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GREEN MAP NEUSIEDL AM SEE

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ABSTRACT

The first globally acknowledged definition of sustainable development was presented by the Brundtland Commission in 1987. Starting with the implementation of the First Action Programme in 1973, the concept has been integrated into European increasingly policymaking during the past three decades. The status of environmental protection in development debates and the role of planners in this context are complex issues. Yet, communication evidently plays a major role in conflict resolution. One possible way for the successful communication of goals related to sustainable development is the comprehensive visualisation of present development outcomes and future strategies. A Green Map therefore, represents a powerful tool to enhance environmental awareness and helps to communicate ideas and concepts to non-experts.

Neusiedl am See is situated in the easternmost province of Austria, the Land Burgenland. After World War I, the town of Neusiedl am See became the administrative centre of North Burgenland. The increased demand for resources and space has resulted in new challenges for local development, as urban growth is limited by natural boundaries. Additionally, the town borders an area protected by various conventions, European Directives and by Austrian law. For this, the responsible use and management of natural resources is a prerequisite to urban development in Neusiedl am See.

The sites displayed by the first edition of the Green Map Neusiedl am See were selected based on findings during a series of visits to the town of Neusiedl am See complemented by informal talks with local residents making their own suggestions. The sites included in the Green Map support economic activities aimed at the sustainable use of resources, strengthen local culture and identity, encourage the experience of nature and recreation, and promote the use of sustainable transport systems.

ZUSAMMENFASSUNG

Die erste, weltweit anerkannte Definition von nachhaltiger Entwicklung wurde von der Brundtland Kommission in 1987 vorgelegt. Seit dem Erlass des ersten Aktionsprogramms in 1973 wurde das Konzept in den vergangenen 30 Jahren zunehmend integraler Bestandteil Europäischer Politik. Die Stellung des Umweltschutzes in Entwicklungsdebatten und die Rolle, die dabei Planer und Planerinnen spielen, sind komplexe Themen, aber Kommunikation spielt scheinbar eine wichtige Rolle bei der Lösung von Konflikten. Die verständliche Darstellung von Planungsergebnissen der Gegenwart und zukünftiger Entwicklungsstrategien bietet eine Möglichkeit zur Kommunikation von Zielen nachhaltiger Entwicklung. Eine Grüne Karte ist daher ein wirksames Werkzeug zur Steigerung des Umweltbewusstseins und hilft bei der Vermittlung von Ideen und Konzepte an Nichtexperten und -expertinnen.

Neusiedl am See liegt in Burgenland, dem östlichsten Bundesland von Österreich. Nach dem Ersten Weltkrieg wurde die Gemeinde Neusiedl am See zum Verwaltungszentrum von Nordburgenland ausgebaut. Die zunehmende Nachfrage nach Ressourcen und Raum führt zu neuen Herausforderungen für die örtliche Entwicklung, da die Ausdehnung der Stadt durch natürliche Barrieren begrenzt wird. Die Stadt grenzt auch an ein durch Konventionen, EU-Direktiven und Gesetze mehrfach geschütztes Gebiet. Deshalb ist die verantwortungsvolle Nutzung und Verwaltung von natürlichen Ressourcen eine Vorbedingung für die Stadtentwicklung.

Die Standorte für die Erstausgabe der Grünen Karte Neusiedl am See wurden nach mehrfacher Begehung des Planungsgebietes und aufgrund informeller Gespräche mit Anrainern und Anrainerinnen, die ihre eigenen Vorschläge machten, festgelegt. Die in der Grünen Karte angeführten Standorte fördern wirtschaftliche Aktivitäten, die auf die nachhaltige Nutzung von Ressourcen ausgerichtet sind, stärken die lokale Kultur und Identität, ermutigen zum Naturgenuss sowie zur Erholung und fördern die Nutzung von nachhaltigen Transportsystemen.

1 Introduction

Evidence suggests that natural resources are limited and that human kind is exceeding the planet's carrying capacity by far. To mitigate existing impacts of these trends and to prevent future hazards and catastrophes, national, regional, and local governments have signed and implemented an ever-growing number of treaties.

1.1 The need for development that is sustainable

The compilation of the "Brundtland Report" published by the World Commission on Environment and Development (WCED) in 1987 entailed the acceptance of the term "sustainable development" by decision makers within the international community. Yet, definitions of the concept are not very specific, allowing for diverging interpretations. Consequently, measures and policies can be regarded sustainable and irrevocably damage the environment at the same time. As a result, non-renewable natural resources are becoming increasingly scarce. This is just one aspect of Global Change challenging humankind (Millennium Ecosystem Assessment 2005).

At the same time, the quality of space has increasingly become relevant for regional development and environmentalism. Nowadays, urban regions are competing with each other, as investors prefer locations with the institutional capacity to minimize apparent conflicts and guarantee a healthy environment promoting healthy local economies and sustainability (Healey 1996). This is essential, since mapping has become an activity dominated by specialists and coordinated by decision makers (Aberley 1993). Rephrasing, maps increasingly have become tools communicating the interests of those in power, which do not necessarily concur with the interests of local residents and other stakeholders. For instance, there are countless maps showing the 'property' of political entities – such as towns, districts, or national states – hardly accounting for ecological or socio-cultural boundaries within a given area (ibid.).

As one of the major impacts of the run for better infrastructure and urban development, the European Commission identified fragmentation to be one of the major threats to the integrity of ecosystems across Europe in 2005.

> *"Fragmentation reduces the connectivity and the size of habitats, which is essential for biodiversity conservation, for example to allow for genetic exchange between populations. The intensity of fragmentation is increasing, mainly due to the expansion of transport infrastructure. This is a very visible development in many landscapes."* (Commission of the European Communities, 2006 SEC (2006) 218)

In the same report, the Commission concludes, *"…Conservation of biodiversity cannot be restricted to nature conservation sites, but has to be integrated into the wider countryside with other land uses"* (ibid.).

1.2 The case of Neusiedl am See

Global challenges have the tendency to be too complex and far too abstract to be communicated successfully to the general public by scientists or decision makers, resulting in a low level of public acceptance. Small-scale problems such as local scale issues affecting the majority of members within a communityon the other hand, are more readily acknowledged and therefore easier to mitigate as far as public support of cost and mitigation measures are concerned (Gallopín 2003).

Consequently, global scale issues that can be identified to be the result or the sum of local scale problems need to be tackled on the appropriate scale. Therefore, the concept of sustainable development will be elaborated focussing on development on local level, i.e. urban development and related to the town of Neusiedl am See in Burgenland, the easternmost province of the Federal Republic of Austria.

Neusiedl am See has been selected for this thesis as it is situated on the northern shore of Lake Neusiedl, Europe's westernmost steppe lake shared by the Federal Republic of Austria and Hungary. The town of Neusiedl am See borders a National Park and is characterized by a growing demand for space by an ever-growing number of local residents.

The region of Lake Neusiedl is well known for its unique as well as endangered halophilic flora and fauna and has been protected by several international treaties since the 1970ies. In 2001, the cultural landscape surrounding the lake was added to the list of World Heritage Sites by the United Nations Educational, Scientific and Cultural Organization, UNESCO (Austrian Commission for UNESCO 2006).

Lake Neusiedl is part of two Biosphere reserves acknowledged by UNESCO's Man and the Biosphere Programme (MAB) suggesting that the national border between Austria and

Hungary has outweighed the given geophysical and biological circumstances and conditions. However, human impacts threatening the lake affect residents of both nationalities. These threats comprise fertilisers, pesticides and herbicides used in agriculture, impacts from water diversion and extraction including drainage and pollution by domestic sewage supporting eutrophication. Additionally, the lake's flora and fauna are believed to be in danger due to excessive hunting of single species, cessation of traditional land use and land management practices (Ramsar Information Sheet 2005). These can comprise pastoral land being lost to agriculture or changes in local vegetation dependent on management practices as succession sets in. Ultimately, these trends can accumulate in habitat loss and fragmentation of the reed belt and of adjacent meadows. Small pools can also be overgrown by reed. Low flying aircrafts have been found to harm bird life as well. Further threats have been identified to be the hunting of water birds and avian botulism (Ramsar Information Sheet 2005).

With respect to the town of Neusiedl am See, the local government is committed to nature conservation and sustainable development. The local strategy concept completed in 2003, suggests eco-tourism as well as a sustainable coastal zone management[1] as appropriate strategies. Yet, economic interests and people's habits seem to collide with these ideas resulting in activities that can be best described as inconsistent with the commitments mentioned above, e.g. residents tend to run errands within Neusiedl am See by car, biking routes crossing the town centre have to be shared with freight vehicles heading in the same direction…etc. Additionally, the town of Neusiedl am See has been attracting new residents continuously for the last decades causing an ever-growing demand for space and other natural resources in the area. These developments resulted in housing projects and construction works within the lake's fringe, as shown by the land use plan contradicting the existing land development strategy of Burgenland[2].

There is also increasing pressure excreted by tourism. Tourist facilities and continuous development of the lakeshore are believed to have the potential for negative impacts on the lake. The growing number of visitors implies additional solid waste and wastewater

[1] See also: Regional Consulting Ziviltechniker Gmbh; 2003. Strategiekonzept Neusiedl am See 2020. *rc446*. Vienna, Austria

[2] Land use in Neusiedl am See and the local land use plan were analysed by the author during two cycles of the Intensive Program *"Responsible Use of Soil and Land and Land Development"* (IPSOIL), i.e. IPSOIL I and II in spring 2005 and 2006, respectively. Coordinated by the institute of Soil Science of the University of Natural Resources and Applied Life Sciences, Vienna (BOKU), these two-weeks cycles were centred in Neusiedl am See and supported by the municipality as well as various local NGOs.

generated on-site. This may result in adverse impacts on the lake and its environment, as the increasing numbers of visitors entail more traffic, pollution and noise (Ramsar Information Sheet 2005).

1.3 About this thesis

1.3.1 Goals and objectives

Based on the challenges and discrepancies described above, this thesis is aimed at the raising of stakeholders' awareness of their local environment by the release of the prototype of a Green Map of Neusiedl am See charting local culture in balance with ecological values.

When creating a Green Map, members of a community are designing a map depicting their home place. Their attempt to find a common ground is based on the underlying assumption that by satisfying the need for understanding what they value most within their own neighbourhoods they are creating a basis for future development. In further consequence, these negotiations can result in the reassessment of the research area accounting for the needs and values of groups of stakeholders more diverse and representative than it was the case for this thesis. Ultimately, the outcomes of the mapping process can result in the empowerment of stakeholders and serve as a sound basis for the renegotiation of development strategies in Neusiedl am See.

1.3.2 Framework for analysis of local data

The study of existing environmental policy and development strategies implemented in Neusiedl am See provides an insight into local conditions under which a selection of Green Map criteria can be applied to the project area providing a framework for assessment. Sites displayed have been proposed by local stakeholders to a high extent resulting in a Green Map striving to balance local residents' activities with natural values of Neusiedl am See.

The author will seek to answer a series of questions within her thesis. Applying the concept of sustainable development to local conditions local policy needs to be examined more closely with respect to this concept. Are local commitments being fulfilled? Is the local development strategy in correlation with existing treaties and acts on a higher level of Austrian legislation and execution? What conflicts can be identified?

In addition to the legal and theoretical framework for assessment, physical conditions for development need to be examined as well. Are local residents aware of the cultural and natural values their home place possesses? Who decides on what is to be preserved and what

is to be changed? Which examples of best practice can be identified and what needs to be improved?

Finally, by testing existing conditions against theoretical concepts, the research area can be assessed. Here, the questions of appropriate assessment criteria and their application need to be examined to receive acceptable and locally justifiable results.

1.3.3 Structure of the thesis

With respect to the structure of the thesis, the research framework described above implies a subdivision of the document.

The subsequent chapter, chapter 2, comprises the investigation of the theoretical framework underlying this work. Based upon the existing legal framework, tools and strategies applied during the mapmaking process and the development of land use strategies will be elaborated and discussed in the local context. The aim is to gain insights on the theoretical concept of sustainable development and its implications for the role of planners and the activity of planning itself. In further consequence, the implications for the design of a Green Map will be delineated.

Chapter 3 describes the methodology and conditions under which the thesis has been finalised. A Green Map is a map charting the cultural and natural environment based on a predefined set of icons. Green Maps are created on-site in a participatory process and in accordance with guiding principles of the Green Map System (GMS), a global eco-cultural movement centred in New York City, USA that provides a framework for environmental mapmaking.

For a better understanding, the results of the examination of the research area will precede the presentation of the results and outcomes of the charting process in chapter 4. Social, ecological and economic conditions will be put in a historic and regional context. This is inevitable for the comprehensive description of sites included in the Green Map Neusiedl am See supporting local residents as well as daily visitors and tourists in their personal decision-making with respect to the use of local resources.

In chapter 5 finally, the outcomes of the thesis will be discussed and related to possible follow-up projects within the community of Neusiedl am See and the region of Lake Neusiedl.

2 Planning for sustainable development

Planners' self-perception and the actual role of planners do not necessarily have to correlate, nor do development strategies of a municipality and policymaking.

Concepts of environmental protection and sustainable development have been adopted in numerous disciplines during past decades. Yet, history and in particular planning history do not attest their endorsement: city development at the cost of green areas, urban sprawl, congestions…etc. are just a few results of past and present planning practices. The role of planners has been a subject to discussions for at least two decades in the Anglophone parts of the world and more recently, also in the German speaking areas of Europe, i.e. Germany and Austria (Blotevogel 1999). Planners have to meet the interests of different groups and can fulfil a variety of roles at the same time. However, their exact role regarding urban development has not been defined, yet, nor have there any legally binding rules been set that can be applied to different approaches.

For a better understanding of the discrepancies between the role of planners in planning theory and their actual role in planning practices therefore, a general concept of sustainable development underlying development strategies and its implications for planning will be introduced in this chapter as well as conflicts related to this concept and approaches for their resolution. As it will be shown, the creation of a Green Map can trigger discussions and development processes that can significantly contribute to sustainable development of places and societies.

2.1 The concept of sustainable development

One of the most frequently cited definition of sustainable development was proposed by the World Commission on Environment and Development (WCED) - also known as the "Brundtland Commission" - in 1987 (WCED 1987). In its report to the United Nations General Assembly "Our Common Future", the Commission introduced the concept of sustainable accepted by the International Community:

> *"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities..."* (WCED 1987, A/42/427, p. 24)

One key concern of sustainable development is the question of equity. The Brundtland Report focuses on equity between generations. This idea of intergenerational equity however, can raise the ethical question of intragenerational equity (Gallopín 2003). It is not enough to preserve natural resources for coming generations as stated in the Brundtland report but there are also disparities in the present that have to be reduced.

Diversity has been identified as the second key element of the concept of sustainability implying that the diverse interests of those affected have to be taken into consideration for development to be sustainable. The aims and goals the development process should be achievable and feasible. Their setting requires the integration of diverse groups of stakeholders.

In other words, sustainable development can bee seen as development, which is sustainable (Gallopín 2003). Development in this context is understood to be a process that enhances the effective freedom of people involved to pursue personal values. This does not necessarily involve economic growth, as material growth in the context is not necessarily synonym with economic growth, either. In the last instance, development can be understood to be about the improvements of quality of life. The experienced quality of life in turn, is based on the satisfaction of human needs, both material and non-material, as well as the fulfilment of human desires and aspirations (ibid.).

Since World War II however, development has become a synonym for the phenomena of market expansion and economic growth, excluding ecological principles, socio-cultural responsibilities and moral obligation among others (Rajeswar 2002). It must be noted that material economic growth is facing both source and sink-limitations (Gallopín 2003). In the industrialized world, non-material growth has increased in the past century because of continuous economic growth, leading to an ever-growing share and dominance of the service sector within the national Gross National Product (GNP). Therefore, the report submitted by the WCED can be seen as an attempt to answer the central question of what is to be sustained and what is to be changed by the international community.

2.1.1 Global commitments

The political concept of sustainable development is rooted in the aim to preserve the environment and has been shaped by three global conferences during the past 35 years:

- United Nations Conference on the Human Environment (1972)
- World Conference on Environment and Development (1992)
- World Summit on Sustainable Development (2002)

In 1972, at the United Nations Conference on the Human Environment held in Stockholm, environmental degradation and its impacts were in the focus of attention of the international community for the first time in history. This concern was voiced globally anew in 1987, when the Brundtland Commission published its report after four years of data compilation presenting the definition given above. The report highlights the impacts of human actions on the environment and calls for changes in economy and consumption patterns. Poverty is identified to be among the major obstacles for future development. There is also a strong emphasis on the need for peace and an improved democratisation of decision finding processes (WCED 1987).

In 1992, after three years of preparatory work, representatives of 178 countries, including over 100 heads of states, joined the World Conference on Environment and Development in Rio de Janeiro, also known as "Earth Summit". In addition, 1.000 non-governmental organisations (NGO's) were allowed to join the conference promoting their own visions on future developments. The following major agreements were signed in the run-up to or at the conference itself:

- The Rio Declaration
- Agenda 21
- The Framework Convention on Climate Change (UNFCCC)
- Convention on Biological Diversity (CBD)
- The Statement of Forest Principles

The Rio Declaration comprises 27 universally applicable principles and is a confirmation and an extension of the Declaration of the United Nation Conference on the Environment, held in Stockholm in 1972. Agenda 21, UNFCCC and CBD are legally binding. Consequently, they have had major impacts on international and national policies.

The World Summit for Sustainable Development (Rio+10) was held in Johannesburg in 2002. The summit ended with the adaptation of a political declaration and a plan for establishing

better governance. The signatory parties also agreed to apply sustainable management practices to natural resources, to establish fair trade, combating poverty and to promote social development. For the successful implementation of the agreements, partnerships between governments, the private sector and NGOs were announced, together with monitoring mechanisms (ScadPlus SD 2006).

Yet, despite all efforts undertaken by the international community, there is still no agreement on an exact definition of the concept that would seem acceptable to all parties involved. The general nature of the concept of sustainable development with its possible implications allows for a wide range of interpretation of the definition given by the Brundtland Report in 1987. Economists tend to have different views on what is important than ecologists, sociologists in turn will not necessarily have the same view on the topic as nature scientists, and so forth (Gallopín 2003). There is also the issue of scale in the spatial as well as the temporal sense (Leemans et al. 2003).

Critic holds that the concept has been stripped of its transformative power, for it has been stressed by various interest groups including global players within the financial world, such as the World Bank (Campbell 1996). This view is based on the underlying assumption that every concept endorsed by so many diverse interest groups must be bypassing the very core of conflict rooted in these interests. The actual implementation of the concept of sustainable development has been questioned as well.

Optimists on the other hand reason that because of its broad acceptance the concept of sustainability has led to a commonly endorsed ideal underlying political and economic decision finding processes (Campbell 1996).

Since an extensive analysis of discourses related to the concept of sustainable development would exceed the resources devoted to this thesis, the highlighting of positions in this paper will focus on those emerging in the context of local development strategies.

2.1.2 The concept of sustainable development in the European context

Environmental issues were not of high priority in Europe until the 1970ies when at the 1972 United Nations Conference on the Human Environment the attention of decision makers was drawn to environmental degradation for the first time in history (ScadPlus SD 2006). The very same year, at the Paris summit in 1972, the heads of state and national governments acknowledged the necessity of the protection of the environment for socio-economic reasons

adding it to the political agenda. As a result, the first of six successive Action Programmes providing a legislative framework for environmental policy was implemented in 1973.

2.1.2.1 From Community Action to Community Policy

Nevertheless, environmental degradation continued and it became clear that for a successful policy implementation concerted action at European as well as at global level was needed (ScadPlus SD 2006). The adoption of the Single European Act in 1987 was considered a turning point in European environmental policy as it has provided the legal basis for Community measures, defining objectives and guiding principles for action. By granting the status of Community Action, protection of the environment was extended to other fields of policymaking.

The Fifth Community Action Programme on the Environment, "*Towards Sustainability*", established the principles of a European strategy of proactive measures for the period 1992-2000 and marked the beginning of a horizontal Community approach, which took into consideration all known sources of pollution, including industry, energy, tourism, transport and agriculture (ScadPlus Nature 2006). Still, the internal market was continuously being criticized for putting economy and trade before the protection of the environment. As a result, the formal status of environmental protection was upgraded from Community Action to a Community Policy in the Treaty on the European Union in 1993.

This treaty has been often criticized, particularly for not simplifying procedures entailing the protection of the environment and for lacking the commitment for sustainable development agreed on at the Earth Summit in 1992. However, it contains a reference to sustainable growth that is respecting the environment and to the principle of precaution, which has been at the core of European environmental policy ever since (ScadPlus Nature 2006).

Further improvement of environmental policy was brought by the Treaty of Amsterdam in 1997, entailing a new article, Article 6. The clause added to the EC Treaty calls for the integration of environmental protection into the definition and implementation of other policies as a means to promote sustainable development. Furthermore, decision-making procedures became clearer and more efficient (ScadPlus SD 2006). Starting with the Cardiff Process launched during the British Presidency in 1998, environmental considerations were increasingly implemented in other policy areas and have been reviewed regularly. These policies have covered a variety of issues, such as energy, sustainable agriculture, internal market, enterprises, extractive industries, common fisheries policy, European aquaculture, economic policy, transportation…etc.

2.1.2.2 Strategy for sustainable development

The adoption of Commission's Communication of May 2001, "*A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development*", at the European Council in Gothenburg indicates a further milestone in the Union's progress towards sustainable development, as it lay the foundations for a comprehensive strategy comprising two parts. The first part proposes strategies and policy measures aimed at the identification of global and European trends considered unsustainable. Some of these issues are related to international agreements signed by Member States or by the European Community and include:

- Climate change
- Transport
- Regional disparities
- Public health and ageing society
- Natural resource management and biodiversity
- Poverty

The second part of the strategy is aimed at EU policy-making and calls for the mutual reinforcement of social, economic, and environmental aspects in decision-making processes.

The Commission also proposed a change in consumer behaviour and the introduction of prices reflecting environmental and social costs arguing that this would lead to a market with less polluting products and services. Technical innovation and improved communication strategies were seen as means of public participation (Commission of the European Communities 2001).

The Sixth Environmental Action Programme, "*Environment 2010: Our Future, our Choice*", was also adopted in 2001 and is a powerful instrument for the implementation of the concept of sustainable development within the EU. It is aimed at a comprehensive definition of priorities and objectives within the Community's environmental policy until 2010 and beyond as well as the description of measures to be taken for a successful implementation of the strategy for sustainable development. It is based on seven thematic strategies comprising air pollution, the marine environment, sustainable use of resources, waste prevention and recycling, pesticides, soil quality and the urban environment (EEA, 2005).

The Sixth Programme proposes a participatory approach with respect to the development of environmental strategies in order to enhance public acceptance. Proposals for possible

measures and strategies include improved communication and the participation of industry, NGOs, public authorities and other stakeholders. The implementation of ecologically sound markets based on environmental friendly products is a further goal. Scientific and economic analyses as well as environmental indicators are expected to contribute to decision finding to a high extent. For this, the Commission has improved its cooperation with the European Environment Agency, EEA (EEA 2005).

In 2002, the Commission outlined the strategy for the European Union's contribution to global sustainable development in the Communication "*Towards a global partnership for sustainable development*"[3] as a preparatory paper for the World Summit on Sustainable Development in Johannesburg. This communication and the Gothenburg Declaration both formed the framework for Europe's position at the World Summit for Sustainable Development (Rio+10) held in Johannesburg in 2002.

The strategy on sustainable development has been continuously refined over the years. The commitments agreed on at the World Summit for Sustainable Development, the Millennium Development Goals and pledges to increase official development aid and to take account of the needs of developing countries in international trade were added subsequently to the document.

In 2005, finally, the Brussels European Council confirmed that the Lisbon Strategy regulating future development strategies of the European Union was part of the wider framework for sustainable development. It also adopted a declaration of the guiding principles outlining the key objectives, i.e. environmental protection, social equity and cohesion, economic prosperity and the need for the EU to assume its international responsibilities (ScadPlus SD 2006).

2.1.3 Modelling sustainable development

Rephrasing the definition given by the WCED, sustainable development can bee seen as development, which is sustainable (Gallopín 2003). In the broadest sense thus, sustainability can be said to result from the balance of social, economic, and ecological interests forming the three poles of a triangle (figure 2-1).

[3] COM (2002) 82 final

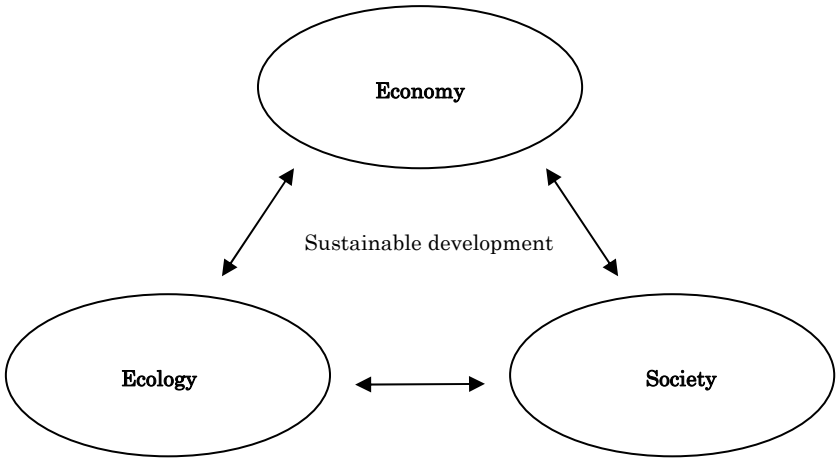


Figure 2-1 Triangular model of sustainable development

The apexes of the triangle represent society, ecology and economy as interrelated aspects of the development process that need to be balanced. Therefore, sustainable development can only occur in the centre of this triangle.

A slightly different approach has been favoured by the EU, as shown by figure 2-2. In this model, sustainable development is based on three separate pillars, i.e. ecology, economy and society, (Commission of the European Communities 2001). The EU strategy for sustainable development is considered the third pillar of the model adapted for the Lisbon Strategy (ScadPlus SD 2006).

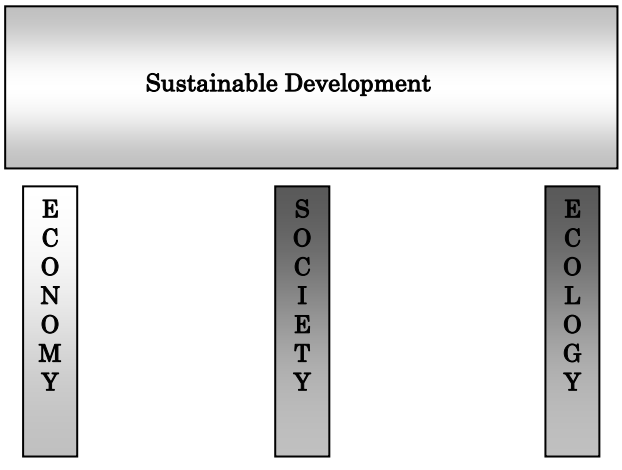


Figure 2-2 Pillar model favoured by the European Union

This model has been criticised by experts because it requires the mutual integration of all three "pillars" equally. This equality of the three pillars however, is not compatible with a series of political documents released and implemented earlier, starting with the Treaty of

Amsterdam. As it has been pointed out before, the integration of environmental aspects in other fields of policy takes priority over other aspects of development in this document.

2.2 Planning for sustainable development

During past decades, it has been increasingly recognized that social, economic, ecological, cultural and political factors need to be integrated into the concepts of sustainability and sustainable development. This implies the coordination of top-down development approaches with bottom-up grass-root movements. Consequently, planners have to encourage economic growth, promote fair distribution of this growth and should not deteriorate the environment in these processes (Campbell 1996).

With respect to planning, the question arises whether the concept of sustainability is a useful one for planners. Critics argue that it is not always clear what is meant by sustainability, let alone sustainable development because the goals may be too far away and too general to be operational. Rephrasing, calling a plan or development strategy "sustainable" does not necessarily mean that it is sustainable indeed.

Advocates of sustainable development on the other hand argue that the concept can be helpful in defining long term planning goals keeping the socio-economic system in balance. They claim that the degree of implementation of the ideals promoted by the concept also demonstrates how society values the economy, the environment and equity (Campbell 1996). Consequently, it can be argued that the concept of sustainable development can be refined to be useful for planners (ibid.).

2.2.1 Modelling sustainable planning

Following the commonly agreed representation of sustainable development, figure 2-3 gives an overview on planners' diverging priorities and the resulting conflicts in the context of planning for sustainable development. The graph shows three types of priorities leading to three different perspectives. Sustainable development occurs whenever a balance between the three interests is reached, i.e. when planning occurs in the centre of the triangle. In an ideal world, planners would do their best to achieve all three goals equally. In reality however, they usually represent one goal neglecting the remaining two at the same time.

One of the reasons why planners possibly fail to promote development that is sustainable not only on paper but also in real life has been identified in planners' entanglement in at least three conflicting interests indicated by the three apexes of the triangle (Campbell 1996).

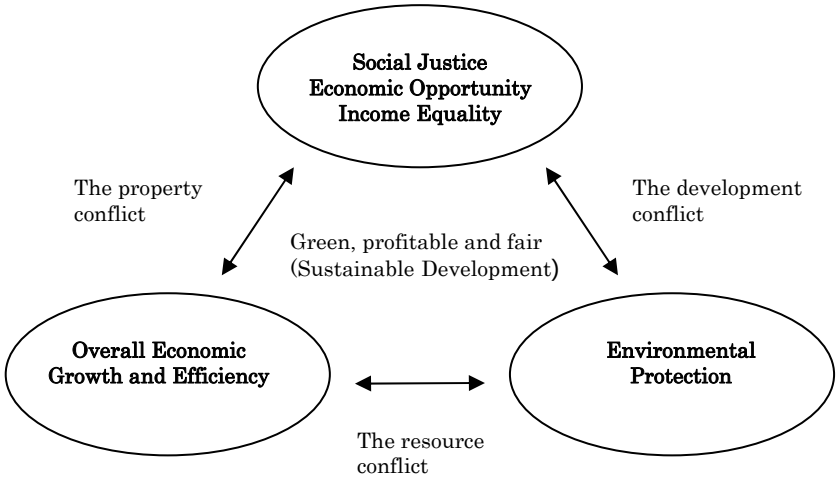


Figure 2-3 Model of sustainable planning (after Campbell 1996)

It must be noted here, that there are more fields of interest intervening in local planning such as architecture, culture or transportation. They have been left out because the figure is meant to show the three major fields of interest underlying each planning process and the interrelationships between these in a very general and schematic way. It clearly demonstrates that the simplified view of controversies as a universal economic – ecological clash between man and the environment has severe limitations as it fails to recognize the social aspects inherent to these conflicts.

2.2.1.1 Types of planners

Campbell has identified three types of planners based on the triangular model of sustainable planning. The economic development planner perceives the object of planning as a location where production, consumption, distribution and innovation take place. There is an ongoing competition with other cities for markets and new industries there.

The second type of planner is represented by the environmental planner who sees the city as a consumer of resources and a waste producer. The city or town is competing with nature for resources and land exerting pressure on the environment. Space in this context is regarded in terms of greenways, watersheds and ecological niches.

The third type is referred to as the equity planner. Planners falling in this category view a city or town as a place hosting conflicts on the fair and equal distribution of resources, services and opportunities. Thus, competition among different interest groups is carried out within the boundaries of the city or town itself. Space is conceived as the area of social interactions in communities (Campbell 1996).

2.2.1.2 Types of conflicts

The three apexes of the triangle represent three divergent interests, which can occur in various combinations and have impacts on all stages of a planning process. Consequently, planners have to deal with at least one of the following three types of conflict identified within the scheme.

The first conflict occurs between the demand for economic growth, on the one hand, and social equity on the other. It is based on concurring interests regarding property, e.g. between urban planners working for the local government and local residents. The situation is further complicated, as each side is highly dependent on the other while defying it simultaneously. The private sector resists the regulation of its property by government policy but needs the very same measures for the functioning of economy. To give an example, private property such as housing or land is a private commodity on the one hand, and depends on governmental interventions, such as land use plans on the other. This leads to tension recognisable in the boundary between public good and private interests (Campbell 1996).

The resource conflict is marked by the apexes of economic growth and environmentalism. Natural resources are being used and need to be preserved for present and future demands at the same time. Thus, there are conflicting demands within society for economic benefits, on the one hand, and ecological utilities on the other. The boundary is a dynamic one, as there is always some amount of pressure exerted by different interest groups. Campbell repeatedly stresses the lack of evidence for a single, universal, economic-ecological conflict and argues that even if a conflict seemingly occurs between economy and the natural environment it always entails intrinsic implications for the stakeholders involved. It can be said that these so-called resource conflicts are rooted in social issues, such as inequity and the imbalance of political power.

The development conflict, finally, can be found between society and the preservation of the environment. This conflict has been described by Campbell, as follows:

> *"If the property conflict is characterized by the economy's ambivalent interest in providing at least a subsistence existence for working people, and the resource conflict is by the economy's ambivalent interest in providing sustainable conditions for the natural environment the development conflict stems from the difficulty of doing both at once"* (Campbell in Campbell 2003, p. 439)

The very reason for this conflict can be found in the discriminating nature of environmental impacts on the poor and the powerless. Generally speaking, this conflict occurs at every stage of the material-cycle. As natural resources are turned into consumer products, waste caused by these processes is returned to nature (Campbell 1996).

Although conflicts always seem to occur between two poles of the triangle, these are only the dominant aspects of a particular type of conflict. The model suggests that no apex of the triangle can exist on its own just as no point in the sustainability triangle can be on its own as the three types of interests are mutually dependent on each other. This implies the existence of collaboration between these extreme positions as well, counterbalancing the evident trends of opposition to some extent.

So, what can and should planners do? Campbell calls for a dual strategy of planning in order to engage in the challenge of sustainable development. First, planners should manage, and resolve conflicts and second, they should promote creative solutions on a technical or institutional level.

2.2.2 Conflict management

The German philosopher Jürgen Habermas holds that we are not individuals seeking advantage autonomously. He claims that our self-perception and our sense of others are rather determined by our relations and communicative practices. He also argues that implicit in our communicative act is a normative judgement that "*…people should relate to each other in ways that aim for comprehensibility, sincerity, legitimacy and truth.*" (Healey 1996 p. 239) Hence, he promotes the principles of participatory argumentation based on the underlying assumption that the contributions of all members are being accepted in discussions and their values and knowledge are being recognised. Habermas argues that the power of what he calls the "better argument" confronts and transforms the power of authorities and capital. Similar concepts can be found in environmental mediation practices where strategy making adds to the political process (Healey 1996).

Obviously, understanding the nature of a particular conflict is prerequisite to conflict resolution. Political debates are characterised by three sorts of structural aspects. Firstly, they are determined by the rules of discourse, which state which normative principles and modes of argumentation are valid and legitimate. Secondly, debates are situated by organisational platforms. Examples include a courtroom, the national assembly or a public hearing. Thirdly,

the specific resources connected to the debate, such as media access or executive power usually play a major role (Van Koppen, 2002).

In the context of political debates and sustainable development, a discourse has an internal consistency and meaning that transcends the specific situation in which it is used. It is situated in a discursive field of meanings, positions and arguments that are relevant to it. It structures the discursive field. Arguments outside the discursive field are non-discursive. (ibid.)

2.2.2.1 Discourses of interest

The question of the appropriate scale is always present in conflicts rooted in tensions between at least two apexes of the triangular model displayed in figure 2-3. Consequently, the question arises whether states or counrties are still legitimate decision makers at all, as there are a new set of additional arrangements, such as public-private partnerships. The conflicts described above are frequently based on issues of efficiency, i.e. the optimal allocation of resources and equity, standing for the balanced distribution of impacts of a project. Literature suggests several indicators and possibilities for grouping, yet the common feature of differentiations in the discourse of interests is the conflict of local interest versus general interest. The former can be found in almost every environmental risk or development debate and is often referred to as the NIMBY attitude[4]. General interests on the other hand are often referred to as efficiency. The dividing line between general and common interests is not a fixed one. It very much depends on temporal and spatial scales, even though it is not necessarily determined by those. The key determinant therefore, is the authority that is believed to represent the interests of all parties involved (Van Koppen 2002).

This discourse can further be split up in two sub-discourses. The environmental effectiveness discourse can be found where people involved present balances of environmental costs and benefits resulting from a project. The discourse is based on broad interests often including those of future generations or those of animals and plants.

The second subtype deals with the economic costs and benefits of a project and represents therefore the economic efficiency discourse. This can be found in almost every controversial political debate. The most frequent lines of argumentation criticise either that societal costs of a project will exceed its overall benefits or that the benefits could be attained at lower costs. (ibid.)

[4] Not In My Backyard, abbr.: NIMBY

2.2.2.2 Discourses of Direction

Discourses of direction are different views on the legitimate ways of decision-making and therefore determine the ways of reasoning in political debates (Van Koppen 2002). They are strongly influenced by social positions, values and of course, the interests of the stakeholders involved. Van Koppen identifies four approaches in literature describing discourses of direction, i.e. the decisionist, market-oriented, technocratic and participatory approach.

The decisionist discourse favours a top-down approach to decision-making. The underlying rationale states that a decision is legitimated by the decision maker's position, not allowing for open debate in the process of decision-making. Consequently, the focus of debate in this discourse is on the legitimacy and competence of the decision-making authorities.

The market approach favours the solution of political controversies by means of market mechanisms. The underlying idea is very much concerned with the notion of common good that should be served by the sum of individual choices. The debate focuses on the functioning of the market and its implications for society and not necessarily on the individual decisions themselves.

Scientific and technological improvements and inventions are at the core of the technocratic discourse. Problems are solved through scientific insights and innovation. Therefore, the arena for argumentation is reduced to these inputs for decision-making. Arguments and counterarguments are based on expertise, and consensus must be reached within the scientific community. Consequently, scientific agreement and norms are often criticised in debates within this discourse.

The participatory discourse finally, focuses on public participation during the process of decision-making. Ideally, stakeholders with diverging social backgrounds, interests and knowledge come together to negotiate and to reach an agreement through consensus. However, negotiations, package deals and compromises are also part of the discussions as consensus in the strict sense (Van Koppen 2002).

2.2.2.3 Conflict Resolution

Traditionally, public discussions and debates are restricted to arenas of formal political, administrative or legal system. Individuals or groups opposing a planning strategy or concept have the right to intervene in decision-making processes in legitimate legal and political procedures. This entails the creation of formal arenas with allocated rights to be represented and heard, favouring some while discriminating others (Healey 1996). Diverse

interest groups, including local residents, representatives of economy, environmental organisations, government officials, and local politicians try to find a line of argument in favour of their respective position and undermining the position of others at the same time.

If a common ground can be established at the negotiation table, the best possible outcome is a win-win situation for all parties involved. In this case, new, innovative ideas can be the result that would not have been achieved through confrontation or following classic top-down planning methods (Healey 1996). However, conflict resolution through negotiation is not always possible. Those in charge can refuse to participate in negotiations or exclude certain interest groups from the discussions among others. To complicate matters, discourses on development or environmental issues can also entail multiple modes of reasoning ranging from decisionist, technocratic, market and participatory.

It is very common for actors to shift their ways of political reasoning according to the situation and their interests. This favours the emergence of uncertainties, as problems are becoming more and more complex. Persisting uncertainties can become the new focus for debate interfering with decision-making because there is sufficient consent on how to handle them (Van Koppen 2002). Consequently, they have to be closed as soon as possible so that they no longer present an obstacle to political decision-making. This does not necessarily mean that they are eliminated, they just do not impede on the decision-making process any longer. The modes of political reasoning for closing uncertainties comply with the discourses of direction introduced above. Four modes can be thus distinguished:

- "Let the authority handle it!" – According to the decisisonist approach, uncertainties are best dealt with by the appropriate authority.
- "Leave it to the market!" – The market approach is based on the assumption that uncertainties can be internalised by turning them into opportunity and risk costs. Ideally, this will lead to an optimal allocation of resources.
- "Let experts handle it!" – Scientific assessment of risks as well as of costs and benefits are supposed to bet the proper instruments for dealing with uncertainties according to the technocratic approach. To get an optimal result the outcomes of the assessments are aggregated and weighted by means of objectifying instruments, i.e. multicriteria analysis.
- "Discuss it among the stakeholders!" – The participatory approach favours discussions in which the participating groups and individuals try to reach a consensus on dealing with the uncertainties in question.

Interventions of pressure groups have the tendency to heighten the complexity of the debate further. Van Koppen suggests that these interventions should not be judged based on the groups' motivations but on their contributions to the discussions and the decision-making process. To give an example: a group representing local interests (NIMBY) can easily contribute to a better understanding of environmental risks by the decision makers as they clearly demonstrate the lack of these insights.

The entanglement of different types of discourse can lead to misunderstanding and increase the number of conflicts. Therefore, it is highly recommended that the aims of the discourse be clarified beforehand and in accordance with the choice of the arena (platform for debate) and the groups of participants. It should also be clarified what is discussed and how (Healey 1996). This is coherent with the term of scoping in science, or the survey stage in planning and implies the exploration of issues and their implications for stakeholders from different angles.

The structure and quality of debates remain highly influenced by power relations (Van Koppen 2002). At the same time, power relations can equally be influenced by the structure and quality of debates. One of the biggest challenges, identified by Healey, is to start discussions before members of the political community have a chance to select so-called arenas of discussion and stakeholders entitled to be represented in these arenas.

> "*There needs to be a moment of opportunity, a crack in the power relations, a situation of contradiction and conflict, which encourages people to recognize that they need to reflect on what they are doing, that they need to work with different people, that they need to evolve different processes.* " (Healey 1996 in Campbell 2003, p. 244)

It can also improve the planning process significantly if people know about each other's concerns. Cultural and social differences among participants may increase the potential for misunderstandings. The style of discussion, linguistic aspects and respect are of particular interest in this process. Language plays a major role because it can be a source of misunderstanding or hinder communication completely (Healey 1996).

Recapitulating, conflict resolution is most likely to be successful if there is a specific topic being disputed instead of an ideology, all parties agree to participate on equal ground, the possible varieties and the possibility for compromises are given, and discussions are guided by a skilled facilitator.

2.2.3 Promoting creative resolutions

Planning tradition emphasises the role of planning in spatial order and is supported by rationalist methods of technical evaluation representing public interests. Developments during the 20th century however, have lead to a diversification of roles. Planners have become environmental mediators, facilitators of negotiations among others, frequently entangled between economic and ecological issues at the same time. Yet, they cannot always represent social, economic and ecological interests equally. Be it because of their professional allegiances, skills or constraining bureaucracies. Thus, planners have to identify their individual loyalties and roles in each conflict. Consequently, they can orient themselves in the triangle represented by figure 2-3 and decide which position they want to take to achieve the most desirable result (Campbell 1996).

2.2.3.1 Possible roles planners can play

When resolving conflicts, the role of the planner is that of a facilitator, guiding the decision-making procedure. Planners in this case do not determine the actual outcomes by themselves. The question, whether the planner should remain neutral or represent the interests of a party cannot be answered easily, planners usually work for someone following a set of rules and instructions.

Maps, in particular land use plans, are very effective tools that can be used by planners for conflict resolution and the steering of the outcomes of development processes. Maps can fulfil several functions. They can show us the present, past or possible future of a place or they can depict spatial relationships[5]. Ideally, by land use design and control, it is possible to balance the quantity of building land and green areas. Design based on planning principles, encouraging clustered development tends to establish such a balance. The role of planners in this case is that of the designer of outcomes, not specifying the means by which they should be achieved (Campbell 1996).

The combination of the two approaches can lead to both political and substantive progress. This is however no universal solution because not every conflict is rooted in spatial problems. Consequently, a solution provided by design may be of cosmetic nature, neglecting the actual problem. As a way out, planners can try to resolve conflicts through land use planning by solving the conflicting logics of human and natural habitats at the same time:

[5] Email from Wendy Brawer, Founding Director Green Map Systems Inc., September 2005

> *"…Planners need better tools to understand their cities and regions not only just as economic systems, or static inventories of natural resources but also as environmental systems that are part of regional and global networks trading goods, information, resources and pollution."* (Campbell in Campbell 2003, p. 449)

2.2.3.2 About Green Mapmaking

"Green mapmaking" represents a means to achieve these goals presenting local resources as well as green and social potentials of an area to stakeholders so that chances of finding a common ground for negotiations are enhanced.

A Green Map is a locally charted map of the natural and cultural environment that uses a set of icons to mark ecologically and socially significant sites. The purpose of Green Maps is to link economic, ecological and social values of a place and to promote sustainable ways of living. They have been described by their creator as follows:

> "*Green Maps illuminate the interconnections between society, nature and the built environment, helping residents get involved and make smarter lifestyle choices while also guiding visitors to successes they can replicate back home.*" (Wendy E. Brawer, GMS, cited 21st March, 2006)

The outcomes can be thematic or linked to a specific event or season. The appearance of Green Maps can vary widely as well, as all decisions about themes and sites are made by the mapmakers themselves. Some projects focus only on beneficial natural sites while others include environmental problems as well. Many maps contain additional narrative text and background information about the sites displayed. Yet, all Green Maps share a visual language using a globally designed set of icons, which represent different kinds of green sites and cultural resources.

In addition to environmental education, the creation of a Green Map also leads to enhanced identification with one's home place, in this case, with the physical environment. The creation of a Green Map depicting places where culture is interlinked with nature can thus contribute significantly to an enhanced level of awareness with respect to the quality of space and the experienced environment within a community. Consequently, it can be used to resolve conflicts and promote new insights to stakeholders and decision-makers alike.

All Green Maps are embedded in a global cooperative network, the *"Green Map System"* (GMS), a global eco-cultural movement rooted in local knowledge, action and responsibility.

The network aims to promote the ideas of sustainability and participation, ideas that are specified on their website:

- *"Help people of all ages represent and share their local eco-cultural resources*
- *Promote model greening efforts underway in communities across the globe*
- *Build inclusive networks that expedite progress toward sustainability*
- *Employ the info-web in service of the web-of-life*
- *Learn from the beauty, brilliance and diversity of nature"* (GMS, cited 21st March, 2006)

What is known today as GMS started as a single Green Map, "*The Green Apple Map of New York City*", created by Wendy Brawer and Modern World Design in 1992. Due to its success the map had to be republished a second time in the same year. As people wanted to replicate the ideas of the firs Green Map in their home places, a systematic, collaborative approach to mapmaking that would be useful to both residents and tourists alike had to be developed.

GMS was launched officially on March 25, 1995, as a global network linking locally led Green Map projects. Ever since, the movement has served as a framework for environmental mapmaking, inviting people to chart the connections between natural and human environments. As of May 2007, there were 400 projects registered in more than 51 countries (GMS 2007).

2.3 Planning for sustainable development in Neusiedl am See

As it has been pointed out, planners need to manage conflicts and to promote the best possible solution under the given conditions to reach the centre of the triangle displayed in figure 2-3, i.e. to promote development that is sustainable. To comply with these conditions, planners have to operate within a given legal and institutional framework.

To complicate matters, Austria has a federal planning system, which needs to comply with European Directives and strategies regulating a variety of issues related to spatial development. Additionally, environmental protection is not explicitly embedded in one single comprehensive act. Single articles and notes referring to the protection of the natural environment can be found in various acts on every level, though. To promote creative solutions successfully, it is essential to understand the federal structure of Austria and its implications for legislation and planning determining the planner's freedom of movement within the triangle.

2.3.1 Political subdivision

The Federal Republic of Austria is subdivided into three operative levels, i.e. the Federation, the Laender and the individual municipalities on the "lowest" level. The Federal territory comprise the territories of nine autonomous Federal Laender, i.e. of Burgenland, Carinthia, Lower Austria, Upper Austria, Salzburg, Styria, Tyrol, Vorarlberg and Vienna, as regulated by the articles two and three of the Federal Constitution (B-VG).

"Low" in this context indicates the scale and dimensions of legal acts, starting with the federal (national) level on top, followed by the Laender and the municipalities. This structure entails a top-down character to all rules and regulations passed on federal or Laender level: Acts and regulations released and implemented always have to comply with acts and ordinances on a higher level.

2.3.1.1 Division of competences

In compliance with the political subdivision of Austria, the constitution lists topics covered by the legislation of the Federation exclusively as well as competences shared with the Laender. The division has been regulated by three articles of the Federal Constitution:

- The Federation has powers of legislation and implementation (B-VG § 10).
- The Federation has powers of legislation, execution is the remit of the Laender (B-VG § 11).
- Legislation regarding principles is within the sphere of competence of the Federation, the issue of implementing acts and their execution is the business of the Laender (B-VG §12).

Forestry, water conservation and mining are matters of national interest (B-VG § 10). However, professional associations in the field of agriculture, forestry or in the field of alpine guidance and skiing instruction and in that of sport instruction fall within the autonomous competence of the Laender (B-VG §11).

International treaties, in particular treaties dealing with nature conservation and the environment, are regulated by the same paragraph, e.g. federal acts can define uniform output limits for atmospheric pollutants that may not be exceeded by federal and Land regulations launched for individual sectors of administration. Environmental impact assessments (EIAs) are prescribed by the European Union, the approval of such projects are regulated by federal law but executed on the provincial level.

The principles of land reform and land consolidation are given by federal law, the implementation and execution of relevant acts within the competence of the Laender (B-VG §12).

Matters not explicitly identified by the constitution as part of the Federation's sphere of competence, such as nature conservation, remain in the field of responsibility of the Laender (B-VG §15). Finally, the constitution also contains possible fields of responsibilities for municipalities.

2.3.1.2 Direct and Indirect Federal Administration

In this context, the difference between direct and indirect federal administration has to be emphasised. A matter falls under indirect Federal administration, if the Land Government and the Land Authorities are responsible for the execution of a particular federal act. If a matter of federal relevance is executed by Federal Authorities (direct Federal administration) they work in the sphere of the Laender.

If Federal Authorities, especially Federal Police Directorates, are entrusted with the execution of matters pertaining to indirect administration by the Federation these authorities are subordinate to the Governor of the Land and bound by his or her instructions. In matters regulated by direct Federal administration, the Governor is bound by instructions from the Federal Government and individual Federal Ministers.

2.3.2 Multileveled planning of space

With regard to spatial planning and thus also to urban development the federal structure provides for the organisation of spatial planning on three major levels as well. Since 1995, a fourth level represented by the European Union has been added even though the Union does not have planning competences to interfere with spatial planning directly. Yet, European programs and strategies such as the Trans-European Networks (TENs) ensuring modern and effective infrastructure within the Union or the Natura 2000 Network preserving the Union's diverse flora and fauna can have impacts on legislation and thus also on planning on all subsequent levels and needs to be examined here as well.

2.3.2.1 Supranational planning

The European Spatial Development Perspective (ESDP) aims to promote the sustainable development of the EU territory and provides a framework for cooperation among sectoral policies of the Community. Therefore, the ESDP can be said to complete these policies, because despite their substantial impacts on the Union's territory with respect to spatial

development, they lack clearly defined spatial objectives or competences. The sectoral policies comprise the Structural Funds, the Common Agricultural Policy (CAP), competition policy, the Trans-European networks, environment policy and Research and Technological Development (RTD). Additionally, support from the European Investment Bank (EIB), not included in the Community budget, provides the Member States with incentives promoting the Union's structural measures. The underlying rationale for the ESDP framework states that economic growth and the convergence of economic indicators are not enough to achieve the goal of economic and social cohesion within the Community. However, it is not binding in a legal sense, compliance with the recommendations released is voluntary (ScadPlus 2007).

With respect to regional policy, the objectives of the 2000 to 2006 programming period have been replaced in 2007 by Convergence, Regional Competitiveness and Employment and Territorial Cooperation. Between 2007 and 2013, approximately EUR 308 Billion will be allocated and delivery by three specific instruments, i.e. the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF). Additionally, the regulation on the European grouping of cross-border cooperation (EGCC) states the rules for cross-border, transnational and interregional cooperation between members of European groupings of territorial cooperation (EGTCs). These are legal entities comprising Member States, regional as well as local authorities and public agencies. (European Commission 2007)

Additionally, the focus of the CAP will be on the second pillar, rural development, during this period. Funding regulations are embedded in one single financial and programming framework, the European Agricultural Fund for Rural Development (EAFRD), established in 2005 (ScadPlus 2007).

2.3.2.2 Austrian Conference on Spatial Planning

The absence of a Federal act on spatial planning is a peculiar feature of Austrian law. The Austrian Conference on Spatial Planning (Österreichische Raumordnungskonferenz, ÖROK) a convention that is responsible for the coordination of planning activities and regulations of the Federation, the Laender and individual communities solely releases periodic recommendations. Still, the Federation is entitled, to manage cooperative development programs and to employ or support experts in this matter.

2.3.2.3 Spatial Planning by the Land Burgenland

With respect to the nine Laender, the act of spatial planning of a Land is the major legal instrument regulating processes and contents of a land use plan. In addition, the development strategy of a Land provides for measurements and concepts for the coming five to ten years and needs revision on a regular basis. These acts need to comply with recommendations released by the ÖROK.

For this thesis, the Act on Spatial Planning of Burgenland and the Land Development Strategy of the Land Burgenland need to be examined.

The Act on Spatial Planning in Burgenland (Burgenländisches Raumplanungsgesetz) of 1969 comprises three parts, describing different aspects of spatial planning.

Part one of the Act on Spatial Planning in Burgenland comprises definitions and aims of supralocal planning, which regulates two major activities, i.e. the design of regional plans and the creation of specific, topic oriented plans, such as plans for national parks. The act supports all anticipatory measures structuring the land as a whole or its parts serving common interests, accounting for potential demands by nature and estimating economic, social and cultural needs. These measures have to comply with the overall protection of the environment.

Part two of the act regulates the contents and requirements of local land use plans designed on local level while part three calls for the prescription of communal law by the Land in accordance with the Federal Constitution.

Article seven of the Act on Spatial Planning requires the Government of the Land to adopt at least one Development Strategy by ordinance. Development Programs have to set targets and goals for the comprehensive and overall development of the Land and its subunits accounting for the natural environment as well as for the present and future demands of social, ecological and cultural nature.

When designing a development strategy the land government has to take into consideration a development processes in adjacent Laender or states as well as those of the Federal Government or local communities. Social partners and representatives of the communities affected have to be consulted on the development strategy. The draft of the strategy has to be on public display three months in advance to decision making in all communities encompassed by the strategy. Every citizen who is entitled to vote may express his or her ideas on the strategy in written form within the period allotted for this process. This has to

be announced when the strategy is displayed publicly. Before the strategy is approved of, it has to be discussed by the Land Government with the Advisory Board on spatial planning taking into consideration comments received from the general public. A development strategy launched by the Land is legally binding for all communities within the planning area; permissions and regulations issued by a community or the Land have to comply with the goals set by this program.

Currently the Land Burgenland employs one development strategy designed to guarantee the economic, social and cultural development of the Land, allowing for a high quality of life for every inhabitant and coordinating an appropriate level of provision with goods and services. The reduction of discrepancies between regions and the support of regional development are further goals of the program (LEP 1994[6]).

The strategy was released in 1994 and comprises three parts. In part one, the strategy calls for a wise use of natural resources and a balance between development of space and the natural environment. Complying with the goals of landscape and nature conservation, the strategy calls for the cooperative preservation of the cultural landscape by the sectors of tourism and agriculture.

In part two, the Land Development Strategy regulates structural elements of space as appropriate tools and measures to achieve development goals in compliance with the principles described above, i.e. sites and zones. The Land Government aims to create optimised conditions for regional development by defining a set of quality indicators. The overall aim is to minimise conflicts arising from different land use types are and to prevent interfere with regional development (LEP 1994).

Finally, the strategy identifies principles that are to be applied on local level when applying categories described by the land use plan in part three.

2.3.2.4 Planning on local level

Every municipality is an independent economic entity and is empowered to act within its own sphere of competence. It can be assigned further fields of responsibility by the Federation or the Land. A municipality's own sphere of competence comprises all exclusive concerns of the community identified by local law that can be managed by the community within its local boundaries. This includes the appointment of the municipal authorities and

[6] Verordnung der Burgenländischen Landesregierung vom 19. Juli 1994, mit der ein Landesentwicklungsprogramm erlassen wird (LEP 1994)

staff, police responsible for public security, markets, administration of municipal traffic areas, pertaining to deaths and burials, local building police, with the exception of Federal-owned buildings serving public purposes, fire control, local environment planning…etc., among others. Communities have to supervise the execution of regulations and processes described by the Act on Spatial Planning within their own fields of competence. The execution of the act itself is supervised by the Land Government.

The most important tool for urban development is the land use plan, regulated by part two of the Act on Spatial Planning. The land use plan divides the area of a municipality into different types of land use accounting for the natural environment and the estimated economic, social and cultural development. In other words, the land use plan charts the existing land use of a given municipality and provides for its development strategy at the same time.

There are three major land use types defined by the Act on Spatial Planning of Burgenland, i.e. building land (development zones), traffic areas and green areas. Additionally, the land use plan provides for the designation of areas of reserve. The zonation of a community based on its major functions has to be account for the protection of residents from environmental hazards and pollution, such as noise, air pollution …etc.

It is possible do divide the zones identified by the land use plan into subcategories (development zones), if public interests requires a temporal sequence of land conversion and development for housing.

The land use plan has to display all areas designated by ordinances and regulations of a higher administrative level (e.g. railways, open waters...etc.) as well as areas with restricted use due to Federal or Land regulations (e.g. nature conservation sites, monuments, danger zones…etc.). If conditions for these specific features cannot be applied any more the area in question has to be unmarked on the land use plan and a new land use type has to be set.

The land use plan is legally binding and therefore the most powerful tool that can be applied in spatial planning on local level. It comprises the wording of the ordinance and a digital graphic display. It affects the building plan of a municipality and has impacts on activities requiring permission, as these activities must not be inconsistent with the land use or interest identified by the land use plan.

The land use plan has to be approved by the Land Government and has to comply with rules and guidelines released on Federal and supranational level. Consequently, the land use plan

is always subject to changes, if required by changes to the Development Strategy or by the execution of acts on Laender or Federal level. The land use plan has to be revised every five years and may be changed in case of new evidence suggesting new planning principles within the community. The Office of the Land Government has to be notified of intended changes and reasons for these changes immediately.

To design a land use plan, the mayor has to publish the intention to draft a new land use plan in the local law gazette. Upon this announcement, the mayor has to be notified of all planned or intended changes to land ownership or of building activities within a month after the announcement so that these projects can be included. Additionally, the future demand for construction sites has to be estimated five to ten years in advance accounting for existing reserves and relevant conditions and measures of the Federation, the Land and neighbouring municipalities have to be incorporated.

The draft of the plan has to be published and transmitted to the office of the Land Government in digital form, adjacent communities have to be notified as well. Everyone is entitled to post well-grounded comments on the draft. The received feedback is integrated into the decision-making process by the municipal council voting on the land use plan.

Upon approval, three copies of the land use plan are submitted to the Land Government as well as the documentation of the feedback received and the protocol of the local council's session. Following consultation with the advisory board on spatial planning (Raumplanungsbeirat) of the Land, the Land Government approves or rejects the submitted documents.

Drafts can be rejected if they do not meet certain criteria, i.e. feasibility or the compatibility with existing regulations and strategies. In this case, the municipality may submit comments on the decision within eight weeks.

If the plan is accepted the land government releases an official notification. The mayor then has to publish the new version of the land use plan within two weeks. The land use plan is considered implemented and valid on the first day of public announcement and has to be accessible for the public during office hours of the municipality. The digital edition of the land use plan can be viewed at the administrative centre of the political district and in the municipality.

In certain cases the process for designing and releasing a land use plan can be simplified and shortened considerably, i.e. if no major changes to local structures are to be expected, or if

changes do not interfere with public interests. However, the Office of the Land Government and stakeholders have to be notified of the intended changes in advance. The stakeholders, i.e. everyone affected by the changes, may submit written comments within two weeks upon notification. The simplified process may not be applied to projects or changes in the land use requiring an environmental impact assessment, however.

2.3.3 Environment and nature

During the 1980ies, nature conservation and environmentalism were ranking high in public awareness and influenced environmental policy. As it has been pointed out before, there is no single comprehensive act on the environment in Austria. Hence, the protection of an intact natural environment is regarded a crosscutting issue. Nevertheless, the status of an intact environment was acknowledged in 1984, when a preamble to the constitution was released stating:

> *"§ 1. (1) The Republic of Austria (Federation, Laender and Municipalities) acknowledges its responsibility for the comprehensive protection of the environment.*
>
> *(2) Comprehensive protection of the environment is protecting the natural environment as the basis of mankind's life resources against detrimental effects. Comprehensive protection of the environment consists in particular of measures to keep air, water and soils clean and to avoid disturbing noise.*
>
> *§ 2. The Federal Government shall be in charge of executing this Federal Constitutional Act."* (Federal Act dated 27th November 1984 for comprehensive protection of the environment)

However, no further act explicitly aimed at the overall protection of the environment has been implemented. Yet, several acts contain sections dealing with possible environmental impacts and the preservation of intact environmental functions and services.

2.3.3.1 Environmental protection as crosscutting issue

On Federal level, provisions for the protection of the environment can be found in the Federal Constitution, regulating the division of competences and responsibilities between the Federation and the Laender (§10ff. B-VG) and providing for matters not explicitly listed (§15 B-VG).

The protection of the environment and nature has been improved further by acts frequently rooted in international treaties as well as in European Directives. These regulations are supported by Article 50 of the Federal Constitution stating that international or

supranational political treaties applying to matters within the field of competence of the Laender require the approval of the National and the Federal Council before implementation.

This applies to EU Directives as well as to international treaties. Examples include agreements on transboundary pollutants or the requirement of Environmental Impact Assessments (EIAs) for projects and strategies that can have impacts on the environment. As a result, environmentalism can be found in many acts on different levels, and is the shared responsibility of the Laender.

The concept of sustainable development first became an official goal following the implementation of the treaties signed in 1992 and the subsequent adaptation of the Treaty of Amsterdam in 1997 in Europe and consequently also in Austria. Ironically, environment policy is considered one of the greatest social challenges faced by public authorities and economic sectors (Commission of the European Communities, 2006 SEC (2006) 218). It is also high ranking in public awareness because it directly affects public welfare and health (ScadPlus Nature 2006).

2.3.3.2 Nature conservation

The act on Nature Conservation and Landscape Protection (NG 1990) of Burgenland was implemented in 1990 and has been revised periodically. The last major amendment was made 2004, when a guideline for impact assessment of proposed projects likely to have adverse effects on Natura 2000 sites was added (NG 1990).

The act on nature conservation also complies with requirements of international treaties and European Directives, which had to be taken into account repeatedly at the time of adaptation in 1990. The different types of protected areas were defined in detail and comprise

- Protected habitats
- Natura 2000 areas
- Protected landscapes
- Protected parts of landscapes
- Nature parks
- National parks

The act is based on the underlying assumption that the protection and maintenance of natural functions and the landscape is the shared responsibility of the Land, the

municipalities and of private economic initiatives. To ensure implementation, a new incentive system based on subsidies was introduced (Hicke 1996).

Based on a participatory approach to nature conservation, there were two new ideas implemented by this act. The compilation of a catalogue listing natural areas by categories was meant to serve as a basis for future measurements. This entailed the active contribution of information by the general public. The second innovation, contract based nature conservation, was meant to lead to active conservation policies and to result in acceptance of the future National Park by stakeholders, as the majority of its territory have been in the possession of the Federal Republic or NGOs or leased by farmers to the National Park.

A Red List was compiled by the Land Government, listing all endangered flora and fauna of the Land and has been revised every five years. In addition, the act calls for the implementation of nature conservation programs and management plans for protected sites. If public interests require an intervention in a protected area, these interventions have to be buffered by designating new habitats or the allocation of additional money for supporting measurements. These regulations are again in compliance with the requirements for the Natura 2000 Network promoted by the EU based on the Directives 79/409/EEC and 92/43/EEC.

2.3.4 Implications for the Green Map Neusiedl am See

As it has been pointed out before, "*green mapmaking*" is about charting the natural and cultural environment to promote sustainable ways of living. Therefore, Green Maps can raise environmental awareness within a community and initiate further discussion on the future of a municipality, improving communication and preparing a common ground for future negotiations.

Public participation and the consultation of stakeholders is prerequisite to processes related to regional development, such as the development of a land use plan, the management of protected areas in compliance with the Act on Nature Conservation or the assessment of environmental impacts of a strategy or project. However, the right to submit written comments does not necessarily imply a right to be heard as decision on the legitimacy of comments solely lies with authorities and decision makers.

In compliance with the treaties signed at the Earth Summit in 1992 the European Commission in cooperation with the International Council for Local Environmental Initiatives (ICLEI) initiated the Charter of European Cities and Towns Towards

Sustainability ("Aalborg Charter"), which was signed at the European Conference on Sustainable Cities and Towns in 1994. The document is a specification of Agenda 21 adapted to local level processes within Europe. Initially, it was signed by 80 local authorities and 253 representatives of international organisations, national governments, scientific institutes, and representatives of civil society. The signing parties commit themselves to enter into Local Agenda 21 processes and develop long-term action plans towards sustainability.

The Land Burgenland has implemented Agenda 21 already, but support is limited to village renewal. Unfortunately, the town of Neusiedl am See has not signed the commitments listed by the Aarlborg Charter and the subsequent document, the Aarlborg Declaration. However, these commitments could provide an institutional and financial framework for the introduction and implementation of a locally charted Green Map.

Therefore, it has to be kept in mind that even though public participation in local development processes may be required by a series of acts, the arbitrary decision on who is to participate and to what extent is still to be made by the authorities and politicians.

Drawing on the model of sustainable development, this leaves two options for planners working in Neusiedl am See. Remaining outside the triangle, planners can act as mediators, supporting the design process and facilitating discussions among stakeholders and with authorities, if required. Joining the centre, as shown by figure 2-3, they could promote their own vision of economic-ecological development by participating actively and influencing the design of the map. Both behaviours are possible and needed.

3 Methodology

The prototype of the Green Map Neusiedl am See was compiled in various stages over a period of eight months. The first stage comprised the selection of categories provided by the global set of icons available to every mapmaker. This was followed by the adaptation of the icons to local conditions in Neusiedl am See. Data collected and the land use plan were tested against these criteria resulting in the identification of sites displayed by the future map. Finally, data collected on-site were sorted, analysed and processed resulting in the design and compilation of the Green Map Neusiedl am See over a period of two months. These outcomes will be published online and printed in English and German.

In this chapter, the processes underlying the selection of criteria, the collection and processing of data and the design of the prototype of the Green Map Neusiedl am See will be described in detail.

3.1 Global framework for designing a Green Map

As it has been elaborated in the previous chapter, a Green Map is a means to display places where people feel a strong connection to their natural environment. Equally, the purpose of a Green Map is that of awareness rising and education but there is also the possibility to promote "green" organisations, i.e. organisations participating in environmental programs.

For the design of a Green Map, future mapmakers have to register their project at the office of GMS in New York, USA. Upon completion of the formalities of registration, mapmakers receive an information kit containing selected editions of Green Maps, a resource disc with the global set of icons and additional guides and information material. Mapmakers are also supported by GMS and other mapmakers during the project period, which can vary and may even comprise the creation of various editions of thematic Green Maps. Each project is directed, funded and evaluated independently (GMS Home 2007).

3.1.1 Green Map Icons

Green Map Icons are a shared by all projects embedded in the global network of GMS. They have been designed collaboratively by volunteers of the Green Map network in order to identify, promote and link ecological and cultural resources.

The current edition in use, Version 2 of the Green Map System Icons, was released in 1999 after four years of development. Currently, there are 125 regular icons in use. An upgrade to version 3 of the global set of icons is planned for 2007.

The icons in use predominantly indicate beneficial green and cultural sites of different sorts. However, additional symbols for infrastructure, information resources and toxic hot spots have been designed as well. There is an overall agreement on each icon's purpose but mapmakers' adaptation to local conditions is needed frequently. There are also a growing number of newly designed icons evolving continuously from projects; many of these icons are incorporated into the global set over time.

3.2 Identification of categories and definition of criteria

The original set of icons comprises 11 categories and 125 icons, far too many issues to be covered by one single, comprehensive map. Therefore, it was necessary to reduce the number of icons symbolising topics covered by the map. To maintain a certain degree of consistency, some groups of categories were eliminated before the remaining categories were scanned for locally significant criteria.

In a second step, the land use plan of Neusiedl am See was tested against the Land Development Strategy and commitments rooted in national and supranational regulations as well as international conventions in order to derive the appropriate topics to be displayed and to develop a comprehensive definition for each of the selected criteria.

3.2.1 Selection of criteria by stakeholders

During the Erasmus Intensive Programme "*Sustainable Soil and Land Use and Sustainable Development*" (IPSOIL II) the concept of a Green Map was explained to stakeholders from Neusiedl am See participating in a two days conference. Each one of them was asked to select categories they thought should appear on a local Green Map from a list by giving a total maximum of nine points to those categories they considered relevant for the Green Map.

The returned lists were analysed and the points attained to each category were counted resulting in a set of categories stakeholders thought should be included in the Green Map Neusiedl am See. This list was compared with guiding principles identified in the Land Development Strategy and further legal documents.

3.2.2 Principles underlying the selection of criteria

The Land Development Strategy calls for a wise use of natural resources balancing development with the natural environment. The act promotes cooperation between the

sectors of tourism and agriculture to preserve the cultural landscape and identifies a set of principles (LEP 1994).

3.2.2.1 Lake Neusiedl

The lake has to be accessible in as much as required by public interest and supported by the natural environment. The lakeshore is to be kept free of constructions, management measures implemented must be ecologically sound and must not harm the character of the adjacent landscape. The strategy explicitly calls for a halt of urban and rural development involving the lakeshore or the lakebed. On the other hand, the designation of development zones along the lakeshore is permitted, if the conversion does not disrupt the landscape or the natural environment.

The preservation of Lake Neusiedl is regulated by the act on the National Park Neusiedler See – Seewinkel, implemented in 1993 and revised 1999. Complementing the act on nature conservation it is the only tool of legal consequence regulating the protection of Lake Neusiedl and the adjacent landscape in detail. In compliance with the Natura 2000 network, it is aimed at the sustainment of representative landscape types as well as the conservation of characteristic flora and fauna. The National Park relies on the support of local residents, particularly of farmers and other landowners leasing their property to the National Park. Any further expansion of the territory of the National Park is subject to new negotiations and agreement of the signatory parties. Exceptions can only be made upon the approval of the Land Government of the Land Burgenland. Additionally, the act calls for a support of activities in the fields of education and recreation as well as of science and research within the boundaries of the National Park (Hicke 1996).

The transition zone of the pre-lake area to the reed belt is to be converted into a continuous zone of meadows. This area is to be kept free of any residential or tourist activity, infrastructure or sedimentation. The strategy also calls for the reduction of nutrient input originating from agriculture (LEP 1994).

3.2.2.2 Urban development

Residential areas are to be preserved permanently in their functions according to the strategy. Development is aimed at the promotion of functional diversity of these areas and the preservation of good living conditions and intact environmental functions at the same time.

Consequently, the conversion of green land and the development of new residential areas has to be appropriate and feasible meeting the demands of local residents and accounting for the estimated demographic development of a municipality within the next five to ten years. Communities are supposed to promote compact structures and be limited in space, preventing urban sprawl. The strategy recommends the prevention of new, isolated constructions and the association of new buildings with existing ones for areas with scattered buildings.

The organisation of building land into plots has to support the interrelations between different land use types and their functions and may not cause additional motorised traffic. New residential areas therefore, are to be situated as close to public transportation facilities as possible.

Green areas, i.e. public playgrounds, fields and recreational areas have to be converted into favourable places and in adequate sizes meeting the diverging needs of different groups of potential users. The designation of public sports facilities and other recreational assets has to be adjusted to and coordinated with the development of tourism.

Different types of land use that could interfere and lead to mutual disturbances have to be buffered sufficiently by green stripes of adequate width. In larger settlements, green areas also have to play a role in the structuring of residential areas (LEP 1994).

3.2.2.3 Traffic and infrastructure

To counter air pollution, noise and further negative impacts on the environment, the comprehensive management of motorised traffic is required. This implies compact settlement structures and infrastructural design. Consequently, facilities generating traffic should be planned on sites, where the creation of parking lots does not imply additional or unreasonable stress for residents and where the accessibility of development areas and their connection to local infrastructure is feasible. The strategy also calls for supplementary measures, such as traffic calming and revitalisation aimed at the minimisation of negative environmental impacts as well as the enhanced cooperation between different types of mobility.

The overall role of public transport has to be strengthened and the number of cars used for private trips should be reduced entailing the promotion and support of non-motorized traffic. Transportation to regional and economic centres needs to be improved focusing on the accessibility of public transportation and on demand oriented structures. The redesign of

schedules according to regional demands and needs, enhanced attractiveness of the public transportation system by combined forms of transport are mentioned explicitly by the strategy (BMLVUW 2001).

Areas reserved for traffic shall guarantee sufficient accessibility to places within and outside the settlement area of a given community. There is also the issue of security. The creation of traffic-free zones supplementing roads and their elaborate design are meant to give them a significant function within the community. There should be enough space covered by green plants with impacts on local microclimate (LEP 1994).

3.2.2.4 Economy

Forestry and agriculture are valued by the strategy as sources of income that need to be preserved under the aspects of appropriateness and feasibility. Priority has been attributed to the strengthening and development of structures allowing for regional supply and improved marketing concepts. This entails incentives for cooperation between agriculture, trade, energy supply, product processing, tourism and social institutions.

With regard to the natural environment, forestry and agriculture need to shift towards ecologically sound management practices. For agriculture, the optimised use of fertilisers, conversion to extensive farming, the improvement of animal welfare and the cultivation of alternative products is strongly recommended by the Development Strategy. These measures can be complemented by ecological management practices in forestry.

Additionally, the potential of recreational areas is to be preserved. Services provided by forestry and agriculture, especially the preservation and maintenance of the cultural landscape, should be assessed economically and regulated by the newly designed program for the cultural landscape.

Tourism plays a major role in Burgenland as it represents a predominant source of income in some regions. Investments supporting the development of tourism are encouraged by the strategy, provided that they are aimed at the improved quality of products and services offered.

The area of Lake Neusiedl has been identified by the strategy as a special zone of tourism. This implies that holiday villages and camping sites have to be ecologically sound, i.e. they do not have negative impacts on the unique character of the natural landscape (LEP 1994). Moreover, communities have to make sure that infrastructure for weekend houses and

secondary homes are not paid entirely by local full-time residents. Therefore, the strategy proposes a restriction of areas for secondary homes to certain parts of the settlement area.

3.2.2.5 Supply and waste disposal

Energy supply is to be guaranteed in all parts of Burgenland complying with regional requirements and renewable sources that can be used for decentralized power and heat supply inherent to a particular region. Even more, the strategy favours a decrease in energy consumption.

Waste management policy is supposed to enforce the reduction of waste and the identification and cleaning up of polluted sites. Recycling is a means to prolong the life cycle of products. Problematic substances must be stored on special, state-of-the-art dumping grounds that are in acceptable distance to the municipality.

3.2.2.6 Education and Culture

With regard to education, the development program acknowledges the importance of life long learning as promoted by the European Union. Related to economic development of the Land, further education is inevitable for the creation of enhanced fields of competence in Burgenland (LEP 1994).

3.2.3 Definition of categories

In compliance with the information given by the stakeholders and the subsequent analysis of relevant acts, the following categories were used for the assessment of Neusiedl am See:

- Economic development
- Culture and design
- Renewable Energy
- Nature (land and water, flora and fauna)
- Information
- Mobility

The set of icons provided by GMS was adapted to local conditions and detailed definitions for the assessment of possible sites were derived. Not all icons listed in Appendix II were included in the map however, as some icons were not applicable.

3.3 Data collection and processing

Based on stakeholders suggestions and the author's visits to Neusiedl am See, the sites displayed by the map were selected. Where multiple categories could be applied, the author aimed to reduce the number of possible criteria for the sake of simplicity.

3.3.1 Data sources

The contents of the Green Map are based to a large extent on the digital edition of the land use plan of Neusiedl am See compiled in 2005. These data were kindly delivered by the municipality of Neusiedl am See within the Erasmus Intensive Program IPSOIL II.

Another important source of information and secondary literature was the thesis written by Thomas Halbritter in 1994/1995 supplemented by two maps displaying Neusiedl am See. Also, reports compiled for international organisations, i.e. UNESCO and RAMSAR provided background information on local flora and fauna that were of great value when the sites featured by the Green Map were visited and documented on various occasions in spring and summer 2006.

Theoretical knowledge and personal impressions were rounded up by informal talks with residents of Neusiedl am See in March and during the summer months June and August 2006. These informal talks with stakeholders resulted in additional insights whenever local residents provided additional information on town history and suggested sites for the Green Map of Neusiedl am See.

3.3.2 Data processing

Information and data gathered were analysed and fit to the predefined set of categories accounting for additional information retrieved from the sources described above. Development trends suggested by evidence were compared with the digital edition of the land use plan and the local development strategy. Additionally, regulations provided by law and international treaties were revised and tested against these trends.

GIS Data of the land use plan were processed with the open source tool GRASS 6.2., images with PHOTO-PAINT (CorelDRAW Graphics Suite 12). If not indicated otherwise, all pictures were taken by the author during IPSOIL II and visits in summer by a 2002 Canon Digital IXUSv3. The map was compiled using the editor tool CorelDraw and converted into PDF format by Adobe Professional for virtual publication and printout.

3.3.3 Design process

In his book, "Design for the Real World", Victor Papanek identifies design as "…*the conscious and intuitive effort to impose meaningful order*" (Papanek, 1984 p. 4). Consequently, the arrangement and shaping of any act towards a desirable end is underlying every design process (Papanek 1984). He reasons that in compliance with planning for sustainable development, the designer's responsibility must transcend considerations of how a product will be received since the call for social moral judgement arises already beforehand, when the decision is made whether the (re)design of a product merits the designer's attention at all (ibid.).

3.3.3.1 The six Aspects of functional design

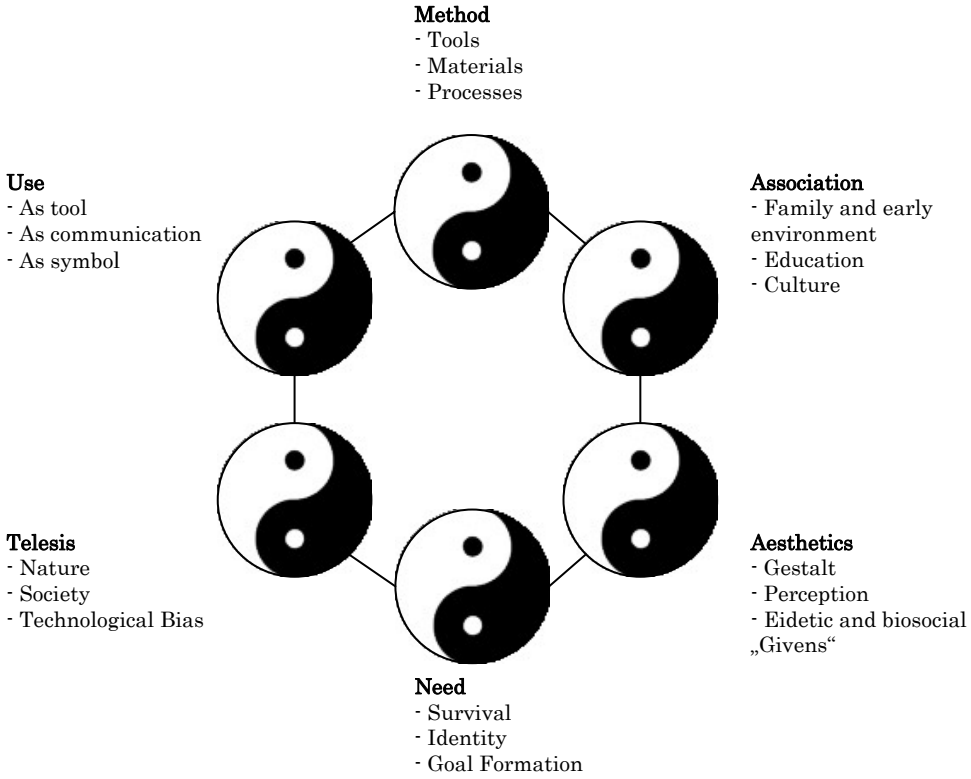
We enjoy things in nature because of the inherent economy of means, simplicity, elegance and exactness. Yet, this is not related to design as it lacks meaningfulness which is often confused with adjectives such as "beautiful", "ugly", "cute", "disgusting", "glamorous", "obscure", "abstract", and "nice". What is called beauty in nature thus is frequently the result of processes we do not comprehend. However, the perceived dilemma between the appearance and functionality of design are just two aspects characterising function (Papanek 1984).

To describe the major aspects of functional design, Papanek groups criteria in six dynamic actions and relationship that make up what he calls the "function complex" shown in graph 3-1. The yin-yang monad symbolizes the complementary nature of each of these six criteria.

Method determines the selection of tools and materials and their uses. Every product has to fulfil at least one function. This is referred to as use of a product.

Telesis is defined as "*The deliberate and purposeful utilization of the processes of nature and society to obtain particular goals*" (Random House Dictionary 1978 in Papanek 1982, p. 17). In other words, tools, objects or artefacts must be embedded in the cultural context and times they are rooted in and must fit norms of society. Papanek clearly warns of moving an object from one culture to another and to expect it to fulfil its function properly.

The satisfaction of needs is another criterion that has to be met by design. Actual needs can be of economic, technological, psychological, and intellectual nature, as opposed to bogus-needs created by the consumer society and commercials.



Picture 3-1: The Function Complex after Papanek

Aesthetics is among the most powerful auxiliary means for selling a product and goes hand in hand with association describing the psychological conditioning of individuals rooted in earliest childhood when sympathy for or antipathy against a given value are developed. However, there is no scientific measure for aesthetics as it is attributed to individual taste. Yet, increased consumer resistance can be attributed to the neglect of the associational aspect of design (Papanek 1984).

The six parts of the function complex described are rooted in the past through experience and tradition. Finally, there is also a seventh aspect that emerges whenever the six needs are satisfied i.e. elegance. The concept is best described by Papanek, as follows:

> *"Designers often attempt to go beyond the primary functional requirements of method, use, need, telesis, association, and aesthetics; they strive for a more concise statement: precision, simplicity. In a statement so conceived, we find a degree of aesthetic satisfaction comparable to that found in the logarithmic spiral of a chambered nautilus, the ease of a seagull's flight, the strength of a gnarled tree trunk, the color of a sunset. The particular satisfaction derived from the simplicity of a thing can be called elegance. When we speak from elegant solutions, we refer to something that reduces the complex to simple".* (Papanek 1984, p. 26)

3.3.3.2 Structure of the map

For the sake of simplicity, the categories displayed by the map had to be restructured resulting in only four different aspects displayed, i.e. economic development, culture and identity, nature and mobility. These aspects are indicated by four arbitrary colours on the map, violet representing economic aspects, blue highlighting sites of culture and identity, green standing for nature and black indicating various forms of mobility.

Multiple sites indicated by the same icon were numbered to support a better orientation on the map. The order of the sites represented does not account for the quality or the significance of the site displayed.

3.4 Open issues

Neusiedl am See is an administrative centre, a popular place for tourists seeking recreation and subject to agreements and regulations of nature conservation at the same time. The resulting tension and attempted balance of human interests and nature conservation create a unique opportunity to promote urban development that is sustainable. The need for a green map can be argued by development trends in Neusiedl am See satisfying demands for spatial and economic growth jeopardising the goals of existing regulations and agreements.

Criteria for the Green map follow general definitions that can be modified to fit local conditions. The applied criteria have been selected by local stakeholders participating in discussions on sustainable development in Neusiedl am See who were willing to contribute voluntarily to the creation of this edition of the Green Map of Neusiedl am See.

Icons have been supplied by the Green Map System and are protected by copyright law, implying that their basic appearance may not be changed. However, their size, colour, orientation…etc. may be modified. Also, definitions applied needed to be specified and adapted to local conditions, complying with Papanek's theory on good design fulfilling the six basic functions described above. This allows for a comprehensive visual language shared by all Green Maps worldwide.

Admittedly, the author is not a resident of Neusiedl am See, as suggested by the guiding principles describing mapmaking. Yet, local residents were consulted throughout the preliminary works leading to the selection and definition of criteria and again during the collection and assessment of sites. The status of the map was reported publicly three times within one year in Neusiedl am See, i.e. in March and June 2006 and again in March 2007 to

varying numbers of stakeholders, participating in IPSOIL II and III, respectively. They have represented a variety of interest groups, such as

- The municipality of Neusiedl am See,
- Local farmers and producers of honey,
- Education facilities, kindergartens, primary and secondary schools,
- Local and international NGOs,
- Gastronomy
- Local trade and commerce

A Green Map is not meant to be one time project with invariable outcomes transfixed in time and space, but rather the deliverables of a continuous process representing stages and milestones in a community's dealings with sustainable development. The main purpose of this first edition is awareness raising within the municipality.

This requirement is being met by the publication of the results of this thesis online on a public site reserved for each Green Map project and a possible printed edition in German in autumn 2007, allowing for a continuation of the process.

4 Green Map Neusiedl am See

For a comprehensive description of the town, it is essential to introduce the region of Lake Neusiedl first. The history and development of Neusiedl am See is linked closely to the history of the region. Therefore, Neusiedl am See needs to be regarded and analysed in the regional context.

In this chapter, an overview on the lake and aspects of nature conservation relevant for Neusiedl am See will be provided before a comprehensive description of the research area is given, followed by an analysis of existing development trends. Finally, the sites included in the Green Map will be presented.

4.1 Lake Neusiedl

Lake Neusiedl (Austria) or Lake Fertő (Hungary) is Europe's westernmost steppe lake situated in northern Burgenland and west Hungary. It lies in the deepest part of the Pannonian Basin – also referred to as Hungarian Basin – on 113 meters Ferro and comprises an area of approx. 320 km². It is a typical steppe lake with of an average depth of only 1.5 metres. Despite its shallowness, Lake Neusiedl represents one of the largest wetland areas of Central Europe (Nationalpark Neusiedler See – Seewinkel 2006). Lake Neusiedl is of high value for nature conservationists and represents a major tourist attraction in Austria at the same time.

4.1.1 Settlement history

Lake Neusiedl has been frequented by different cultures for eight millennia (Management Plan 2004). The cultural landscape within the region results from a continuous process of human interaction with the natural environment and contains evidence of various cultures and human activities.

Settlement history in the region of Lake Neusiedl can be subdivided into two major periods. The first period stretches from the sixth millennium BC until the foundation of the Hungarian Kingdom in 1000 and is characterised by the subsequent colonisation of the region by various peoples (ibid.).

The founding of the Hungarian Kingdom marked the end of the Migration Period in the region and resulted in the division of the area was between two counties (comitats). This administrative structure remained intact over the centuries until 1920 when borders were redrawn following World War I. However, some occasional immigration of peoples occurred

until the 17th century, yet without the displacement of established cultures in the region as opposed to the Migration Period. Today, the area is divided between the two states Austria and Hungary.

4.1.1.1 First Settlements

Human history in the region of Lake Neusiedl can be traced back as far as the sixth millennium BC when first Neolithic settlements were founded along the southern shore of the lake (Management Plan 2004).

Evidence suggests early Neolithic settlements also in the area of Neusiedl am See but traces of these initial settlements have been covered by water, only some remaining funds are being spilled out occasionally. The majority of the discovered tools comprise arrowheads, blades, shards, stones, and other useful items (Halbritter 1995).

Climate change by the end of the Stone Age resulted in lower temperatures and increased humidity. Following rising water levels, settlements had to be moved to higher grounds. Just a few hundred meters from the sites of the initial settlement but already on the lakeshore, traces of late Neolithic settlements and of Wieselburg civilisation of the early Bronze Age (1800 to 1700 BC) have been found. More recent settlements in the region include Balaton-Lasinja and Baden civilisations of the Copper Age (Management Plan 2004).

During the Bronze Age, 1800 BC, the exchange of cultures across the continent thrived due to two major routes crossing Europe. The Amber Route ran from the Baltic to the Adriatic Sea linking Lithuania with Italy. Traces of this road can still be identified in vineyards and fields west of the lake as embanked structures ending in the medieval post road connecting Bratislava and Sopron. The second road ran from east to west and connected the Carpathian Basin with the Viennese Basin south of the lake.

Remnants of settlements of the Iron Age from the seventh century BC can be found in literally every existing village along the lakeshore. With regard to Neusiedl am See, burial mounds (Tumuli) and clay pottery of the Older Iron Age Hallstatt Culture (750 to 450 BC) were found in the meadows of Zitzmannsdorf. The Chapel of St. Florin marks the last remaining mound of the era (Halbritter 1995). These settlers were succeeded subsequently by the Celts, Romans and Germanic tribes (Management Plan 2004).

4.1.1.2 The Migration Period

The conquest of the area by the Huns around 430 AD and the subsequent fall of the Hun Empire initiating the Migration Period led to the settlement of various Germanic tribes

including the East Goths, Svebs, Herules, and Langobardes. Finally, the dominating tribe of the Avars united the region under one single authority for centuries. They were succeeded by the Onogurs in 800 AD, who in turn were conquered by the Hungarians founding their kingdom in the Carpathian Basin in 1000 AD.

4.1.1.3 Multiple devastation and conquest

Within the Hungarian Kingdom, the area of Lake Neusiedl was subdivided between the counties Sopron to the southwest and Moson in the northeast (Management Plan 2004).

Between the 13th century and the Middle Ages, German settlers re-migrated into the area. During the first half of the 16th century, i.e. during the siege of Vienna in 1529, the region was devastated completely and many residents were killed. To mitigate the effects of depopulation, Croatian settlers moved into the region marking the end of colonisation (Biosphere Reserve Neusiedler See 2006).

4.1.2 The region of Lake Neusiedl

Lake Neusiedl is located at the boundaries of five distinct landscapes. In the west, the lake is surrounded by mountains, i.e. the spurs of the Eastern Alps and the Ruster Höhenzug in the west, the Leitha Mountains (Leithagebirge) in the north-west. To the north, the gravel Plateau of Parndorf stretches 40 meters above the lake for some 200 km².

On each side of the border between Austria and Hungary, Lake Neusiedl is complemented by characteristic wetlands. In the southeast, predominantly in Hungary, the Hanság comprises an area of 460 km². Between the Plateau of Parndorf and the sluice in the east, the basin of the Fertő Niche[7] can be found extending over 450 km². This area mainly lies on Austrian territory and extends into Hungary only at Fertőújlak. This part of the region is characterised by the so called „Lacken“, up to 80 small, shallow pools of no more than 70 centimetres depth as well as by remnant salt meadows in a landscape formed by human land use.

4.1.3 Climate

Lake Neusiedl is located in the transition zone between the Continental and Pannonian climate zones. The water body of the lake and the adjacent slopes of the Leitha Mountains have some considerable regulating effects. Additionally, the Leitha Mountains form a natural barrier against cool, alpine west winds.

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[7] Fertőzúg (Hungarian) or Seewinkel (German)

4.1.3.1 Temperature

Temperatures can range from - 25°C in winter to 40°C during summer months resulting in a mean annual temperature of 9.7°C. The Pannonian climate dominating weather events in the region implies hot and dry summer months and accounts for over 60 days with temperatures of 25°C and higher, annually.

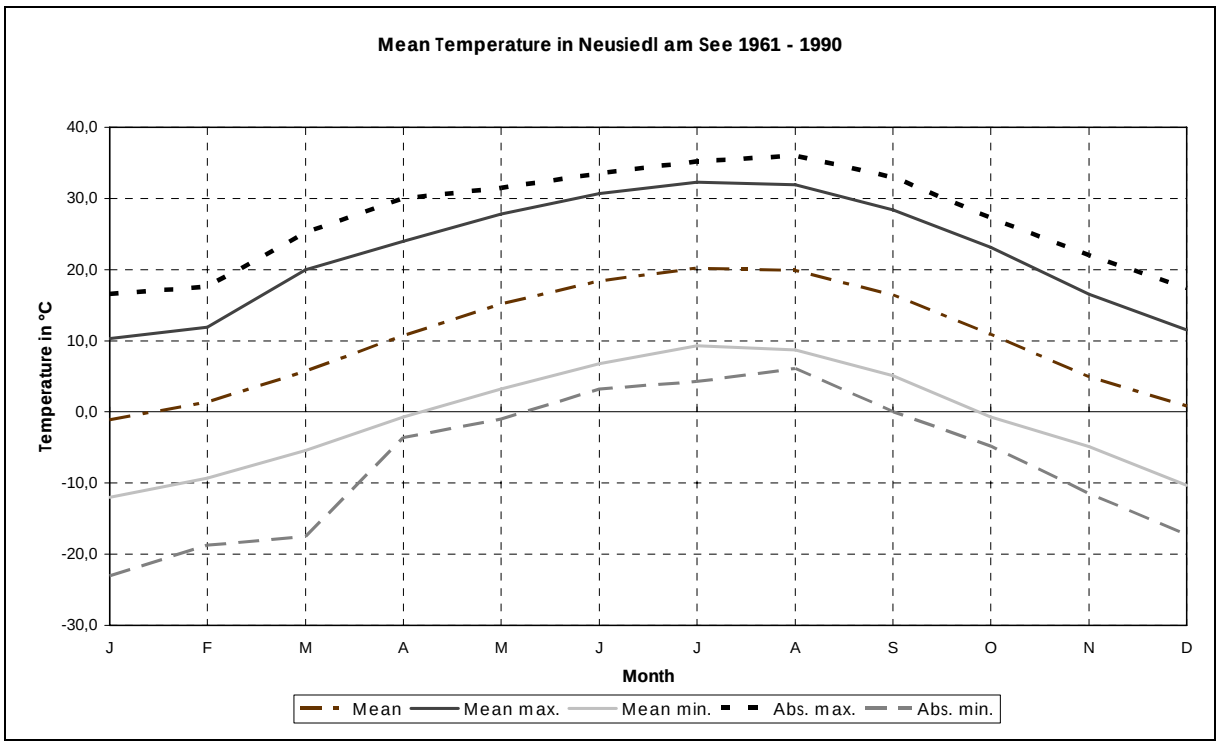

Figure 4-1 Monthly means in Neusiedl am See (Source: ZAMG, 2007)

Yet the Pannonian climate is also responsible for cold winter events in the north of Burgenland accounting for some 90 frost days per year freezing the lake for over than 50 days per year (Management Plan 2004).

4.1.3.2 Wind

Wind predominantly blows from the northwest and occasionally from the southeast during summer. The average speed ranges between three and four metres per second, which is considerably high and causes constant water perturbation, influencing drift and favouring the silting up of the lake (Ramsar Information Sheet 2005). The combination of little precipitation, high temperatures, and continuous wind can also lead to high evaporation rates due to semi-arid conditions. In some soils, these conditions can favour salinisation processes resulting in the accumulation of sodium carbonate in top layers. The impacts of wind erosion can be amplified by these conditions as well.

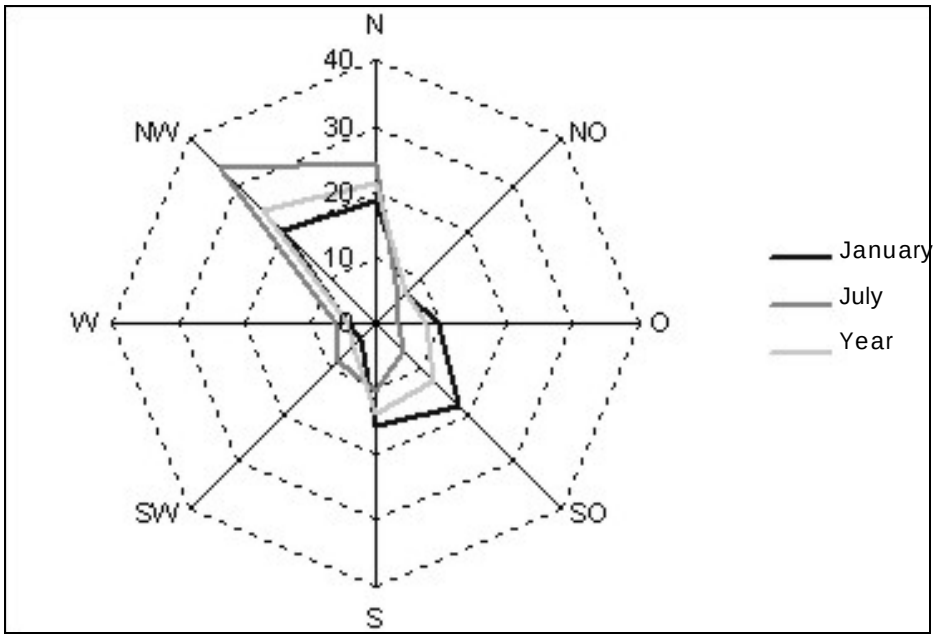

Figure 4-2 Distribution of wind directions (Source: ZAMG, 2007)

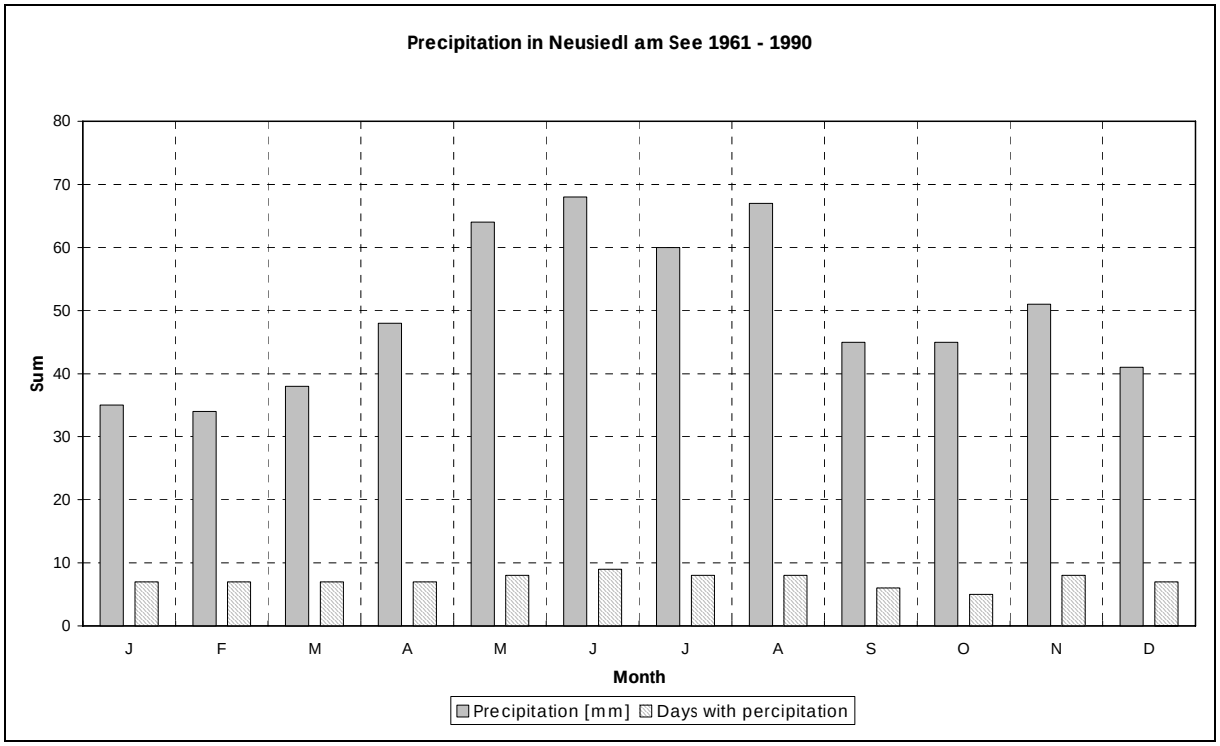

Figure 4-3 Precipitation in Neusiedl am See between 1961 and 1990 (Source ZAMG, 2007)

4.1.3.3 Precipitation

Weather events originating in the west are frequently buffered by the Alps resulting in an annual precipitation of only approximately 526 to 600 millimetres (Ramsar Fact Sheet 2003 and Biosphere Reserve 2006). This indicator is of major importance, as precipitation is the only significant water supply of the lake.

4.1.4 Soils

Lake Neusiedl came into being when the lake area, which used to be situated higher than the Plateau of Parndorf, submerged following a series of tectonic movements and the newly created basin was filled with water by the Pannonian Sea during the Miocene. Subsequently, the area was also supplied by the rivers Danube, Ikva, and Leitha turning the sea into a freshwater lake, which covered the primary Palaeozoic slate of the Basin with layers of gravel and sand during the interglacial periods (Management Plan 2004).

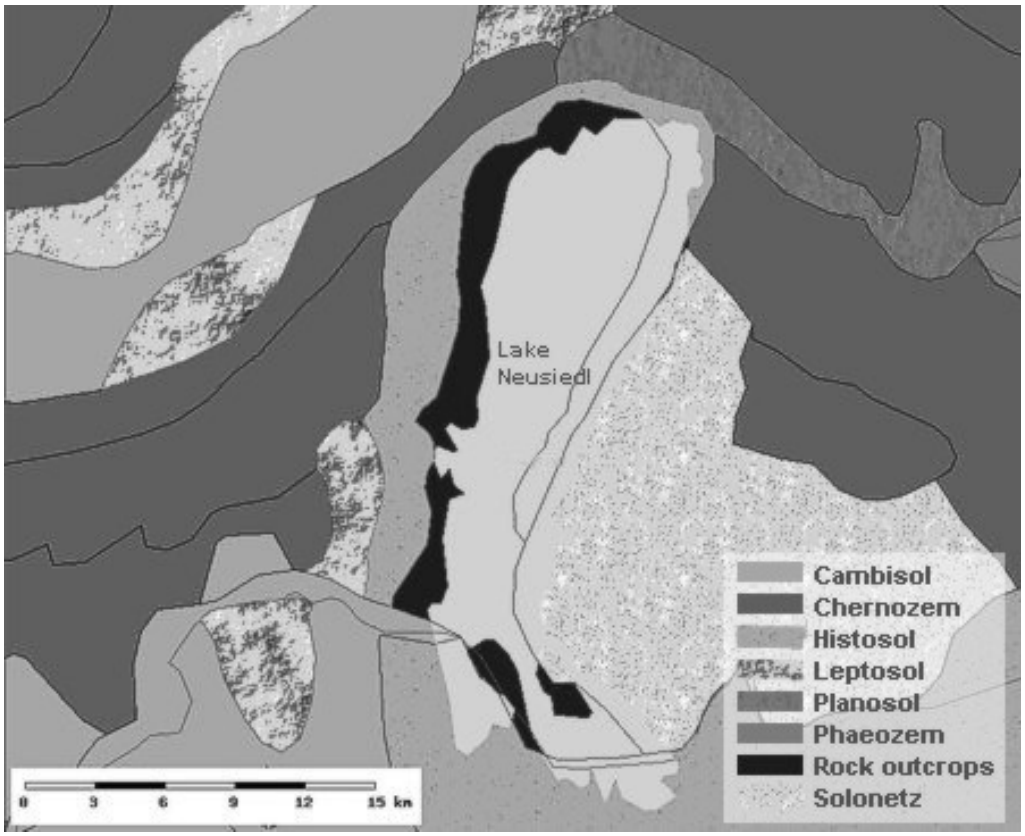

Figure 4-4 Soils of the region (source: Soil Map Internet Server, 2007)

Currently, the lake area contains a high variety of soils due to climatic conditions and the primary rock indicating the lake's marine past.

Soils of Lake Neusiedl are frequently characterised by accumulations of potassium and magnesium based salts originating from the interglacial loess horizon as well as by high

levels of ground water. The most characteristic types of soil include Solonchak and Solonetz of the Fertő Niche as well as brown soils in the northeast.

4.1.5 Water quality and water balance of Lake Neusiedl

Lake Neusiedl was mentioned for the first time in an official document by the Romans and was labelled "Stagnum Ferteu". The subsequent replacements of "stagnum" by "palus" in 1096, "lacus" in 1217 and "flumen" in 1324 indicates changing conditions over time (Hicke, 1996).

Because of the fine lake sediments, the shallowness and the constant exposition to winds, the water of the lake is very turbid. At present, the lake is silting up suggesting a developed state of ageing (Ramsar Information Sheet 2005).

4.1.5.1 Water temperature

With an average depth of only 1.5 meters, the water body of the lake warms up quickly in spring and summer. Temperature highs can reach up to 30°C in top layers (Management Plan 2004). Yet, the water body is also capable of buffering rapid changes in air temperature, especially in spring and early summer when the warming effect of the lake is beneficial for the vegetation cover and allows for viniculture in the vicinity of the lake (Ramsar Information Sheet 2005).

In spring, the lake warms up quickly due to its shallowness and buffers drops in temperature during cold spring nights, preventing damage caused by late frosts. In autumn, the lake counterbalances early frosts by preserving its summer temperature causing a warming up of the region. Therefore, the vegetation period is extended to a maximum of 250 days (Biosphere Reserve Neusiedler See 2006).

4.1.5.2 Physicochemical conditions

On the Austrian side of the border, Lake Neusiedl and the Fertő Niche have been classified as inland wetland with permanent saline lakes. Lake Neusiedl is saline with a pH ranging from 7.7 to 9.5 due to its high content of magnesium-hydrogen-carbonates and sulphates (Ramsar Information Sheet 2005). The average salt content is estimated to amount to 1700 mg per litre, concentration levels increasing from west to east (Management Plan 2004). The water's high salt content results mainly from groundwater emerging through fissures in the rock bed, rich in carbonates and sulphates (Ramsar Information Sheet 2005).

The lake has been threatened by eutrophication due to very high levels of nutrients, predominantly phosphates and nitrates originating from agriculture since the 1970ies and

brought in by the River Wulka (ibid.). The rapid development of tourism in the region exerted further pressure on the lake as wastewater treatment was lacking in many municipalities. Mitigation measures and changes to farming practices led to a significant reduction of nutrient input by 2003. Yet, Lake Neusiedl is still mesotrophic due to continuous nutrient input from agriculture (Biosphere Reserve Neusiedler See 2006).

As nutrient trap, reed has played an important role in maintaining the water quality. The reed belt filters out and binds the nutrients brought in, but also nutrients originating from the lake itself. Consequently, oxygen deficits may occur inside this zone (Management Plan 2004).

4.1.5.3 Groundwater

Lake Neusiedl is more or less cut of from aquifers that could provide it with sufficient ground water as there are hardly any located in the vicinity of the lakeshore, if not for some quaternary clay-silt sediment layers with very little permeability (Halbritter 1995). Water tables may even fall below Lake Neusiedl's own water level. Therefore, water supply from the topmost groundwater level is highly uncertain.

Below, a second water table can be found consisting of a tertiary clay-marl layer with an estimated age of 18.000 years. The enclosed clay-silt sands of this layer allow for even less vertical transportation (ibid.). Between Neusiedl am See and Mönchhof in the east, some of these aquifers can be very close to the surface, however.

During the second half of the 20th century, a decline of ground water levels caused a decrease of water pressure in the artesian aquifers. It has been found to be the combined result of the continuous and sometimes illegal use of the second, tertiary water table, and very slow recharge rates of the prehistoric aquifers in the Plateau of Parndorf.

At the lakeshore however, the water tables are elevated enough to react to precipitation events almost immediately. On the other hand, evaporation rates are the highest here as well. It is even possible that ground water evaporates directly into the atmosphere during hot and dry summers.

In 2006, plans for the development of a health resort with mineral springs in the lake area under the participation of several municipalities of Northern Burgenland specified as trial drillings on the eastern lakeshore between St. Andrä and Frauenkirchen resulted in the discovery of an artesian water table. By December 2006, there were no results or further details available.

4.1.5.4 Water Balance

The water balance of Lake Neusiedl is predominantly governed by climatic conditions and has been subject to high variability due to changing water content over time. The water basin comprises an area of approximately 900 km² (Management Plan 2004).

About 80 percent of the lake's water body result from precipitation. The remaining 20 percent are supplied by small surface contributories, such as the River Wulka (Ramsar Information Sheet 2005). The lake looses water due to evaporation accounting for some 90 percent and regulation measures by means of the sluice (10%). High evaporation rates in summer and insufficient rainfall can even cause dramatic fluctuations in water levels of up to 60 centimetres (Biosphere Reserve Neusiedler See 2006). To illustrate the impacts of the flat geomorphic structure of the area, a rise in water levels by 10 cm result in an additional area of 20 km² being flooded (Management Plan 2004).

Two scenarios explaining floods and the occasional drying up of the lake during extremely wet and dry years, respectively, illustrate the dependence of water levels on precipitation. During "wet" years, i.e. years with an annual mean precipitation higher than the average, losses caused by evaporation during summer and early autumn are compensated by precipitation during the subsequent winter. Rainfall events in early spring following a winter rich in precipitation can cause floods consequently.

A lack in rain events during winter, on the other hand, results in decreased water levels by the end of spring. Evaporation is far too high during summer for rainfall events to take more effect than to merely decelerate the rate of water loss. Therefore, after two or more subsequent dry winters, water levels can decline considerably. A series of dry winters over a couple of years can even result in a partial drying up of the lake.

Lake Neusiedl was recorded to have gone dry completely between 1865 and 1871. Evidence suggests that the lake has dried up more than 100 times so far (Biosphere Reserve Neusiedler See 2006).

Flood events on the rivers Danube and Raab had impacts on the lake indirectly as well, as the backwater of the rivers was retained by their contributories, i.e. the River Rabnitz. For this, regulation of the rivers Ikva, Rabnitz, and Raab had considerable influence on the lake's water balance as well. To decouple water levels from weather conditions, i.e. to avoid floods, the level of the lake has been regulated by a sluice connecting the lake with the river Raab (Rábca) called "Einserkanal" since 1910 (Hicke 1996).

4.1.5.5 Regulation of water levels

First ideas for reclaiming the lake bed were raised in 1616 but the plan was abandoned until the 18th century when economic upswing led to extensive building activities on the shores of Lake Neusiedl. Despite numerous elaborate mansions and town houses built in the area, local residents continued to make a living mainly from agriculture, animal husbandry, and viniculture.

In the beginning of the 18th century, water levels started decreasing, irrespective of human influence, and lake water even vanished completely between 1740 and 1742 making way for agriculture in the lakebed. Yet, only a few decades later, in 1786, the lake reached its maximum extension ever recorded flooding an estimated area of 515 km².

A dam built already between 1777 and 1780 to protect the towns of Eszterháza (Fertőd) and Pamhagen from the floods separated the Hanság from the lake. This has entailed a continuous decline of water levels in this part of the region. Consequently, haymaking substituted fishery as a source of income (Hicke, 1996).

Fluctuations in water levels continued and led to the renewal of plans for drawing away the water of the lake in 1838. Before the plan could be implemented however, water levels started decreasing again significantly on their own, resulting in another natural drying up of the lake in 1865. This time, agriculture lasted until 1871 and the ground was even covered by natural vegetation (ibid.).

In 1872, water was refilled into the lake and water birds returned subsequently. Just one year later, the Organisation for the Regulation of the River Raab (Raabregulierungsgesellschaft) was created as intentions of draining the lake area were renewed again as well. Plans were finalised in the beginning of the 1890ies resulting in the construction of the "*Einserkanal*", a ditch (canal) connecting the lake with the river Raab (Rábca). In 1910 the ditch was finalized, and the meadows of the Hanság were flooded when the gates were opened (Hicke, 1996). Since then, this sluice has been regulating the water level of Lake Neusiedl.

After World War I, borders in Central Europe were redrawn dividing the Lake between Austria and Hungary. In 1918, the drainage of the region of Lake Neusiedl was reconsidered once more on the Austrian side of the border. Yet, hunters, nature conservationists, and local residents prevented the implementation of these plans out of concern for local climate and possible impacts on their incomes (Hicke 1996). This change in public and political attitude was also due to the opening of the first public beaches in Rust and Neusiedl am See in the

very same year (ibid.). Yet, the ambivalent relationship of residents and administration to the lake also resulted in the development of new strategies for reclaiming the lakebed for agriculture at the same time. These plans however had to be dropped, as the protected status of the lake region was confirmed in 1940 by German and again in 1961, by Austrian law.

Since the beginning of the 21st century, the regulation of water levels has ranked high in public awareness again. The basic idea is to keep the water of the lake at a constant level by means of water supply from the River Raab or the River Danube. The location of the channel had not been specified, nor was it clear, who would be responsible for the project by December 2006. Questions of possible ecological impacts on the lake's flora and fauna, or the expected costs and benefits resulting from the channel were also open.

4.1.6 The cultural landscape and biological conditions

As a border area, Lake Neusiedl has been shaped by elements of a variety of landscapes resulting in a high level of biodiversity. The mild and dry climate supports southern and eastern types of steppe. These exotic, open, steppe-like patches of landscape of the lake are by no means natural, but rather the result of continuous human activities for centuries (Halbritter, 1995). Human interventions thus, have resulted in highly diverse, species abundant habitats of great interest to nature conservationists, which need to be preserved. The area also fulfils an essential function in a continental ecological network maintaining the geographic range of plant species and communities (Ramsar Information Sheet 2005).

The area surrounding the lake is characterised by a specific zoning. Around the open waters of the lake, a reed belt of varying width comprises a whole set of channels and small, enclosed lakes. These are surrounded by saline meadows and hills in the west. There are slight differences between the Austrian and the Hungarian parts of the lakeshore. In Austria, winegrowing had a temporary high resulting in the conversion of grasslands to vineyards during the 1950ies and 1960ies. Meadows have been reclaimed during the last few decades for agriculture and housing while the area for wine growing has declined subsequently only since the 1990ies. There still exist significant areas of meadows in the area of Oggau and Jois.

In Hungary on the other hand, the reed belt has grown more or less continuously for two centuries. Vine production has increased but no considerable reforestation took place during that time. Meadows therefore have been preserved and the extension of vineyards and agricultural areas has remained unchanged as well (Management Plan 2004).

4.1.6.1 Flora

The flora of Lake Neusiedl shows characteristic plant societies of various floral regions. The area is part of the Kisalföld floral county (Arrabonicum) of the Alföld floral region (Eupannonicum) with the Leitha Mountains (Laitaicum) forming part of the Western Transdanubium (Praenoricum) in the west exerting some influence as well (Management Plan 2004).

Initially, the region around Lake Neusiedl was covered by oak forests, with the exception of a few extremely dry or salty locations. Human settlement commencing during the 7th century BC entailed forest clearances and land conversion into extensive pastures. The subsequent regulation of water levels allowed for the intensified use of these pastures. Consequently, a high variety of biotopes can be found in the region including Eurasian steppes, Pannonian oak forests, and bogs (Biosphere Reserve Neusiedler See 2006).

Literature suggests a series of natural and semi-natural biotopes in the region following the lake's zonal structure, as listed by the management plan of the World Heritage Site Fertő / Neusiedlersee Cultural Landscape compiled in November 2003:

- Water plants with lake weeds
- Reeds and high sedges
- Continental saline marshes with reed stands
- Fresh bog lands
- Semi-wet bog lands
- Marshlands (several associations, mainly hayfields)
- Plant associations of the Solonchak salt pans
- Plant associations of the Solonetz salt pan
- Solonetz saline grasslands
- Solonchak saline grasslands
- Sub-Continental Sub-Mediterranean xerotherm oak stands
- Sloping steppe associations

Local flora harbours an outstanding variety of rare and endangered as well as endemic species. Particularly on Pannonian Soda soil, there exist many rare and endemic species. Lake Neusiedl also provides the western most boundaries for South Russian steppe species (Ramsar Information Sheet 2005)

The Fertő Niche is home to numerous halophilic plant species, including holly wormwood (Artemisia santonicum) and the herbaceous seepweed (Suaeda maritima). The management plan for the World Heritage Site Lake Neusiedl gives an extensive list of the unique features of the area with regard to biodiversity, including various orchid species such as the raer lady's slipper orchid (Cypripedium calceolus) and the bog orchid (Liparis loeselii) which can only be found in a few locations throughout Hungary and Austria. Further species such as the fly orchid (Ophrys insectifera) and the spider orchid (Ophrys sphecodes) growing in the hills around Lake Neusiedl and the Fertő Niche as well as the marsh orchid (Orchis laxiflora ssp. palustris) are listed by the document as well (Management Plan 2003).

The Ramsar Information Sheet compiled between 1997 and 2003 was reviewed in 2005 and gives a more detailed description on plant species of high value:

> *"…Within a small area, plant and animal species from alpine, Asiatic, Mediterranean and northern species are present, resulting in the high species diversity in the area. A number of rare plants occur in the meadows along the northeastern shore: Pulsatilla grandis, P. nigricans and Artemisia laciniata. Endangered plant species recorded in the site are: Artemisia laciniata, Astragalus exscapus, Aster canus, Bolboschoenus maritimus, Botrychium lunaria, Cladium mariscus, Euphorbia palustris, Gladiolus palustris, Iris pumila, I. spuria, Juncus maritimus, Linum maritimum, Lycopus exaltatus, Ophrys holoserica, O. sphegodes, Orchis militaris, Pinguicula alpina, Schoenoplectus litoralis, Spergularia salina, Thymus serpyllum, Typha angustifolia…"* (Ramsar Information Sheet 2005)

4.1.6.2 Fauna

Contrary to the flora, the fauna of Lake Neusiedl is highly valued due to its high numbers of ordinary species that have been reduced in numbers or even became extinct in west Europe following land use and land cover changes of the past (Management Plan 2004). Of course, the site also supports rare endemic and endangered species.

There are significant populations of dragonfly species, including Leucorrhinia pectoralis and L. Caudalis living in the vicinity of the inner ponds as well as, populations of Lestes dryas, Coenagrion scitulum, and Anaciaeschna isosceles. The lake area is also dotted with holes of Lycosa singoriensis, a tarantula inhabiting the steppes of southern Eurasia (Ramsar Fact Sheet 2005).

With regard to amphibians, twelve out of eighteen species living in Hungary can be foud inside the Ramsar area Lake Neusiedl. The populations of the edible frog (Rana sp.) and the European tree frog (Hyla arborea) area considered outstanding. In the Hanság, some 100

individuals can be found of the Transdanubian meadow viper (Vipera ursinii rakosiensis), an endemic wetland species of the Carpathian Basin that has been nearly extinct (Management Plan 2004).

The fish population of the lake used to be restocked naturally by the contributory rivers following a dry period. Literature suggests the existence of 20 to 34 species inhabiting the lake in the past. During the past decades however, human interventions, such as the regulation of water levels and the release of native as well as alien species into the lake have had negative impacts. These species comprised eel (Anguilla anguilla), silver carp (Hypophtalmicthys molitrix), grass carp (Ctenopharyngodon idella), and even prussian carp (Carassius auratus gibellio) (Management Plan 2004). No further release of alien species has been permitted since the implementation of the National Park in 1992, however (Hicke 1996). Important native species include leather carp (Cyprinus caprio), pike (Esox lucius), catfish (Silurus glanis), pike perch (Lucioperca lucioperca), and carp (Carassius carassius). Umbra krameri is one of the extinct species that has been reintroduced recently and is under protection (Managaement Plan 2004).

The existing mix of diverse habitats close to lake Neusiedl provides ideal conditions for various birds, such as the kentish plover (Charadrius alexandrinus), avocet (Recurvirostra avosetta), common tern (Sterna hirundo), redshank (Tringa totanus), black-tailed godwit (Limosa limosa), curlew (Numenius arquata), yellow wagtail (Motacilla flava), and white stork (Ciconia ciconia), among others (Biosphere Reserve Neusiedler See 2006). Raptors are also present in the region; the great bustard (Otis tarda), an endangered species, has been found to breed near the lake.

The lake area, especially the reed belt, is an outstanding staging area for migratory waterfowl species as well as a breeding site for water-birds in general. During the migration seasons, there have been over 150 bird species been counted within the boundaries of the national park (Biosphere Reserve Neusiedler See 2006). Gees in particular gather at the shallow pools and the lake before they continue their migration to the south. The numbers of breeding pairs are given by the Ramsar Information Sheet compiled amended in 2005:

> *"…The site is extremely important for staging migratory waterbirds, including Anser fabalis (20,000), A. albifrons (3,000), A. anser (6,000), and Anas crecca (10,000). The lake and its reed belt also support a wide variety of breeding birds including Casmerodius albus (200-400 pairs), Ardea purpurea (100 pairs), Platalea leucorodia (0-20 pairs), Anser anser (400 pairs), Aythya nyroca, Circus aeruginosus (130 nests), Porzana parva, Charadrius alexandrinus (15-30 pairs),*

Recurvirostra avosetta (70-100 pairs), Limosa limosa (40-130 pairs) and Tringa totanus (100-200 pairs). Thirty species breed within the reed belt." (Ramsar Information Sheet 2005)

There are also more than 40 species of mammals living within the boundaries of the national park, such as the Eurasian ground squirrel (Citellus citellus) and the steppe polecat (Mustela eversmanii) (Biosphere Reserve Neusiedler See 2004).

4.1.6.3 First concerns for nature

During the middle Ages, the sole purpose of nature conservation was the maintenance of certain services for the use by the small elite (Hicke 1996). This practice implied the negation of nature's own right to exist (ibid.).

Modern nature conservation rooted in the 19th century however, has attempted to preserve nature from human use in general. Since the second half of the 19th century, birds, which were regarded to be useful for soil culture, were protected in Hungary, mainly for agro-economic reasons.

After World War I and the subsequent division of the lake area between two countries, the first act on nature conservation entered into force in Burgenland in 1926. The act regulated the preservation of the landscape and accounted for the protection of individual species typical for local flora and fauna. By releasing the act, the Land Government forfeit any further possibilities to reclaim the lakebed for the time being. However, the act also had serious shortcomings as it allowed for irregular permissions signed by representatives of the Land. The process for obtaining these permissions had not specified, leaving room for arbitrary decisions (Hicke 1996).

Further ordinances issued by the Land Government followed, resulting in the expansion of the protected area until 1935, when first demands for a National Park Neusiedler See were placed publicly. These demands were confirmed at the convention for nature conservation in Schladming in 1940. However, when Austria became part of Nazi Germany in 1938, the legal system was substituted by that of the Third Reich. The Reich's act on nature conservation entered into force in 1939 and remained valid until 1961, when it was substituted by a new act on nature conservation, the Naturschutzgesetz 1961 (Hicke 1996). After World War II, the region of Lake Neusiedl remained isolated until 1989 due to the erection of the Iron Curtain.

4.1.6.4 In the focus of interest of the International Community

Despite the Cold War splitting Central Europe in two and the resulting isolation of the region, the international community was taking an ever-growing interest in Lake Neusiedl

during the 1970ies and 1980ies. Starting in 1977, a series of declarations by international organisations led to the multiple protection of the lake area by international law.

In 1977, the lake and the surrounding reed belt were accepted as Biosphere Reserves in compliance with UNESCO's Man and the Biosphere program. The same year, the Council of Europe added the area to its list of Biogenetic Reserves (Hicke 1996). This was followed by the designation of a Ramsar-site in Austria centering Lake Neusiedl in 1983 (Ramsar Information Sheet 2005).

Five years later, a planning commission for the National Park Neusiedler See – Seewinkel was introduced by the Land Government resulting in the implementation of the act on the National Park Neusiedler See - Seewinkel by the Diet of Burgenland in 1992. This was a prerequisite for the acceptance of the designated area as Category II – Site in 1993, complying with standards set by the IUCN (Hicke 1996).

Since Austria's entry into the European Union, Lake Neusiedl has also been integrated into the European Natura 2000 network, starting in 1996. Protected sites nominated for the network usually correlate with areas already accepted by international programs.

Due to its cultural value and high diversity complying with UNESCO's Convention on the Protection of the World Cultural and Natural Heritage the region of Lake Neusiedl was awarded the status of World Heritage Site in 2001.

4.2 The town of Neusiedl am See

Neusiedl am See lies on the northern shore of Lake Neusiedl and consists of two parts, i.e. the settlement area on the northern lakeshore and the meadows in the east, Zitzmannsdorfer Wiesen, included in the National Park Neusiedler See – Seewinkel. For the purpose of this thesis and the resulting Green Map, the focus of attention will be on the western part of Neusiedl am See.

4.2.1 Town history

In accordance with the region's settlement history, various peoples have inhabited Neusiedl am See over time. Neusiedl am See was first recorded in 1209 as villa Szumbothely (Halbritter 1995). The town of Neusiedl was also repeatedly destroyed and rebuilt between the 13th and 17th century. During the Kuruc Revolution 1704 – 1709, the town was heavily damaged (Management Plan 2004).

4.2.1.1 Historic Centre

Due to geomorphologic conditions, the town was limited in growth by the Plateau of Parndorf to the north and by Lake Neusiedl to the south. Therefore, it developed along the main road rather slowly. The historic centre of Neusiedl am See comprises the Town Square (Hauptplatz) stretching to the west along Obere Hauptstraße as far as Wiener Straße, and to the east along Untere Hauptstraße as far as Feldgasse.

The majority of the traditional, I- and L-shaped farmhouses were built with the short side facing the street and were enlarged over time. The backside of the plots connecting the reed as well as the fields and vineyards with the farms, was accessible by a smaller road used for supply. During the 18th century, a few prestigious, medieval farmhouses were renewed and extended resulting in a baroque appearance (Halbritter 1995).

4.2.1.2 Urbanisation and expansion of the residential area

The military barracks built in 1856 mark the eastern boundaries of the residential area expanding at a slow rate during the 19th century. When Neusiedl am See was integrated into the railway network of the Monarchy in 1897, neither of the two existing train stops was situated within the residential area (Halbritter 1995).

During the 20th century, urban development was triggered by two factors. After World War I, the attribution of parts of the Hungarian counties Vas, Moson, Sopron to the recently proclaimed Federal Republic of Austria, to form the easternmost Land, Burgenland, entailed a serious drawback with regard to the administration and management of the Land. To counter the lack of significant administrative centres and infrastructure in the north of the Land, Neusiedl am See became district centre, facilitating the administration of North Burgenland. Additionally, Neusiedl am See was chartered in 1926. This led to increased economic development and population growth as new administrative buildings and educational facilities as well as family homes for civil servants had to be built. The resulting enlargement of the residential area led to the extension of the town to the east beyond the barracks as far as the new harbour to the south, in addition to the historic axes of development. (Halbritter, 1995)

During the 1950ies, the first planned town enlargement took place in the area of the barracks characterised by semi-detached houses filling gaps in settlement structure left out during former decennia.

During the 1960ies, the speed of town development towards the lake and to the north took on new dimensions, as detached houses gained in popularity. In the western part of Neusiedl am See, the area of Sauerbrunn was developed. In the north at Hirschfeldspitz, family homes were built outside the settlement area triggering a new wave of urban sprawl. Moreover, regulations during the 1970ies explicitly promoted detached housing.

During the 1980ies and 1990ies the enlargement of the settlement area concentrated on the northern part of Neusiedl am See. In the very north, at the crossroads to the highway, the newly built industrial cluster exerted pressure on small shops in the centre of Neusiedl am See. In addition, social housing was supported during the 1990ies resulting in the development of plots used for gardening in the south.

Since the beginning of the 21st century, expansion has continued in all directions. Latest developments include new settlements in the vicinity of the train station in the east as well as north and south of the historic centre where many social houses are being built in the former garden plots.

4.2.2 The cultural landscape formed by agriculture

One century ago, agriculture was the major source of income for residents of Neusiedl am See. With the increased popularity of recreation and sports related to Lake Neusiedl and with the development of administrative services the shift from the primary to the tertiary sector was inevitable.

4.2.2.1 Viniculture

The first documentation of viniculture around Lake Neusiedl dates back as far as 1313 (Management Plan 2004). The traditional areas comprise parts of the Plateau of Parndorf and the slopes of the Leitha Mountains. Due to climate conditions, wine produced in Northern Burgenland is famous for the grapes' high sugar content.

Viniculture was brought to an abrupt halt by the Phylloxera Plague at the end of the 19th century caused by the grape phylloxera (*Daktulosphaira vitifoliae)* native to North America. Wine production recovered only slowly from this catastrophe.

At the beginning of the 1960ies, the area designated for wine production started expanding rapidly. Viniculture peaked in 1980 when Neusiedl am See possessed some 800 ha vineyards (Halbritter). Ever since, the number of vineyards has decreased again, frequently due to urban development. Recent developments suggest the conversion of the vineyards in the southern part of the centre to building land eventually.

4.2.2.2 Crop production

Most fields used for crop production can be found on the Plateau of Parndorf. Even though the farmers market of Neusiedl am See was among the primary selling points in west Hungary the cultivation of grains remained negligible until industrial fertilisers were introduced in the area entailing intensified farming practices in the region. Farmers involved in crop production frequently plant wheat and rye, as well as the oil crops rape, sunflower and soybean (Halbritter 1995).

4.2.2.3 Horticulture

Vegetable gardening was the major source of income in Neusiedl am See between the 1920ies and the 1960ies comprising an area of 120 hectares (Halbritter 1995). Traditionally, the fields for vegetable production were located south of the residential area. Here, sediments of the lake are mixed with sands from the Plateau of Parndorf creating suitable soils for market gardening. The town used to be one of the major producing areas in Austria with regard to lettuce and marjoram. Lettuce was of major importance to the economy of Neusiedl am See because it was the first vegetable available in spring. Due to excellent climatic conditions, lettuce cultivated in Neusiedl am See appeared on markets always one week ahead of the Viennese products. This resulted in high return rates that made up a significant part of the income for many farmers in Neusiedl am See. Marjoram was cultivated as intercrop resulting in a production of up to 30 tons per year supplying different parts of Europe. Tomatoes, cucumber and onions were also cultivated in Neusiedl am See but were less significant with respect to local economy.

After World War II, the production of vegetables shifted increasingly to plots in the Fertő Niche, where climate, soil, and water resources provided better conditions. The end of vegetable gardening in Neusiedl am See was marked by the introduction of green houses entailing a decline in production costs and profound changes to market conditions. Since the 1980ies, vegetables have been grown for private consumption only. Parts of the former gardens have been developed, and converted into building land during the past two decades.

4.2.2.4 Animal husbandry

During the first half of the 20th century, animal husbandry was a major economic factor in North Burgenland. Herds of cattle, horses, and pigs were grazing on common pastures typical for the landscape. Intensified farming and restructuring processes in agriculture led to the replacement of meadows and pastures by vineyards. Since 1965, the number of

vineyards has increased, particularly on the eastern lakeshore (Biosphere Reserve Neusiedler See 2006).

The number of livestock has decreased since the middle of the 20th century. Cattle drive was given up completely in 1958. Consequently, the future of meadows in Neusiedl am See is highly uncertain. The number of horses was also declining after World War II but their numbers have stabilised at some 20 individuals in riding schools and on a few remaining farms due to the discovery of riding by urban dwellers (Halbritter 1995).

4.2.3 Nature and recreation

Tourism started in the 19th century and has had profoundly influenced peoples' attitude regarding the lake.

4.2.3.1 Sailing

Sailing was popular in the region of Lake Neusiedl already some 130 years ago when the British sailor Edward Drory "discovered" the lake. In 1926, the sailing club moved from Podersdorf to Neusiedl am See leading to the foundation of the "Yachtclub Neusiedler See. By the end of the 1970ies, the union counting over 500 members had gained political power and influence on decision-making processes in municipalities around Lake Neusiedl.

At the present, there are ongoing debates about the construction of a second channel regulating the water supply of Lake Neusiedl. Ecologists object, pointing out the fact that Lake Neusiedl is isolated from aquifers of the landscape hosting the river Raab. Therefore, the microbial lives of these waters can differ from those of Lake Neusiedl significantly and may have adverse effects on local flora and fauna. Interests groups and many politicians on the other hand highlight the economic benefits of constant water levels allowing for water sports, attracting many tourists. To underpin this position, the 2006 International Sailing Games were held on Lake Neusiedl in spring last year.

The town of Neusiedl am See however, was cut off from the streams of interested tourists as transfer busses between the train stations and the site of the event did not stop in the town centre.

4.2.3.2 The Sea of the Viennese

During the 1850ies, tourism and recreation had a temporary high in Neusiedl am See leading to an increase in the number of beaches inside the reed belt and of secondary homes. As a result, tourism and recreation became the primary interest of stakeholders and decision makers.

When Neusiedl am See was connected to the railway system of the monarchy in 1897, the train stop "Bad Neusiedl am See" was built for the Viennese seeking recreation. After World War I and the resulting annexation of Burgenland, bathing facilities were improved and enlarged. A boardwalk running for one kilometre was built, connecting the bathing facilities with the lake. Later, a small harbour close to the train stop allowed for small boats to carry the tourists from the train stop to the swimming facilities (Halbritter 1995).

Bathing trains from Vienna to Neusiedl were introduced subsequently with a travelling time of less than 1.5 hours from Vienna to Lake Neusiedl. In 1928, a light rail connected the bathing facilities with the train stop allowing thus for a faster transportation of visitors. The "*Sea of the Viennese*" was a very popular place for recreation. Most facilities were standing on wooden poles in the water. These pole constructions are still popular along the shore and inside the reed belt. During the 1930ies, tourism came to a sudden halt following economic recession.

After World War II, all parts of the bathing facilities made of wood were burnt and used up for heating and cooking. The lakebed was heaped up during the early 1950ies resulting in a dam and a parking lot on the lakeshore. Later, restaurants and an area for sunbathing were added.

During the 1970ies, there was a rapid expansion in tourism, which soon became a major branch of local economy. Between 1968 and 1978, overnight stays in general had quadrupled in Neusiedl am See. Tourists from West Germany were particularly favouring the lake accounting at for almost 68 percent of overnight stays in Neusiedl am See in 1976 (Halbritter 1995).

Growing tourism also entailed the expansion of the settlement area. In the south, new secondary homes were built as well as hotels and hostels. In 1974, the "Reitertscharda" offering horse riding opened its doors for everyone seeking recreation. In 1976, six new tennis courts and a football field followed. By 1977, it was also possible to play tennis indoors or to go swimming in a swimming hall (ibid.).

During the 1980ies and early 1990ies, a recession set in. In addition to the opening of the Danube island, "*Donauinsel*", in Vienna, competition along the lakeshore was increasing putting tourism under pressure in Neusiedl am See. Lake Balaton in Hungary also attracted a growing number of tourists at much lower prices. To make things worse, the water quality of Lake Neusiedl was subject to discussions (Hicke 1996).

Despite the growing popularity of international destinations due to cheap flights, tourism received new inputs after the opening of the iron curtain. The increasing popularity of school trips to Lake Neusiedl has made up a significant percentage of overnight stays in Neusiedl am See. Additionally, daily excursions to the lake have become very popular again, particularly among the Viennese. On hot summer weekends, up to 100.000 visitors seek recreation in Neusiedl am See as daily tourist (Halbritter 1995). For this, the lakeside in Neusiedl am See is frequently referred to as "Vienna's beach".

4.3 Development trends

4.3.1 Demography

Population growth was significantly higher in Neusiedl am See than in the political district or the Land, as shown by figure 4-4. The number of residents has more than doubled during the past 130 years growing by 239 percent between 1869 and 2005 (ÖSTAT 2006).

This atypical increase in the number of residents compared to the region is mainly due to the status of the town as regional centre of administration entailing incentives for urban development. Additionally, an increase in tourism, the growing number of educational facilities, economic development, and a highly developed infrastructure with respect to public transport connecting Neusiedl am See with Vienna can be named as further drivers of development. Consequently, the population of Neusiedl am See has increased continuously, even after World War II and the implementation of the Iron Curtain. To give an example, during the last ten years of available date the number of residents has increased form 5.182 (Halbritter 1995) individuals in 1995 to 5.752 in 2005 (ÖSTAT 2006).

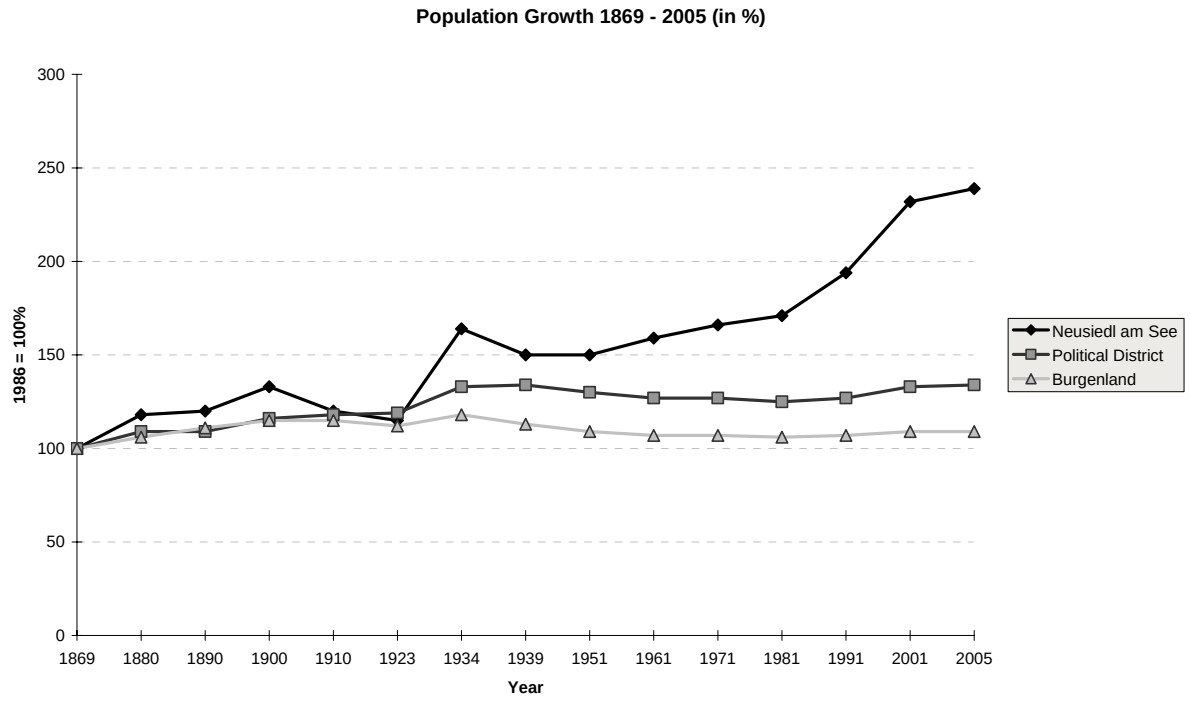

Figure 4-4 Relative population growth of Neusiedl am See, the administrative district of Neusiedl and the Land Burgenland compared (Source: ÖSTAT, 2006)

4.3.2 Economic development

One century ago, Neusiedl am See was a town dominated by agriculture and trade. Farmers from Neusiedl am See and later of the Fertő Niche used to supply the Viennese markets with fresh vegetables during the second half of the 20th century (Biosphere Reserve Neusiedler See 2004).

After World War I, Neusiedl am See became a district centre hosting decentralised legal and administrative competences of the Land. This change in the structural functions of the town of Neusiedl am See entailed a change in the existing socio-economic situation of the residents (Halbritter 1995). The development of the service sector supported by growing tourism had major impacts on residents' incomes.

The industrial sector was growing as well, yet the share of the secondary sector in Neusiedl am See has remained rather constantly at about 27 percent whereas non-productive industries (tertiary sector) have increased continuously (ÖSTAT 2006). Agriculture in contrast was declining but still remained the dominant sector in Neusiedl am See until the 1950ies.

Following the entry into force of the Austrian State Treaty in 1955, and the retreat of the Red Army from the Land Burgenland, agriculture immediately lost one third of the employees

when agricultural production declined significantly (Halbritter 1995). As tourism gained importance during the 1960ies, the share of agriculture decreased further, resulting in only 2.7 percent of the working population earning their income from agriculture or forestry in 2001 (ÖSTAT 2006). In terms of absolute numbers, only 119 producers accounted for an area of 3967 hectares (ibid.). Today the labour market of Neusiedl am See is dominated by the service sector.

4.3.3 Urban development

As it has been pointed out earlier, urban growth has been limited by topographic conditions in Neusiedl am See. This has resulted in the concentrated development of town along the main axes, i.e. the Main Road and Wiener Straße resulting in long walking distances. With the Main Square as a starting point, it takes half an hour to forty minutes to reach the train stop Neusiedl am See on foot.

4.3.3.1 The Land Development Strategy

The Land Development Strategy lists Neusiedl am See as a central site and a site supporting tourism, with a special focus on Lake Neusiedl. Central Sites are agglomeration centres of the Land Burgenland offering public and private facilities for supply and services as well as cultural events with a regional impact (LEP 1994). This definition calls for the implementation of education centres facilitating secondary and higher-level education as well as of recreation facilities, social and health care centres, and so forth. For urban development, this category implies an intensification of building densities allowing for compact structures and promoting economic efficiency with respect to development areas.

Sites for tourism identified within a zone favouring tourism are characterised by improved conditions for tourism and a higher potential for further development than in other municipalities of the region (LEP 1994). The strategy therefore suggests the integration of aspects of tourism into other programs and strategies within the region, allowing thus for the mutual benefit of municipalities. Obviously, aims and goals of local development have to comply with goals set for regional development.

Tourist zones are areas suitable for special forms tourism than other parts of the Land. Industrial production, intensive animal farming, airfields for sports planes, and other activities of similar impacts are limited by the ecological carrying capacities of the given area providing the basis for tourism. These activities may not interfere with other recreational activities either (LEP 1994).

Zones of preservation include all protected areas, in particular national parks, nature conservation areas, landscape protection sites and areas of groundwater protection (LEP 1994). The special zone Lake Neusiedl comprises the tourist zone, the landscape protection zone and the National Park Neusiedler See – Seewinkel.

4.3.3.2 The land use plan

Building land has to have the ability to bear constructions and has to comply with the estimated demand for new residential areas for the next five to ten years within the community. Sites must be excluded from the development zone if the provision with infrastructural facilities for the site is not feasible or if the area is not suitable.

The following subcategories have to be identified within the residential zone in Neusiedl am See, depending on demand and functional uses: housing (residential area), rural settlements, trade, industry, production, mixed areas and areas for recreation or tourism.

Traffic is limited to areas facilitating transportation or the opening up of settlements or green areas, including supportive structures, such as safety constructions (Act on Spatial Planning in Burgenland 1969).

Areas not identified as residential areas or traffic areas are considered green areas. Those not attributed to agriculture have to be specified further by the land use plan indicating the exact function of the site, i.e. wetland, dog school, private gardens, public parks, tennis court ...etc.

According to the land use plan, there are still considerable amounts of building land available in Neusiedl am See. However, some of the plots listed cannot be developed, yet. Due to a peculiar feature of Laender law prescribing the inheritance of farms by all children of a farmer upon his death, the continuous subdivision of parcels over generations has resulted in many thin plots of up to one kilometre length called “Riemenparzellen”. These parcels have to be laid together first, before land development can begin. For this purpose, the landowners can exchange their parcel with land somewhere else and receive compensation, if required. This is still an ongoing process in Burgenland.

The existing trend of urban development in Neusiedl am See shows a shift towards two town centres. The enlargement of the historic centre continues to the south and the east, with increased concentration of building activities on the plots used for vegetable gardening and towards Calvary Hill. Already social housing and a home for the old can be found there. This has some considerable impacts on the appearance of the lakeside when regarded from a viewpoint, e.g. Tabor or Calvary Hill.

The second centre is evolving around of the train station. A series of new homes, single family and coupled houses have been built there recently.

Development trends also continue to exert pressure on the lake. Trends of urban development and the expansion of the tourist sector are not always complying with interests and commitments agreed on by the signatory parties of various international agreements dealing with nature conservation and the preservation of the cultural heritage of the region. To give an example, land has been reserved for new tourist facilities along the lakeshore. These activities comply with the land development strategy, yet future impacts on the reed belt are not clear, yet.

4.3.3.3 Energy supply

In compliance with the land development strategy, energy supply has been partially decoupled from fossil energy as wind and solar energy have been promoted successfully in the region. In addition, a central heating station using wood chips will supply public buildings and the swimming centre with heat in the near future.

4.3.4 Potentials for development that is sustainable

The Biosphere Reserve and the location of Neusiedl am See within the buffer zone of the World Heritage Site offer various opportunities for sustainable development.

4.3.4.1 Nature Conservation and urban development

Due to the federal structure of the Republic of Austria, each inter- and supranational treaty related to nature conservation has to be ratified by the National Assembly before the agreement is passed on to the Laender for implementation. Since acts and regulations on lower level must comply with rules and regulations of a higher administrative level, they frequently have to be adapted first to meet the targets agreed on by the signatory members. Sometimes, even a new act has to be drafted, e.g. the Act on the National Park Neusiedler See – Seewinkel, to meet the criteria set by the IUCN. This can delay the implementation of agreements up to 10 years!

Consequently, all acts and ordinances pertaining issues on local level have to comply with existing regulations and acts of a higher administrative level. However, this is only true for newly released acts implying a caveat for local legislation.

Since the 1970ies, international treaties in addition to existing regulations implemented by the Land Government have resulted in the overall protection of Lake Neusiedl.

Parts of the residential area of Neusiedl am See lie within the boundaries of the protected landscape described by the Act on Nature Conservation (NG 90). The aim is the protection of the overall appearance of the cultural landscape and of the settlement area complying with the idea of Biosphere Reserves and of World Heritage sites as the residential area is located within the buffer zone of the latter.

The eastern part of Neusiedl am See is part of the National Park Neusiedler See – Seewinkel and is not subject to urban development.

4.3.4.2 Traffic

The B 51 is part of a ring around the lake. It runs along the eastern and northern lakeshore and crosses the centre of Neusiedl am See from east to west ending in a contributory to the highway A4 at Wiener Straße.

During summer, motorised traffic can increase significantly due to tourism as 94% of tourists arrive by car (Management Plan 2004). Unsurprisingly, traffic in Neusiedl am See is considered a major problem, for several reasons, e.g. costs of road maintenance, pollution and noise (Strategiekonzept Neusiedl am See 2020).

To counter development trends and in compliance with the land development strategy, public transportation is being developed and strengthened in the region. Measures include a better coordination of train and bus schedules and the promotion of public transportation on local level. For Neusiedl am See this implied the introduction of a local bus line, Ne´Mo, supplemented by call-taxis in December 2006.

4.3.4.3 Biking

Climate conditions and the topography favour biking sports at Lake Neusiedl. Due to the development of public transportation and the proximity of the highway A4, Neusiedl am See is a very popular starting point and destination of biking tours around the lake.

Neusiedl am See lies at the junction of two biking routes, i.e. B10 and B 21. The former runs along from east to west, south of the residential area. One branch leads to the lake following Seestraße. A second route can be found in the centre of Neusiedl am See along the main road. This route however, is not separated from cars and is used less frequently.

The adaptation of tourist facilities to diverse demands for recreation and sports entailed the extension of the tourist season well into spring and autumn. Biking in particular has had positive impacts on tourism. The increasing demand for biking facilities during the early 1990ies led to a biking route around the lake, followed by a whole network of biking paths of

more than 5.000 km length connecting Bratislava and Vienna with Lake Neusiedl (Halbritter 1995).

4.3.4.4 The role of Biosphere Reserves

Biosphere reserves fulfil three inter-connected basic functions that mutually reinforce each other: conservation, development, and logistic support. Conservation function implies a contribution of the site to efforts of nature conservation, i.e. the conservation of landscapes, ecosystems, species, and genetic variation. Development describes the aim of Biosphere Reserves to facilitate and to support economic and human development, which is sustainable in a socio-cultural and ecological sense. In addition to nature conservation, the promotion of the sustainable use of natural resources secures an income for local inhabitants of the area. The logistic function is used to describe Biosphere Reserves' support of research, new land use practices, and the raising of public awareness. In short, this function describes the capability of a Biosphere Reserve to provide support for research, monitoring, education and information exchange related to local, national, and global issues of conservation and development.

To fulfil these functions, Biosphere Reserves are organized into three interrelated zones: the core area, the buffer zone and the transition area. The core area is the only part of a Biosphere Reserve requiring legal protection. Therefore, this area very often correlates with areas already protected by other programs, e.g. the National Park Neusiedler See - Seewinkel. The buffer zone is adjacent to one or more core areas and allows for sustainable and environmental friendly land use practices. This can consist of agriculture, forestry, tourism and recreation, research and monitoring…etc. By default, this area supports the promotion of environmentally friendly products and the involvement of local stakeholders in nature conservation. Settlement areas are not included in this zone!

The transition area also referred to as area of co-operation is used for living, economic activities and recreation. Here, differing interests of stakeholders may collide. Ideally, new ideas for sustainable uses and economic models can be developed and tested in this zone. Subsequently, these ideas can be exported to places and be applied there contributing to sustainable regional development.

Located in the transition area, Neusiedl am See has a high potential to become a role model for sustainable development in the region. Energy policy and the introduction of local public transportation are just two examples. The coordinated growth Neusiedl am See, the implementation of a comprehensive concept for the preservation of green areas including the

design of a green belt around the residential area, the promotion of organic farming …etc. are just a few examples for future projects. In the regional context, Neusiedl am See can play a major role within the World Heritage Site using local resources and knowledge. Examples of best practice can be implemented in other municipalities of the region as well.

4.4 Green Map Sites

The Green Map of Neusiedl am See accounts for all these issues described above, balancing the promotion of good examples and raising awareness where required.

Green Maps depict sites where nature and culture are interlinked. Applied to Neusiedl am See, a town bordering a National Park and within the transition area of a Biosphere Reserve, the map focuses on positive aspects of the residents' lives and on possible sites for development. The main purpose of the map is to raise public awareness and to strengthen local identity.

4.4.1 Economic Development

Sites of economic development promote sites where economic activities are interlinked with natural resources. These comprise the production and consumption of goods and the preservation of ecological functions at the same time.

4.4.1.1 Farmers Market

The farmers market on the Main Square is open every Friday before Palm Sunday until October offering a wide range of organic, regional products but also homemade cakes and honey produced in Neusiedl am See.

In 2006, Mr. Lunz, the local honey maker, was the only person selling products made in Neusiedl am See.

4.4.1.2 *Natur & Reform*

This light green store located at Hauptplatz 29, offers a variety of organic and wholesome products. There is also a variety of products available, which are devoid of additives, artificial colouring or aromas. Cosmetics free of mineral oil can be found here as well.

4.4.1.3 Rudolf Stuhl Textilreinigung

The cleaning shop, is a cleaning company specialized on textiles in the field of gastronomy and has been awarded the ISO 14 001 certificate "ISO 14001: 2004" by the acknowledged and authorized agency TÜV Süd. The criteria for this certificate follow clearly defined and globally recognized standards published by the International Organization for

Standardization (ISO). The certificate is valid until 2008 and the company needs no re-evaluation until that time. There are two cleaning shops located in Neusiedl am See, i.e. at Hauptplatz 37 and at Untere Hauptstraße 7c.

4.4.1.4 Bakery Naglreiter

Naglreiter is the first bread shop and restaurant in Burgenland that has been awarded the national eco-certificate, "*Umweltzeichen*", for environmentally sound facility management. Additionally, Naglreiter relies on ingredients grown in the region to a high degree, supporting thus regional economy and contributing further to the protection of the environment as negative impacts arising from transportation are minimised. The certificate is subject to annual re-evaluation by an independent expert or national agency. The restaurant and bakery can be found at Wiener Straße 66. A smaller bread shop and coffee house is located in the centre at Hauptplatz 5.

4.4.1.5 *Pöck GesmbH*

Located at the industrial cluster, Betriebsgebiet Prädium, Pöck GesmbH offers various services and actively contributes to the reduction of negative impacts on the environment. The services offered comprise sophisticated waste management, seminars on waste disposal and recycling, and environmental consulting, e.g. on energy-saving options in private houses.

4.4.1.6 Koryphäen

The socioeconomic initiative "Koryphäen", a long-term project aimed at the employment and education of women, was introduced in 1995. Working conditions within the initiative have been adapted to the personal situation and individual needs of the women employed. Tailoring services and the recycling of garments collected directly from the donors and resold in the second hand shop in the centre, Untere Hauptstraße 55, are essential sources of income. The initiative is also among the few organisations offering traditional indigo blueprint for textile products, once typical for the region.

4.4.2 Culture & Design

This category describes places where local identity and culture can be strengthened and where the natural environment has had considerable impacts on the evolvement of local traditions. The Green Map Neusiedl am See displays sites promoting culture and identity, historic features and the local town hall.

4.4.2.1 Stork's nest

The stork family on the roof of the pharmacy at the eastern end of the main square plays a major role in the town's local identity.

Storks symbolize fertility and luck in Northern Burgenland. The species is endangered by development, as it needs wetlands and dry pastures for hunting. These hunting grounds are being lost due to urban development, construction works, and changes in agriculture (Halbritter 1995). The population in Austria consist of less than 400 breeding pairs of which the biggest colony can be found in Lower Austria along the River March. The remaining colonies nest along wetlands in the east, predominantly in Burgenland (Naturschutzbund 2007).

4.4.2.2 Haus im Puls

The farmhouse of a Frankish wine producer built in the 16th century is located at Obere Hauptstraße 31 and was restored and extended during the 1990ies. Co-financed by the European Union and the Land Burgenland, it houses the cultural initiative IMPULSE Neusiedl am See, an organisation supporting local and international cultural events. On the backside, the organisation Weinkultur- und Vermarktungs GmbH promotes and sells regional products, in particular vine.

4.4.2.3 Gerbgruben

Located in the historic town centre, at Hauptplatz 50, the oldest part of the former tannery was built in 1709. Today, Gerbgruben houses several NGOs as well as UNESCO Burgenland. Mr. Titz, the owner, frequently organises cultural exchange programs supporting international artists and enriching the cultural life of Neusiedl am See.

4.4.2.4 Town archive (music school)

The historic society of Neusiedl am See is responsible for the town archive and is devoted to the exploration of local history in voluntary work. The society was founded in 1995 and counts almost 50 members. The research outcomes are grouped by topic and published annually. The town archive is located in the centre, opposite of the town hall, at Kirchengasse 3.

4.4.2.5 Cellar lane on the slopes of the Wagram

In the northeast of the historic centre of Neusiedl am See, traditional wine cellars form a line in the loess wall marking the boundaries of the Wagram. The layers of soil around these cellars buffer changes in the outside temperature naturally. This means that these cellars have a cooling effect during hot summers on the one hand, and resist temperatures below

zero during winter on the other. As temperature is regulated by soil, no additional energy input is needed.

4.4.2.6 Tabor Ruins

The ruins of tabor, a fortification with a lookout tower, originate from the medieval ages is among the major sights of Neusiedl am See. This historic site also serves as a good viewpoint.

4.4.2.7 Neusiedler Schanze

Maps originating from the 19th century show an entrenchment line between Petronell in the north and the Ruins of Tabor in Neusiedl am See. This line of fortification was created in the early 18th century and is a distinct landscape feature, especially in the area of Parndorf.

4.4.2.8 Calvary Hill (Kalvarienberg)

Kalvarienberg comprises a public park with a playground as well as a small monument ensemble. This historic site is listed by the Austrian Federal Office for the Care of Monuments (Bundesdenkmalamt).

4.4.2.9 Well

This historic drinking well stands in the historic town centre, right at the end of the Main Square. It was donated to the town of Neusiedl in 1892.

4.4.3 Renewable Energy

4.4.3.1 Repair-shops

The products and services of the shops added to the Green Map can vary widely. However, they all share one particular feature, offering repair services, extending thus the lifecycle of products offered and in use. The following shops have been added to the map:

- Computers and office equipment
    - Emconsulting Erno Mayer KEG, Obere Hauptstraße 24
    - Bürotechnik Elö Gmbh, Altenburger Straße 6
- Sports and sports equipment
    - Moser Sport, Obere Hauptstraße 30
    - Leiner Gertrude (bikes only), Kalvarienbergstraße 91a
    - Sailing centre Neusiedl am See - repair services and a second hand boats, Seegärten 117
- Furniture and interior decoration
    - Polstermöbel Johann Glanz, Obere Hauptstraße 40a

- Anton Kandelsdorfer, Untere Hauptstraße 13
- Werner Horvath, Josef-Reichl-Gasse 37

- Timepieces and jewellery
  - Kleindienst Nfg. Fischlmaier, Hauptplatz 5
  - Rudolf Brunäcker, Hauptplatz 19
  - Elfriede Fischlmaier, Hauptplatz 27
  - Hans-Joachim Pinter, Untere Hauptstraße 34
- Household aids
  - Friedrich Hess GmbH, Untere Hauptstraße102
- Textiles
  - Studio for Fashion and Design Judith Frank-Unger, Untere Hauptstraße108

4.4.4 Information

This category describes sites where information about the local environment and sustainable ways of living can be obtained.

4.4.4.1 Tourist information centre

The tourist information is located in the town hall and offers a broad range of information about the National Park Neusiedler See – Seewinkel and the Neusiedler Seecard.

4.4.4.2 Town hall

Political decisions with respect to urban planning and the management of natural resources are made in the town hall of Neusiedl am See, at Hauptplatz 1. Information on the local land use plan is available here as well. The building also hosts the local tourist information centre.

4.4.4.3 UNESCO Centre

UNESCO Burgenland hosted by Gerbgruben was implemented by Nick Titz in 1975. This organisation completes the UNESCO Centre Burgenland in Eisenstadt. Mr. Titz has been responsible for the evaluation of UNESCO sites in Central Europe with respect to the criteria and targets set for MAB Reserves. There is no such evaluation mechanism available for Austria, yet.

4.4.4.4 Complementary health resources

Several doctors in Neusiedl am See do not rely solely on modern Western medicine but also offer complementary approaches. The names and addresses of the ordination are publicly available.

- MedR Dr. Richard Cerny, Obere Hauptstraße 44-46 – General practitioner, acupuncture and acupressure,
- Dr. Almoghedwi Hilal, Obere Hauptstraße 24 – General practitioner, acupuncture and acupressure
- Dr. Eva von Papen, Seestraße 20 – General practitioner, homeopathy and acupuncture
- Dr. Burian Lang, Am Seefeld 7 – Physiotherapist, osteopathy
- Dr. Monika Merz-Hombauer, Hauptplatz 24 – Paediatrician, homeopathy and acupuncture
- Dr. Karl-Heinz Smetan, Bühlgrunde – Paediatrician, complementary medicine
- Kroiss Sabine, Franz-Liszt-Gasse 9 – Shiatsu practitioner
- Santosha Vastu & Yoga-Studio, Berggasse 26 – Ayu Veda and Yoga centre

4.4.5 Nature: Land and Water

This category summarizes the natural environment and specific habitats displayed by a Green Map.

4.4.5.1 Lakefront of Neusiedl am See

The lakefront is accessible throughout the year. During the summer months, there is an entrance fee. Once inside the gates, visitors can bathe in the sun, go for a swim in the lake, or go in for water sports.

4.4.5.2 Reed belt

The reed belt is situated within the boundaries of the National Park, the Ramsar wetland site and the UNESCO Biosphere Reserve. As a breeding ground for a variety of bird species, the reed belt is a valuable habitat and protected by various acts and treaties.. Therefore, access is limited and requires permission by the Land Government.

4.4.5.3 Loess wall

The wall of loess represents a typical land formation where the lake basin meets the Plateau of Parndorf. Many species can be watched at this site in the northeast of Neusiedl am See, including birds such as the sand martin and the bee eater, amphibians and various insects.

4.4.5.4 Natural monument bee eaters

In the north of Neusiedl am See, the Plateau of Parndorf ends abruptly at the Wagram resulting in a wall of loess clearly marking the boundary between the lake area and the Plateau of Parndorf. This geological feature is also a valuable habitat and breeding ground

for various birds and insects. In 1980, the site housing a colony of sand martins (Riparia riparia) was listed as natural monument. Currently, it represents the only natural monument of Neusiedl am See.

4.4.5.5 Winter activity

The ice cover in winter allows for ice-skating, ice sailing and many other winter sports for some fifty days during winter. Many people from the region and Vienna visit the lake on sunny days for winter activities. During this time of the year, the reed belt is accessible as well.

4.4.5.6 View from Calvary Hill

The view over the town of Neusiedl am See and the lake from the top of Calvary Hill is a very popular sight among visitors and residents alike.

4.4.5.7 Ruins of Tabor

On clear days, there is a spectacular view from the ruins of Tabor as far as the Leitha Mountains and the Alps in the distance.

4.4.5.8 Waterfront and Mole West

From the lakeside and the terrace of Mole West in particular, the sunset over the lake with the sun disappearing behind the Leitha Mountains in the distance, is a rather spectacular view.

4.4.6 Nature: Flora

This category comprises sites where the experience of nature depends significantly on the vegetation cover of a given area.

4.4.6.1 Public playgrounds

- Bühlgründe
- Hirschfeld Spitz
- Nyikospark
- Calvary Hill
- Sports centre - cluster of playing and sports facilities for children of all ages
- Waterfront
- Rosenweg

4.4.6.2 "Schwammerlwald"

"Schwammerlwald" (lit. mushroom forest) is the local name given to parts of the forest connecting the lake area with the Leitha Mountains. As indicated by the name, this is a popular site for collecting wild mushrooms.

4.4.6.3 Teichbach/Mittersätzbrunnen

The road following the rivulet offers various options for those seeking recreation and supports activities, such as biking, roller-skating, or walking. Numerous benches along the road also make this boulevard a senior friendly site.

4.4.7 Nature: Fauna

4.4.7.1 Guesthouse "Zur Alten Mauth"

The guesthouse at Eisenstädterstraße 205 offers a variety of gastronomic services and pork products made of mangalica (wool pig). This breed was once characteristic for the Pannonian basin and can be kept outdoors throughout the years. Due to intensified agriculture starting in the early 20th century, it was increasingly replaced, by new, faster growing breeds suitable for intensive farming, resulting in a massive decline of populations. By the early 1990ies, the wool pig was seriously endangered. Yet, following political intervention and changes in public attitude, many farmers started breeding mangalica again, stabilising their numbers in Central Europe by the end of the century.

4.4.8 Mobility

Mobility describes every aspect of transport in Neusiedl am See that is considered sustainable.

4.4.8.1 Bike rental

Bike rentals in Neusiedl am See often offer repair services as well. Bikes cost 10 to 15 € per day. The following bike rentals can be found in Neusiedl am See:

- Bucsis, train station Neusiedl am See
- Bucsis, Schilfweg 3
- Hotel Wende, Seestraße 40 – 42
- Maurer, Eisenstädter Straße 76

4.4.8.2 Biking routes

Neusiedl am See is connected to two major biking routes.

- B 10 connecting the river Danube with Lake Neusiedl

- B 20 international biking route around Lake Neusiedl

4.4.8.3 Park' n' ride for bikes P

There is a parking facility for bikes at the train station Neusiedl am See, allowing for the combination of various means of transport to get around.

4.4.8.4 Boat launch sites and boat rentals

It is possible to rent e-boats, sailing boats, or paddleboats at these sites to explore the lake according to individual interest. However, it is strictly forbidden to enter the reed belt during the breeding season, as this could have devastating consequences for the animals living there.

- Boat rental Baumgartner, Berggasse 21
- Sailing school Hofbauer & Partner GmbH, Am Segelschulhafen 1
- Boat rental Haider, Seebad (Lakeside)

4.4.8.5 Train station Neusiedl am See

The train station of Neusiedl am See is a regional transport hub. Trains heading in various directions meet and stop here, as well as several regional bus lines. Additionally, a bike rental and a parking facility for bikes allows for the combination of various means of transport.

4.4.8.6 *Train stop Bad Neusiedl am See*

This train stop originates from the 19th century, when Neusiedl am See was connected to the railway system of the Austrian and Hungarian Monarchy. Visitors seeking recreation were brought to the lakeside from here.

4.4.8.7 Local Bus line Ne'mo

Neusiedl am See Mobil "Ne´mo" was introduced in December 2006 in collaboration of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW), the Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Economic Affairs and Labour (BMWA) in a joint project with the Land Burgenland supported by the European Union. The city bus serves the centre of Neusiedl am See every hour on weekdays, from 7 AM to 6.30 PM. The bus is complemented by local call-taxis operating on weekdays from 7:30 PM to 1:30 AM and on weekends and holidays from 08:30 AM to 1:00 AM. Bus-stop poles have been designed especially to indicate stops of each of the systems.

4.4.8.8 Bus stop for regional Bus lines

Neusiedl am See is served by the regional bus lines 572, 580, 679, 871, and 875. Busses from Neusiedl am see leave for the city of Vienna, Eisenstadt and villages of the region as well as to Vienna Airport in Schwechat.

5 Conclusions and Outlook

A Green Map is a locally charted map promoting sustainable development and is based on a set of icons displaying sites where nature is interlinked with local economy and culture. Green maps display local resources and their potential use to stakeholders enhancing chances for common ground in negotiation processes. The creation of a Green Map accounting for local conditions within a municipality can contribute significantly to an enhanced level of awareness.

5.1 Who is the map for?

The Green Map designed for this thesis represents the view the author has gained on the town of Neusiedl am See to a high degree. The map has been designed to raise awareness with respect to the local environment and culture among local residents and visitors alike.

5.1.1 Local residents

For local residents, the map displays many special features of Neusiedl am See, which give the town a unique identity and has contributed to local culture. Additionally, sites and activities related to local economy as well as healthcare have been added to the map. Information for these sites was retrieved from public sources, available on the internet.

As the map represents the view of the town of Neusiedl am See of an outsider, most probably, residents will feel the need to discuss and comment on these results. Subsequently, they can express their own ideas on what is to be displayed by the Green Map and what is to be left out, starting a new design process.

5.1.2 Visitors

For those visiting Neusiedl am See, the map gives valuable information with respect to transport and mobility. Recreation, culture, and the experience of nature are indicated by the Green Map of Neusiedl am See as well, providing a valuable guide for those interested in local culture and recreation in Neusiedl am See.

5.2 Lessons Learnt

5.2.1 Environmental awareness

Settlements need to be managed accounting for demographic trends, on the one hand, and the ecological and economic carrying capacities of a given area on the other (LEP 1994). The

Land Development Strategy calls for the improved coordination of sites designed for housing, economic activities, public services and recreation to keep town centres "alive".

Residents of Neusiedl am See value the lake and an intact environment. They are also aware of environmental issues, as it has been shown by various standardised interviews during IPSOIL II. Pollution and noise caused by motorised traffic is perceived by many to be a major problem. However, the overwhelming majority were not familiar with the local land use plan and their roles in the design process.

It has also been noticed that the promotion of sustainable development is more likely to be successful, if it is linked to economic incentives. Solar cells on private houses are a very common sight in Neusiedl am See. Many residents confirmed, that the high popularity of photovoltaic energy supply is the combined result of campaigns informing on solar energy coupled with financial incentives.

5.2.2 Stakeholders' engagement

When designing a Green Map, public participation is a basic requirement for the mapping process (GMS 2005). The Green Map of Neusiedl am See was designed in cooperation with local stakeholders during the identification of criteria and the selection of sites. Decisions were based on suggestions and recommendations made by local stakeholders, yet all decision were arbitrary, made by the author. Representatives of the town hall have shown interest in projects related to the development of Neusiedl am See. Also material and data were kindly provided. However, no further commitments on future cooperation were made so far.

The author is not a resident of Neusiedl am See. Despite the considerable time spent there during the three years IPSOIL-cycle and the research carried out during the compilation of the Green Map, it is likely that major interest groups were not included in the mapmaking process. Additionally, there are many political undercurrents and groups of stakeholders pursuing their goals and ambitions in Neusiedl am See. Some entanglements of stakeholders could be identified, but it is assumed that many more skipped attention.

5.3 Acceptance

As it has been pointed out, residents may not agree with the contents of the map. Therefore, the handing over of the mapmaking process to residents of Neusiedl am See interested in

local development is prerequisite for the continuation of the process. The proper distribution of project information with respect to the involvement of local residents is a key factor.

5.4 Follow-up work (Outlook)

A German edition of the Green Map will be released by the end of 2007. Additionally, there will be an official release of the two versions online, on the website of the Green Map System, accessible to everyone.

Additionally, the result will be presented to the town hall and to the stakeholders participating in the preliminary process.

Finally, the project will be handed over to stakeholders in Neusiedl am See interested in the continuation of the Green Map process. The online publication of the results of this thesis and a printed German edition in autumn 2007 is in progress.

5.5 Recommendations

5.5.1 Institutional support

Parties signing the Aarlborg Charter and the Aarlborg Declaration commit themselves to enter Local Agenda 21 processes and to develop long-term action plans towards sustainability. This framework could provide an institutional and financial backing for the introduction and implementation of a local mapping process. To receive the necessary support by citizens, planners need a framework that allows for a high degree of local autonomy.

5.5.2 Public participation

There are different views on the concept of sustainability and sustainable development. Some hold that the concept has been stressed by to many interest groups. Optimists on the other hand reason that because of its broad acceptance the concept underlies countless political and economic decision finding processes. This view is also supported by the strategies for sustainable planning elaborated in chapter two of this thesis. A high level of participation is required to account for the needs of as many interest groups as possible. Involving groups of stakeholders, allow for decision-making processes under the paradigm of the “better argument” promoted by Habermas.

5.5.3 Embedment in the regional context - research and education

There are no educational activities identified within the framework for the Biosphere Reserve Neusiedler See. The administration of the National Park however, offers guided tours, and other nature related events (Biosphere Reserve Neusiedler See 2004). These events are linked to selected species or habitats. The activities include walks focussing on bird watching to guided searches for medical herbs.

Following the presentation of the first edition of the Green Map, it is essential to start public discussions and to engage more participants. This goes along with the extension of groups of stakeholders. Subsequently, stakeholders and decision makers participate in discussions on local development to maintain the high level of supply, the quality of the natural landscape and of living conditions in Neusiedl am See. Future projects could involve schools for a youth map and an energy map for Neusiedl am see.

In compliance with the town's central role in the region, Green Mapmaking could and should be exported to municipalities within the World Heritage Region irrespective of political boundaries.

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APPENDIX I – LETTER TO STAKEHOLDERS

Experten – Rating für Grüne Karte Neusiedl am See

Neusiedl am See befindet sich in einem durch internationale Abkommen mehrfach geschützten Gebiet, das in der Landesgesetzgebung vermehrt bedacht wird. Leider rücken diese bei der örtlichen Entwicklung gelegentlich in den Hintergrund.

Eine Grüne Karte stellt die Schnittstelle zwischen der anthropogenen Beanspruchung des Raumes und der Natur dar. Diese Art der Kartierung entstand in den neunziger Jahren in New York und erfreut sich im Rahmen des Green Map Systems (GMS) in zahlreichen Staaten großer Beliebtheit.

Um das Bewusstsein für Werte einer intakten Umwelt /Natur auf Gemeindeebene zu stärken, möchte ich, wie bereits erwähnt eine Grüne Karte von Neusiedl am See anfertigen. Sie wäre die erste ihrer Art in Österreich.

Beiliegend finden Sie eine Übersicht der verwendeten Symbole, sortiert nach 11 Kategorien. Aus Gründen der Übersichtlichkeit sollten auf einer Karte nicht alle dieser Kategorien vertreten sein (einige von ihnen treffen oft auch nur bedingt zu).

Bitte verteilen Sie insgesamt 9 Punkte auf bis zu fünf Kategorien, von denen Sie glauben, dass diese am ehesten in Neusiedl am See ihre Anwendung finden (zum Beispiel Natur: Wasser und Boden 3 Punkte, Wirtschaftliche Entwicklung 2…etc.).

Nähere Informationen zu Green Map finden Sie auf der Homepage von GMS unter: http://greenmap.org.

Vielen Dank für Ihre Hilfe.

Dóra Kertész

Für Anregungen oder bei Fragen stehe ich gerne zur Verfügung. Schreiben Sie mir bitte ein E-Mail unter: dora.kertesz@boku.ac.at
Bis 1. April finden Sie mich auch im Seminarraum des Feuerwehrhauses im 2. Stock.

APPENDIX II - LIST OF ICON DEFINITIONS

Economic Development			
Icon name	Description	Key	Icon
Farmers market	Farmers markets sell regional produce, grown organically. Additional products, such as flowers, hand-crafted items, baked goods, wine, honey…etc. can also be offered for sale.	**a**	
Eco-agricultural site	An eco-agricultural site is defined to be an organic farm within the area of research.	**¤**	
Natural food	Sites indicated by this icon offer a wide range of organic and "healthy" products free of allergens supporting alternative diets. People suffering from intolerances and allergies can buy food here facing no restrictions in their quality of life.	**A**	
Strictly green store	A strictly green store only offers ecological and conserving products.	**G**	
Green business/ Green service	A green business offers services that are green, i.e. information about recycling, waste management, remediation of polluted sites…etc.	**k**	
Eco/conserving products	These stores offer a few ecological and conserving (non-edible) products among many that are conventional. Additionally, the business or provider of services has obtained either the national ("Umweltzeichen") or the European eco-label (EMAS). These companies or services are re-evaluated periodically according to transparent criteria by independent inspectors.	**g**	
Social shop	This "light green" category includes green and socially responsive products and policies, but not all products "go all the way".	**}**	

Chart I Icons indicating local economy

Culture & Design			
Icon name	Description	Key	Icon
Cultural site	Cultural sites contribute to the town's environment and sense of place. Non-institutional resources, monuments and places, even temporary events are included.	**o**	
Art spot	Art spots comprise ecologically oriented artworks, i.e. earthworks, public or performance art, or other including resources for making eco art and information on events or schools related to environmental art.	**e**	
Historical feature	This icon indicates an edifice, institution, monument or unmarked historical area with a special meaning to the town's environment and sense of place.	**c**	
Eco design/ planning feature	This icon can indicate exciting design features including public transport stations, or an area planned to be ecologically sound.	**D**	

Significant building	Significant buildings are of great importance to the community and represent sites promoting a sense of place. Schools or buildings with historic, cultural or architectural value can also be included.	**B**	
Child friendly eco site	This icon indicates an environmentally engaging area suitable for children.	*f*	
Senior friendly site	This icon indicates an area where people with walking difficulties can enjoy nature.	£	

Chart II Icons used to indicate elements of local culture and design

Renewable energy			
Icon name	Description	Key	Icon
Reuse site	Second-hand shops, flea markets, and stores offering reparation are indicated by this icon.	/	
Remediated site	A site is considered remediated if it has been cleaned up and prepared sufficiently for natural systems to take over or to be re-developed by the community. This icon can also indicate sites where the clean up process is still in progress.	*	
Redevelopment opportunity site	Redevelopment opportunity sites comprise areas that need to be cleaned up and can be remediated for a new and ecologically sound use.	¶	

Chart III Icons used to indicate the reuse of natural resources

Information			
Icon name	Description	Key	Icon
Eco-information centre	Eco-information centres provide information on the environment and sustainable and conserving services or resources.	**F**	
Info resources online	Web addresses or links to local information on the Internet are available here.	**H**	
Community centre	At the centre of a community clubs, meetings and social gatherings are held, involving the whole community. This can be either a formalised community centre, or one established though common use.	ª	
Significant organisation	A significant organisation can be a socially responsible non-profit organisation, club or association, contributing to environmental awareness and nature conservation.	\	
Alternative health resources	Alternative medicine sources can vary, including herbal, homoeopathic, eastern, spas and yoga centres, among others.	**p**	

Chart IV Icons used to indicate information sources

Nature: Land and Water			
Icon name	Description	Key	Icon
River and water front park	Waterfront parks allow inhabitants to walk along and play by the water. Swimming and wading is possible.	**x**	
Wetlands	Wetlands are protected by the Ramsar Convention and represent important habitats and useful for water cleaning. Access and use is restricted.	**t**	
Landform/ Geological feature	This icon signals apparent landforms, which can be unusual or typical for the map area. These can be exposed rock layers, glacial tills or just have a unique appearance.	**U**	
Open Space	Open, natural areas within an urban area or in the developed countryside are indicated by this icon.	**K**	
Winter Activity	In these places, it is possible to enjoy winter, building snowmen, skating, cross-country skiing, sledding etc., without damaging the environment.	**¡**	
Great views/ Scenic vistas	Great views indicate favourite places where the beauty of the town's environment becomes apparent.	**¥**	
Sunset/ Sunrise site	In places indicated by this icon, watching sunsets or sunrises can be particularly beautiful.	**Y**	

Chart V Icons used to indicate elements of nature – land and water

Nature: Flora			
Icon name	Description	Key	Icon
Public Forests	Public forests are state owned and accessible to everyone.	**W**	
Recreation area (Parks)	Recreation areas offer the possibility to relax and play. This icon can indicate sports-fields, running paths and playgrounds. There is no differentiation between publicly owned areas free of charge and private ones with entry fees.	**w**	
Special tree	Trees of historic importance or those especially beautiful, large, old or rare, are identified by this icon. They can be old growth, virgin trees (never cut by humans), ancient, sacred or medicinal trees or native plants.	**r**	
Spring blossoms	In these areas, spring blossoms are especially beautiful.	**..**	
Autumn leaves	Sites identified by this icon are especially beautiful during autumn.	**‹**	
Shaded boulevard	Shaded boulevards are pleasant routes for walking and biking on hot days.	**Î**	
Wildlife corridor/ green ways	This icon generally indicates places where interconnections between the natural and built environments are evident. Greenways often follow riverbeds, ravines or steep hills, and are	**>**	

	left in a close to natural state. The icon is also applied to wildlife corridors providing shelter wild animals.		
Gleaning/ Fishing area	In places identified by this icon it is possible to collect wild food, including mushrooms and berries. It can also indicate farms supporting gleaning and fishing piers or ponds.	**S**	

Chart VI Icons used to indicate elements of the local flora

Nature: Fauna			
Icon name	Description	Key	Icon
Bird and wildlife watching	It is possible to watch wild animals here. Sites indicated by this icon can comprise sites recognised officially as well as sites known only to local residents. These sites may only be entered following 'rules' for viewing.	**R**	
Significant habitat	This icon identifies notable wildlife habitats or natural areas, which may be rare or especially beautiful and rich. The sensitivity of these areas is a key factor.	†	
Coastal habitat	Coastal habitats are places along the water's edge where wildlife congregates. This can be any kind of wildlife in or above the water, on the shore or on adjacent land.	**T**	
Amphibian habitat	Amphibian habitats are viewing sites for frogs, newts and other amphibious creatures. These are highly vulnerable and good indicators with respect to environmental conditions in their habitats.	ß	
Insect watching site	These sites are suitable and representative areas for insects and other arthropods.	¬	
Farm animals	This icon identifies places where farm animals that are of special value, are being kept. This includes native or endangered breeds historically related to the cultural landscape of the countryside outside the settlement area.	**Q**	
Dog run	These are special areas designated for dogs, where they may run around without leashes and frolic.	œ	
Fly-over zone	This icon indicates good places to watch flocks of birds overhead. It can also be used to indicate the prevailing direction of birds' seasonal migrations.	®	

Chart VII Icons used for indicating elements of the local fauna

Mobility			
Icon name	Description	Key	Icon
Bicycle site	Bicycle sites comprise places to buy, borrow or rent bicycles, work bikes and other kinds of human-powered vehicles as well as repair services for bikes.	–	
On road bike paths	These biking paths are usually painted but on the same street level as car traffic.	**L**	
Separate bike paths	These bike paths are separated from cars by curbs or barricades.	**l**	
Secure bike parking	This icon indicates sites, where bike parking is possible or recommended with adequate lighting and a bike rack.	**-**	
Public square	A public square is a public space, frequently a traditional urban gathering place of a town hosting several events.	**“**	
Boat launch site	These are sites for human powered boats, like rowboats or kayaks as well as for sailboats.	**X**	
Major public transport stop	Major public transport stops are multi-modal transit hubs served by more than one kind of public transport system and have a regional significance. Frequently, there are other services available here as well.	**M**	
Local transport stop	These stops are smaller and play a minor role in the regional context, e.g. local bus stops.	**µ**	
Park ‘n’ ride facility	Park and ride facilities offer the opportunity to combine different modes of transportation according to demand and feasibility. These sites comprise parking lots for cars or bikes with a public transport connection.	**+**	P

Chart VII Icons used to indicate aspects of mobility