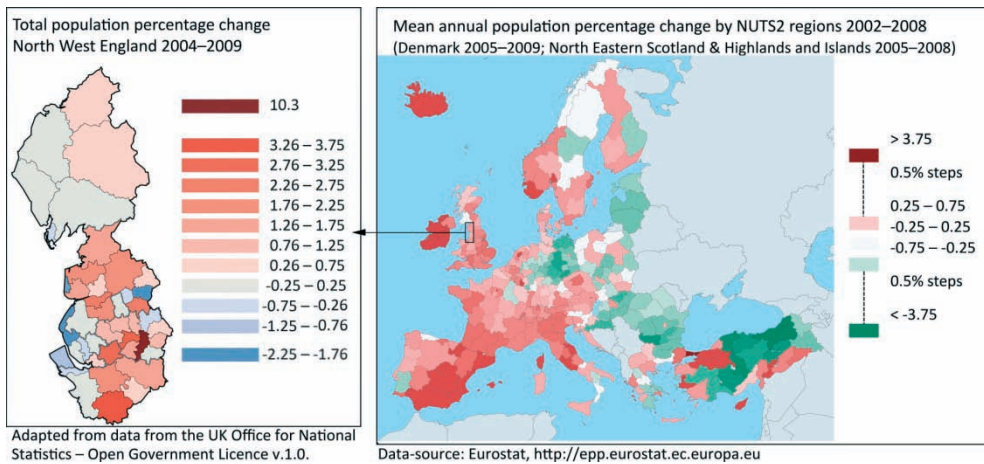


Figure 1: Population density change in Europe. Awareness of spatial disparities is different according to scale.

and weather conditions. The variability of the services provided by natural resources is characterized by a tessellated patchiness on small scale, much more heterogeneous than it was shown in figure 1 for population development.

In this article the aim is to focus on some causes by delayed problem recognition of impacts on soils ecosystem goods and services. Being aware of the implications, administrators and scientists have to draw appropriate consequences when promoting an integrative management of sustainable land use.

2. Spatial variability of soil potentials

Soils heterogeneity is not visible but must be derived from a systematic and area-wide inventory set up by collecting and analysing soil samples and by classifying and assessing soil profiles. Figure 2 shows the spatial pattern of soil properties (soil-map, figure 2a). It triggers the spatial distribution of soil potentials to fulfil specific goods and services the society demands. Figure 2b specifies the suitability of soils in the selected soil map section for agricultural needs, differentiated by full to restricted cultivability.

In Switzerland such soil maps are not yet established nation-wide. Instead, a so called “Bodeneignungskarte der Schweiz” (BRP et al. 1980) was created in the 1970s to provide a basis for spatial planning. The set up was based on geomorphologic, climatic and topographic data. Field investigations were made only on a part of Switzerland and samples were merely taken on places considered to be typical. The resulting map shows the suitability of land for different agronomic land use at 1:200'000 scale (figure 2c). Comparing the result with findings based on the soil map (figure 2b) it is obvious that the small scale only gives a rough first idea. Nevertheless, the “Bodeneignungskarte” is still in use, now digitised and vectorised (BLW 2009), because the big majority of the Cantons still lack an adequate area-wide dataset.

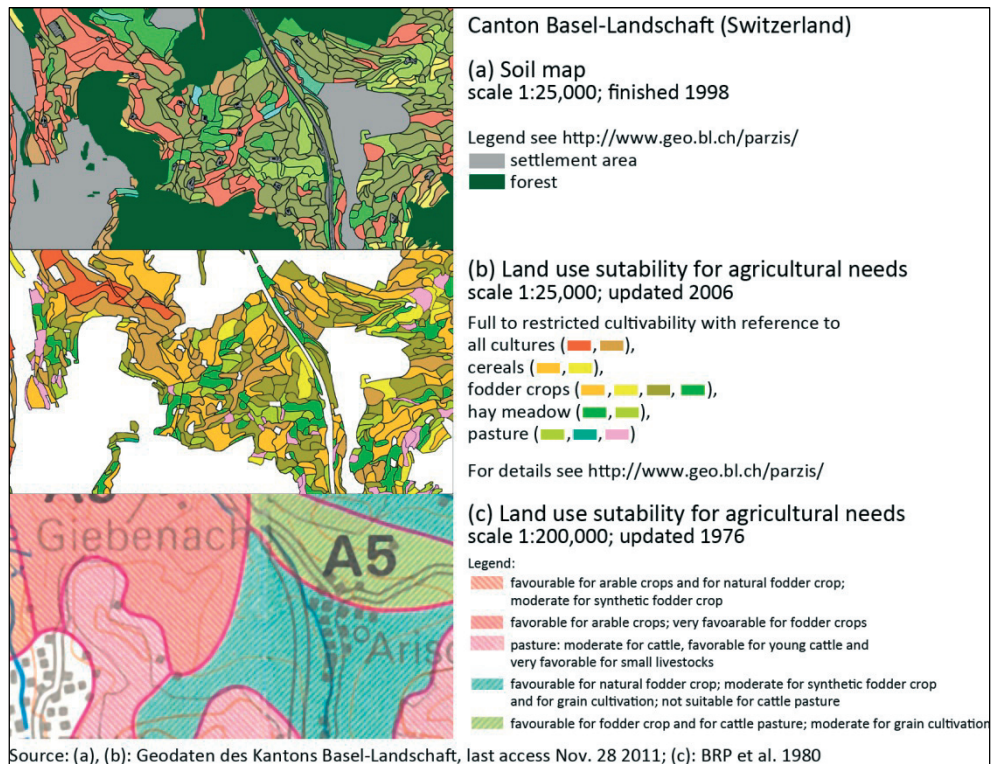


Figure 2: Basel-Landschaft (Switzerland): Extracts of the cantonal soil map (a), the derived agronomic suitability map (b) and the small-scale “land capability map” (c)

Soil maps can give information on localisation of soils water storing capacity, carbon content, ability to bind pollutants as well as infiltration rate of water and soluble materials into the groundwater. The importance of these potentials extends far beyond the interests of agriculture. Related data are useful also for water resources management, flood prevention, actions to combat climate change, nature and countryside conservation, forestry, bioenergy production etc. All these fields of activity would benefit from thematic maps derived from soil data. Needless to say that this is relevant for land use planning and regional development.

3. Scale dependence of resource shortage perception

Food production is the best recognised service of soils. It is also well known that soil resources which fulfil this service are shrinking (Ramankutty et al. 2008), and it is widely accepted that it cannot continue like this. But even in this context it becomes evident that an effective management needs an adequate spatial resolution of resource capacities.

3.1 Population growth and food supply: The global scale

On global scale the Food Aid Convention signed in London on 13 April 1999 aims to contribute to creating food security in the world and to enhance the international com-

munity's ability to respond more effectively to acute food crises and the food requirements of the developing countries. Nowadays the problem gets new and larger attendance caused by the global economic downturn combined with rising food and fuel prices that have worsened the food situation in many developing countries. On 27 September 2011 the European Parliament adopted a resolution on an EU policy framework to assist developing countries in addressing food security challenges (T7-0410/2011). Rising world population combined with an increasing life-standard in countries like China certainly have an important impact on these economic effects.

The severity of the consequences increases until global markets react to changes in demands, but this delayed since by this time the problem has reached a stage where the effects of the excessive use of natural resources are quite severe and in need of immediate action. Thus, waiting on simple market self-regulation is the contrary of sustainability.

Scientists follow these developments very closely. Many studies have been made to estimate future food requirement and to establish ways of how to intensify the world's food production. As a result it was assumed that advances in sustainable food production might be achieved but that they need a multi-disciplinary approach also involving social sciences and economics. In addition, it needs a political will to deploy specific policy measures on all levels of action, local, national and global (Godfray et al. 2010, Lang 2010). With respect to the current food system it was said that it exhibits signs of systems failure (Lang 2010).

3.2 The example of Switzerland's strategy to safeguard arable land of good quality

Looking at Switzerland we observe that its food self-supply rate is more or less stable despite productivity of agriculture increased during this time-span. This is no surprise because the pro capita area of arable land is diminishing. In 1992 the Confederation carried out a crop rotation plan (the so called "Sachplan Fruchtfolgeflächen") bearing in mind that there is a scarcity of good quality agricultural land. This sectoral plan forces the cantons to locate and maintain a canton-specific minimum area of high quality farmland (Schweizerischer Bundesrat 1992). Quotas were imposed in a political process. Selection of the areas was done by the cantons and protection was implemented within the framework of the cantonal structure plans ("Richtpläne"). Entries were based on the data used for the "Bodeneignungskarte der Schweiz" mentioned above (figure 2c).

Relying on this overview it was assumed that sufficient land suitable for crop rotation will remain even when some parcels are used for other purposes. The related balance of interest was taken from case to case in subsequent decisions. Very often land-use change was prioritised over the agricultural production value. As a result, the total area for crop rotation has decreased over the last two decades.

In 1998 the canton of Zürich completed its 1:5000 scale soil-mapping of all the municipalities' agricultural area. Since 2006 the map is available on the internet. It serves as a

basis for future re-cultivation projects, environmental impact reports, assessment and planning of terrain modifications, land use planning, water protection, appropriate agriculture etc. (Lehmann 2007). The map shows that the assumptions on remaining crop rotation areas were too optimistic.

A Federal Court decision specified that a part of the designated areas is not suitable enough to be legally accepted as crop rotation areas. In consequence, the Canton of Zurich had a deficit of crop rotation land. The required quota can only be reached by including 50% of those limited suitable soils that are described as “preferred for feed production, crop farming seriously restricted”. The federal government accepts this approach in preliminary examination considering that the detailed soil map now includes soil quality which allows a more accurate and comprehensive drawing of the boundaries of crop rotation land (Regierungsrat des Kantons Zürich 2011).

Outlined development shows that it actually took less than two decades to destroy forever a remarkable number of good quality soils. In addition, soil quality assumptions are only valid if soil properties have not changed in the meantime, e.g. by the use of heavy machines during rainy periods which may cause soil compaction. However, minor (“chronic”) changes applied gradually over a period of time are a serious but unsolved problem. Thus, we can not necessarily trust the data; the situation could even be worse.

The example shows two things:

1. Limitations correlated to soil quality are directly linked with the land-owners multi-use options. Even if the loss of soils ecosystem services is mainly remarked on regional or national level the preventive measures to protect soils have to rely on local environmental conditions. Conversely, acting on a local scale needs adequate information; otherwise there is a great risk of missing goals of overriding regional or higher level interest. This means that in soil protection both are important, aggregation of information and changes of the actual natural-geographical context on local scale. What we need is a monitoring across all scales.

It has been said that soil maps are still missing in extensive parts of Switzerland. If you ask soil protection officers for the main cause of missing data then the answer is always the same: lack of money. In other words, politicians and administrations have other financial priorities. In summary the problem at the moment is not yet taken as being serious, for whatever reason.

2. Decisions made on a case-by-case basis involve a high risk to opening the gap between the demands of ecosystem goods and services and the resources capacity. At the moment in Switzerland land consumption remains on a remarkable high level (see below). This is well known by everybody, but landowners rarely feel directly addressed. In fact, values that describe the maximum tolerable use of resources are not intervention values which are applicable case-by-case basis but systemic limits to be respected by the impacts in their sum. Therefore, feedback mechanisms need to be incorporated in regulations. Efforts in anticipatory planning and risk mana-

gement are warranted by taking into consideration not only all single actions but also the influence of their combined interactions in order to limit a risk. If this perspective is missing contingent levels will be filled up continuously until, all of a sudden, quickly designed but far-reaching policies must be put into force – a scenario that rarely leads to good solutions.

4. Soil contamination risks

Soil contamination is another serious but on-going problem of resource degradation.

4.1 State-of-the-art technology

Rules governing the installation of new structures and constructions start from the current state-of-the-art using existing technologies, but state-of-the-art might not be sufficient. Trusting the harmlessness of certain approaches or production methods can turn out to be very costly. In Kölliken (Canton Aargau) 350,000 tonnes of hazardous waste were deposited in a disused clay-pit between 1978 and 1985. At the time this was in line with regulations on hazardous waste management but the necessary experience was lacking.

The aim was to allow safe disposal of industrial and commercial hazardous wastes. The price for the reception of waste was deliberately set low in order to prevent unordered dumping. However, there was a lack of awareness of the problems relating to long-term chemical reactions and biological decomposition processes. It was later recognized that the environmental hazard is significant whereas the follow-up costs were massively underestimated.

Since 2007 cleaning up is in progress (www.smdk.ch). A fire event gave an additional increase of remediation costs that are now expected to reach up to 770 Mio CHF while operating provisions amounted to less than 2 Mio until landfill-closure. Thus, cleaning up of local hot spots might be unexpectedly expensive. The only good thing is that local hot spots are mostly known. This means that, according to technical feasibility, they can be monitored.

4.2 Early trend detection in diffuse soil contamination

The situation is different if we look at diffuse surface contaminations. It normally takes a long time to detect risks outgoing from long term accumulation of pollutants in soils. NABO, the Swiss Soil Monitoring Network, is an instrument used for early detection purposes and for evaluating the effectiveness of soil protection measures. The monitoring showed that trends can be identified and certified only after a sufficiently intense and long measurement series (Desaules et al. 2004). The authors say that it was not possible to identify trends when using sampling interval time periods of 5 years as is common in soil monitoring. Detected variations almost remained within the procedural and site-related bandwidth of background variation (“noise”). It could even be that actual measurements suggest a decrease while the long-term future trend might very likely be increasing (Desaules et al. 2010, Keller et al. 2006).

Different ways may be applicable to reduce deficits in surveillance. It became visible that mounting number of measurements could lead to earlier detection of trends. This relates also to improving the accuracy of noise figures. However, secured trend statements can only be achieved through sufficient long and intensive statistical time series (Keller et al. 2006).

Balances of anthropogenic material flows are another tool of soil monitoring to identify and assess sources of pollution. This also is not an elementary method to detect trends because data must be stochastic and rely on an adequate model. NABO results show that the measured concentration changes correspond only to some degree with those predicted from surface pollutants balance. Inconsistencies in trends cannot be explained solely by man-made inputs. They indicate rather different causes. Research needs to understand the influence of soil dynamic processes on concentration changes (Keller et al. 2006).

These results of NABO trends lead me to the following statements:

1. The lack of scientific certainty should not delay the adoption of measures preventing the risk of major and irreversible damage to soil resources. Scientific uncertainty has to be reflected in the background of environmental insecurity. Thus, the discussion has to be in essence a risk debate in terms of: Which risk might be considered to be socially, ethically and legally acceptable? From this point of view scientific uncertainty in itself is a risk that calls for precaution.
2. Precaution in this sense is not only to determine appropriate and reasonable conditions and requirements for concrete cases. It also means that some activities must be restricted in a way that their damaging effects are supposed to be overall acceptable. This is connected with the spatial dimensions of soil threats and related restrictions.

5. How to act sustainable under such conditions?

It is remarkable that a common understanding exists for the value of air, water and biodiversity, but this does not seem to be the case to the same extent for soils. The lack of awareness is for one part due to the fact that we cannot see into soils and it is proverbial that what is out of sight is out of mind. But, paradoxically, unawareness is also due to the big success soils play in fulfilling regulating services, so that the impacts of damages take time to be recognized.

5.1 Reversibility of damages

However, this does not change the fact that soils are in a close interaction with the other environmental compartments. Moreover, soils contain the biggest stock of carbon dioxide. Results reported in publications indicate that certain changes in land use can have a remarkable effect on soil carbon stocks – their decline as well as their increase (Guo and Gifford 2002). This is true even though again it is difficult to provide evidence as neither flux measurements nor repeated soil sampling seem to be suitable for tracking absolute changes in soils organic content (Leifeld et al. 2011).

In summary, impacts on soils affect in particular surface and ground waters, climate, biodiversity, as well as quality and quantity of food production. Some of these impacts are reversible by natural processes in soils, such as redistribution of degradable organic compounds or regeneration of disturbed top soil structure (e.g. by ploughing). They even could lead to an enhancement of certain soils ecosystem potentials. Other impacts can be named irreversible compared with the life span of a human being. Examples for such impacts are (i) soil loss through sealing, extraction of materials, mining and erosion; (ii) intensive pollution by heavy metals, xenobiotics and radioactive compounds; (iii) advanced acidification and (iv) deep-reaching compaction (Blum 2009).

Irreversibility is only visible with respect to soil-loss. The effects of other crucial threats are more hidden. Nevertheless, sustainability assessments should focus on the reversibility of impacts and hereby look at the spatial variation of expected impacts. Thus, the obligation to act sustainable requires adequate methodologies and tools to understand the state and the value of soil functions and services for a certain spatial unit.

5.2 Counteractions and awareness of trade-offs

In practice there exist different kinds of steering mechanism on different levels of decision-making but their interplay is often not really understood, not even by policy makers themselves. It is very likely that corrective actions have trade-offs. For example: In the second half of the last century sewage sludge was used in regular intervals as valuable fertilizer. When risks of this practice became obvious, mineral phosphate fertilizers were more often used. And all of a sudden Germany had a problem with uranium contaminated ground and drinking waters. Why was that? Uranium deposits in mineral phosphates represent the largest economically useful uranium source. Thus, phosphorus and uranium production are most often interlinked. But when the prices for uranium dropped after the end of the cold war (due to the destruction of nuclear weapons) the extraction of uranium from mineral phosphates became temporarily unprofitable. As a result mineral phosphates got higher contents of uranium. Fertilizer derived uranium in soils is prone to easy leaching (Ragheb and Khasawneh 2010, Smidt et al. 2012).

This simple example shows that it is a big challenge to bring together the relevant ecological, economic and social demands. A big variance of stakeholders' points of view can influence the success of governance. We therefore need solutions that integrate not only models for valuing soil functionality, spatial structures and the resulting development but also methods that show how to implement enhanced sustainability on different decision levels (figure 3).

6. Need for action in all fields

The need for action is again illustrated with the example of agricultural land use. Switzerland's statistical data (surveys conducted in 1979/85 and 1992/97) show that within 12 years 3.1% of farming land changed to other land uses. The expansion of new settlements is responsible for the largest part of this loss. They mostly affected the best agricultural sites

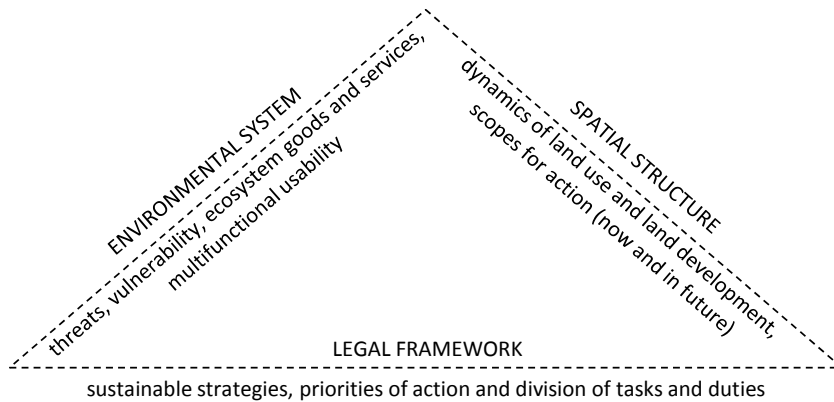


Figure 3: Integrative management of sustainable land use needs 3D-methodology.

in the valleys. In mountain region the loss concerns nearly unused and abandoned alpine areas which become unproductive or wooded areas. Extrapolation of these findings shows that if we continue like this, in a couple of centuries agricultural land will have completely disappeared (figure 4).

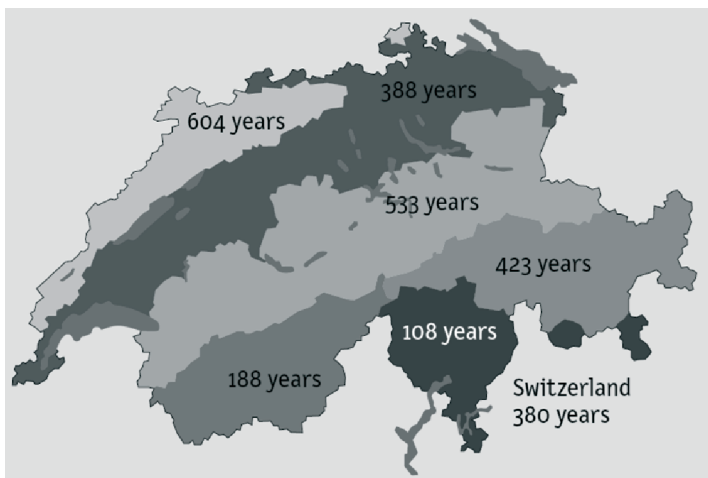


Figure 4: Years to the point of exhaustion of Swiss agricultural areas if the annual loss of agricultural land remains at the same level. Source: SFSO (2001).

This, of course, is no perspective. However, it seems that in everyday practise the findings do not bother communal authorities occupied with land use planning. Until now quantitative aspects are only taken into consideration with regard to the mentioned crop rotation plan, while the Federal planning law implies an on-going further expansion of building zones.

Whilst emphasising the importance of taking an overall view, it is detrimental that different offices and different state-levels are charged with divided matters. In Switzerland the

legislative power of the federal government is limited. It has full legislative authority in protection of the environment. In agronomy the focus is on the agronomy market and the security of supply. In spatial planning, on the other hand, the Federal Constitution grants the Confederation responsibility only for framework legislation. The respective law relates to aims and planning principles that must be considered for any spatial planning. It also lays down the planning instruments and the rules of procedure whereas legislation and practical planning implementation is the responsibility of the Cantons. They delegate a number of tasks to the local authorities.

With respect to land use, the Federal government tries to restrict first and foremost implications on the mentioned Federal affairs (e.g. food supply). The state of compliance with other legislations of spatial relevance is checked during the authorisation procedure when cantonal structure plans are changed. The outcome of these procedures is more a conglomerate of sectoral requirements than the outflow of a proper sustainability-concept. This indicates that convergence of different legislations is unsatisfactory.

7. Concluding Theses

Protecting future needs of natural resources are widely recognized as a goal. However, in soil protection clear benchmarks are missing in legislation. Further down the line of implementation the general state of resources receives less and less consideration while other interests come prominent, being more short-termed but concrete. As a result ecosystem goods and services are only partially taken into consideration, depending upon the circumstances of the case in question. One may suppose that the goods and services provided by soils are protected mainly reactively when degradation has already advanced and risks become visible. As a result the vulnerability of both environment *and* society increases, step by step. The situation is comparable to climate change.

To act with more responsibility some scientific sequences have to be better developed:

- *Ecosystems goods and services*
Knowledge of the dynamic behaviour of ecosystems should be enforced to model impacts on basic values, i.e. effects on vital ecosystem services, health and significant assets.
- *Spatial science including spatial planning*
Development and distribution of ecosystem goods and services needs to be integrated into spatial planning in order to develop and implement coordinated deployment policies. This includes a critical view on conditions and acting-options formed by the political and administrative system.
- *Legal framework and the balance of interests*
Not only suitability and efficiency are crucial to minimise irreversible impacts, but also the appropriateness of the procedures. The focus should be on strategies, distribution of tasks, conceptual deficiencies and operational difficulties, namely with respect to legally protected values.

All this has already been said in other contexts. However, it is an advantage when scientists can adopt concepts they are already familiar with. The big challenge is to get significant increase in overarching research-quality. Complex systems develop in their own way and they follow their own laws. Such systems are governed by a multitude of factors which are not all measurable in a suitable way to integrate them e.g. in a multi-criteria evaluation model.

In a first phase, interdisciplinary collaboration should concentrate on *joint integrative ways* that have the potential to overcome the conventional discipline-oriented approaches. One method could be the concretisation of common criteria. The principle of causality is to be combined with the principles for shaping future development, the principle of coherence in decision-making, the principle of proportionality and other principles of good governance with the aim to align land use management with soil resource protection. Skills required for this kind of research are a mutual understanding, a will to learn from each other, to get an improved understanding of potential obstacles.

An overview and – if possible – a theory that formulates in a general manner the basics for and the process of integrative management would be of great value, considering that persistent efforts are needed because the overall goal can only be reached gradually. To formulate a research-concept with such a focus many disciplines have to be involved. However, the discussion should focus on those principles, rules and requirements, which can be generalised – briefly: on the essentials. And what could be more essential than to use a vital and non-renewable natural resource in such a way, that it remains on the long term?

References

- Bailey, A.J. [2009], Population geography. In: Kitchin R. and Thrift N. (eds.), International Encyclopedia of Human Geography (pp. 274–284). Oxford: Elsevier.
- Blum, W.E.H. [2009], Reviewing land use and security linkages in the Mediterranean region. In: Rubio, J. L., Safriel, U., Dausa, R., Blum, W. and Pedrazzini, F.: Water Scarcity, Land Degradation and Desertification in the Mediterranean Region (pp. 101–117). NATO Science for Peace and Security Series C: Environmental Security. Dordrecht: Springer.
- BLW [2009], Bodeneignungskarte der Schweiz. Geodatenatz und Datenbeschreibung. <http://www.blw.admin.ch/dienstleistungen/00334/00337/> (accessed 5th Dec. 2011).
- BRP, BLW and BFF (eds.) [1980], Bodeneignungskarte der Schweiz. Karten u. Textband, Stand 1976. Bern: Eidg. Drucksachen- und Materialzentrale.
- Couch, C., Fowles, S., Karecha, J. [2009], Reurbanization and housing markets in the central and inner areas of Liverpool. Planning Practice and Research 24: 321–341.
- de Haas, H. [2011], Mediterranean migration futures: patterns, drivers and scenarios, Global Environmental Change 21, Supplement 1: 59–69.

- Desaules, A., Ammann, S. and Schwab, P. [2010], Advances in long-term soil-pollution monitoring of Switzerland. *Journal of Plant Nutrition and Soil Science* 173: 525–535.
- Desaules, A., Keller, A., Schwab, P. and Dahinden, R. [2004], Projekt Varitemp – Analysen von Zeitreihen und Ursachen gemessener Konzentrationsveränderungen von Schwermetallen und Phosphor in Böden auf Dauerbeobachtungsflächen. NABO-Bibliographie Nr. 126. Zürich: Agroscope FAL Reckenholz.
- Godfray, H.C.J., Crute, I.R., Haddad, L. et al. [2010], The future of the global food system. *Phil. Trans. R. Soc. B* 365: 2769–2777.
- Guo, L.B. and Gifford, R.M. [2002], Soil carbon stocks and land use change: a meta analysis. *Glob. Change Biol.* 8: 345–360.
- Keller, A., Desaules, A., Schwab, P. et al. [2006], Monitoring soil quality in the long term. Examples from the Swiss national soil monitoring network. *Mitteilungen der Österreichischen Bodenkundlichen Gesellschaft*. 73/2006: 5–12.
- Lang, T. [2010], Crisis? What crisis? The normality of the current food crisis. *J. Agrar. Change* 10: 87–97.
- Lehmann, A. [2007], Zürcher Bodenkarte im Internet, *Umweltpraxis* 49: 9–10. www.umweltschutz.zh.ch (accessed 6th Dec. 2011).
- Leifeld, J., Ammann, C., Neftel, A., and Fuhrer, J. [2011], A comparison of repeated soil inventory and carbon flux budget to detect soil carbon stock changes after conversion from cropland to grasslands. *Glob. Change Biol.* (2011) 17: 3366–3375.
- Ragheb, M. and Khasawneh, M. [2010], Uranium fuel as byproduct of phosphate fertilizer production. *Nuclear & Renewable Energy Conference (INREC10)*: 1–15.
- Ramankutty, N., Foley, J.A. and Olejniczak, N.J. [2008], Land-use change and global food production. In: A. K. Braimoh and P. L. G. Vlek (eds.), *Land use and soil resources* (pp. 23–40). Springer Netherlands.
- Regierungsrat des Kantons Zürich [2011], Antrag vom 6. September 2011. 4833. *Amtsblatt des Kantons Zürich* 2011 (37): 2413–2423.
- Rodríguez-Pose, A. and Gill, N. [2006], How does trade affect regional disparities? *World Development* 34: 1201–1222.
- Schweizerischer Bundesrat [1992], Bundesratsbeschluss Sachplan Fruchtfolgeflächen: Festsetzung des Mindestumfanges der Fruchtfolgeflächen und deren Aufteilung auf die Kantone vom 8. April 1992. *Bundesblatt* 1992 II 1649–1650.
- SFSO (ed.) [2001], *The changing face of land use*. Neuchâtel: Swiss Federal Statistical Office (SFSO).
- Smidt, G.A., Hassoun, R. et al. [2012], Uranium in German tap and groundwater – occurrence and origins. In: B. Merkel and M. Schipek (eds.), *The new uranium mining boom* (pp. 807–820). Berlin Heidelberg: Springer.
- Wenger C. [2011], *Integrale Bodenpolitik: Boden brauchen wir alle*. Bern: Federal Office for the Environment FOEN, Magazin “Umwelt” 4/2011: 4–7

The European Academy of Land Use and Development (EALD) organizes annual symposiums on topics related to the interactions between people and the land in both rural and open environment. This book contains articles of experts from 14 different European countries with different professional background.

It covers the following generalized topics: Interactions between landscape transformation and the structure of social systems and ecosystem services – the role of institutions and stakeholders in land use change – the various impacts of land use changes – coordination requirements in land use planning – approaches to address specific challenges in land management – stumbling blocks of integral land management.

Die Europäische Akademie für Bodenordnung (EALD) organisiert jährlich ein Symposium zu Themen der Raumnutzung und des Landmanagements. Das vorliegende Buch enthält Beiträge von unterschiedlichen Experten aus 14 europäischen Ländern.

Es deckt folgende grundlegende Themen ab: Wechselwirkung zwischen Landschaftsveränderungen und dem strukturellen Aufbau der Gesellschaft bzw. der Leistungsfähigkeit von Ökosystemen – die Rolle von Institutionen und Akteuren bei Landnutzungsänderungen – Auswirkungen von Umnutzungen – Anforderungen an die Koordination bei der räumlichen Planung – Ansätze zur Bewältigung spezifischer Herausforderungen – Stolpersteine im integralen Landmanagement.

ISBN 978-3-7281-3479-0 (Printausgabe)

ISBN 978-3-7281-3480-6 / DOI 10.3218/3480-6 (open access)