

# Development Concept for the Territory of the Baltic Green Belt - A Synthesis Report of the INTERREG IVB Project Baltic Green Belt



**Editors:**  
**H. Sterr, S. Maack & M. Schultz**



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## **Development Concept for the Territory of the Baltic Green Belt**

**A Synthesis Report of the  
INTERREG IVB Project Baltic Green Belt**

**Editors:**

**H. Sterr, S. Maack & M. Schultz**

**Department of Geography, Christian-Albrechts-Universität zu Kiel  
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## Imprint

**Cover pictures:** Part of the Baltic Green Belt community near old watchtower of Saka Manor, Estonia (Photo: Henri Järv)

**Insets (top-down):** The Sea holly is a protected dune plant on the terrestrial part of the Baltic Green Belt (Photo: Jan Barkowski)

Learning with and from each other at the Baltic Green Belt (Photo: Stefanie Maack)

Beds of blue mussel are an important component of the marine part of the Baltic Green Belt (Photo: Wolf Wichmann)

The Baltic Green Belt at the Latvian Coast (Photo: Stefanie Maack)

A Baltic Green Belt workcamp (Photo: Jurate Morkvenaite-Pauluskiene)



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## Preface & acknowledgements

The Baltic Sea in the Northeast of Europe is a semi-enclosed body of water with unique marine, littoral and terrestrial ecosystems. Unlike other coastal regions in Europe, such as the North Sea and the Mediterranean, the coasts of the Baltic Sea are less strongly modified by man and its multiple uses of the coastal zone. This is partly due to the fact that the Baltic Sea hinterland is less densely populated than other European regions. Another kind of “coastal conservation” came by a “whim of history” to the Southern and Eastern parts of the Baltic. Political ideologies and decisions were responsible that the Baltic coast from Lübeck in Germany to St. Petersburg in Russia served as “iron curtain” border between the eastern European countries under Soviet influence and the remainder of Europe for 45 years. Irrespective of the fact that this border situation was unfortunate and sad from a human perspective, the coastal environment and landscape received noticeable benefits from this situation. Sealing off most of the coastal strip from intensive residential, industrial and recreational uses gave room to nature and wildlife. Thus, valuable coastal ecosystems and habitats could develop here over decades. After the regime changes in the early 1990s the line of the Iron Curtain was transformed into a Green Belt, a nature conservation zone, through Europe from the Barents to the Black Sea. Until recently this European Green Belt had a significant gap – the stretch along the Baltic Coast. Thus, it seemed obvious that this gap ought to be closed and a Baltic Green Belt needed to be established and linked to the neighbouring Belts so as to create a Pan-European Green Belt system.

The idea for a Baltic Green Belt project was proposed in 2008 and was welcomed by the EU INTERREG community for the Baltic Sea Region. As more than 15 years had passed after the political turnover, the changes along this coastal zone were in full progress and the human pressures on the coastal landscape and seascape were building up. At an increasing speed tourism and recreational activities are conquering the coast with its wonderful natural features such as pristine forest, impressive dune systems, soft and hard rock cliffs and many others. Moreover, agriculture, urbanization, harbour and marina developments are spreading out towards and along the waterfront. Therefore, it seemed wise to initiate a dialogue and concerted actions among and between the key stakeholders in all iron curtain countries, i.e. Germany, Poland, Lithuania, Latvia and Estonia. The stakeholders defined the following goals as primary objectives of the Baltic Green Belt project:

- development of an ecological network under the umbrella of the European Green Belt following the Green Belt vision
- collaboration of environmental NGOs, universities and authorities for a sustainable development of the coast
- protection of the environment and natural resources; improvement of the ecological status of the marine and terrestrial Baltic Sea area (eutrophication, waste water, agriculture, tourism)
- supporting the implementation of the HELCOM Baltic Sea action plan for the protection of the Baltic
- evaluation of the implementation of international agreements for coastal nature protection along the Baltic Green Belt
- identification of barriers and success factors/indicators of sustainable coastal development
- contribution to the EU Strategy for the Baltic Sea by preserving natural zones and biodiversity.

The stakeholder community of the project is comprised of NGOs, scientific institutions, public authorities and economic stakeholders and thus excellently mirrors the Green Belt tradition of successfully integrating a wide set of actors and supporters. Although, for political reasons, Russia could not serve as an official partner in projects funded by EU INTERREG at the starting point of the project, joint efforts of the partner community succeeded in incorporating Russian NGOs and institutions as associated partners who actively participated in the project work.

For the purpose of project guidance a Steering Committee was established in order to provide both scientific and practical advice for the project work.

At this point, in April 2012, after numerous meetings, conferences and workshops the Baltic Green Belt project has finished its designated work. The results of this work are summarized in this volume. Across many borders, similar problems have been found and problem solutions have been discussed and often identified. As a whole our work has demonstrated (once again) that sustainable coastal development is to be reached only by transnational and concerted multi-stakeholder efforts. Everyone involved in the project has also realized that there is no alternative to sustainable development for this coast, if remaining treasures of nature ought to be preserved. It's up to the individual reader now to decide which and how many of the results and insights presented here are relevant to him or her.

For the lead partner of the project it is clear that the benefits of the project cooperation are enormous and go far beyond the results published here. Personal friendships, mutual visits, intensive communication pathways and collegial partnerships were established along the progress of the BGB project. Many of these will continue a long time beyond the project phase. Therefore, we want to thank the EU INTERREG BSR Programme for financing the project work as well as the State government of Schleswig-Holstein for additional support to keep the Russian partners involved. Most of all, however, we express our gratitude to all partners and persons who have been engaged in the Baltic Green Belt idea and project in one way or another. It has been a great pleasure to work in this team!

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## **The Baltic Green Belt Project – initial situation, application and set-up**

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### **Abstract**

This article serves as an introduction to the synthesis report of the Baltic Green Belt project presented in this volume. The article explains the initial situation, namely the choice of the project area and the situation in the project area. It gives a brief introduction to the political background in chapter 2. Chapter 3 outlines the history of the project - mainly technical aspects – as project development in itself can be improved through exchange of experience. The partner consortium is presented in chapter 4, and the goals and approach are listed in chapter 5. Chapter 6 gives an introduction to each of the project themes with references to the respective articles in this volume.

### **1 Project area**

The Baltic Green Belt stretches out for about 1,700 kilometers along the southern and eastern Baltic Sea coast between Lübeck, Germany, in the south and the Finnish-Russian border in the north (Figure 1). It runs along western/ northern boundaries of Russia (Leningrad Region and Kaliningrad region), Estonia, Latvia, Lithuania, Poland, and (eastern) Germany – the course of the former Iron Curtain. This project area is defined by the former existence of a strict border regime between the formerly communist countries of Eastern Europe (so-called Eastern bloc) and the democratic countries during the times of the Cold War – from about 1945 to 1991. Unlike the rest of the European Green Belt, which mainly covers terrestrial habitats, this Baltic Green Belt section consists of coastal land and sea areas.

During the Cold War, large parts of the Baltic Green Belt coastal areas including several islands were fully or partly closed to the public (Sepp 2011). Access was only granted by special permission, coastal fisheries were strictly limited, schools, hospitals and other social infrastructure were closed down. These social incentives urged many people to move further inland. Also, some cases of active deportation or social clean-up are documented, e.g. at the coast of the German Democratic Republic.

Today, not many people are aware that the coasts at the western borders of the Socialist countries were ruled by similar restrictions as e.g. the inner German border. Due to these restrictions, coastal build-up is up to now much less pronounced than at the western European coast (EEA 2010a), and the coastlines are therefore much more pristine habitats. These enhanced environmental conditions due to the former border situation are the common feature of all Green Belt regions. Since 1989, many protected areas have been established already. Currently, there are more than 500 protected areas within 25 kilometers of the line of mean water level, which can be used as a technical definition of the former Iron Curtain (Maack et al. 2011). Based on data for the protection status of the marine (HELCOM 2010) and the terrestrial (EEA 2010b) side of the Baltic Green Belt, we can estimate that in each country along the Baltic Green Belt about 30-40 % of the length will be formally protected once the NATURA 2000 designation process has been fully completed (Maack et al. 2011). However, financial resources for further conservation (management planning and implementation) are limited. In this situation we cannot expect more large-scale designation of protected areas in the near future.

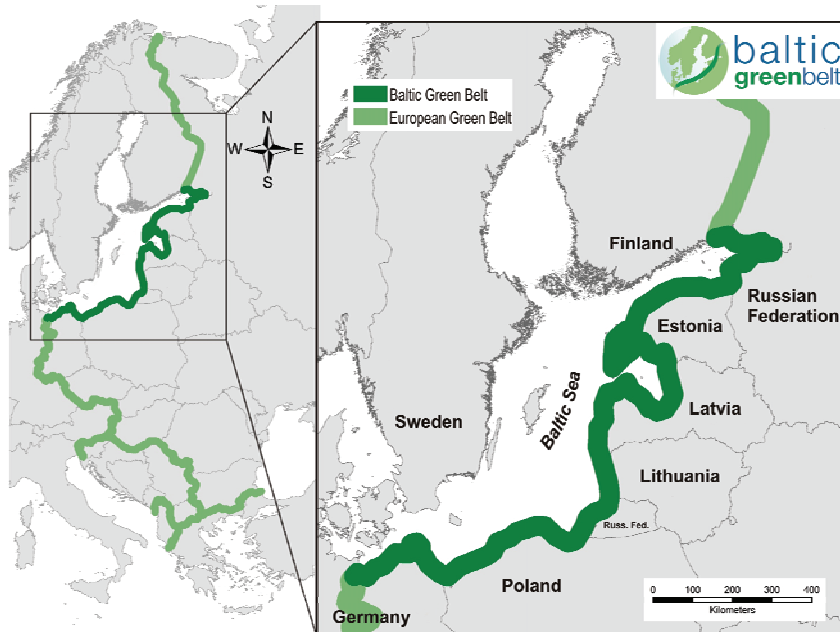


Figure 1: Map of the Baltic Green Belt area within the European Green Belt.

The coasts having been outer borders of the so-called Eastern Block for more than 40 years, were however, used for military purposes including border guarding. Numerous relicts of military activities can be found at the coast, especially along the eastern coasts of the Baltic Sea. Economically, the coastline of the Baltic Sea Region is more and more turning into an important tourism, recreational and residential area. This contrasts with long stretches of the overall European Green Belt which are still remote and partly economically uninteresting (Sepp 2011). A development in the sense of the European Green Belt aims at providing a living for the residents of the Green Belt territory while minimising negative impacts of human activities on the environment.

## 2 Political background in the Baltic Sea Region

There are a number of political documents related to how and to which extent sustainable development practice shall be implemented in the project area of the Baltic Green Belt. These are on the one hand EU policy documents (e.g. Habitat Directive, Water Framework Directive, Integrated Pollution Control and Prevention Directive), on the other hand policy documents specific to the Baltic Sea Region (BSR).

The BSR, in fact, has a long tradition of intergovernmental cooperation reaching back to 1972, when the riparian states agreed on a convention for the protection of the Baltic Sea environment and established the Helsinki Commission (HELCOM) for its implementation. HELCOM is nowadays a cooperation of the environmental ministers of the nine Baltic Sea riparian states and the EU. Since 1992, there is also a cooperation body of the ministers of foreign affairs, the Council of the Baltic Sea States (CBSS). In addition to the riparian states, CBSS involves Norway and Iceland and deals with five priority areas: environment, economic development, energy, education and culture, as well as civil security.

In June 2009, the European Commission adopted a new type of political document to foster the joint and integrated development of macro regions BSR, the EU Strategy for the Baltic Sea (COM(2009)



248, EUSBSR). The EU Commission has recognized that an EU27 is too big in some cases for a “one size fits all” solution. According to CBSS, the Strategy for the BSR is an attempt to “re-regionalise” the EU. The BSR Strategy builds on four objectives, which are specified into 15 actions described in an action plan (SEC(2009) 712/2):

1. to improve the environmental state of the Baltic Sea Region and especially of the Sea;
2. to make the Baltic Sea Region a more prosperous place by supporting balanced economic development across the Region;
3. to make the Baltic Sea Region a more accessible and attractive place for both its inhabitants, for competent labour force and for tourists;
4. to make the Baltic Sea Region a safer and more secure place.

However, the EU has no mandate for operating at regional level, and hence no laws can be produced. This strategy is a statement of political will and intend, and as such is not to be underestimated although it will not be legally binding. The focus is particularly on the implementation and effective enforcement of the existing common EU law, the programming of EU funds, and the EU Integrated Maritime Policy and Action Plan. The intention is to bring already existing instruments for development, such as the INTERREG programmes and the territorial fund, together in a more coherent way. This means that all future projects in the BSR will have to show a clear contribution to the strategy. The Baltic Green Belt project contributed primarily to the following actions:

- Action 1: To reduce nutrient inputs to the sea to acceptable levels
- Action 2: To preserve natural zones and biodiversity, including fisheries
- Action 12: To maintain and reinforce attractiveness of the Baltic Sea Region in particular through education and youth, tourism, culture and health

### **3 Project application**

Activities within the European Green Belt initiative, up to now completely depend on allocating funding from governmental or private donors – mainly in the form of projects. Developing cooperation projects with different partners and writing project proposals takes some experience and substantial manpower. For this reason, we summarise the application procedure of this project briefly and point out to some noteworthy experience.

The idea to set up a transnational Green Belt project for the Baltic Sea region arose in the fall of 2006 at the first regional Fennoscandian Green Belt Meeting in Laaheema National Park, Estonia, organised by the Estonian University of Life Sciences. With respect to manpower for the project preparation phase, the starting point was the regional Baltic Sea working group of Friends of the Earth Germany (BUND AG Ostsee). Driven by two members of the working group, the first step was to identify a suitable funding programme for setting up a Green Belt environmental network for the Baltic. With transboundary cooperation, regional development and sustainability being key issues of the EuGB, the Baltic Sea Region Programme (BSRP, [www.eu.baltic.net](http://www.eu.baltic.net), formerly INTERREG IVB) funded from the European Regional Development Fund seemed suitable for a project covering partners from six countries. The programme started in 2008. However, application criteria were tough and a reliable group of partners with convincing ideas needed to be gathered to meet these criteria.

The first major step was a sailing tour along the German coast carried out by the two regional Baltic branches of BUND (Schleswig-Holstein and Mecklenburg-Vorpommern) in summer 2007 and sponsored by the German environmental lottery BinGO! The tour consisted of a number of stops in highly visited tourist areas at the German coast, accompanied by press conferences, public discussions, meetings with politicians and information events for the general public. This tour gained substantial attention among the German media and was essential to establishing contacts with and gain

support from decision makers in Germany. It furthermore confirmed that the Green Belt approach has a most promising potential.

The tour was followed by numerous working trips to meet and involve partners from the neighbouring Baltic Sea countries from fall 2007 to spring 2008. For the partner search, two existing networks were used as the main basis: the environmental NGO association network Coalition Clean Baltic (CCB, [www.ccb.se](http://www.ccb.se)) and, of course, the network of the EuGB, namely regional coordinators and focal points. Additionally, the national and international contacts of partners who already joined were used. While some of the organisations contacted joined as fully financed partners, others were involved in the project as associated partners who documented their interest in the project in a written letter of intent.

Another key question concerned the lead partner for the project, as the BUND AG Ostsee is not a self-standing legal body allowed to take this role itself. Once the BSRP programme manual and the first project call were launched within the BSRP in early 2008, it was clear, that even small NGOs such as the regional branches of BUND/ Friends of the Earth were not eligible for coordinating a project. Therefore, the Coastal Geography Branch of Kiel University was asked as a potential lead partner with both experience in EU funded projects as well as strong dedication to the Baltic Sea coastal environment. Together with the Institute for Tourism Research in Northern Europe (NIT) and the project initiators, the regional BUND branches of Schleswig-Holstein and Mecklenburg-Western Pomerania, the project application team was well equipped with competence in nature conservation practice, science and project management. Financially the project application was again supported by the German environmental lottery BinGO!

At that point, the application team had already found a number of suitable organisations, who were ready to contribute meaningful activities to the overall project setup. These activities needed to be combined and tuned into a useful project plan. At the same time, the rules for the funding programme were new and several partners did not have any experience with EU projects at all. Therefore, the next challenge was to explain the complex BSR programme regulations to all partners and make sure that all partners could comply with these regulations.

During this period, it was crucial to get direct personal consultations from the responsible institutions. The BSRP Joint Technical Secretariat in Rostock provided not only comprehensive documents but also valuable feedback and advice to the application team. Furthermore, the German Federal district Schleswig-Holstein supported the project application: The Ministry of Justice, Employment and European Affairs offered consultation services as a contact point for Interreg projects including the BSRP. Such contact points exist for all member states and contacting them is absolutely advisable.

The next challenge was to come up with a manageable budget. As the majority of partners are small or medium sized NGOs, the main barrier was to come up with matching funds which are required to receive co-funding at all. It was only due to a new regulation that many partners were able to participate at all: Since the start of the EU programming period 2008-2013, voluntary work is eligible as matching fund contribution. Finally, after about 9 months of intensive preparatory work, a selection of 15 partners, had managed to raise the necessary national co-financing and signed their partner declaration in time. Supporting letters of seven associated partners made the proposal even more convincing.

The project was granted by the BSRP monitoring committee in November 2008, and started in January 2009 with a project duration of 36 months and a budget of 2.1 Mio €. There were two unexpected difficulties that substantially affected the course and content of the project but did not lead to its collapse. On the one hand, two Russian partners who were supposed to be funded through the complementary European Neighbourhood and Partnership Instrument (ENPI) did not receive any funding as the contractual basis for this EU funding towards non-EU countries was not renewed in time. They were forced to drop out of the partner consortium and continue as associated partners. Secondly, the effects of the global economic crisis lead to a shortage in bank loans in some EU countries. For this reason, two partners could not come up with the pre-financing for the own activities

and retreated from the project consortium to also become an associated partner. Fortunately at least a part of planned project activities of the Russian partners could be carried out with the financial support by the Government of Schleswig-Holstein. The drop-out partner activities in the other countries were covered by the remaining partner consortium. Despite these difficulties, the project took a very good course, with rapid and numerous outcomes, effective international meetings and continuous communication work on the national and sub-national levels both with decision makers and the general public.

After this successful project application, we would like to encourage other European Green Belt activists to make more use of European funding opportunities, e.g. the regional development funding programmes. Next to the large-scale regional funding programmes, a number of smaller regional or cross-border programmes exist on EU level. These tend to be smaller with respect to the number of partners and budgets and are thus easier to manage.

#### 4 Project partners

The project partner consortium initially consisted of governmental, non-governmental and scientific institutions from all countries along the Baltic Green Belt. From the beginning on it had a strong back-up of the majority of associated partners who got actively involved in project activities such as events and publications and continuously exchanged ideas with the project partners. As several partners had to drop out of the consortium (chapter 3), a total of eleven partners continued until the end. They are presented here, while an overview of all partners, including those formally associated to the project is given in table 1.

The **Coastal Geography Group of Kiel University** ([www.kuestengeographie.de](http://www.kuestengeographie.de)) addresses major issues of coastal changes and coast-related risks both in Germany and world-wide, including reconciling conflicting uses and developments via Integrated Coastal Zone Management (ICZM), detecting impacts of climate change and sea level rise on coastal morphodynamics and stability, long-term coastal protection (defence) strategies as well as landscape and heritage interpretation in coastal regions and its value for tourism. With regard to these issues, the group has carried out a number of research projects financed by national and international programmes. Kiel University acted as the lead partner of the project with coordination support of the Institute for Tourism Research in Northern Europe (NIT, [www.nit-kiel.de](http://www.nit-kiel.de)) and financial administration located at Landgesellschaft Mecklenburg-Vorpommern ([www.lgmv.de](http://www.lgmv.de)). In particular, Kiel University was responsible for scientific research accompanying the pilot projects, internal and external project communication as well as project administration and coordination.

**BUND Schleswig-Holstein** (BUND SH; [www.bund-sh.de](http://www.bund-sh.de)) is a non-profit organisation founded in 1980 in Kiel which nowadays has about 11,000 members and supporters. The main objectives of BUND SH are a healthy environment, gentle use of means of livelihood and a protected and diverse nature. To achieve these goals, the BUND Schleswig-Holstein get's involved via political lobby work, public relations and experts reports. Besides it is purchasing areas worth of preservation and it does environmental education work for example with it's environmental centre „Umwelthaus Neustädter Bucht“. Within the Baltic Green Belt project, BUND SH was responsible for the coordination and facilitation of international political lobby work concerning the Baltic Sea environment, environmental education and information and linking Baltic Green Belt with the existing Green Belt projects.

**BUND Mecklenburg Western Pomerania** (BUND MV, [www.bund-mv.de](http://www.bund-mv.de)) is the second regional branch of BUND Germany, the national branch of Friends of the Earth actively involved in the Baltic Green Belt project. BUND MV represents the northeastern region of Germany, Mecklenburg-Western Pomerania, which used to be part of the GDR. BUND is active in the field of nature and environmental conservation. BUND MV initiated the Baltic Green Belt project, launching a sailing tour for awareness raising in 2007. Within the Baltic Green Belt project, the tasks were to install a coordinating office and consultancy for conservation and development of Green Belt sites along the

coast of Mecklenburg-Vorpommern, to build a regional website in German, and to organise meetings and prepare information material for the presentation of the Green Belt initiative.

Table 1: Partner consortium of the Baltic Green Belt project as of the end of the project in 2012.

Organisation	Abbreviation	Type	Function	Country
BUND Mecklenburg Western-Pomerania (Friends of the Earth, regional German branch)	BUND MV	NGO	partner	DE
BUND Schleswig-Holstein (Friends of the Earth, regional German branch)	BUND SH	NGO	partner	DE
Kiel University, Department of Geography	CAU	Science	partner	DE
Estonian University of Life Sciences, Institute of Agriculture & Environmental Science	EMU	Science	partner	EE
Läänerannik		NGO	partner	EE
Coastal Research and Planning Institute, Klaipeda University	CORPI	Science	partner	LT
Zvejone (Lithuanian Green Movement)	Zvejone	NGO	partner	LT
Lauku Celotajs (Latvian Country Tourism Association)	Lauku Celotajs	NGO	partner	LV
Slitere National Park Administration, since mid. 2009: Latvian Nature Conservation Agency, Regional Admin. of Kurzeme	SNP	GO	partner	LV
Green Federation Gaja	GAJA	NGO	partner	PL
Coalition Clean Baltic	CCB	NGO	partner	SE
World Conservation Union	IUCN	NGO	associated partner	B
BUND Project Office Central European Green Belt	BN	NGO	associated partner	DE
Federal Agency for Nature Conservation	BfN	GO	associated partner	DE
State Agency for Environment and Nature Rostock	StAUN	GO	associated partner	DE
Estonian Society for Nature Conservation	ESNC	NGO	associated partner	EE
Sillamäe City administration		GO	associated partner	EE
Pajuris Seaside Regional Park administration		GO	associated partner	LT
Zachodniopomorskie (West Pomerania) Voivodeship Office, Department of Environment and Agriculture		GO	associated partner	PL
Baltic Fund for Nature	BFN	NGO	associated partner	RU
Centre for Environmental Initiatives	CEI	NGO	associated partner	RU
Committees for the development of collective gardens		NGO	associated partner	RU
Green World Russia		NGO	associated partner	RU

**Green Federation GAJA** ([www.gajanet.pl](http://www.gajanet.pl)) is a Polish NGO working in the field of active nature conservation, environment protection and civil society awareness rising since 1993. The organization is a member group of the Union of Associations “Polish Green Network” and Coalition Clean Baltic. Green Federation GAJA focuses their efforts on prevention of the loss and restoration of what seems to be lost: rare, endangered species, traditional landscapes, respect for the Earth. Its work include research studies, educational campaigns, watchdog monitoring, raising society’s awareness on the problem of pollution of the Baltic Sea and environmental policy development, especially in terms of lobbying work.

**Žvejone** ([www.zvejone.lt](http://www.zvejone.lt)) is an environmental club established in 1988 in Klaipeda on the Lithuanian Baltic Sea Coast. The basic aim is a balanced development of Klaipeda city and the coastal areas of Lithuania. The main activities are Natura 2000 site conservation and, to take care of water resources, and EU volunteering through environmental education courses, organizing and taking part in local, national and international seminars, independent environmental monitoring and researches, information and campaigning. The Environmental club “Zvejone” is a member of the Lithuanian Green movement and collaborates with international organizations such as CCB (Coalition Clean Baltic). The aim for the Baltic Green Belt project was to improve public awareness and involve politicians and decision makers in roundtables and seminars about protected Natura 2000 areas at the Baltic Green Belt, such as the Lithuanian Seaside Regional Park.

The **Coastal Research and Planning Institute (CORPI)** is a research and education unit within Klaipeda University, Lithuania ([www.corpi.ku.lt](http://www.corpi.ku.lt)). It focuses on fundamental and applied scientific research and supports PhD studies. The main fields of the Institute’s scientific activities are experimental analysis and modelling of the coastal ecosystems, environmental impact assessment, environmental monitoring, development of scientific background for sustainable development, land planning and ecosystem remediation. Within the Baltic Green Belt project, CORPI will give scientific expertise and identify the common stand and existing strategies of coastal protection, evaluate positive and negative influence and develop recommendations for good practice coastal protection and conservation.

**Kurzeme Regional Administration (KRA)**, (<http://slitere.lv>) of the Latvian Nature Conservation Agency (NCA) ensures the implementation of the unified Latvian nature protection policy in western Latvia. KRA evolved after an administrative reform from the Slītere National Park Administration, and is now one of four regional administrations of the NCA in Latvia. The main functions of the NCA KRA are the management of all protected areas in the western part of Latvia; carrying out cooperations with local authorities, tourism entrepreneurs, non-governmental organizations and education institutions to promote nature conservation; Educate and inform the society about nature conservation. Within the Baltic Green Belt project, KRA implemented educational projects (Discover the nature, See for yourself) and a sustainable tourism project dedicated to turning a narrow-gauge railway into a bike trail.

The Latvian Country Tourism Association "**Lauku ceļotājs**" ([www.celotajs.lv](http://www.celotajs.lv)) is a non-governmental organization established in 1993 in Riga. It unites owners of rural tourism accommodations and other tourism stakeholders in Latvia with some 350 members at the beginning of 2009. The main goal for the association is to develop well balanced and environmentally friendly tourism in the countryside of Latvia. Its functions are rural tourism product development, quality control and labeling, provider training and consultations, promotion and marketing of its products in brochures, maps and Internet, lobbying for interests of members and project activities. Within the Baltic Green Belt project Lauku ceļotājs’ tasks were to study what the Soviet military left behind in the region, tested ways in which that heritage can be put to use for tourism purposes and ensured the sustainability of the territory’s social and economic aspects.

**Läänerannik** is a local environmental NGO rooted in the West Coast of Estonia with its home base on the island of Vormsi. Its strength for the project was the closeness to the local people perspective

combined with long year experience in international nature conservation projects (e.g. funded by Life nature). The task for Läänerannik was to help the Baltic Green Belt network not to lose contact to practise when discussing comprehensive action plans for ICZM and sustainable coastal development.

The **Institute of Agricultural and Environmental Sciences (IAES) of the Estonian University of Life Sciences (EMU, [www.emu.ee](http://www.emu.ee))** is a leading institution for research, survey, monitoring, teaching and training for agricultural and environmental sciences in the Baltic. The Institute currently employs around 300 staff in total and is responsible for training more than 800 undergraduate, about 250 master degree and 90 PhD students. EMU-IAES provides independent research to inform governmental institutions on agriculture, natural resource management, environmental protection, limnology and water management, and biodiversity. EMU's expertise is widely used by European and international organisations and in collaborative projects. Prof. Kalev Sepp of IAES has been appointed as the Estonian National Focal Point for the European Green Belt. IAES' tasks within the project were to develop a methodology for evaluating and inventorising the landscape values of coastal areas, preparing a book and film about Estonian Green Belt and providing recommendations for good practice coastal protection.

**Coalition Clean Baltic (CCB)** is a non-profit association founded in 1990 which unites 27 member organizations in the Baltic Sea Region. The main goal of CCB is to promote the protection and improvement of the Baltic Sea environment and natural resources.

## 5 Project goals and approach

The project followed two major goals which relate to a medium-term time scale: (1) to develop a **network of active stakeholders** from NGOs, universities and authorities in the Baltic Green Belt countries who are interested in collaborations to promote a sustainable development of the coast and (2) to contribute to the development of an **ecological network** under the umbrella of the European Green Belt following the Green Belt vision. From these overall goals, we derived a number of more specific goals for the project lifetime:

- evaluation of the implementation of international agreements for coastal nature protection along the Baltic Green Belt
- identification of barriers and success factors/indicators of sustainable coastal development
- delivery of regional Green Belt pilot projects for different themes (agriculture & eutrophication, heritage & spatial planning, sustainable tourism, conservation & awareness) which can serve as blue prints for other regions
- enhance the awareness about the European Green Belt among stakeholders

As a whole, the project activities aimed at contributing to the long-term political goals formulated on the scale of the Baltic Sea Region, namely the protection of the environment and natural resources; the improvement of the ecological status of the marine and terrestrial Baltic Sea area, support to the implementation of the HELCOM Baltic Sea action plan for the protection of the Baltic and support to the implementation of the EU Strategy for the Baltic Sea by preserving natural zones and biodiversity.

The project consisted on the one hand of geographically overarching assessments (e.g. environmental values & threats) carried out by the universities, on the other hand of specific regional pilot projects in the countries dealing with different themes. The pilot projects' outcomes were documented, accompanied by research and widely communicated in order to stimulate a cross border transfer of the results. They are meant to be taken up by project partners or other organisations outside the project. The transnational component of the project cooperation furthermore was expressed in the cooperation and exchange on the Green Belt idea. It involved on the one hand the joint communication of the European Green Belt vision to international and national stakeholders and on the other hand the discussion of the vision for the Baltic Green Belt to be established as a permanent component within the European Green Belt initiative.

## **6 Project themes**

### **Eutrophication and sustainable agriculture**

Eutrophication was identified as the number one environmental problem of the Baltic Sea more than 20 years ago. Numerous measures have been taken on the political level to reduce nutrient inputs, including HELCOM's Joint Comprehensive Environmental Action Programme for the removal of pollution hot spots and the EU's Water Framework and other Nutrient related Directives. The success of these top-down measures was measurable in the Baltic Sea but limited mainly to a decrease in phosphorous input. Negative impacts are becoming more and more evident, such as the second largest anoxic bottom water zone world wide in the Central Baltic. Next to the deep open water basins, the coastal lagoons suffer mostly from the high nutrient concentrations and their effects on the local ecosystems. As these marine territories are part of the Baltic Green Belt, the European Green Belt environment is directly threatened by poor water quality of the Baltic Sea. The water quality problem is created to the extent of 99% by inland activities, particularly agriculture. The majority of nutrient pollution to the Baltic Sea stems from Polish territories, as agriculture plays a major role for Polish economy. Against this background, eutrophication is tackled within the Baltic Green Belt project with a new bottom-up approach implemented primarily by an NGO, however, in direct contact with authorities and scientific institutions. There are about 2.6 million farms, 18.5 million hectares of agricultural land, over 14 millions pigs, 5.6 million cattle and 150.6 million poultry in Poland. Within the Polish pilot project, the impact of industrial animal farming on the pollution of the Baltic Sea shall be reduced by a training and motivation programme for farmers to carry out diverse, environmentally friendly agriculture (see Skorupski, pp. 45-55).

### **Sustainable tourism based on cultural heritage and using sound spatial planning**

Sustainable tourism being one of the major economical development chances for protected areas, was an important topic throughout the project and touched within different contexts, mainly related to cultural heritage development and spatial planning.

While disclosure due to military use during Soviet times has left a green heritage in some areas, others must be considered brown heritage due to military pollution. For example, in Estonia, 87,000 hectares were designated military areas during the Soviet period, a large part of which was located on the coast. In the project, Estonia took a systematic approach to making this heritage useful: based on a methodology for evaluating landscape values of coastal areas developed by the Institute of Agricultural and Environmental Sciences (IAES) of the Estonian University of Life Sciences (EMU), an inventory of the Estonian coastline will be carried out to determine all objects of cultural heritage. The data shall serve for spatial planning in the coastal zone, and some applications were be demonstrated.

Military heritage from World War 2 and the subsequent Soviet era is a typical feature of the southern and eastern Baltic coast. Dozens of military objects such as ruins of bunkers, airplane hangars or watch towers offer a unique chance for modern touristic development following the rules of sustainability in ecological, economical and social terms and with a reference to the former division of Europe that we have nowadays overcome. One potential touristic object is the narrow-gauge railway of Nordic Courland built during the German Nazi occupation during WW2 for wood transportation. The Latvian Country Tourism Organisation (Lauku Celotajs) together with the Slitere National Park administration developed this railway as one exemplary tourist site and assessed other existing military heritage sites to compile and develop touristic products and information media. During the development, a focus was set on the stakeholder involvement process. A comprehensive description of the tourism pilot project activities including the major outcomes (e.g. data base of military objects, military heritage map, guidelines for military heritage in tourism) is given in Maack et al. (2011).

## Conservation of the marine and coastal environment

Nature conservation is the primary goal of the European Green Belt initiative. In the context of the Baltic Green Belt project, conservation was not the explicit topic of one particular pilot activity. It was rather the background for a variety of activities, such as participation in planning processes, formulation of statements concerning policy development. In Schmiedel (2012), the main natural values and threats to their existence are described from a conservation point of view. As an overall project conclusion and outlook to future activities, a Baltic Green Belt Action Plan concludes this report in the last article by Schmiedel (pp. 113-116).

## Communication & awareness rising at the Green Belt

A significant part of the project work was made up of communication and dissemination. This was on the one hand important as the Green Belt was virtually unknown in the Baltic Sea Region before the project. Its specific approach in the Baltic area - the “product“ and the idea of the Green Belt had to be intensively spread and characterized to be well understood. On the other hand, the implementation into politics, policies and programmes is crucial for a successful Green Belt performance, and so almost all project partners contributed to this activity. As there is no separate chapter in this report is dedicated to the communication activities, the most important are summarised in table 2.

Table 2: Selected results of Baltic Green Belt communication work.

Activity	Number	Target group(s)	Comments
Green Belt websites	4	Practitioners (Int, PL), interested public (DE, EE)	<a href="http://www.balticgreenbelt.net">www.balticgreenbelt.net</a> <a href="http://www.balticgreenbelt.de">www.balticgreenbelt.de</a> <a href="http://www.polishgreenbelt.org.pl">www.polishgreenbelt.org.pl</a> <a href="http://www.estoniangreenbelt.eu">www.estoniangreenbelt.eu</a>
International Baltic Green Belt Forum	3	Stakeholders of the EuGB and the Baltic Sea	Feb 2009 in Lübeck, Germany (BUND SH) Apr 2010 in Palanga, Lithuania (CORPI) Oct. 2011 in Tallinn, Estonia (EMU)
Films	3	Stakeholders & general public	The Lithuanian Green Belt (Zvejone) Discover the nature, Latvia (KRA) The Estonian Green Belt (EMU)
Baltic Green Belt Panorama Newsletter	6 issues	Stakeholders of the EuGB and the Baltic Sea	<a href="http://www.balticgreenbelt.uni-kiel.de/index.php?id=panorama">http://www.balticgreenbelt.uni-kiel.de/index.php?id=panorama</a>
Stakeholder workshops	> 30	Practitioners from the Baltic Sea coast	<a href="http://www.balticgreenbelt.uni-kiel.de/index.php?id=events">http://www.balticgreenbelt.uni-kiel.de/index.php?id=events</a>
Information events	> 70	General public	
Media articles	> 100	General public	<a href="http://www.balticgreenbelt.uni-kiel.de/index.php?id=media">http://www.balticgreenbelt.uni-kiel.de/index.php?id=media</a>
Social Media		EuGB stakeholders	Facebook group „European Green Belt“
Books			Sepp (2011): The Estonian Green Belt Zirnite (2011): Livonians in Northern Kurzeme

## Further project activities

This synthesis report cannot go into detail about every single subproject. Some very successful field activities such as an awareness raising campaign for the maintenance of the Lithuanian Seaside Regional Park, a nature guide for coastal animal and plants and photo exhibitions in Latvia are not covered. They are documented on the project website, and we encourage all readers to browse the website for more information about project outcomes.



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## **The European Green Belt initiative**

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### **Abstract**

In the remoteness of the Iron Curtain a “Green Belt” of valuable pristine landscapes developed through Europe from the Barents to the Black Sea. Today the Green Belt Europe connects a large number of valuable areas in the sense of European nature conservation; it is a cross section of all European biogeographical regions and could be developed as part of a European Green Infrastructure and backbone of a Pan-European ecological network. Furthermore the Green Belt is an outstanding memorial landscape of European relevancy with a great potential for trans-boundary cooperation, sustainable regional development, the support of understanding among nations and the merging of Europe. The initiative Green Belt is a geopolitical challenge and change; it connects 24 European countries and stakeholders from the local to the international level from governmental and non-governmental organizations.

### **1 Introduction**

‘Nature knows no boundaries’ is an often stated truism, but absolutely pertinent in Europe with its densely packed political borders which frequently follow natural features such as mountain ranges or river systems. Regarding the European Green Belt, nature does not only know no boundaries, nature is uniting across borders: people, organizations and states, large pristine areas through the continent, animal and plant populations as well as Europe’s history and future.

Along the former Iron Curtain, which separated the continent in East and West for nearly 40 years, an outstanding ecological network and living memorial landscape developed. Despite its brutal inhumanity, the Iron Curtain granted nature a pause for breath along more than 12,500 kilometres from the Barents Sea at the Russian-Norwegian border, along the Baltic Coast, through Central Europe and the Balkans to the Black Sea.

A lack of conventional land use and agriculture as well as the absence of most human-made disturbances along large parts of the Iron Curtain and also in its surrounding led to the conservation and development of large pristine areas and a connected system of various nature related habitats and landscapes. In the former Eastern Bloc countries the utilization of border land was mostly prohibited (Riecken et al. 2006), in some areas villages at the border were raised to the ground and people were forcefully settled down in the inland in order to control the area more efficient, whereas on the western side remote border areas were less attractive for investors, sparsely populated and no major infrastructure was needed.



Figure 1: The Green Belt Europe connects 24 European countries and a great number of pristine and nature related landscapes.

## 2 Background: From many Origins to one European Initiative

Unwittingly the Iron Curtain supported the conservation and development of valuable habitats and therefore served as a retreat for many endangered species. The richness of nature related habitats became obvious long before its fall. Years before the breakdown of the Iron Curtain, conservationists in several areas of Europe draw their attention to the flourishing nature and wildlife proliferated undisturbed. Right after the decline of the Eastern bloc, regional initiatives started to preserve valuable nature along the borders. Therefore, the establishing of the European Green Belt initiative was a merging of different existing regional initiatives to one common European.

In the year 2002 BUND (Friends of the Earth Germany) firstly suggested the creation of a Green Belt all along the former Iron Curtain. It succeeded to bring together the different approaches by implementing first conferences on the European Green Belt supported and organised by the German Federal Agency for Nature Conservation (BfN) and the World Conservation Union (IUCN) in 2003 and 2004 (Riecken et al. 2006). The three main origins – besides the many local initiatives and activities - of the European Green Belt initiative are - from north to south - the activities along the Fennoscandian Green Belt, the German Green Belt and along the Green Belt in the Balkans.

### Green Belt Fennoscandia

Already in 1970 satellite pictures showed a dark green belt of old-growth forest on the Finnish-Russian border. Nature conservation cooperation between Finland and the Soviet Union started in the 1970s when a scientific-technical cooperation agreement was signed (Haapala et al. 2003). Furthermore a joint Finnish-Russian working group on nature conservation was founded, which led to the successive establishment of a series of twin parks along the border in the mid-1980s. An inventory project on border forests conducted from 1992 to 1994 showed the ecological value of this border area with regards to ecosystems and species in the boreal forest zone and led to the idea of establishing a network of separate protected areas on each side of the border. In this connection it was firstly discussed to develop a Fennoscandian Green Belt covering also the border of Norway and Russia (Haapala et al. 2003). Core of this Fennoscandian Green Belt are the large and many nature reserves

along the border (Figure 2). The concept of the Fennoscandian Green Belt includes also a joint environment policy in the border area (Hokkanen 2004).



Figure 2: Existing and planned nature reserves along the Fennoscandian Green Belt (Hokkanen 2009). E. g. the Kalevalskiy national park in Russia is one of the last European primeval forests and retreat for species like Wolf (*Canis lupus*), Eurasian Lynx (*Lynx lynx*), Brown Bear (*Ursus arctos*), Eurasian Eagle-Owl (*Bubo bubo*) and Three-toad Woodpecker (*Picoides tridactylus*).

The Fennoscandian Green Belt is a mosaic of forests, bogs and lakes; it covers a wide range of ecosystems from the Arctic tundra on the Barents Sea coast to mixed broad-leaf forests covering the islands in the Gulf of Finland. The largest part is northern coniferous forest, known as the boreal zone. The area comprises also last tracts of old-growth taiga in the European part of the continent and highly interesting geological structures and relief as part of the ancient Baltic crystalline shield. The Fennoscandian Green Belt contains the last large massifs of old-growth taiga typical for Fennoscandia, which mainly consist of dry pine forests (Karivalo & Butorin 2006).

Because of the large pristine areas and forests, the Green Belt of Fennoscandia serves as a retreat for several large and endangered carnivores like Wolverine (*Gulo gulo*), the Eurasian Lynx (*Lynx lynx*), Wolf (*Canis lupus*) and Brown Bear (*Ursus arctos*). Large carnivores are an indicator group of animals which has been carefully studied for decades and shows the high value of the Fennoscandian Green Belt (Hokkanen 2009).

### Inner-German Green Belt

The border fortifications of the Iron Curtain were most strongly expressed in the former divided Germany. The GDR (German Democratic Republic) used 3,000 kilometres of fences, 200 kilometres of walls, 800 kilometres of anti-vehicle ditches, 1,800 kilometres of patrol routes 850 watchtowers,

1.2 million tons of concrete and 700,000 tons of iron, land mines and spring guns to “secure” their border to West-Germany.

First observations of the border areas, only possible from the western site, from 1975 on and a systematic ornithological survey in 1979 on a stretch of 140 kilometres along the inner-German border conducted by young conservationists of Bund Naturschutz (BN), the Bavarian branch of BUND, showed the richness of biodiversity. The ornithological survey covered the immediate border zone to Thuringia (GDR) and large areas of adjacent farmlands in Bavaria for comparison (Meyer et al. 2011). 90% of the recorded, highly endangered bird species like Whinchat (*Saxicola rubetra*), Red-Backed Shrike (*Lanius collurio*), European Nightjar (*Caprimulgus europaeus*) and Woodlark (*Lullula arborea*) preferred to breed inside the border strip (Beck & Frobel 1981). Further activities followed, e. g. first land purchases at the western side of the border by BN and attempts to get in contact with conservationists from the eastern side (Frobel et al. 2009).

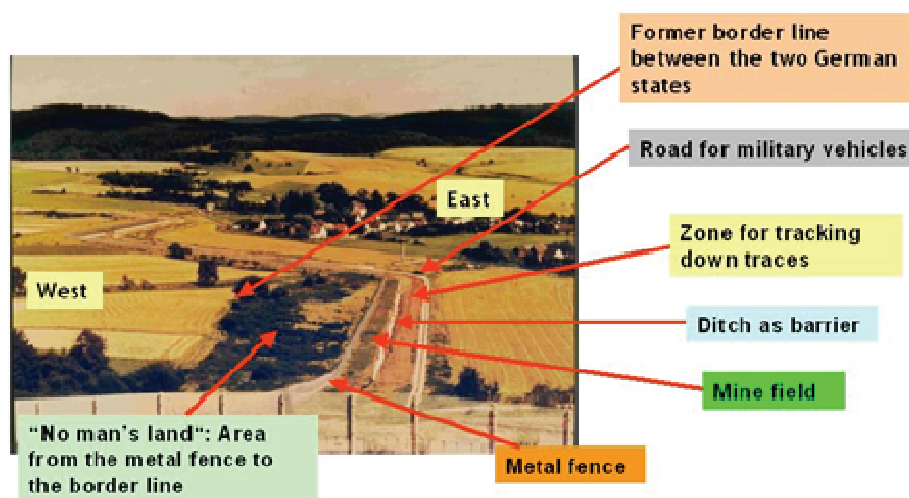


Figure 3: Structural components in the former border zone between the two German states. The central area of the Green Belt Germany is the former “no mans land”, the upstream territory of the GDR lying west to the metal fence. Here, habitats could develop nearly undisturbed for decades. Picture: Bundesarchiv/BUND-Project Office Green Belt.

The Iron Curtain fell in 1989. One month after the Berlin Wall was officially opened; BUND organized the first meeting of nature conservationists from East and West Germany. The approximately 400 participations of the meeting passed a resolution to protect the “Green Belt” along the border (Meyer et al. 2011). Thus, the Green Belt Germany-project was born. Right from the start, it was not only Germany’s first nationwide nature conservation project but also a living memorial to recent German history. The first years of the Green Belt in Germany were marked by a positive interest by the media, environment politicians and committed nature conservation authorities in the new states (the former GDR-countries), who designated nature reserves along the former Iron Curtain. But these times were also characterized by rapid intervention and destruction of valuable areas. E. g. habitats that had been unused for decades were ploughed up in a few days mostly by Western farmers. Not until 2001 a decisive breakthrough came when the German Federal Agency for Nature Conservation (BfN) together with BUND carried out a habitat survey of the entire former inner-German border line.

The results proved that the Green Belt is of high value for German nature conservation. The survey identified 109 different habitat types along the 1,393 kilometres long and 17,656 hectares wide central Green Belt Germany (Figure 3). 60% of the Green Belt Germany consists of streams, rivers and inland waters, various types of forest, extensively exploited mesophilic grassland, unused fallow land and species-rich moist and wet grasslands.



Half of the area consists of endangered habitat types of the Red List for Germany, e.g. xerophilic grassland, moors and wetlands, semi-natural riparian zones and alluvial forests. At the same time, 85 % of the area and 80 % of the length may be regarded as intact (Schlumprecht et al. 2002).



Figure 4: In intensively used agricultural areas like Germany, the Green Belt is irreplaceable as ecological network and often last retreat for endangered species like Red-Backed Shrike (*Lanius collurio*). Green Belt between Thuringia and Hesse near the village Obersuhl (left). Pictures: Klaus Leidorf and BN-Archiv.

The Green Belt Germany is a backbone of a nationwide ecological network. There are 150 nature conservation areas along the Green Belt, most created after 1989, and further 125 conservation areas in the vicinity. If the 150 conservation areas directly to the Green Belt are included, the ecological network increases 12.5 times to 2,232 square kilometres (Geidezis & Kreutz 2009), which is nearly the size of the German federal state Saarland. In the long run, it is the aim to protect and develop not only the partly narrow central German Green Belt as ‘backbone’ of the ecological network but also adjacent conservation and nature-related areas as ‘ribs’ to both sides.

### **Balkan Green Belt**

In South-Eastern Europe the political situation after the Second World War was even more complicated. The Iron Curtain separated several countries, not just the two political blocs. Although Yugoslavia was connected to the socialist and communist countries, it was not part of the Eastern Bloc and the Warsaw pact. Yugoslavia followed a development independently of the USSR: the people were allowed to travel, also they enjoyed more freedom than people in countries of the Warsaw Pact. In consequence, Yugoslavia was not considered as serious and trustful partner by the countries of the Eastern bloc which controlled their borders heavily in order to prevent people to escape from their countries. Also the border between Yugoslavia and Greece was heavily controlled and only a few border crossings were open. Albania as a special case completely closed its borders and was isolated from the rest of Europe since the early 1970s. This special situation led to the fact that on the Balkan Peninsula the Green Belt follows not only the borders of the Eastern Bloc, but also those of Albania and former Yugoslavia. Similar to other parts of the Green Belt these borders largely preserved nature from human activities (Schneider-Jacoby et al. 2006). After the collapse of communism also on the Balkan Peninsula, the European Nature Heritage Fund (EuroNatur) began together with many local partners building support among governmental and non-governmental organizations in the early 1990s, with the aim of protecting transboundary areas of high ecological value (Riecken et al. 2006). In the focus of this regional initiative has been the border stretch between Bulgaria, Greece, Albania and Macedonia.



Figure 5: The first results from a survey of important sites along the Balkan Green Belt published by EuroNatur in the late 1990s.

From the Pannonian Plain to the Mediterranean and Black Sea coast, the Balkan Green Belt forms an extremely heterogeneous, but mostly natural corridor. Alluvial wetlands, steppe areas, mountains, lakes and nature related cultural landscapes form a unique mosaic of valuable habitats. Along the Balkan Green Belt different valuable transboundary ecosystems are connected, for example in the centre of the Balkan Peninsula, mountain national parks are linked with the protected Lakes Greater and Lesser Prespa (Albania, FYR Macedonia, Greece) and Lake Ohrid (Albania, FYR Macedonia, ). On the coast, marine habitats such as beaches and lagoons are interrelated with the freshwater ecosystem of Lake Skadar (Montenegro, Albania) or the alluvial wetlands of the Evros-Meric-Marica River (Greece, Bulgaria, Turkey). Although many wetlands are situated at the border, the biggest part of the Balkan Green Belt is formed by mountain chains and forest complexes. No large towns or industrial zones are located along the formerly strictly controlled border and the range offers excellent opportunities for the establishment of large-scale protected areas (Schneider-Jacoby et al. 2006).

The Balkan Green Belt is part of an extensive connected habitat system and forms an important ecological corridor. It is a retreat for numerous rare species like Dalmatian Pelican (*Pelecanus crispus*), Imperial Eagle (*Aquila heliaca*) and Balkan Lynx (*Lynx lynx balcanicus* resp. *Lynx lynx martinoi*) (Schwaderer et al. 2009).

### 3 The European Green Belt Initiative – A trans-boundary Network

During the international conference “Perspectives of the Green Belt” in Bonn (Germany) conducted by the German Federal Agency for Nature Conservation (BfN) in July 2003, the vision of a Green Belt through Europe was officially discussed for the first time. A very big step for the Green Belt Europe was the international conference in Hungary in September 2004. The World Conservation Union (IUCN) and BfN jointly organised a conference that took place in the trans-boundary protected area of the Fertő-Hanság National Park in Hungary. Over 70 participants from 17 countries attended the conference. The two main outcomes of this conference were a common structure for the coordination of the Initiative and a Programme of Work (PoW).





Figure 6: Participants of the first Pan-European Green Belt Conference in 2004 in the Fertő-Hanság National Park in Hungary.

Today a huge number of associations, groups and authorities in 24 countries are working within the European Green Belt initiative. Currently there are three distinct areas of activity: The Fennoscandian Green Belt, with Norway, Finland, the Russian Federation and the Baltic countries Estonia, Latvia and Lithuania. The Green Belt Central Europe; running through Poland, Germany, Czech Republic, Austria, Slovakia, Hungary, Slovenia, Croatia and Italy. The Balkan Green Belt; running along the barrier that separated the Balkan countries - Serbia, Montenegro, Kosovo, FYR Macedonia, Romania, Bulgaria, Albania, Greece, Turkey -, ending at the Black Sea. For each of the three sections of the European Green Belt a Regional Coordinator was appointed: The Association of Zapovedniks and National Parks in Northwest Russia for Fennoscandia, BUND for Central Europe and EuroNatur for the Balkan region. IUCN took over the patronage of the initiative. Furthermore, in every country so called National Focal Points, mainly from ministries, were nominated.

In addition to the numerous local trans-boundary nature conservation, environmental education and nature-tourism projects along the Green Belt, there is currently one EU-funded project covering a large part of the Central European Green Belt: The project GreenNet (April 2011 - March 2014, [www.greennet-project.eu](http://www.greennet-project.eu)) with 22 Project partners (thereof 11 associated partners) from Czech Republic, Germany, Austria, Slovakia, Slovenia and Italy, supported within the Central Europe Programme.

Along the Balkan Green Belt several projects addressing species and habitat conservation as well as capacity building are implemented. The Balkan Lynx Recovery Programme implemented by EuroNatur, Kora, MES and PPNEA covering activities in Albania, FYR Macedonia, Kosovo, Montenegro should be highlighted as example for transboundary cooperation along the Balkan Green Belt.

### **Closing the Gap: The Baltic Green Belt**

The activities and results of the Baltic Green Belt-project (published in this volume) luckily closed a long existing strategic gap of the European Green Belt initiative between the (northern) Fennoscandian Green Belt (Norway, Russia and Finland) and the Central Europe section. The Baltic Green Belt-project is a decisive breakthrough, which supported the development of Green Belt-activities in this region sustainably. Due to its special situation as coastline, specific problems, issues and correlations exist. The project succeeded to take all these challenges into account and to develop an own character considering the Green Belt on shore and the neighbouring parts off shore.

Besides the comprehensive activities concerning nature conservation, environmental education and the special history of the coastal line with its military heritage, the Baltic Green Belt-project developed a strong network of engaged people and organizations working for the European Green Belt idea in the Baltic region. The EU-funded project has formally ended in January 2012. But there is reasonable hope, that this project is the beginning of a strong and permanent initiative for the Baltic section of the Green Belt.

In the next years it will be of great importance, that the stakeholder network will be strengthened, public relations and political lobby work specially towards members of the European Parliament continue, existing nature reserves are sustainably protected and further new reserves will be declared (e. g. as national nature heritage) and that the aims of the European Green Belt initiative will be adopted by the Baltic states authorities and governments.

### **Geopolitical Chance and Challenge**

The European Green Belt connects 15 EU-countries, one accession country, three candidate countries, three potential candidates and with Russia and Norway two non-EU countries, the initiative is an outstanding chance of geopolitical, ecopolitical and cultural relevancy for the EU. The initiative offers outstanding possibilities for trans-border cooperation between states and regions as well as for the establishment of sustainable regional development, especially through ecotourism, considering the outstanding connection of nature, culture and history as a unique selling point and competitive advantage particularly of structurally weak areas along the Green Belt. The great potential of this initiative for the historical documentation and clarification of the Cold War as well as for the cooperation of old and new EU-member states, candidate countries, potential EU-candidates and non-EU-countries is obvious.

### **Future of the Initiative: New Approaches**

Due to the large geographical range of the European Green Belt as well as the quantity of actors, the coordination of the European Green Belt Initiative is a huge challenge that requires time and finances respectively. As no core funding for the European Green Belt Initiative is available, most of the coordination and communication activities implemented so far by IUCN as former overall coordinator as well as the Regional Coordinators were financed within externally funded projects or by own resources of the respective organization.

This proved to be no longer feasible as the degree of engagement of the organizations strongly depended on the availability of external funds. It became obvious that – in order to conquer the above-mentioned challenge - innovative models for coordination and financing are needed.

The development of such will be addressed within a project which is jointly implemented by BUND Green Belt Project Office and EuroNatur, financially supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the German Federal Agency for Nature Conservation.

Main activities of the project which aims to further enhance the European Green Belt Initiative will be to

- further develop the organizational structure of the Green Belt Initiative
- develop a sustainable model for financing the Green Belt Initiative and to
- develop a functioning communication strategy, addressing both internal and external aspects.

All aspects will be worked out by a core project team led by the BUND-Project Office Green Belt and EuroNatur. Results will be presented to all players on GO and NGO level in meetings as well as during several international conferences planned during the implementation of the project in order to ensure participation of the Green Belt Community.

#### **4 Green Belt as Part of a Pan-European Ecological Network**

The outstanding importance of the Green Belt Europe for the European ecological network is apparent because of the conspicuous accumulation of large scale nature reserves along the 12,500 kilometre of the former Iron Curtain: 39 national parks are situated directly along the Green Belt, 16 thereof are trans-boundary national parks. More than 3,200 nature protected areas can be found within a 25 kilometres buffer on either side of the Green Belt (Schlumprecht et al. 2009). Furthermore, this ecological network connects all European biogeographical regions (Renetzeder et al. 2009). The European Green Belt is a retreat for many endangered and rare habitats as well as animals and plants and a very important corridor for the migration of endangered large mammals. Therefore it represents a unique European nature heritage.

The implementation of the Green Belt Europe as one of the largest European and trans-boundary ecological networks is one of the main challenges of European nature conservation in the next decades. The existing nature reserves and pristine landscapes should be conserved as core areas and the landscapes next to and between these areas must be developed as stepping stones and important corridors for species. In this way, the European Green Belt contributes to the implementation of the Convention on Biological Diversity (CBD) and Natura 2000 (EU Habitats Directive 92/43/EWG). Furthermore the European Green Belt can contribute to the implementation of the EU-Biodiversity Strategy for 2020.

The importance of the European Green Belt in combination with other large scale ecological networks, like the Alpine-Carpathian network or the ecological network along the Rhine river, is described within the study of the Leibniz Institute for ecological spatial planning (Leibenath et al. 2009) and the report by EEB (European Environmental Bureau) (EEB 2008). The mentioned large scale ecological networks support trans-boundary cooperation and contribute to halt the loss of biodiversity.

#### **5 Conclusions**

The further protection and development of the European Green Belt as Pan-European ecological network and historical heritage is a big challenge for the next decades. Therefore the EU is asked to support the Green Belt, referring to target 2 of the EU-Strategy on Biological Diversity: ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15 % of degraded ecosystems. To achieve these objectives, further trans-boundary projects have to be supported by the European countries as well as by the EU also including EU-candidates and non EU-countries. Regarding the EU-level, this requires a special priority to preserve and support the ecosystem function of the European Green Belt in currently implemented and future infrastructure projects; as well as the trans-boundary harmonization of conservation area management, the closing of gaps within the ecological network and the establishment of additional trans-boundary protected areas as core areas and buffer zones. Also an adaption of the EU-subsidy policy is urgently necessary; e.g. the restriction of biomass production and industrial agriculture, which currently endangers the ecological network of the Green Belt and its unique landscapes. Instead, a support of ecological land use and sustainable regional development along the Green Belt is needed.

Above its uncountable value for nature conservation, the European Green Belt is also a European cultural heritage of invaluable asset. It is both a commemorative landscape and a living monument for the overcoming of the Iron Curtain and the Cold War just as it is a symbol for the overcoming of the separation of Europe. Therefore the long-term objective is to nominate the European Green Belt as UNESCO (natural and cultural) World Heritage.

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The Baltic Green Belt project is an important mile stone in developing the European Green Belt initiative: The project succeeded in building up a network of engaged stakeholders, which developed a wide range of activities and projects to preserve and develop the Green Belt at the Baltic Coast. Before the project started, the Green Belt in the Baltic Sea region was more or less a "blind spot" within the European Initiative. The specific conditions and situations of coastal and marine habitats and species

as well as the special history of the Iron Curtain with many restricted military areas, made it necessary to establish “tailor-made” concepts for this region.

The authors thank all partners involved in the Baltic Green Belt project, who developed activities and projects with creativity and commitment. We are sure that this network and the results of the Baltic Green Belt-project will be a very good starting point for following activities in the region.

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## **ICZM climate change along the Baltic Green Belt**

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### **Abstract**

Since 1995, concern about the state of Europe's coastline has led to a number of EU initiatives, striving to improve conditions through the concept of integrated coastal zone management (ICZM). ICZM attempts to balance the needs of development with protection of the very resources that sustain livelihood along the coasts. It also takes into account the public's concern about the deteriorating environmental, socio-economic and cultural state of the coastline, on a regional scale as well as all over Europe. In the EU context the coastal zone is interpreted as the resulting environment from the coexistence of two margins, namely the terrestrial edge of the continent and coastal water as the littoral section of shelf seas. Together they constitute an entity which needs a specific methodological approach for dedicated planning and management. ICZM is thus an approach to sustainable development following defined management principles designed for regions in the coastal areas of Europe. In this article, we explain the concept of ICZM, set it in context with the Baltic Green Belt, and point out to implications of climate change for ICZM in the Baltic Green Belt area. In the end, we give an outline of ICZM in the Baltic Green Belt.

*“Our coastal zones are facing serious problems of habitat destruction, water contamination, coastal erosion and resource depletion. This depletion of the limited resources of the coastal zone (including the limited physical space) is leading to increasingly frequent conflict between uses, such as between aquaculture and tourism. Coastal zones also suffer from serious socio-economic and cultural problems, such as weakening of the social fabric, marginalization, unemployment and destruction of property by erosion. Given the coast's critical value and its potential, these problems must be solved.”*

*European Commission, 2002 (2002/413/EC)*

### **1 Integrated Coastal Zone Management (ICZM)**

Why is ICZM relevant to the Baltic Green Belt? Within the European Green Belt, the Baltic Green Belt is the only longer stretch covering a coastal zone. The European Green Belt initiative and ICZM follow the same goals and principles (cf. (2002/413/EC and IUCN 2005), namely, to achieve sustainable development, to conserve both nature and cultural heritage, to implement development activities primarily on local scales, and to involve stakeholders throughout the development process. The political support for ICZM has led to a substantial knowledge base concerning both data and practical experience (Figure 1). Few examples of ICZM projects exist that fulfill all criteria of ICZM, but many demonstrate partial implementation. By means of political and scientific documents as well as through case studies, ICZM gives the methodological background for a successful integration of the European Green Belt in the Baltic Sea coastal area. For the Baltic Green Belt such ICZM approaches are needed

- because ICZM constitutes the accepted framework for sustainable development of the coasts
- because it can help to conserve the valuable natural habitats and cultural heritage of this formerly secluded coastal region

- because it can help to ensure a prospering and long-lasting socio-economic development

<p><b>a) Selected reports relevant to ICZM in the Baltic</b></p> <p>Pickaver, A. (2003): Integrated Coastal Zone Management in the Baltic States - State of the Art Report. EUCC - The Coastal Union, Leiden</p> <p>EEA (2006): The changing faces of Europe's coastal areas, report 6/2006, European Environmental Agency, ISBN 92-9167-842-2</p> <p>Rupprecht Consult (2006): Evaluation of Integrated Coastal Zone Management (ICZM) in Europe</p> <p>Gilbert, C. (2008): State of the coast of the South East Baltic, ISBN 978-83-85780-91-5</p>	<p><b>b) ICZM case studies</b></p> <p><b>EUCC-Baltic data base:</b> 100 ICZM projects &amp; case studies in the Baltic <a href="http://baltic.eucc-d.de">http://baltic.eucc-d.de</a></p> <p><b>Our Coast data base:</b> 350 reviewed ICZM Case Studies all over Europe, <a href="http://ec.europa.eu/environment/iczm/ourcoast.html">ec.europa.eu/environment/iczm/ourcoast.html</a></p> <p><b>Trilateral Wadden Sea Secretariat:</b> best practice, transnational UNESCO World Heritage since 2009: <a href="http://www.waddensea-secretariat.org">www.waddensea-secretariat.org</a></p>
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Figure 1: ICZM resources for the Baltic.

*Why is ICZM necessary?* The coastal zone is undergoing rapid changes resulting from the expansion of human activities in the hinterland, at the coastline and offshore. Generally speaking, both demographic and economic factors drive the development in coastal regions and put numerous pressures on the coastal system. To a certain extent pressure also comes from natural forces such as coastal morphodynamics, storm floods etc. In order to cope with these effects the European Environmental Agency (EEA 2000) brought up the DPSIR concept which is considered the background and basis for ICZM.

The DPSIR concept (Figure 2) shows **drivers**, e.g. increase in seaside building and economic activities, produce serious **pressures** such as pollution and overfishing. In consequence these pressures change the **state** of the environment, typically in a negative direction, and **impact** both ecosystems and socio-economic conditions. These impacts call for short-term and long-term responses, e.g. enhanced nature conservation measures, improved environmental legislation, monitoring, regulation and control mechanisms, e.g. formulated as regional management plans. Ideally, the responses will then feed back to the starting point and change the driving factors, so as to interrupt the trend of coastal deterioration. Among the responses, ICZM is a key tool to address most of all relevant issues of the DPSIR framework.

*How is ICZM implemented?* ICZM, being an iterative process of considerable duration, starts out with an **initiation** phase, usually in the form of the definition of the region of concern followed by a DPSIR analysis and an analysis of the stakeholders concerned. Based on the DPSIR, the stakeholders get involved in a participative **planning** process, followed by **implementation** of the management measures formulated during planning. The implementation as well as its outcomes are **monitored and evaluated** in order to restart the process by adapting the management plan. The Baltic Green Belt project serves to initiate ICZM processes on the local level (pilots) and the transnational levels (overall Baltic Green Belt). One example of a participative planning process involving various stakeholders is the restoration of Rostocker Heide on the German coast, persued by the local branch of Friends of the Earth (BUND Mecklenburg-Western Pomerania).

**The overall area** to be covered by the transnational ICZM process within the Baltic Green Belt is not yet defined. The total coastline including bays, lagoons and islands is more than 7,500 km long (Pickaver 2003). As the definition for the European Green Belt given by Schlumprecht and Ludwig (2009) does not cover all islands along the Baltic Green Belt and is thus not in line with the idea of an ICZM region, we propose to refine it in the following manner:

„The area of the Baltic Green Belt is defined in space as a buffer zone of 25 km (50 km in the Fennoscandian area) on each side of the former Iron Curtain with the inner 5 km constituting the core zone. Formally, the seaward boundary of the NUT3 administrative districts shall serve as the line of



the Iron Curtain. Additionally, all islands and inner coastal waters reaching beyond the buffer zone are included.” Within this overall area, each pilot activity within the Green Belt defines its own area of concern in a manner suiting the spatial scales of the problems and processes addressed.

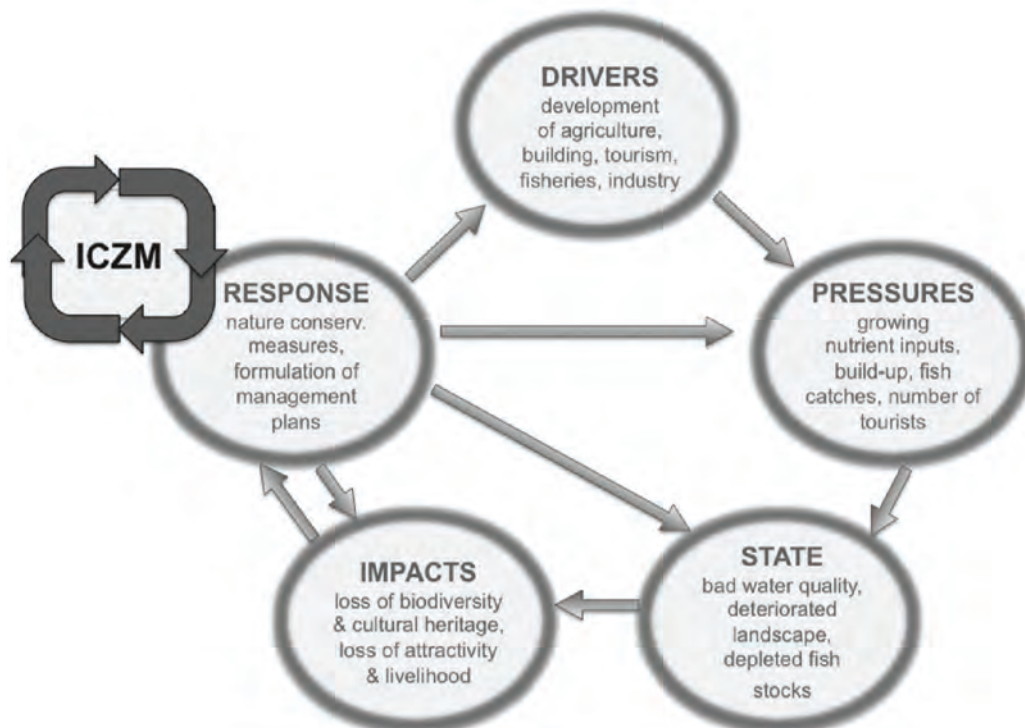


Figure 2: DPSIR approach for the Baltic Green Belt.

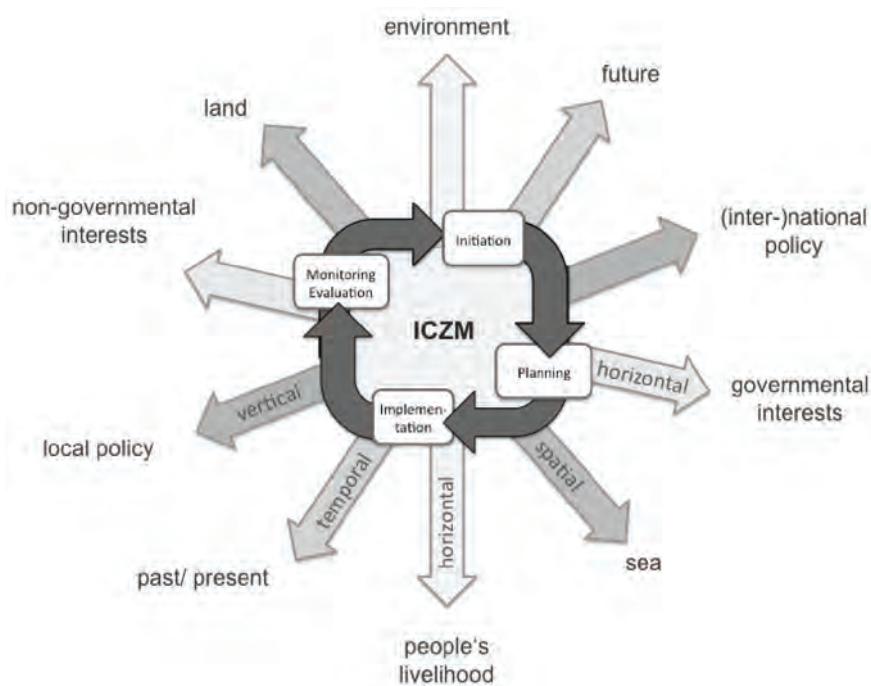


Figure 3: The four phases of the ICZM process (inner circle) and the most important levels of integration with respect to the Baltic Green Belt.

*What needs to be integrated?* For the successful implementation of ICZM, it is crucial to internalise the different levels of integration that must be pursued throughout the iterations of the ICZM processes (Figure 3).

**Spatial integration** requires to take into account effects of neighbouring (or even remote) areas have on each other. Those stakeholders fostering development activities shall particularly integrate coastal waters and terrestrial areas, coastal and hinterland areas, neighbouring administrative districts and transnational cross-border areas. An example of spatial integration in the Baltic Green Belt project is the integration of land and sea in the pilot „Sustainable Farming in Poland“. The Green Federation GAJA offers training and consultation about ecological farming methods to farmers in order to reduce nutrient inputs to the Baltic coastal waters.

**Horizontal and vertical integration** aims at the involvement of different sectors (horizontal) and different administrative levels (vertical) by addressing all stakeholders important to realising the ICZM goals, in this case, realising the European Green Belt vision. It is crucial to identify those economical sectors that are suitable for a combination with nature conservation in order to assure for people's livelihoods. On the Estonian Island of Vormsi, for example, nature conservation is brought in line with small scale tourism, extensive agriculture, and traditional handicraft in one of the pilots of the Baltic Green Belt project. The integration process also encompasses to include stakeholders from both governmental and non-governmental backgrounds. For example, in Lithuania, the environmental NGO Zvejone collaborates closely with the administration of the governmental Seaside Regional Park to maintain and develop the park as a protected area. On the international level, the structures of the European Green Belt consisting of a Brussels based coordinator, regional coordinators, national focal points and project partners in different constellations are well set up to fulfill this goal. With respect to the vertical integration within the transnational ICZM process, it is important to introduce the Baltic Green Belt idea to policies from the local to the international levels. The vision needs to be lobbied for in order to formally include it in national and local political documents. The German Green Belt has demonstrated how to achieve this and what for.

**Temporal integration** is often ignored in designing ICZM concepts. However, in the Baltic Green Belt context the temporal integration element is a central issue, as it holds both chances and challenges for the region. Due to the restricted access and limited economic activities before 1990, the coastal values are up to now nearly undisturbed in many areas. At the same time, pressures on the environment, resulting from 20 years of enhanced agriculture, fisheries, industry, tourism etc. since the fall of the Iron Curtain, are building up rapidly. Now, in the years and decades to come, impacts from climate change will have to be considered with respect to their short-term and long-term effects on coastal ecosystems and economies. Within the Baltic Green Belt project, Lauku Celotajs gives a good example of integrating over time. The Latvian NGO develops environmentally friendly tourism products based on military heritage from Soviet times to assure for soft tourism in the years to come.

## 2 Climate Change: scenarios, impacts and challenges

*Which climate change impacts are to be expected in the Baltic Sea Region?* It is widely recognised by both science and policy, that climate change driven by man will be inevitable in the 21<sup>st</sup> century (IPCC 2007). In a recent study of the Joint Research Centre of the EU (PESETA study, Ciscar et al. 2009) the socio-economic effects of climate change in Europe were analyzed.

Irrespective of some obvious advantages of Northern Europe seen in the PESETA study, it is necessary to analyse the possible chances and challenges resulting from regional trends in climate change in greater detail. This was done in a comprehensive and detailed Assessment of Climate Change for the Baltic Sea Basin, the so-called BACC report where modelling of regional climate plays a major role (BACC Author team 2008). E.g. the COSMO-CLM model (or CCLM) is a non-hydrostatic unified weather forecast and regional climate model developed by the Consortium for

Small scale MOdelling (COSMO) and the Climate Limited-area Modelling Community (CLM). The COSMO model as well as other approaches for regional climate modeling in Europe by now have a rather high spatial resolution (< 20 km). Therefore, the modelling results may be used with decent confidence for impact assessments. Key outputs have been adopted into the 4th IPCC assessment report on climate change and are currently used for more detailed analyses of climate change.

Model-based **Baltic climate scenarios** until 2100 reveal pronounced changes in the basic climate features.

- general warming trend lies well above global average → 4 - 6°C;
- warming trend speeds up during 2nd half of 21st century
- warming is stronger during winter ( up to 10°) than summer
- considerable increase in precipitation (except in the southernmost areas)
- seasonally, winter will be wetter everywhere, summers drier in the South
- in increase in stronger winds is likely, mainly in winter
- ice cover decreases both in extent and duration
- river discharge likely to increase significantly during winter, decrease during summer (in the South);

Table 1: Climate change scenario outcomes for the Baltic (compiled from BACC Author team 2008).

Climate change scenario outcomes for the Baltic					
Parameter	Southern Baltic Sea Region		Northern Baltic Sea Region		LEGEND
	Winter	Summer	Winter	Summer	
Air temperature	++	+	+++	+	++ / - - ... strong effect + / - ... Moderate effect
Precipitation	+	-	+	o	+ ... increase - ... decrease o ... no change
Wind speed	++	+	++	+	
River discharge	+	-	++	+	
Ice cover	-	n.n.	--	n.n.	

Table 1 summarizes the key findings, providing indication of dominant trends for both the Northern and the Southern Baltic Region, which are somewhat different. In essence, a warming above global average is to be expected, becoming particularly pronounced in the northern half of the Baltic Sea region (BSR). The warming trend, accompanied by significant changes in precipitation and perhaps also in wind patterns will bring about changes and impacts in the environment, affecting marine, littoral and terrestrial ecosystems.

### Baltic ecologic & environmental scenarios

The following changes and processes are to be expected as a result from climate change trends as indicated above:

- decrease in salinity of (mainly central) Baltic Sea
- changes in marine species composition and shift in vertical & horizontal species distribution
- temperature – sensitive species likely to migrate / disappear (e.g. cod)
- increased production & survival rate of „warm“ species (herring, sprat)
- invasion of foreign species may disturb ecosystem balance

- increase in nutrient influx & eutrophication from higher river discharge
- increase in plankton growth and bacterial blooms (e.g. toxic cyanobacteria)
- increase in SLR in the South, with rising sea level „migrating“ North.

The consequences of these environmental scenarios are manifold. While there is a rather clear picture for the BSR as a whole, little is known about the specific consequences to be expected in the narrow coastal strip. More detailed facts can be expected from regional projects, such as

**BALTEX:** The Baltic Sea Experiment ([www.baltex-research.eu](http://www.baltex-research.eu))

**AMBER:** Assessment and Modelling of Baltic Ecosystem Response

([www.io-warnemuende.de/amber.html](http://www.io-warnemuende.de/amber.html))

**BaltCICA:** Climate Change: Impacts, Costs and Adaption in the Baltic Sea Region ([www.baltcica.org](http://www.baltcica.org))

**Baltic Climate:** Baltic Challenges & Chances for local & regional development generated by Climate Change ([www.balticclimate.org](http://www.balticclimate.org))

Some environmental ecological system's adjustments are seen to have a positive effect while others will probably trigger negative impacts for the Baltic region. Current knowledge suggests that the following **socio-economic trends** are likely to be expected:

- increase in coastal flooding due to enhanced SLR and storminess;
- loss of land areas and beaches due to flooding and erosion processes;
- increase in costs for coastal protection and beach management measures;
- improvement of tourism & recreation conditions due to warmer temperatures;
- possible prolongation of the summer tourism season;
- possible decrease of water quality from eutrophication & bacterial blooms;
- improvement of sea traffic (in the North) because of the spatial and temporal reduction sea ice;
- improvement of some coastal habitats & nature reserve areas while others will undergo deterioration.

In the PESETA study (Ciscar et al. 2009) the socio-economic effects of climate change in Europe were studied comparatively across 5 regions in Europe: Southern Europe; Central Europe South; Central Europe North, British Isles and Northern Europe. Four climate change scenarios from moderate (+2.5°C) to strong (+5.4°C) were analyzed for four climate-sensitive sectors in these regions: agriculture, tourism, river floods and coastal systems. The results reveal that climate changes affects European locations in a very different manner. The main PESETA findings can be summarized as follows:

- all regions except Northern Europe will suffer socially and economically from climate change;
- The higher the temperatures, the higher will be the losses in annual welfare for the regional populations;
- tourism is the only sector that is likely to see positive effects in four of the five regions (exception: southern Europe);
- coastal systems will be affected negatively in all five regions of Europe;
- Northern Europe is seen to be gaining welfare in all but one sector: coastal systems.

- Thus, coastal systems is the sector most severely affected across Europe due to the expected impacts of accelerated sea level rise.

It must be stated here, however, that only some (= the southern) parts of Northern Europe will suffer from negative effects of rising sea level. As the central and northern areas of the Baltic Region are still undergoing post-glacial isostatic uplift, these areas might rather see a drop in sea level than a rise. Thus, these shores are facing small or no risks from sea level rise while they might be affected by enhanced erosion due to a reduction of the sea ice cover.

*What are the implications of climate change impacts for the Baltic Green Belt?* Summarising, the findings from both the PESETA study and the BACC report, the Baltic Green Belt region is not threatened negatively by climate change impacts to the same degree as other European regions. Some benefits can be expected, mainly in the tourism and the transport sector. On the other hand, significant environmental alterations might render sensitive coastal and marine ecosystems even more vulnerable.

### **ICZM strategies to cope with climate change?**

As recent outputs of INTERREG IVB BSR projects such as BALTICA; BALTADAPT and others show a dual strategy ought to be followed: adaptation to observed or expected climate change trends & impacts is crucial while mitigation efforts need to be sustained. A few examples for steps & measures to be taken in the Baltic Green Belt Region are:

- reduce Green House Gas emissions (locally and regionally);
- avoid hazardous or negative impacts as far as possible (e.g. flooding, eutrophication);
- utilize positive effects wherever possible (extended season, new habitats);
- strive for environmentally-friendly development of the coast, by using the existing BGB potential!!
- built up a Green/climate friendly image (e.g. eco-tourism; regional products);
- build alliances between adjacent sectors, communities and people;
- stay away from “risky grounds” (e.g. establish no-building zone at coastline);
- get local population, NGOs etc. involved in participatory planning & decision-making.

As ICZM unites both top-down and bottom-up approaches, an improvement of existing governance schemes will be necessary to support the coastal management efforts that have been stimulated through various transnational INTERREG BSR projects. Parallel to these activities work by the UNESCO (2006) documents how mechanisms of ICOM (Integrated Coastal and Ocean Management) can be put into effect so as to substantiate the efficient handling climate-related and other problems in the coastal zone (Tab. 2).

Table 2: Governance mechanisms and measures to support ICZM / ICOM (UNESCO 2006)

Goal	Indicator	Measurements
Ensuring the coordination and coherence of administrative actors and policies	Functions of administrative actors related to the coast	<ul style="list-style-type: none"> <li>- ICOM functions of administrative actors clearly defined by legislation or administrative acts</li> <li>- New agencies for ICOM established and responsibility assigned</li> </ul>
	Coordinating mechanism	<ul style="list-style-type: none"> <li>- Existence and functioning of a coordinating mechanism for ICOM</li> <li>- Outcomes of the coordination process</li> </ul>
	Legislation	<ul style="list-style-type: none"> <li>- Existence of legislation on coastal and marine resources</li> <li>- Adequacy of the ICOM legislation</li> </ul>
	Environmental assessment	<ul style="list-style-type: none"> <li>- Use of EIA and SEA procedures and modifications to coastal projects</li> <li>- Use of CCA procedures in coastal tourism development</li> </ul>
	Conflict resolution mechanism	<ul style="list-style-type: none"> <li>- Agreed procedures and mechanisms for conflict resolution</li> <li>- Changes in the proportions of conflicts successfully mitigated, resolved or prevented</li> <li>- Overall change in the number of conflicts</li> </ul>
Ensuring the quality and effectiveness of management	Integrated management plans	<ul style="list-style-type: none"> <li>- Existence, characteristics and status of ICOM plans</li> <li>- Extent (percentage) of coastline covered by ICOM plans</li> </ul>
	Active management	<ul style="list-style-type: none"> <li>- Level of implementation of ICOM plans, actions and projects, including infrastructure building</li> <li>- Procedures, legal tools, and monitoring and sanctioning applied for enforcement of ICOM plans/actions</li> <li>- Level of enforcement of, or compliance with, ICOM plans</li> </ul>
	Monitoring and evaluation	<ul style="list-style-type: none"> <li>- Existence of an operational monitoring and evaluation system with related indicators</li> <li>- Consideration of results into ICOM initiatives</li> <li>- Adjustments made to ICOM initiatives</li> </ul>

### 3 Outline of ICZM in the Baltic Green Belt

The vision for ICZM in the Baltic Green Belt stems from the European Green Belt: „to create the backbone of an ecological network, running from the Barents to the Black Sea that is a global symbol for transboundary cooperation in nature conservation and sustainable development“ (www.europeangreenbelt.org). Within the BSRP project Baltic Green Belt, stakeholders from different backgrounds have joined to initiate ICZM processes on the local level – e.g. on Vormsi island, in Slitere National Park, and the Lithuanian Seaside Regional Park - to contribute to an ICZM process on the transnational level. Starting from the activities planned within the lifetime of the Baltic Green Belt project, more stakeholders from different sectors should be gradually included while passing through

iterative management cycles. The scope of the activities should be broadened to bridging the water line wherever possible, and close cooperation between NGOs, GOs, science and economy should be sought for. With respect to climate change, the ICZM challenge for the Baltic Green Belt is twofold: On the one hand to utilise the chances of climate change for regional economical development, in particular sustainable tourism, while on the other hand limiting and balancing ecological changes in order to avoid loss of habitats or degradation of the quality of coastal waters, flora and fauna.

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## **Environmental values and threats to coastal areas and the Baltic Green Belt**

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### **Abstract**

The Baltic Green Belt contains special and valuable natural and cultural assets while also being affected and altered by multiple landscape uses. These are often compatible with the Green Belt assets and are sometimes even a prerequisite for their safeguarding. However, they may also arouse severe conflicts, permanently destroying Green Belt values or negatively altering habitat qualities.

### **1 Introduction**

Land use in the Baltic Green Belt has changed dramatically since the fall of the iron curtain. The areas that had been partly or totally inaccessible for decades suddenly became easy to reach. The once dominant military land uses have been almost totally abandoned. Changes in society and the economic situation of many citizens have led to different recreational activities and building pressure along the shoreline. Agricultural use is changing, becoming more intensive or being given up on marginal agricultural land. But also the awareness for nature conservation and protection needs is growing.

The changes pose threats but also chances, and in this article we are going to examine some of the major values of the Baltic Green Belt as well as some development trends and landscape uses with their implications.

### **2 The special assets of the Baltic Green Belt**

The Baltic Green Belt is a contiguous chain of habitats ranging from boreal to temperate Europe, running along the coastline of the Baltic Sea from Estonia to Germany. It forms a central part of the European Green Belt and is its newest section with concerted activities started in 2007 – 2009. The four decade era of the iron curtain is a main reason why such a wide collection of valuable habitats is still present in this area (Maack et al. 2011, Schmiedel et al. 2009, Sepp 2011, Wrška et al. 2009). Besides the natural assets, there are also unique historical monuments dating from the iron curtain period.

#### **Nature and landscape**

The natural assets of the Baltic Green Belt are very diverse. They include both land and sea habitats, which is unique in the whole European Green Belt. Of all Baltic Sea marine and coastal biotope complexes and subtypes (v. Nordheim & Boedeker 1998), only a single one (Fjords) does not occur in the Baltic Green Belt.

Very special and often of international importance are many of the shallow water areas, markedly the lagoons and offshore banks. They are home to characteristic underwater vegetation and benthos communities which vary considerably in their species composition from west to east and from open sea towards the lagoons, in line with the decreasing salinity of the water. These habitats are important feeding grounds for ducks and divers (Figure 1) and indispensable spawning areas for fishes like the Baltic herring (*Clupea harengus*) or garfish (*Belone belone*).

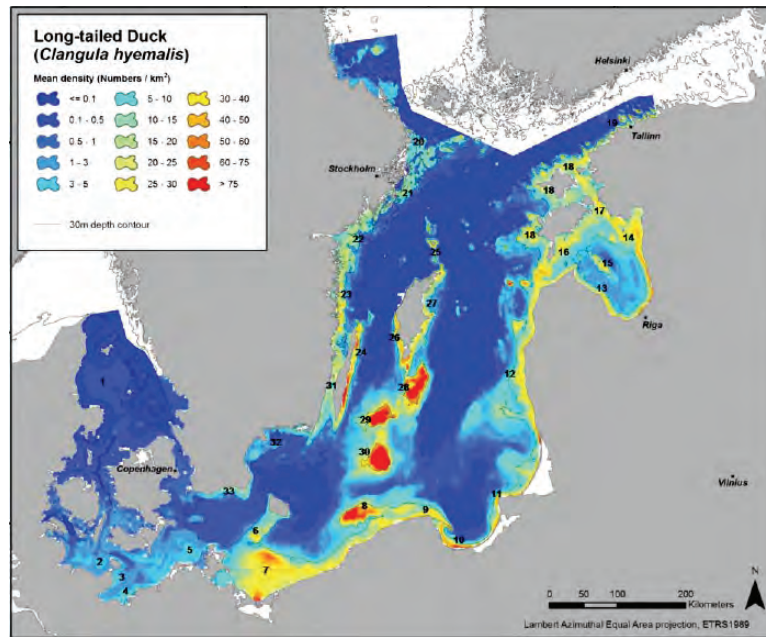


Figure 1: Like many other ducks and divers, wintering Long-tailed ducks (*Clangula hyemalis*) show a marked concentration in Baltic Green Belt shallow waters (Skov et al. 2011).

The coasts in the Baltic Green Belt are multifaceted, reaching from soft sandy shores to steep cliffs of varying geology. Cliff coasts interchange with low coasts frequently and on a small scale, depending on the effective water currents. Estonia shows an abundance of rocky shores, while most other coasts are made up of soft material. The southern shoreline from Lithuania to Germany has the special feature of large lagoons. Their extent and diversity is quite exceptional and of European importance (Niedermayer et al. 2011, Reinicke 2008).

Beaches, sea walls and dunes mediate to the land habitats. They show a great biodiversity with several species and subspecies unique to the Baltic Sea region. They easily lose this diversity in areas with prominent tourism activities or coastal protection measures, but on Latvia's west and Estonia's northeast coast or in the Słowiński and the two Curonian Spit national parks large unspoiled coastal habitats can still be found. Prominent dune complexes exist south of Liepāja (up to 34m high), on the Curonian Spit (67m) and west of Ļeba (42m). Extensive forelands with old wooded dune ridges, such as Cape Kolka in Latvia with 200 parallel dune chains or the Neudarß in Germany with more than 100 chains are evidence for milleniums of dune development and form diverse habitats of varying age.

The low coasts are often associated with periodically flooded brackish marshes. Many of them have been diked off and meliorated in previous decades, but thanks to the special border situation a lot have also survived. While some of them are under agricultural use as grazed meadows, others retain their natural state as brackish reed beds.

Freshwater peat bogs and periodically flooded riverside marshes are most intact in the eastern part of the Baltic Green Belt, with highlights e.g. in Kemeri national park. Among the woodland areas the extensive boreal forests around the Gulf of Finland, e.g. in Lahemaa national park, the world heritage beech woodland of Jasmund or the Rostocker Heide complex stand out.

Dry grassland habitats occur naturally on older dunes, cliffs and on rock and alvar outcrops, but also as secondary vegetation dependent on grazing or cutting. Depending on their substrate, the species composition is very diverse. They show an exceptional quality and value in the limestone-dominated area of Estonia's Vainameri region (Lotman 2004).

The Baltic Green Belt hosts a considerable amount of rare species, some of them endemic to the Baltic Sea region. Quite a few of these have the majority of their stocks in the Baltic Green Belt.

The Baltic Green Belt waters are the most important wintering ground of the European and western Siberian stocks of the Greater Scaup, *Aythya marila*, hosting an approximate 80,000 birds each winter (Mendel et al. 2008, Möller et al. 2009, Skov et al. 2011, Tomiałojć & Stawarczyk 2003). Other parts of the Baltic and other European seas do not seem to offer habitats of a comparable quality for this species. For plants, the Baltic Green Belt shows a marked concentration of species that are rare or endemic and of special conservation concern (Figure 2) (Berg 2004, Kull et al. 2002). For the preservation of a large number of taxa it is the most important area in the respective states, in the Baltic Sea region or even on global level.

Endemics of the Baltic Green Belt are e.g. the cinquefoil *Potentilla wismariensis* occurring only on the coastline between Wismar and Rostock (Gregor & Henker 2001), *Linaria loeselii* of the coast between Kołobrzeg and the Gulf of Riga (Gudžinskas 2008, Piękoś-Mirkowa & Mirek 2003) as well as several plants of Saaremaa and Hiiumaa Islands, notably the rattle *Rhinanthus osiliensis*, the orchid *Dactylorhiza praetermissa* ssp. *osiliensis* or the hawthorn *Crataegus osiliensis* (e.g. Kull et al. 2002, Schmiedel 2011). These (as well as a number of other taxa not specifically mentioned here) occur only in the Baltic Green Belt and nowhere else in the world. Their survival is therefore directly linked with successful Green Belt habitat protection. Many of the endemics seem to be in immediate danger of extinction (Henker et al. 2009, Tartu Ülikool 2012, Voigtländer & Henker 2005), but even those that seem to occur in sufficient numbers have only a very limited distribution encompassing only a few square kilometers at best. They are very susceptible to unfavourable habitat changes, even if these should only be of a very local nature.

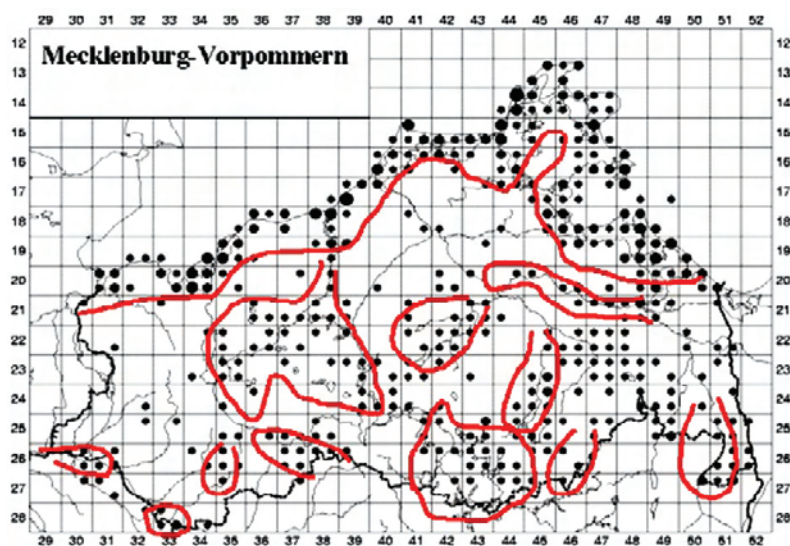


Figure 2: Distribution of vascular plant taxa with global (endemics and subendemics) or national protection responsibility in Mecklenburg-Vorpommern state in Germany. The size of dots indicates the number of species. The red lines enclose the most important areas for plant conservation. The strong concentration in the Baltic Green Belt (top of map) is apparent (Berg 2004).

### Cultural highlights

Four decades of military dominance during iron curtain times have left a great number of military remains. Some of them even date from the 19th or early 20th century and were still used or re-used during the cold war. Many of these military structures serve as historical monuments or memorials today and some can be of considerable visitor interest (Lauku ceļotājs 2011, Sepp 2011). However, the historical value of many military remains in the Green Belt is still not recognized in common perception.

The most prominent marks of the former border situation are probably the remaining watchtowers. Many of these have been removed, the most dramatic losses having probably occurred in Germany, where only three coastal towers survive. While it is understandable that these structures may remind the older generation of unpleasant encounters, they offer a striking experience of what the former border situation was like and are thus of great historical significance.

### **3 Land uses and possible conflicts with Green Belt values**

In the Baltic Green Belt, land uses do not only occur on land areas, but also encompass the many uses of the coastal waters. Human activity, use and exploitation of the whole area is manifold. The construction of infrastructure and the consumption of natural resources are the most striking impacts.

#### **Housing construction and land development**

Urban sprawl and recreational housing development have a great relevance in the Baltic Green Belt. Attractive seaside locations are very much sought after, which makes the Baltic Green Belt - unlike other parts of the European Green Belt - a center for settlements and residential expansion. A great pressure lies on the vicinity of the larger cities where extensive areas have been built up during the past two decades. While by far not all of the claimed spaces have been valuable natural areas, there are still many cases where recreation areas for the urban population or important natural sites have been neglected and spoilt.

Summer houses are being constructed in large numbers at many coastal locations, both adjacent to existing villages and in the open landscape. It is not at all an exception that they are built right into dune fields or other coastal habitats. Centers of recreational construction activities lie e.g. in Jūrmala and on Curonian and Vistula Spit in Kaliningrad region. Especially the Kaliningrad activities pose a severe threat to the Green Belt, since these take place in vast natural and sometimes even protected areas (Plath 2009). The construction activities in protected or particularly sensitive sites often violate official regulations and are regularly only made possible by corruption or unlawful acceptance of benefit (CCB 2008).

New housing developments – both residential and for tourism - are often undertaken on former military sites. While some of them are well suited, it must be kept in mind that large natural and formerly closed areas are often part of these locations and that they are regularly situated in a great distance to villages. Currently, state owned former military land is being sold for development on the Polish coast, seriously endangering unfragmented Green Belt habitats.

#### **Traffic and traffic infrastructure**

A rapid extension of the traffic network in the Green Belt began right after the fall of the iron curtain. Almost all activities concern road construction, both the opening and upgrading of former military driveways to public roads as well as the alignment of totally new infrastructure. The greatest overall density has probably been developed on the German coast, leaving only few unfragmented areas in that part of the Baltic Green Belt (LUNG 2008). A current project posing significant conflicts with Baltic Green Belt assets is the planned bridge from the Estonian mainland to Muhu Island which would create a fixed link to Saaremaa. Situated in an important migration route in Väinameri Important Bird Area, it poses a significant collision risk for birds and might also endanger the ringed seals in the area (Keerberg 2007). Growing car traffic can generally be an important mortality factor for a number of animal species, such as the European otter (*Lutra lutra*) (Körbel 1994).

Some former military airports are now being used for commercial aviation. Their importance for transportation is fairly limited though, the most frequented site being Heringsdorf (Usedom) with a few seasonal regular services. Peenemünde, likewise on Usedom Island, has a pretty conflicting location (resting and feeding bird flocks in adjacent shallow water), but due to low traffic the current actual disturbance to nature seems moderate.

Former military harbours have been transferred to civil use in many cases. Additionally, totally new harbours have been built, such as several large new ports on the Russian coast of the Gulf of Finland. In 2001, Primorsk port on the northern coast was the first to be completed. It concentrates on oil and oil products, just like several other complexes that are planned or under construction on the south coast, e.g. Batareinaja Bay or Lomonosov (Hänninen & Rytönen 2004). There have been conflicts with Green Belt natural heritage, including protected areas, in almost all cases and pre-construction consultation with local communities has been poor to non-existent (Pynnöniemi 2011, Trumbull & Bodrov 2009).

Ust-Luga on the southern coast of the Gulf of Finland is a totally new construction in a formerly unspoiled marsh and woodland area around the mouth of Luga River and probably poses the greatest conflicts with Green Belt heritage. It has large container and ferry facilities and is also planned to become a major port for coal and oil. Severe conflicts with nature protection are obvious and the damage to Green Belt assets is substantial also in neighbouring protected areas, e.g. Ostrov Seskar, Ostrov Malyy and Kurgalsky Peninsula (Scandiaconsult 2003, Trumbull & Bodrov 2009). Construction activities in the complex are still going on, although large areas are already in operation. Baltijsk in Kaliningrad region is also seeing a huge expansion of the port complex and a new deep water port may be built off Būtingė in Lithuania. A large liquid gas terminal is currently being constructed for Świnoujście port in former woodland on Wolin Island, and Rostock plans to almost double its port area. If realized as planned, this would destroy the last coastal marshes on the Warnow estuary and conflict with Rostocker Heide site conservation. There are numerous other port projects at many sites along the Baltic Green Belt, most of them enlargements of existing ports.

Recreational ports for yachts and similar vessels have been constructed mainly in Germany. A further substantial development with several totally new sites and an extensive enlargement of many existing ports is planned, despite an existing average summer utilization of only 25% (Planco 2004). Quite a few of the envisaged locations pose high conflicts with Green Belt assets while other sites are well in line with sustainable development policies. In most cases a final decision in favour or against construction has not been taken.

The growing oil tanker traffic through the Baltic Sea passes largely outside of Green Belt waters. Oilspills can, however, easily reach Green Belt habitats. Traffic to installations like Būtingė oil terminal poses a constant risk for the nearby shallow water and spawning areas (Vetemaa et al. 2009). In the often shallow waters of the Baltic Green Belt the risk of shipping accidents is apparent and many such calamities have happened in the past involving vessels of various sizes.

While many sea areas were closed for water sports, yachts or even general shipping during iron curtain times, they are now open and often under heavy use by vessels of different types and sizes. This means that many water areas that were previously virtually unaffected by water traffic are now prone to a more or less striking disturbance that may be problematic for resting or moulting water birds exhibiting flight distances of often more than one kilometer (Mendel et al. 2008). This applies especially to many waters on the Estonian west coast and in Germany's Western Pomerania region.

### **Recreation and tourism**

The Baltic Green Belt has an outstanding importance for tourism. It is among the touristic top destinations of all Baltic Green Belt countries, usually being the topmost tourist area of the respective nation or state. Hotspots for tourism and recreation are Darss-Zingst peninsula, Rügen, Usedom and Wolin islands, the Gulf of Gdańsk and Gulf of Riga, as well as the Rostock, Tallinn and St. Petersburg metropolitan areas. While much of the tourism is focused on bathing and sunbathing on sandy beaches, the natural and cultural values are an important asset, especially for the more remote regions. Both tourism industry and tourists therefore benefit greatly from the Green Belt's attractions.

Numerous travel guides focusing on the natural values have been published, and even a few dealing specifically with the Baltic Green Belt (e.g. Cornelius 2009, Lauku ceļotājs 2011, 2012).



There are several excellent field examples of integrating both the natural and cultural/military assets into combined tourist destinations especially in Latvia and Estonia, for example by transforming former watchtowers into birdwatching platforms or reusing former military buildings as in-field information centers. Tourism can, however, also damage natural values, e.g. through trampling on beaches, dunes and sea walls (Schierding et al. 2011). This is a problem especially on the heavily used beaches in Germany and can be alleviated only by zoning measures concentrating tourism on some beaches and reducing impact on others.

Environmental problems like algal blooms, overfishing or oil spills have a significant negative effect on tourism. This extent varies significantly from region to region and ranges from irrelevant to quite important, just like the perception of the problems by the tourism industry (Hasselström 2008).

### Agriculture and forestry

Agricultural land use is the major source of nutrient inputs in the Baltic Sea and thus also the main cause for the severe eutrophication that has changed not only the shallow water habitats of the Baltic Green Belt. Agriculture contributes 70-90% of the total anthropogenic diffuse losses of nitrogen and 60-80% of total phosphorus (Figure 3). The highest per-hectare emissions in the Baltic Green Belt area originate from agriculture in Germany (Andersen & Laamanen 2009, Knuuttila et al. 2011).

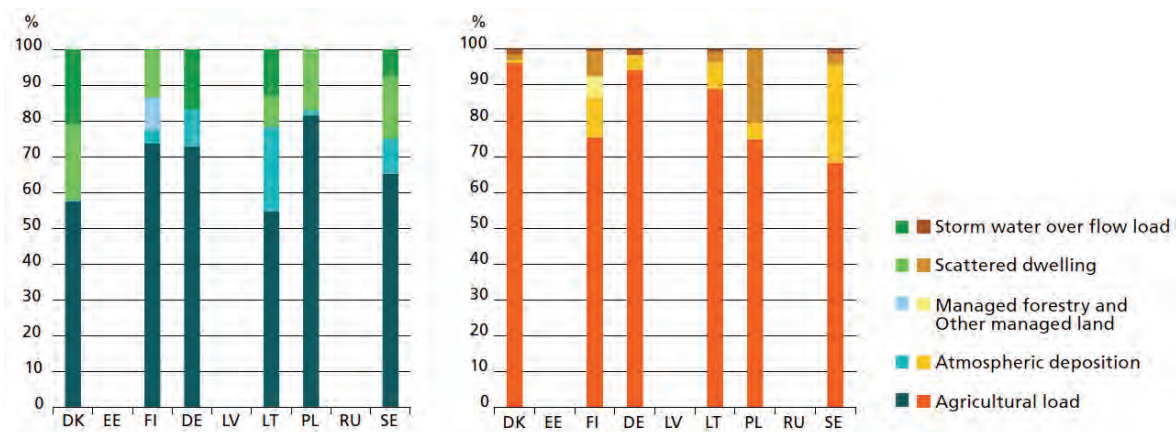


Figure 3: Anthropogenic diffuse phosphorus (left) and nitrogen (right) loads into the Baltic Sea by source (in %) and by country in 2006 (Knuuttila et al. 2011).

Agricultural land use in the Baltic Green Belt follows two opposite trends. Many areas show an intensification of agricultural land use, leading to higher fertilizer and pesticide treatments and a more industrialized method of land cultivation, including the removal of natural structures that hinder such cultivation measures. On the other hand, land use is being given up on marginal agricultural land. The resulting succession is sometimes unfavourable for valuable man-made habitats, especially dry and boggy grasslands. Efforts are being taken to encourage a continuation of land use in some of these areas, focused on nature conservation. A very comprehensive approach has been taken in the Vainameri region in western Estonia, where nature protection, agriculture, regional economy and local societies have been integrated into a regional policy aiming at the sustainable preservation of the natural assets (Kokovkin et al. 2005).

Industrial logging of formerly not or only lightly used woodlands is a danger especially to boreal forests around the Gulf of Finland and has taken place even in protected areas (Green World 2007). On the other hand, there are local efforts to install sustainable forestry regimes based e.g. on FSC standards and even establish some no-use areas inside and outside of national parks. Experiences from Rostocker Heide site show that this forestry is not less economic than traditional practices (Hansestadt Rostock 2011).

## Fisheries

Fisheries have been a long time traditional use of many Green Belt waters, but as many fish stocks are today in a poorer shape as several decades ago and the same yield therefore requires considerably more nets, fishing intensity has usually gone up (Figure 4). This arouses increased problems with bycatch of birds and whales. Large losses of ducks, divers and some other birds occur especially around Vistula Spit in Lithuania, in the Gulf of Gdańsk and in the Oder mouth area (Koschinski & Stempel 2010, Meissner 2001, Žydelis 2009). Harbour porpoise bycatches are a special problem in Puck Bay and in many German open sea waters, e.g. around the Oder Bank. Puck Bay has therefore been blocked against porpoise entry by a chain of pingers (Sergot 2010). This, however, is a somewhat doubtful solution, since it keeps the porpoises out of their feeding grounds, and the actual effectiveness of the pingers is not known anyway.



Figure 4: Growing fishing intensity illustrated by the density and locations of set nets in Green Belt waters SE of Rügen Island (Institut für angewandte Ökologie 2007).

Due to overfishing, many of the fish populations of the shallow water areas have been severely altered, both in species composition and in age structure (Aps & Lassen 2010, Limburg et al. 2008). Especially target species like cod (*Gadus morhua*) or European perch (*Perca fluviatilis*) are drastically reduced in biomass and average age, not only by commercial fisheries, but also quite significantly by sport fishing (Ådjers et al. 2006, Bundesforschungsanstalt für Fischerei 2007). While no target fisheries exist on rare species like twaite shad (*Alosa fallax*) or Atlantic sturgeon (*Acipenser oxyrinchus*), their stocks can still be endangered by catches. Also affected are other organisms of the ecosystem, both directly (e.g. through habitat damage and direct kills produced by bottom trawling) and indirectly (e.g. changed predator-prey relationships due to the altered structure of the fish population). Approaches to relieve conflicts between fisheries and nature conservation in the Baltic Green Belt have been developed e.g. for Germany (Pusch & Pedersen 2010).

The construction of artificial reefs, as performed off the coasts of Mecklenburg, Poland and Estonia with special reference to fisheries, is not a solution to restore fish stocks and the ecosystem to a natural state. While they may be concentration points for fishes, these reefs are very different from the natural soft bottom communities and they may actually increase organic detritus accumulation and hypoxia in surrounding sand bottom areas (Zettler & Pollehne 2008).

## Extraction of geological resources

Marine sand and gravel extraction is a major threat to the shallow water marine habitats of the Green Belt, since it destroys the complete sea bottom flora and fauna, leaving an either temporarily or permanently severely damaged habitat. Large sea bottom areas in the Green Belt are affected by these activities, e.g. in Germany, Poland and Russia (Herrmann et al. 1999, Sutton & Boyd 2009). All states along the Baltic Green Belt exploit marine aggregates both for beach nourishment and construction activities on land, to a minor extent also for the maintenance of dredged channels. There are no

regionalized statistics of the actual takes (they vary considerably anyway from year to year), but probably at least 1 million m<sup>3</sup> are taken annually out of Baltic Green Belt waters in average, possibly a lot more. The total affected area is difficult to estimate, but due to the usually very limited extraction depth of up to 2 meters it must be extensive.

Offshore oil extraction with 13 producing wells is performed in Kravtsovskoye oilfield 22 km northwest of the Curonian Spit with substantial pollution risks for the world heritage site and national parks (Council of Europe 2005). Possibilities of future oil extraction are currently being investigated around Usedom Island (CEP 2011). The associated seismic investigations will probably have harmful effects on marine mammals in the area, especially harbour porpoises. The effects of oil shale mining in northeastern Estonia affect the Green Belt by changing e.g. level and composition of groundwater (Gavrilova et al. 2005).

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## **Industrial Animal Farming in Poland as a major threat to the natural environment of the Baltic Sea**

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### **Abstract**

The dynamic development of modern agriculture, intensification of an animal production and the desire to maximize garner for a limited and defined area of available arable land, hopes for economic benefits, but also causes serious environmental threats to the Baltic Sea, as well as its whole catchment area. The biggest problem seems to be large-scale, industrial animal farms. There are 752 such farms in Poland and, because of highly concentrated and industrialized production system resulting in significant individual impact on environment, Helsinki Commission (HELCOM) has recognized them as a point sources of agricultural pollution (Baltic Hot Spots). The main problem with factory farming is connected with high production of natural fertilizer (liquid manure). Manure storage and handling cause many ecological, socio-economic and legal problems. The only solution seems to be sustainable agriculture, which balance the need to meet the needs of present generations with the need to meet the needs of future generations. This idea, deriving from a very pragmatic reasons, will tackle in the future reconstruction of ecosystems' homeostasis and reconciliation of agricultural activity with the needs of the environment. Thus, sustainable farming is not a brake on progressive crops and livestock production, but only stimulus guiding the direction and framework for their development.

### **1 Introduction**

Intensive animal farming causes a number of hazards, which may have a negative impact on the Baltic Sea Region environmental condition. The possible impact concerns all components of the environment: air, soil and – what is the most important for the Baltic Sea – water (surface water, subsoil water, rainwater). Negative effects of industrial animal farming have also social, economic and legal connotations.

The most inconvenient sources of pollution are big factory farms, in which even a few thousands of animals are kept. This particular kind of animal livestock farming is called industrial (or factory, intensive). In the Council Directive 96/61/EC of 24th September 1996 concerning integrated pollution prevention and control (IPPC Directive) industrial animal farms are defined as plants, that are obligated to possess integrated permits (which includes all pollutant emission from particular plant to all environment components), that is with livestock density for unless 40,000 individuals (poultry), 2,000 pigs over 30 kg, or 750 sows. In 2008, the Helsinki Commission (HELCOM) has recognized large-scale farms as point sources of agricultural pollution (Baltic Hot Spots). Also factory cattle farms with more than 400 Animal Units, as well as sheep, goats, horses and fur animals large-scale breeding installations with equivalent number of livestock were counted among this category (HELCOM 2009).

The most disadvantageous, from environmental point of view, is litter-free breeding, which causes great amounts of liquid manure. The manure is a natural, liquid fertilizer, which contains of feces, urine and water. This is a highly concentrated fertilizer with heavy content of mineral components,

microbiologically polluted. Improperly stored, managed and utilized manure can cause many serious threats, both to natural environment and to man's health (Skorupski et al. 2007).

In comparison, dung is less concentrated animal natural fertilizer, produced in litter rearing farms. Dung contains more organic matter, has higher temperature than liquid manure (worse development conditions for pathogenic microorganisms and parasites) and for that reasons is considered as more environmentally-friendly (Skorupski 2011).

By contrast, on industrial poultry farms the poultry dung is produced, with different composition than the pig manure. Dung of hens (or turkey, duck, goose) is characterized by high concentration of minerals – both nitrogen and phosphorus. This follows from the fact that birds excrete urine with feces, in the form of solid uric acid. The problem is also an unbalanced diet, resulting in significant quantities of undigested phosphorus compounds excreted in faeces (Skorupski 2011).

Thus, the negative influence of industrial animal farming depends on the species kept on farm, level of livestock density and on technology of the breeding and management of the produced fertilizers.

The industrial animal sector is being regulated by number of European Union's legal acts, from among which the most important are Council Directive 96/61/EC of 24th September 1996 concerning integrated pollution prevention and control (IPPC Directive, since 2011 replaced by the IED Directive/Directive on industrial emissions 2010/75/EU) and Council Directive 91/676/EEC of 12th December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (Nitrates Directive). There are also some general recommendations, like Reference Document on Best Available Techniques (BAT) for Intensive Rearing of Poultry and Pigs, European Commission, July 2003 (BREF), BS EN 13725:2003 Air quality. Determination of odour concentration by dynamic olfactometry (standard of odour air quality of European Committee of Standardization), Good Agricultural Practice Code, Best Environment Practice (BEP), as well as international conventions and agreements, e.g. Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992, entered into force on 17 January 2000 (Helsinki Convention), and Agenda 21 for the Baltic Region (an agricultural sector activities).

On the national level intensive livestock rearing is regulated by number of legal acts. The rules of manure application (as natural fertilizer) are defined in the Fertilizer and Fertilization Act, Good Agricultural Practice Code, and in Ministry of Agriculture Decree on application of fertilizers and education in fertilization (Dz. U. Nr 60, poz. 616 of June 1st, 2001). Fertilizing in the Nitrate Vulnerable Zones is restricted through the Water Law Act (Dz. U. Nr 115, poz. 1229 of July 18th, 2001), the Environmental Protection Act (Dz. U. Nr 62, poz. 627 of April 27th, 2001) and through two Ministry of Environment Decrees regarding Nitrate Vulnerable Zones (Dz. U. Nr 241, poz. 2093 of December 23rd, 2002 and Dz. U. Nr 4, poz. 44 of December 23rd, 2002). According to the Fertilizer and Fertilization Act the minimum level of capacity for storing of manure should allow for 4 months storing or 6 months in the Nitrate Vulnerable Zones. Annex III to the Helsinki Convention, concerning the 6 months period of storing manure, is not obeyed.

It is noticeable that above mentioned legal acts are not commonly obeyed, as it is said in a document of the Polish Supreme Chamber of Control's, published after the newest control of industrial animal farms in Poland (Supreme Chamber of Control 2007).

## 2 Statistical data

There are about 14.3 million pigs in Poland (Central Statistical Office 2010) and population of poultry amounts to about 124.4 million (Central Statistical Office 2010). The livestock density is equivalent to 89 pigs and 771 heads of poultry per 100 ha of farmland.

There are 752 industrial animal farms in Poland (Ministry of Environment, September 2010), including 146 pig farms (82 farms with more than 2,000 places for pigs over 30 kg, 48 farms with more than 750 sows and 16 farms with mixed production profile) and 606 poultry farms. Number of

large-scale farms, calculated per 1,000 ha of arable land is 0.05 (pigs – 0.01, poultry – 0.04). Most farms are located in the Wielkopolskie, Mazowieckie, Zachodniopomorskie, Kujawsko-Pomorskie, and Łódzkie provinces (Figure 1, Figure 2).

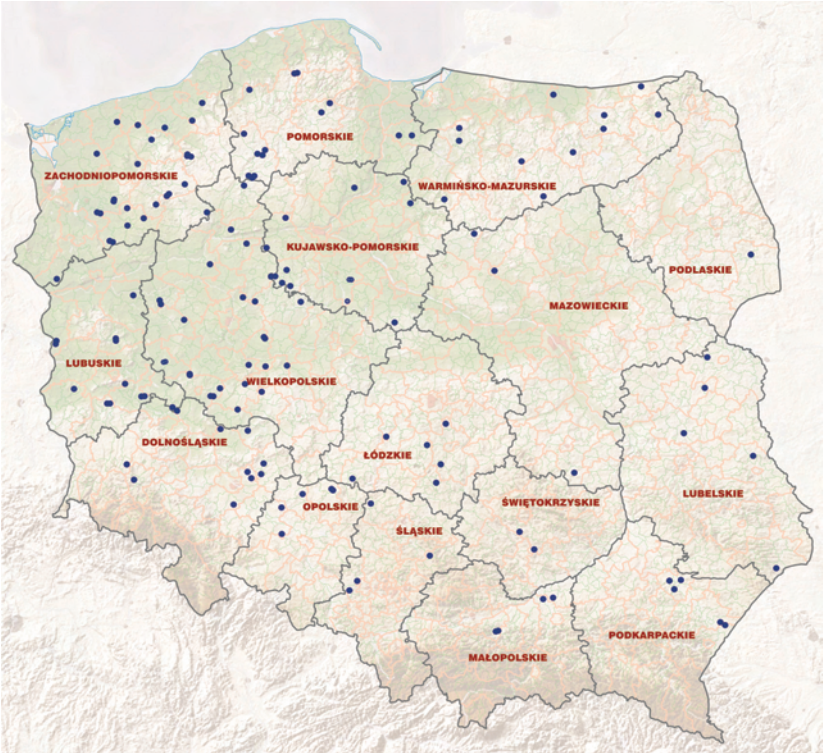


Figure 1: Location of swine industrial farms in Poland.

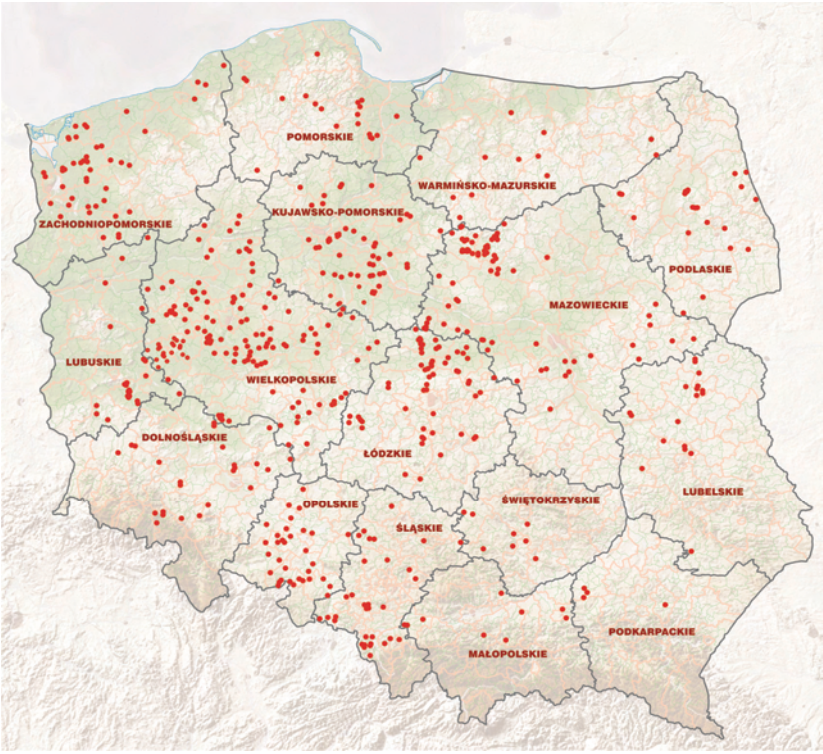


Figure 2: Location of poultry industrial farms in Poland.

According to the Centre of Agricultural Consultancy there are 62 organic pig farms (and 71 poultry farms) accordant with Organic Farming – EC Control System (Regulation (EEC) No 2092/91). In comparison, in Denmark the overall number of such farms is app. 364) (Danish Plant Directorate 2002).

Analysis of the number of farms per 10,000 ha of agricultural land in individual provinces, as well as based on the 10,000 inhabitants of rural areas of individual region, allows for interesting conclusions. Firstly, taking into account the acreage of arable land, Kujawsko-pomorskie and Opolskie provinces are characterized by especially high indicator of the large-scale farms density (Figure 3). However, comparing the amount of the IPPC farms with the number of inhabitants of rural areas, especially high ratio is characteristic for Kujawsko-pomorskie province (Figure 4).

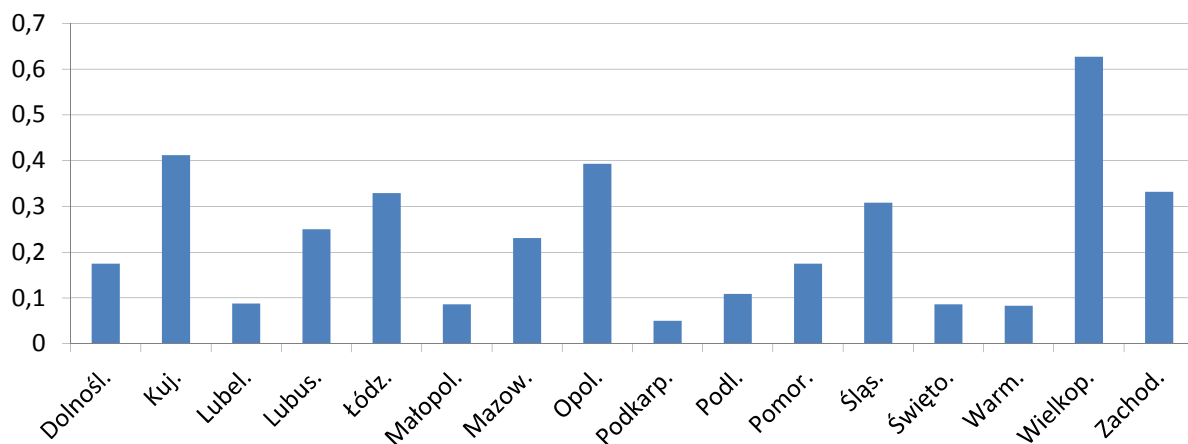


Figure 3: Number of industrial animal farms per 10,000 ha of farmland, in individual provinces.

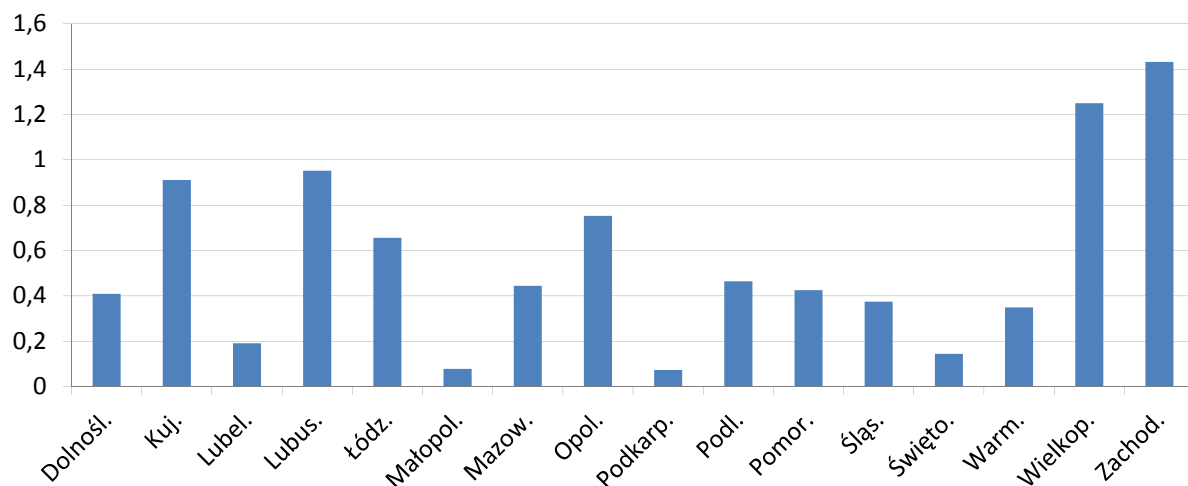


Figure 4: Number of industrial animal farms per 10,000 inhabitants of rural areas, in individual provinces.

These data allows assess the actual share of industrial agriculture in the whole agricultural landscape of various Polish regions, as well as the possible scale of its impact on the population of the particular provinces. Analysis of only the number of farms in individual provinces indicate 5 provinces (listed earlier Wielkopolskie, Mazowieckie, Zachodniopomorskie, Kujawsko-Pomorskie, and Łódzkie), as the areas of highest concentration of industrial animal farms. Meanwhile, taking into account the



acreage of agricultural land and population of individual provinces, among those listed above only Wielkopolskie, Zachodniopomorskie and Kujawsko-Pomorskie provinces are areas of particularly high share of large-scale livestock production in the socio-economic landscape. Right behind them ranks Opolskie province.

### 3 Problems connected with intensive animal rearing

All problems connected with industrial animal farming can be divided into three groups – environmental, socio-economic and legal problems.

Environmental problems include (Skorupski et al. 2012):

- water pollution – the main danger related to agricultural usage of liquid manure is leakage of the nutrition macroelements (like nitrogen and phosphorus) to the ground water and surfaces water, connected with overfertilization of fields;
- eutrophication – “overfertilization” of inland and sea waters (algal blooms, decrease of fish population, ecosystems modifications, loss of bottom fauna, lack of oxygen in waters) (Figure 5);



Figure 5: Strongly overfertilised mid-field pond (Picture: A. Kozłowska).

- microbiological pollution – *Staphylococcus* sp., fecal streptococci, *Escherichia coli*, rubella bacilli, tubercle bacilli, foot-and-mouth disease viruses, various fungi and parasites are microbes connected to the liquid manure produced by pig farming; this kind of microbiological water pollution constitutes a sanitary danger (Łysko & Cyglicki 2004);
- greenhouse gas emission and its contribution to formation of acid rain and the ozone layer harming increased greenhouse effect.
- Among the socio-economic problems the most important are (Skorupski et al. 2012):
- air pollution – the anoxic (without oxygen) fermentation of manure, produces such gases as ammoniac, hydrogen sulfide, carbonyl compounds, amines, mercaptans, dinitrogen monoxide, etc. These gases causes offensive odours, danger for human health (e.g. pernicious effect on air-stream mechanism transformation of haemoglobin into hematine, plugged nose, lacrimation, headache, stress) (Steinheider 1999; Nimmermark 2004);

- loss of recreation places – for example, the liquid manure from farms in the Goldap's health resort neighborhood caused massive fish oxygen starvation in nearby lakes in 2006 (Skorupski 2007);
- high costs of drinking water purification;
- degradation of cropland – improper storage and usage of liquid manure;
- farms' location in direct neighborhood of Natura 2000 areas and different protected or valuable areas and the Nitrate Vulnerable Zones.
- Finally, the legal problems are (Skorupski et al. 2012):
- lack of permanent monitoring of the soil quality;
- the Polish Ministry of Agriculture refuses public access to information about fertilization plans claiming that this is market sensible, private information; local communities around big farms have been entirely deprived of the possibility of controlling proper manure management; present situation shows that Aarhus Convention principles regarding access to environmental information are not followed in Poland;
- deficiency of the Helsinki Convention implementation – common failure to observe the Annex III (Bukowski 2010);
- Poland does not have any regulations concerning air odour quality (the Limitation of Odour Emission Act is being discussed); in this situation there are no legal procedures that can be used if a farm causes odour emissions, which is often troublesome for local societies;
- infringements of the law connected to activities of the pig farms (Supreme Chamber of Control 2007);
- problems with inspection authorization of Regional Environmental Protection Inspectorates and local authorities, which in some cases has powers, but do not make use of it;
- despite the fact that the Reference Document on Best Available Techniques for Intensive Rearing of Poultry and Pigs (BREF) is available in Polish language, it is not commonly applied;
- ineffectiveness of industrial farms controls run by the Veterinary Inspection, the Environmental Protection Inspection and Sanitary Inspection (Supreme Chamber of Control 2007);
- insufficient cooperation and coordination of activities, connected with industrial animal farms control, between institutions mentioned above (Supreme Chamber of Control 2007);
- disregard of building regulations by factory farms, stated during Main Office of Architectonic Supervision's controls (Supreme Chamber of Control 2007);
- not taking into account the local community voice under consideration during IPPC license process and farms localization.

#### **4 Large-scale agriculture and the natural environment of the Baltic Sea**

The stocks of pig in the whole Baltic Sea region counts around 67.3 million of animals, cattle – 35.6 million, while the poultry population – 189.8 million (Gren et al. 2008). In the Baltic Sea catchment area are located over 1,320 large-scale poultry and swine (IPPC) farms (Tybrik 2012). This figure does not include installations for rearing of cattle, fur animals, horses, sheep and goats with the density corresponding to the IPPC factory farming, and thus also strongly affecting the natural environment. This impact is so important mainly because of factory farms highly concentrated and industrialized animal production system, with significant individual impact on environment (high production of natural fertilizers). As such, industrial animal farms must be recognized as point sources of agricultural pollution, which interactions with the environment – their intensity and scope – are different than in the case of diffuse (non-point) sources of agricultural pollution.



The intensification and industrialization of agricultural production is particularly dangerous for the environment of the Baltic Sea, as a result of its ecological sensitivity, caused by (Skorupski et al. 2012):

- fewer species than in the open sea (conditions not really optimal for either freshwater species or saltwater species),
- the water exchange is slow (nearly enclosed brackish-water area, seawater renewal through narrow Danish Straits and Sound (retention time 30 years), vertical salinity stratification of the water masses (halocline) prevents vertical mixing of the water, and prevents ventilation and oxygenation),
- the Baltic Sea is situated in a densely populated area (sewage from 85 million people is discharged into the sea, making it one of the world's most polluted sea).

Especially dangerous process, from an ecological point of view, is the eutrophication. Polish Water Law defines it as an enrichment of waters with nutrients (nitrogen and phosphorus), causing an accelerated growth of algae and higher forms of plant life, resulting in the disruption of biological processes in the aquatic environment and affects the quality of these waters. Effect of large-scale agricultural activities on the Baltic Sea's eutrophication, illustrate the following data (Lääne et al. 2005):

- 50-80% of nitrogen pollution comes from runoff water from areas used for agriculture (soil cultivation, use of fertilisers, storing and spreading manure, intensive and uncontrolled agriculture),
- urban and industrial wastewater are still the main source of water pollution with phosphorus, but in some countries (f.i. Nordic countries), where treatment is widely used in removing nutrients, the primary source of phosphorus pollution is agriculture,
- the main causes of high rates of nitrogen and phosphorus loads (kg N or P/ha/year) for land unit area is high percentage of agricultural land and high population density,
- during the last 30 years there has been a marked decline in nitrogen and phosphorus loads discharged from the housing and industry, while stable amount of nutrients discharged to water from agricultural areas.

## **5 The ways to act against negative effect of industrial animal farming**

Due to the scale and intensification of production, as well as the number of livestock on the industrial farms, their significant impact on the environment and local communities is obvious. The general opinion about the industrial animal production, unfortunately backed by a shameful practice, is negative and thus, recognized as not environmentally friendly. However, it is possible to implement a number of specific ways to counteract the negative effects of industrial farming, which allows make it at least environmentally neutral. Efficient ways to act against negative effects of the factory fattening, recommended many times by Green Federation GAJA, Coalition Clean Baltic, HELCOM and also enclosed in Baltic Sea Action Plan or the Polish Supreme Chamber of Control conclusions and recommendations, are:

- considering all types of factory farms as HELCOM'S point sources agricultural;
- detailed inspection of a bidding legal standards (both in terms of fulfilling the obligation to obtain an integrated permit, as well as meeting the conditions contained therein and compliance by the installation of the existing legal regulations for environmental protection);
- increasing local authorities participation in control and law enforcement process, connected with industrial animal sector;

- information about IPPC-plants should be published and commonly available (up-to-date actualization and expanding of the Ministry of Environment's internet database and The European Pollutant Release and Transfer Register (E-PRTR);
- promotion and increase the number of ecological livestock farms;
- using of biotechnological ways of liquid manure treatment (decrease foul smell emission, biological disinfection and sanitization, organic matter mineralization, biogas production, purification in farm's biological refineries
- controlled fermentation, making use of "efficient microorganisms");
- setting efficient law regulations on air's smell quality;
- full implementation of ratified Helsinki Convention;
- increasing the meaning and popularization of the Reference Document on Best Available Techniques for Intensive Rearing of Poultry and Pigs (BREF), Good Agricultural Practice Code and works of Agenda 21 in sector of industrial animal production;
- using of well-balanced fodder for animals, to prevent animals from excretion a high number of nitrogen and phosphorus compounds;
- increase of participation of local communities in administrative proceedings relating to the establishment of new farms (for example, by keeping the existing standards of public consultation, to facilitate public access to information on environment and its protection, promotion practices related to the idea of citizen-friendly offices);
- more restrictive approach to the farms that operate in or near protected areas, including preventing the siting of new farms in those areas;
- revision of existing in Poland Nitrate Vulnerable Zones (NVZ), which includes the establishment of new one, which corresponds to the real needs and circumstances set out in the Nitrates Directive.

All these practices allows to approach the industrial animal farming to sustainable agriculture, which relies on the use of environmentally friendly methods to mitigate the negative impact of agriculture on the environment through the introduction of integrated pest management and fertilization plan, based on nitrogen balance. Sustainable agriculture balance the need to meet the needs of present generations with the need to meet the needs of future generations. This idea, deriving from a very pragmatic reasons, will tackle in the future reconstruction of ecosystems' homeostasis and reconciliation of agricultural activity with the needs of the environment. Thus, sustainable farming is not a brake on progressive crops and livestock production, but only stimulus guiding the direction and framework for their development.

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## **Transferring experience in Green Belt Tourism to the Baltic**

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### **Abstract**

Tourism has been called one of the major chances for sustainable development of regions at the European Green Belt. However, stakeholders along the European Green Belt have different ideas of what Green Belt tourism should or should not be. In order to assure for positive effects of tourism development on the Green Belt, it is necessary to specify the concepts underlying Green Belt tourism development. This article attempts to specify two basic aspects of Green Belt tourism: the effects (positive effects aimed for and negative effects to be avoided) and the target groups of Green Belt tourism. Two existing pilot studies (AGORA, Exp GB) were examined for information concerning these aspects. The extracted information was examined with respect to suitability for application in a coastal pilot region in Estonia, and if necessary adapted to the situation. The results consist of a generalised outline for GB tourism target groups as well as a list of desired and undesired effects of GB tourism. Both of these can be used for planning of further tourism projects at the European GB.

### **1 Introduction/ Background & Objectives**

*“The European Green Belt has the vision to create the backbone of an ecological network, running from the Barents to the Black Sea that is a global symbol for transboundary cooperation in nature conservation and sustainable development.” (Terry et al. 2006)*

This article ties up on this vision. The Baltic Green Belt has been developed as a part of the European Green Belt only within the last three to four years. If coastal regions decide to lay a focus on nature conservation, they face limitations with respect to growth oriented regional development, which usually results in coastal build up and land use conversion. Therefore alternative sources of income compatible to nature conservation need to be worked out for those regions. As an intact nature and rare habitats are main conditions for tourism in rural regions, it seems obvious that tourism can be an economical alternative for the regions along the Green Belt. At the same time, tourism can be a successful tool to help turn the vision into reality.

Green Belt activities in tourism have been documented for several regions, e.g. at the former inner German border (project Experience Green Belt [[www.experiencegreenbelt.de](http://www.experiencegreenbelt.de)]), at the Slovenian/Austrian border (Cross Border Stones [[www.europeangreenbelt.org/003.local.011.html](http://www.europeangreenbelt.org/003.local.011.html)]), as well as Austria/Czech Republic border (Morava Thaya-Tours [[www.greenbelteurope.eu](http://www.greenbelteurope.eu)]) and the Austrian/Hungarian border (National Park Fertő/Hanság – Neusiedler See [[www.nationalpark-neusiedlersee-seewinkel.at](http://www.nationalpark-neusiedlersee-seewinkel.at)])). However, with more people joining the initiative in other parts of Europe, the goals pursued with Green Belt Tourism and means to implement it blurred increasingly to outsiders or newcomers. No guidelines or common ideas were formulated on the level of the European Green Belt. In particular, it was difficult for the Baltic Green Belt community to grasp the Green Belt Tourism idea in order to adapt it to the own circumstances in the Baltic Sea Region.

The goal of this article is therefore, to use existing tourism initiatives to extract common ideas of Green Belt Tourism and compile these ideas into common terms to be used by Green Belt stakeholders in the Baltic Green Belt. First, a definition of Green Belt Tourism is provided. Secondly,

the principles, impacts and potential target groups of Green Belt Tourism are described. Finally, some recommendations for action for those regions that want to implement Green Belt Tourism are given including references to helpful implementation tools from the European Green Belt community.

## 2 Definition of Green Belt Tourism

There is no statement in the literature yet which defines Green Belt Tourism. Even the term “Green Belt Tourism” does not exist. However, within projects dealing with tourism development at the Green Belt publications about Green Belt Tourism have been produced which can serve as sources for the definition (e.g. BN & BUND 2006, Terry et al. 2006, Wrbka 2009). In these publications, Green Belt Tourism is characterised by the following aspects: the region in which it takes place, the contents it presents to visitors and the effects it has on regions.

Green Belt Tourism is **spatially bound to the European Green Belt**, that is the area associated with the former border between the eastern and western blocks during the second half of the 20<sup>th</sup> century. With respect to contents, Green Belt Tourism can be understood as a special kind of **heritage tourism**, as the heritage of the Iron Curtain, **both natural and cultural**, is one of the focus points of this tourism phenomenon in all projects. With respect to the effects, Green Belt Tourism requires its developers to keep in mind on the one hand the effects on nature, and on the other hand the (social and economical) effects on the local communities. In other words: sustainable development is essential for the development on the Green Belt through tourism. That is why Green Belt Tourism is also a form of **sustainable tourism**. The main goal of the European Green Belt, which has to be pursued in Green Belt Tourism as well, is the **conservation of the nature** that developed along the belt during the Cold War. Nature here, has two implications for tourism: Primarily, natural areas are the main locations where Green Belt Tourism takes place; secondarily, nature provides content (topics and activities) to tourism offers. All these specific forms of tourism have to be considered in Green Belt Tourism. Therefore a definition of Green Belt Tourism has to lean on these forms and their definitions.

For understanding the meaning of heritage tourism one has to understand the meaning of heritage. In research there is already a long debate existing (BOWES 1989: 36; ASHWORTH & TURNBRIDGE 1999: 105; TIMOTHY & BOYD 2003: 2). For Green Belt Tourism the understanding of heritage is leaned on the definitions by the UNESCO (UNESCO 1972: 2; UNESCO 2003: 2; Jokilehto 2005: 43), which contains the natural, the cultural and the intangible heritage. The relevant heritage for the Green Belt includes all these phenomena that are related to the time of the “Iron Curtain”. This can be for example socialist monuments, barrack complexes, military airfields, bunkers and watchtowers (cultural heritage), witnesses reports and the “living in the occupation area” (intangible heritage), but also the unique habitats developed along the Iron Curtain as the one outstanding natural heritage, containing the Biodiversity and endangered and rare species (natural heritage).

Knowing the meaning of heritage, one can define the term of heritage tourism. Combining the definitions of tourism by UNWTO and heritage by UNESCO (see above), heritage tourism can be understood as all tourism phenomena where people visit natural and/or cultural heritage sites and/or the participation in events with a reference to these heritage sites.

As mentioned before, another important premise for Green Belt Tourism is sustainability. Green Belt Tourism has to follow the principles of sustainable development and respectively sustainable tourism. Similar to heritage tourism there is a long debate in science about the meaning of sustainable development and tourism (BLANCAS et. al. 2009: 484 ;UNEP 2005: 8, 12;WCED 1987; KATES et al. 2005: 10; WILLIAMS 2009: 110). In general sustainable tourism can be understood as

*“Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities.  
(BARLETT 2007, p. 2;UNEP 2005, p. 12)*

Combining the aspects discussed before, the authors suggest the following definition for Green Belt Tourism:

*Green Belt Tourism is an environmentally, socially and economically sustainable form of heritage tourism devoted by region and content to the natural and cultural legacy of the Iron Curtain which contains all tourist phenomena where people visit, experience, or learn about the history and/or nature in the area of the Green Belt.*

### 3 Target Group: The Green Belt Tourist

Who is the typical Green Belt Tourist? The characterisation and identification of the specific tourist and respectively the development of target groups is elementary for the development of new touristic products. The definition of specific target groups should be among the first steps of every region which plans to implement Green Belt Tourism. In order to do so, it is important to break down the potential target groups to common characteristics and to compare them to the existing tourists in the destination. As usual in tourism, there is not the one Green Belt Tourist, as it can be attractive for a lot of tourist target groups. This is due to the wide range of the themes which can be related to the Green Belt: nature, culture, history, sports, arts, and many more.

The Agora 2.0 project recently developed a Baltic Sea heritage tourism information service (BASTIS). AGORA 2.0 is an approved Baltic 21 Lighthouse Project. It is well in line with the EU strategy for the BSR and leads the region to become a front-runner in sustainable tourism implementation and aims at improving the common identity of the BSR, based on its rich natural and cultural treasures.

Part of BASTIS is a study characterizing the target groups of Baltic Sea heritage tourism. Using the data of the Flash Eurobarometer 291 (Survey on the attitudes of Europeans towards tourism), the study shows an existing demand on the tourism market (Grimm et al. 2011): In general the authors say that there are 3.25 million people and potential tourists in the EU with an interest in the BSR and have the main travel motivation of culture and religion; on the other hand, there are 6.67 million people in the EU with an interest in the BSR whose main travel motivation is nature (Grimm et al. R 2011: 34). These numbers confirm the statement that there is a general demand for the topics of Green Belt Tourism.

Within a prestudy (BN & BUND 2006) for the Experience Green Belt project several potential target groups for Green Belt Tourism at the inner German border have been worked out. We adopted them for the Baltic Green Belt, but it needs to be extended in some points primarily due to the fact that the Baltic Green Belt is coastal and thus offers different activities compared to the inner German border (Table 1).

Table 1: Potential target groups of Green Belt Tourism (modified after BN & BUND 2006: 125 ff).

Target Group	Market Potential	Contents	Relation to Green Belt
<b>Recreation and Health</b>			
Age: 50+ Individual travellers Couples / small groups 2-6 persons	High, slowly growing	Everything comfortable and recreational: take a walk, sightseeing, shopping, smaller guided tours, health offers, swimming, beach	Rather at the edge, has to be stimulated, f.i. Guided Tours at the GB, Excursion to exhibitions
<b>Nature-Border Experience</b>			
From Young Grown-Ups to higher age Individual Travellers Group Travellers	Low to middle, dynamically growing	Real nature experience, rational and sensitive perception of the special characteristics of nature/culture areas and the conservation areas	GB at the focus or conservation areas connected with the GB

<b>Active Experience</b>			
Teenager (14+) to higher age Individual Travellers Group Travellers	Middle to high dynamically growing (health prevention)	Activities in the nature, sports like hiking, Nordic-Walking, cycling, canoeing, skiing, beach sports	GB is scenery and can be integrated in theme routes, information points, exhibitions as stopover (rest & variety)
<b>Culture &amp; History-Border Experience</b>			
Teenager (pupil-groups) Older people with interest in the border history	Low to middle, (dependent on primary motives, at the moment often "meeting with the really personal history"), constant	Border of Iron Curtain Border and culture in the change of history Overcome of border situation	GB as a concrete experience of change & history – probably also connection with change of natural and cultural landscapes
<b>Family &amp; Children</b>			
Families with Children (0-13 years)	High to middle	All mentioned topics, but family and children-like, swimming, beach	GB as adventure playground

In the model regions of the Experience Green Belt project, Green Belt Tourism has already been implemented to a certain extent and products, that fit the target groups have been developed. It has to be taken into consideration that the original description focused on German visitors.

#### 4 Impacts of Green Belt Tourism

Usually there are desired (positive) impacts of tourism on the one hand, and the real impacts which are at least partly negative on the other. The goal of Green belt Tourism should be to maximize the positive effects while reducing the negative ones to the minimum possible. This approach is also part of the concept of sustainability. Usually the possible impacts of any kind of tourism are divided into 3 spheres: Physical or environmental, socio-cultural and economic (Mathieson, Wall 1982). In table 2 these impacts are portrayed within the 3 spheres.

Table 2: Possible positive (+) and negative (-) impacts of Green Belt Tourism (own representation leaned on BOYD & TIMOTHY 2003: 125; TIMOTHY & NYAUPANE 2009: 57, N.I.T. 2007: 3).

<b>Physical Impacts</b>	<b>Socio-Cultural Impacts</b>	<b>Economic Impacts</b>
<ul style="list-style-type: none"> <li>- Serious damage on sights caused by mass tourism</li> <li>- Wear and tear (visitors touch, climb on, or rub historic structures and artefacts)</li> <li>- Structural damage on surrounding green spaces and landscapes -&gt; compacted soils, increased soil erosion</li> <li>- Garbage</li> <li>- Air pollution</li> <li>- Vandalism</li> <li>- Illegal trade of antiquities</li> <li>+ environmental conservation/restoration</li> <li>+ Environmental education</li> </ul>	<ul style="list-style-type: none"> <li>- Displacement of local population</li> <li>- Tourism dependent communities</li> <li>- Cultural change</li> <li>- Cultural commodification</li> <li>- Lack of true ownership of culture</li> <li>- stereotypes and false perceptions through outside use and control</li> <li>+ reviving lost or declining elements of culture</li> <li>+ awareness of the own culture</li> <li>+ development of a new regional consciousness</li> <li>+ regional-psychological stabilization effects</li> </ul>	<ul style="list-style-type: none"> <li>+ Revenue generated (e.g. through entrance fees)</li> <li>+ Stimulation of economies of neighbouring communities</li> <li>+ Employment of local people</li> </ul>



While the physical and socio-cultural impacts seem likely negative, the destination can profit from the economic ones. On the other hand there are quite a few possible positive effects, especially on the socio-cultural level, as a rising awareness of the own culture and the development of a new regional consciousness or regional psychological stabilization effects, the mediation of a global, border crossing thinking. Cultural Tourism, and connected to that Green Belt Tourism, can also give a contribution towards international understanding and the process of coming to terms with the past (HEINZE 2009: 126; STEINECKE 2007: 23), what is an important aspect concerning the topics of the Green Belt. For the Green Belt Tourism not all of these aspects are accurate or important while some peculiarities are missing. Looking at the physical impacts the first important note is, that Green Belt Tourism as mentioned before is also a form of sustainable tourism, which excludes the phenomena of mass tourism. That means that all physical impacts listed should not appear in a strong extent (Cf. Chapter 5). The conclusion of that insight is, that the rural regions can profit from the economic impacts of Green Belt Tourism without harming the environment or losing its cultural integrity. It can rather help protecting the environment and biodiversity with the financial income of tourism. It is quite difficult or rather impossible to achieve a tourism development without negative physical or socio-cultural impacts, but the goal of Green Belt Tourism is to minimize them as much as possible.

## 5 Principles of Green Belt Tourism

The principles of Green Belt Tourism can be derived out of the definition itself. It mainly says that Green Belt Tourism has to be sustainable. Therefore it has to follow the principles of sustainability. As widely known, sustainable development tries to balance economic development, environmental conservation and a considerate handling of the socio-cultural aspects. This approach needs to be adopted towards Green Belt Tourism. The environment is the most important asset of the Green Belt. Its conservation and protection should be the major principle of any development in these regions. The cultural aspect is also very important. The life of the people during the time of the Iron Curtain, their witness reports and experience provides content for tourist products and thus serves to raise awareness of the difficulties of recent European history. The economic level is important as well, as Green Belt Tourism and the connected restrictions can only find acceptance at the population when they get economic benefits.

In their agenda for a sustainable and competitive European tourism, the Commission of the European Communities developed principles for achieving a competitive and sustainable tourism. This includes amongst others a holistic and integrated approach, the planning for the long term, the involvement of all stakeholders, the minimizing and management of potential risks and a continuous monitoring (Commission of the European Communities 2007: 5f).

The Agora project compiles tools and information concerning sustainable tourism and makes them accessible for interested users. The source for this information are the Agora partners representing all three dimensions of sustainability, all levels of administration and tourism management and different thematic interests, projects, actors and stakeholders of tourism.

According to the principles of the Commission of the European Communities a testing tool for the sustainability of projects in the BSR was developed by the Agora project, the so called Sustainability Check (N.I.T. 2007: 1; GÜNTHER ET AL. 2007: 3). With the use of this check potential Green Belt Tourism regions can ensure that they follow the principles of Green Belt Tourism already in the stage of the project development. Table 3 shows the main principles for the development of sustainable projects. A new project dealing with Green Belt Tourism should always follow these principles.

Table 3: Objectives to be fulfilled by Green Belt Tourism projects (modified after N.I.T. 2007: 3).

Economy	Society	Environment
Strengthen local/regional economy	Make most stakeholders satisfied with the tourism project	Minimize resource use
Employ local people rather than attracting people from elsewhere	let local people participate in decisions	Reduce environmental use
Contribution to the added financial value for the region	Show respect for local/ regional development	Preserve biodiversity

## 6 Recommendations for regions for implementing Green Belt Tourism

- **Involve local stakeholders:** With a stakeholder analysis all potential project partners can be identified (Table 4). An open invitation to them at the beginning of the project can help to find partners, gather ideas for a project and to perform a first brainstorming. One organization should take responsibility for involving the stakeholder and moderating discussions. It can be either from the region or from outside, depending on the situation. While a local organization has better insight into the community and more frequent contact, an outside organization has the advantage of being neutral (e.g. with respect to existing conflicts).

Table 4: Potential partners for developing GBT (Taken and complemented from LAUKU CELTOAJS 2011: 41 ff.).

Potential Partners for GBT
The Ministry of Environment
The Nature Protection Board
The State Environment Service
Regional Environment Boards
Administration of the specially protected Nature Territories
NGO's
Entrepreneurs
Local and/or regional administration
Guides
Private persons
National GB Focal Points
Regional GB Coordinators

- **Involve Green Belt Network:** A Region that is thinking about Green Belt Tourism should contact their national Green Belt focal point and the regional Green Belt Coordinators from the beginning on. These Green Belt stakeholders can provide institutional support (letters, partner search, lobbying), experience from other regions and links to other ongoing international activities.  
**National Green Belt Focal Points:** [www.europeangreenbelt.org/004.initiative\\_focalpoints.html](http://www.europeangreenbelt.org/004.initiative_focalpoints.html)  
**Green Belt Regional Coordinators:** [www.balticgreenbelt.uni-kiel.de/index.php?id=140&L=0](http://www.balticgreenbelt.uni-kiel.de/index.php?id=140&L=0)
- **Use existing Green Belt Experience:** Within other Green Belt projects several useful ideas and tools for the implementation of Green Belt Tourism have been developed, but not all of them are fully documented (articles, websites or other accessible sources such as [www.europeangreenbelt.org](http://www.europeangreenbelt.org)). Therefore it is important to contact the network. The so far largest

comprehensive project dedicated to Green Belt Tourism was *Experience Green Belt project* ([www.experiencegreenbelt.de](http://www.experiencegreenbelt.de)). It provides a number of good ideas as well as some scientific studies accompanying the tourism development in four model regions. For the development of military heritage, Lauku Celotajs, a professional rural tourism association from Latvia, developed *heritage management guidelines*, which contain a checklist to determine the touristic potential of military heritage objects ([www.celotajs.lv/cont/prof/proj/GreenBelt/GreenBelt\\_en.html](http://www.celotajs.lv/cont/prof/proj/GreenBelt/GreenBelt_en.html)).

- **Analyze regional situation:** The touristic situation needs to be analyzed to determine the strengths, weaknesses, risks and opportunities of the region. A guideline from the LEADER II (Links between Actions for the Development of the Rural Economy) initiative of the EU for the evaluation of a region's touristic potential leads through the whole analysis process.

***Guideline for evaluation of a region's touristic potential:***

<http://ec.europa.eu/agriculture/rur/leader2/rural-en/biblio/touris/metho.pdf>

- **Assure for sustainability through good project development:** From the first project idea on the different levels of sustainability should be incorporated into the project goals and plans step by step. A good practical help is the Agora Sustainability Check (cf. chapter "Principles of Green Belt Tourism"), because it breaks down sustainability into a set of manageable indicators.

***Agora Sustainability Check for touristic projects:***

<http://www.yepat.uni-greifswald.de/agora/87.0.html>

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## **Comprehensive study of Estonia's coastal zone protection and conservation**

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### **Abstract**

Taking into account natural and cultural values are the Estonian coastal areas in a better condition compared to many other European countries. Despite that, the pressure on coastal areas has increased step by step in Estonia as well. This article describes the current problems related to the protection and conservation of Estonian coastal areas and their possible solutions. In order to obtain information about the natural and cultural heritage objects located on Estonian coast, a methodology for inventorying coastal areas was developed and a thorough inventory of cultural heritage objects in the Estonian green belt was conducted (an overview of the inventory methodology, the results of the inventory, the inventoried objects, their condition and risk factors). Protection of valuable objects and areas outside protected areas depend largely of spatial planning measures. Thus, the best practices of the protection and conservation of coastal areas in spatial planning were studied and reasoned recommendations were given on how to supplement them and make their implementation more successful. Based on the best practices and the inventory results, a methodology for the zoning of coastal areas was developed and the sample zoning of a pilot area was prepared. Estonian coastal areas include many military objects – displaying them as tourist objects may significantly influence the condition of coastal areas. Thus, the possibilities of military tourism in Estonia and its reflection in the media were studied. Since many different interest groups are related to the subject of coastal areas, this article also gives an overview of the methods of distributing study results.

### **1 Background**

Estonia has a coastline of some 3,800 km and more than 1,500 islands. Historically, before World War II, Estonia's coastline was neither heavily populated nor a recreational area for wealthy elites. The main economic activities occurred at trading ports (Tallinn, Narva and Pärnu) and the local fishing industry. The Soviet occupation of Estonia in 1944 brought about major changes (Vollmer et al. 2010).

In 1946, the Council of Ministers of the Estonian Soviet Socialist Republic issued the secret regulation No. 058 "About the restricted border coastal belt in the Estonian SSR and the regime within it". This regulation established a restricted coastal border zone, which included with few exceptions most of the coastal area in North and North-West Estonia, all the Estonian sea islands and the town of Paldiski (Figure 1). People were allowed to move and operate in the border zone only on the basis of special permits, which were demanded even from those working in the border zone (e.g. in fishing kolkhoz). Local residents had to have a respective notation in their passport. It was difficult to get a permit to visit the islands, as not all applications were satisfied. Mostly, it was only possible to get a permit to the islands for the purpose of visiting close relatives.

All the activities of the local people of the coastal areas were largely controlled by Soviet border guards. It may be difficult to imagine, that swimming in the sea was allowed only during daytime and no one was permitted access to the waterfront after 10 P.M. The reason for all these measures was not to protect the Soviet Union from invasion, but to prevent its own people from escaping (Sepp 2011).



Figure 1: Security zones of the Estonian Soviet Socialist Republic 1945-1991.

These harsh restrictions were accompanied by drastic changes in the former way of life – many residents were forced to leave, traditional ways of land use dwindled and a number of manmade objects and values were left to face the forces of nature. But, as is often the case, this also had some positive impacts. Not considering the border guard, ports, and fishing kolkhozes, almost no development or construction activities took place on Estonian coastal areas. Partly thanks to that, these areas are still well preserved and in a relatively untouched state.

Compared to many other European countries, the Estonian coastal areas are in a better condition (taking into account natural and cultural values), which is why among other things these areas have also great tourism potential. However, Estonian coastal areas are endangered by several factors and thus, all measures must be taken to ensure their continued good condition. However, the issues with chaotic and in a way illegal construction activity, the lack of public accesses to the shore path or the closing of the accesses in conjunction with development activities, the pressure of real estate development on the coastal forests and the pollution accompanying the visiting of beaches (Sinijärv 2005) still remain. Construction pressure on the coastal areas increased just after the restoration of independence in Estonia, when the closed coastal areas were re-opened and the land reform started. To avoid the perishing of natural biotic communities, restrict the unfavourable influence of human activity and direct and maintain the inhabitation structure and public accesses characteristic to the shore, the Nature Conservation Act provides for zones restricting the land use on the coast. These are the limited management zone, the building exclusion zone and the water protection zone. Unfortunately the National Audit Office found during the audit in 2007 that the natural values of shores and banks are insufficiently protected from private interests and illegal construction and the shore and bank values may be damaged to the extent that may be later expensive or impossible to restore.

Construction and development activities on the coast endanger not only natural values, but also landscapes and objects of cultural heritage found there. In Estonia, one of the important criteria for

assessing the cultural-historical value of landscapes is the wealth and condition of cultural monuments and traditional landscape elements, and the wealth and character of elements/structures originating from various historical periods (Hellström 2001).

In order to preserve the valuable natural and cultural heritage, leaving at the same time the people the chance to enjoy the wonderful nature of Estonian coast, these objects and areas must be managed rationally and economically. That cannot be done, having no idea about the values hidden in the coastal area.

## 2 Objectives

The predominant approach applied to studying cultural heritage in Estonia has been object-based. A great part of Estonian mainland has been surveyed by now under the leadership of State Forest Management Centre (RMK). As of January 2012, 34,649 objects of cultural heritage (OCH) from all of the counties of Estonia had been recorded in the database of the Estonian Nature Information System (EELIS 2012). However, the military and cultural heritage objects on coastal areas have not been studied and described in sufficient detail as of yet. In the framework of the Baltic Green Belt project, the Estonian University of Life Sciences decided to approach the issue of the protection and conservation of coastal areas in a complex manner:

1. In order to obtain information about the natural and cultural heritage objects on coastal areas, a thorough **inventory of objects of cultural heritage on the entire length of the Estonian green belt** was carried out on a 200 m wide coastal strip, where many restrictions are applied to construction and development activities.
2. In order to protect natural and cultural values, several protected areas have been created, but it is neither possible nor reasonable to take the whole coast under protection and therefore, a large part of the values will always be located outside the borders of protected areas. So that the entire coastal area of Estonia would be managed rationally and its good condition would be preserved, **the good practices of the protection and conservation of coastal areas and the application thereof in spatial planning was studied**. The spatial plans related to coastal areas were analysed and the best practices currently implemented and suitable for the conditions of Estonia determined. In addition, reasoned recommendations on their further development and better implementation were given.
3. The protection of cultural heritage objects, but also the protection of the nature and the environment often cause conflicts between the people living and operating in the areas under protection, and the people organising the protection. The protection of values and the everyday life of people must go hand in hand in a way that would enable the normal existence of both. However, achieving the wellbeing and satisfaction of all parties is a very complicated task, as frequently, people are unclear about their rights and obligations. In order to prevent and solve conflicts and find the best uses for specific areas, **a methodology for zoning coastal areas was developed on the basis of the coastal zone protection and conservation best practices and results of the inventory. Sample zoning for a pilot area (Lahemaa National Park) was compiled**.
4. Many cultural and natural values have been taken under national protection (nature protection, heritage conservation etc.) either as single objects or as entire areas. Compared to other objects of cultural heritage, relatively few valuable military objects have been taken under protection. Their wellbeing is often dependent on private initiative. One of the options of valuing and conserving the objects is military tourism. The possibility of it largely relies on the specific area and circumstances (different legislation, general economic situation etc.) and thus, the experiences and knowledge of other countries cannot be adopted without making certain adjustments – in addition, local circumstances must be studied. **Thus, the study “Reflection of military tourism in the media and its possibilities in the Estonian green belt” was conducted**.

5. As research results hold no value unless used, **the research results and general information about the project's activities were distributed** by means of several awareness events, the Estonian Green Belt book and film, a bilingual travelling exposition, and various articles, press tours, leaflets etc.

### 3 Cultural heritage inventory in the Estonian Green Belt

Estonian University of Life Sciences conducted the inventory of coastal areas in the Estonian Green Belt in the period August 2009–December 2010. The inventory was based on the Coastal Areas Inventory Methodology (CAIM), devised in 2009 and complemented in 2010 (Sepp & Lõhmus 2010).

The inventory covered the entire Northern and North-Western coast of Estonia, the offshore coasts of Hiiumaa and Saaremaa and the entire coast of Vormsi island (Figure 1). Information was gathered about the objects in 27 municipalities located in the Estonian Green Belt. The inventory area was 200 metres from the mean tidal position. The inventory area was determined based on Estonian Nature Conservation Act, pursuant to which the width of limited management zones of sea coast is 200 metres. Thus, the use of land in the area in question has restrictions arising from law. Development work must be under strict supervision in the restriction zone and supposedly, objects of natural and cultural heritage are protected more effectively there than in the areas with no restrictions.

The inventory area was covered on foot in order to check that OCH marked on the pre-selection map did exist and to map all the newly-found OCH. Details of every OCH were recorded, such as name, type code, location data, the extent of the object and the land parcel where the object was located. The object's condition was photographically recorded and the human impact that had affected or may potentially affect the object were examined and a wealth of other relevant information was collected and recorded (Sepp 2011).

Geographic information system (GIS) software, which is used by most state agencies in Estonia, was used to compile the database of OCH. GIS facilitates the use of data by officials and other stakeholders.

#### Inventory results

During the inventory the total of 1,529 objects were investigated, out of which 1,268 were the objects of cultural heritage and 261 the instances of current human pressure (IHP – mainly buildings in the building exclusion zone). CAIM enabled the mapping of human pressure in coastal areas and to evaluate, which threat and to which extent human activity has posed to natural and cultural heritage during the last twenty years. For the areas with strongest IHP see figure 1.

Estonian OCHs consist of 139 types (e.g. function, material, era, cultural source). The inventory identified 1268 OCHs consisting of 72 types, which for ease to display were amalgamated to form 21 types (Figure 2).

The largest group of OCHs in the inventory area (25%) are from the Soviet occupation, most of which were border-guard constructions. Observation posts and towers were built at regular intervals along the mainland and island coasts, most of which still exists in various conditions. The inventory identified 117 historical homesteads and 74 manor farmhouses. A vast majority of the homesteads and manor farmhouses are still in use and in an excellent condition. A small number of farmhouses on recently abandoned farms are in a more dilapidated condition.

Estonian coastal areas are rich in boulders, these huge and interestingly shaped rocks have always been an inspiration for folklore. The inventory recorded at least 96 rocks, most of which were used for sacrifices or other religious purposes and connected with legends. Naturally, many seamarks were also recorded, of which the majority were lighthouses. The oldest lighthouses included in the survey were the Pakri old lighthouse built in 1760 and the smaller Suurupi wooden lighthouse built in 1859.



Unsurprisingly, the dominant OCHs in the coastal inventory concerned landing spots, harbours and fishing-related locations (Lõhmus et al. 2011).

OCHs that are not so numerous should not be ignored. The site types that consist of only a small number of preserved examples are even more valuable.

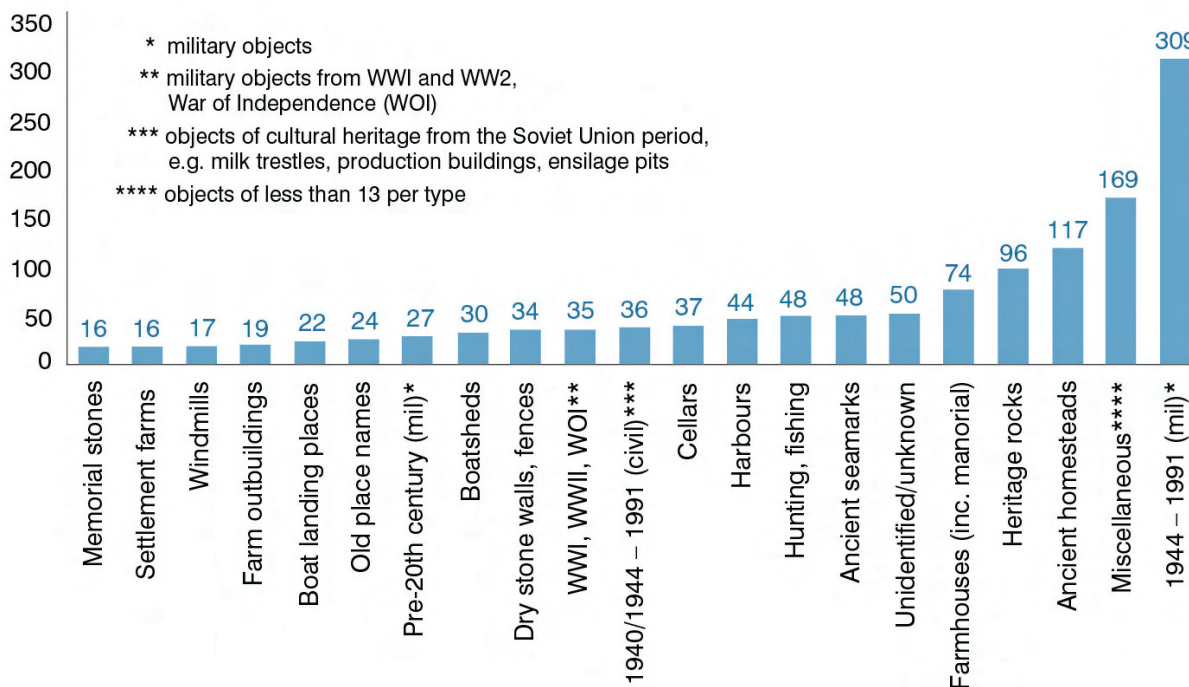


Figure 2: Objects of cultural heritage (n=1268) by type within the Estonian Green Belt area.

The condition of each surveyed OCH was evaluated against a six-level scale. The results were promising with 40% being 'well preserved' or 'very well preserved'. This means that, in the context of buildings or complexes, such as homesteads, they are still in use or could be easily reconstructed or restored to a usable condition. The high proportion of 'well' and 'very well preserved' OCHs is partly due to the infinitesimally low rate of degradation of natural objects, such as boulders and geological places.

The condition of the OCH is mostly affected by various human impacts. Semi-natural communities (coastal meadows, flood-meadows, wooded meadows, alvars, wooded pastures), which have formed over centuries as a result of human activities, and which are characterised by an especially great richness of species/biodiversity and an abundance of objects of cultural heritage, play an important role in Estonian traditional landscapes. In relation with the displacement of people and the collectivisation of agriculture, many of these valuable areas were left out of use and turned into scrublands. For example, in the 1950s, the area under alvars took up 44,000 hectares, while at the end of the 1990s, the area was only 5,000 hectares (Estonian Seminatural Community Conservation 2012).

The results of the inventory proved the same: most often, about 40% of the cases, it was found that the object had been affected by a decrease in human activity. Other important impacts were: traces of demolition and damage (~27%), littering and dumping of waste (11%), construction works, which had damaged the original object (~5%).

The inventory also specified the human impact, which could affect the objects in the future. Most often, by 24% of cases, it was found that the object might be damaged or demolished in the future. The risk of littering was highlighted by 17% of cases. The risk of a decrease in human activity was described by 12% of cases and construction works by 11% of cases (Lõhmus et al. 2011).

Over 80% of the objects surveyed in Estonian Green Belt had not previously been surveyed as objects of cultural heritage (OCHs). While 13% of the OCHs had previously been surveyed and included in the database of Estonian Nature Infosystem (EELIS), these objects are not subject to national protection and consequently their protection depends on the landowners' free will. Currently, only 5% of the OCHs surveyed in the coastal areas are subject to heritage protection.

### **Importance of the inventory**

The Green Belt inventory showed although Estonia's coastline is very rich in heritage, the majority of the OCHs are from recent historical periods (i.e. the Soviet occupation). Finding traces in the landscape from earlier periods becomes harder and harder and therefore every effort should be made to record OCHs. Primarily, the inventory of cultural heritage is important for several reasons: cultural education would benefit; compiling cultural heritage databases, helping with further research, and helping to design hiking trails, etc. Cultural heritage should also form the basis for settling land-use issues (i.e. where to construct recreational areas; which areas should be kept intact etc.) (Sepp 2011).

## **4 The best practices of coastal zone protection and conservation in spatial planning**

Maintaining the good condition of coastal areas depends not only on direct restrictions and the monitoring whether or not these restrictions are followed, but also on a great number of other aspects. In addition to orders and restrictions, one of the methods of protecting and conserving coastal zones is spatial planning. As many parties as possible should be involved in the planning process, and as many various factors as possible should be considered with. This should lead to a situation where the final result is the best for all parties. Alas, this is not always the case. The results of the planning process often depend on the priorities of the local government and the way it has conducted the planning process (has legislation alone guided the process or has traditional land use been taken into account as well; are some people's interests more important than others; have there been enough activities to make the matter known to the public and make the public more aware of it etc.).

Several good practices for the protection and conservation of coastal areas have been developed and implemented in Europe. Europe's coastal areas are extremely variable because of a great variety of natural, social, economic and cultural factors that have shaped them. The importance of solutions that would fit local environment is increasingly stressed as a means of enabling application of integrated coastal zone management in practice. In order to determine the solutions suitable for the conditions of Estonia, the experiences of both Europe as well as Estonia gained from the good practices of the protection and conservation of coastal zones were studied.

In order to determine the best practices developed and recognised in Europe, the most important coastal zone regulations and cooperation projects in Europe and in the Baltic Sea region, which, in the broadest sense, could be considered the best practice (as they focus on a special strategy or a series of projects that can be regarded as a whole), were studied. A selection of examples on integrated coastal zone management programmes (primarily experience gained from projects after 2000, which are offered as the best practice) were discussed (Veersalu et al. 2011).

In addition to mapping European experience, an overview of protection and conservation practices in spatial planning in Estonia (as laid down in legislation and existing as recognised best practices) was compiled. To identify opportunities that the local authorities see in the coastal zone and to determine whether the objectives listed in the plans are in line with the coastal management/governance principles, spatial plans related to coastal areas (prepared in the past 11 years in Estonia) were analysed. The analysis also revealed the most serious conflicts in the coastal zone

### **General remarks based on the analysis of spatial plans.**

The structure and essential approach mirror the variable (unsteady) conditions of the past 11 years (2000-2011) that have had an effect on the area of spatial planning. At the official level, the

understanding of the so-called “plan in accordance with requirements” has varied and been inconsistent in counties. The persons who have prepared, consulted or harmonised the plans have grasped the subject differently. The essence of the planner’s work has gone through some changes: expert and carrier of know-how has become negotiator and mediator.

Rapid changes in the society have led to rapid amendments in laws and other legal acts as well as increased their volume and provisions; however, the practice is often outpaced by the legislative procedure. Since 2004, Estonia has been a member of the European Union. Hence, several legal acts have been amended. For example, the Planning and Building Act has been divided into two separate acts and the former environmental expertise has been replaced by environmental impact assessment.

The understanding of the purpose of coastal planning has changed; for example, in the early 2000s, coastal planning mainly stood for building on coastal areas (summer houses/private houses) and the regulation of the building activity. The period under review includes also the intensive construction boom (especially on the coast) and, as a response to this, highlighting of issues relating to nature conservation.

### **Good practice in the present-day spatial planning in Estonia**

On the basis of the plans analysed it can be stated that the plans, where the solutions go beyond the requirements for such plans set forth in the legislation, could be ranked among the most successful ones in terms of protection and conservation of coastal areas. This means that additional opportunities, methods, solutions, strategies/principles not explicitly required by the law, are been used while preparing the plans. It can be concluded that the current legislation does not ensure the best planning solution in the coastal zone. On the basis of the plans studied, the *good practices* in the present-day spatial planning in Estonia were highlighted (Veersalu et al. 2011).

Opportunities and planning methods arising from the law:

- Pursuant to the Planning Act, the selection of the area of the planned territory is flexible, it is possible to delimit the planning area on the basis of landscape-related considerations, and through several municipalities;
- A comprehensive plan can be prepared as a thematic plan or a comprehensive plan for a part of the rural municipality (eg thematic plan for coastal areas) that allows addressing one theme or selected themes or a definite part of the rural municipality in more depth.

Strategies / principles:

- Following the recognised principles of integrated coastal zone management in Europe; integrating nature conservation and socio-economic interests (not contrasting them);
- Common strategy for the coastal area = land areas + water areas (all-inclusiveness); zoning;
- The coast is the largest natural resource in Estonia that must be regarded as a non-renewable natural resource and not to be used at the expense of future generations;
- Setting public interests above private interests on the coast; orienting to enlarging the share of the land areas owned by municipalities; being guided by the principle that the building right is an ownership right provided by the municipality, not an absolute ownership right provided by law;
- Being guided by the specific character of the region (nature, socio-economic conditions) and the historically developed "tried and tested" tradition;
- Using all the existing best relevant and available data (GIS, studies, monitoring data, earlier plans, examples of good practices in foreign countries, etc) and experience in preparing plans;
- Being guided by the existing recognised good practices (good agricultural practice); defining, acknowledging and developing the local good practice;
- Preserving landscapes – green network, valuable landscapes, landscape maintenance;

- Cooperation (in parallel with the simultaneous projects; long-standing cooperation partners in Estonia and abroad), orienting to joint activities;
- Actual preparation of the plans (not just recording the pre-determined outcome);
- In the case of conflicts, an active discussion oriented to finding solutions;
- Training, raising awareness, informing and counselling;
- Defining and unifying notions;
- Long-term perspective;

The application of good practice can be influenced by two principles, first, the “negative way” – by monitoring and responding to non-adherence to or violation of practices (general public, media, professional circles, stakeholders, etc). Second, the positive way - to notice and acknowledge the adherence to standards of good practice. Estonian University of Life Sciences chose second approach and in addition to recognition, decided to give recommendations on how to improve coastal management based on *best practice* and how to develop and improve the application of best practices in spatial planning in Estonia.

The following proposals were made (Veersalu et al. 2011):

- To devise and develop for local authorities methods for planning Estonia's coastal zone that are recognised, easy to understand and that define the coastal zone and harmonise the notions relating to the coastal zone.
- One must be guided by the following strategies: 1) the coast is the biggest natural resource in Estonia that must be regarded as a non-renewable natural resource and not to use it at the expense of future generations; 2) on the coast, public interests must be set above private interests.
- The existing good practices should be of higher priority.
- To formulate recognised good practices for coastal zones that take into account the local specificity.
- To devise and develop recognised methods for assessing the projects and plans of coastal areas.
- To participate with examples of Estonian projects/plans (proceeding from the structure of the examples of European *good practice*) in compiling databases of good practice projects
- To consolidate, in an uncomplicated wording, the simpler/most commonly used indicators for coastal areas that are relevant and used, first and foremost, in spatial planning.
- To create a webpage that incorporates the datasets about Estonia's coastal zone, plans of coastal zones and coastal area management as a whole
- In cooperation with the webpage, to establish a consultation service for Estonian coastal zone

## **5 Implementation of the coastal zone protection and conservation best practices in spatial planning: zoning of the Lahemaa National Park coastal area.**

The largest and oldest national park of Estonia – Lahemaa - was established in 1971. Lahemaa is known for the great number of landscapes characteristic to Estonia (Saaber 1996). In the National Park, two main landscape units could be distinguished: cultivated and natural landscapes. In the cultivated landscapes, limited economic activities and organized recreational activities are allowed. The natural landscapes comprise on the one hand the areas, which have preserved their natural condition (nearly 70 %) and where human activities are prohibited, and on the other hand natural landscapes of regulated use, where such human activities not causing irreversible changes in the nature, are allowed.

## Problems in management

Lahemaa National Park is located in the territory of two local governments – Kuusalu municipality and Vihula municipality. Both municipalities have a valid comprehensive plan (Vihula Municipality 2003) which treats the national park as a recreational and tourist area with distinct local holiday sites converging near popular sandy beaches. The local governments aim to develop environmentally friendly tourism. Realising the tourist potential is only possible in collaboration with the national park and its administration.

Upon drafting their comprehensive plans (at the beginning of 2000-s), the local governments on the territory of which the national park is located, have come across several disagreements and dissatisfaction resulting from strict restrictions subject to the (somewhat outdated) protection rules of the national park and the concurrent bureaucracy. Problems are rooted in conflicts between Estonian laws of that time. It has yet been impossible to solve such problems within the planning process (AS Entec 2003). One specific example are strict and for owners quite costly architectural requirements. In Lahemaa most of such problems are caused by requirements to protect rural architecture considered with high cultural value. At the moment 447 buildings all over the Lahemaa National Park territory are protected as National Heritage objects. (Estonian Government regulation 2010) The inhabitants have expressed the feeling of living in the national park as museum exhibits.

## Objectives and approach

Traditionally, internal zoning of a protected area aims at determining zones under different protection rules in order to preserve the values of nature. The zones may include e.g. strict nature reserves, natural and maintainable conservation zones and limited management zones (Nature Conservation Act).

The purpose of present zoning of Lahemaa National Park was somewhat different than usual: the zoning of the coastal area (Helsinki Commission 1994) was laid out to incorporate not only protection but also planning principles. The aim was to focus on cultural landscapes by studying land use consistency and allocation of protected objects including cultural heritage objects and semi-natural communities. Three different types of areas were distinguished: (1) areas which meet the economic and social needs of modern men, (2) areas where it is possible to practice a so called traditional ways of living (i.e. fishing, farming) and (3) areas where it is possible to combine both (i.e. tourism farms).

The final goal is to give recommendations for terms of development (use) by zones in a way, which enables to maintain cultural heritage in a more complex manner and more integrated with spatial planning and conservation.

## Activities and outcomes: Zoning

The zoning follows the traces of consistency in land use. The output of the zoning is an explanatory report and digital map layers (Figure 3)

Upon zoning, three conceptual zones have been regarded:

- The **coastal water zone's** baseline is the regular water line and it extends seawards up to the imaginary line connecting the utmost points of the islands, islets and peninsulas, measured from the coast.
- The **coastal sea zone** (not displayed in figure 3) relates to fishing; it extends seawards from the coastal waters.
- The **coastal land zone** extends from the regular water line to the inland border of the zoned area (3 kilometres from the regular water line) (Palginõmm & Veersalu 2009).

**Within the coastal land zone**, smaller subzones were distinguished:

1. Natural landscape zone
2. Secondary forest zone (formerly cultivated landscapes)
3. Farmland zone (cultivated landscapes)
4. Coastal zone (cultivated landscapes)
5. Dispersed settlement zone (cultivated landscapes)
6. Concentrated settlement zone (cultivated landscapes)
7. Compact settlement zone

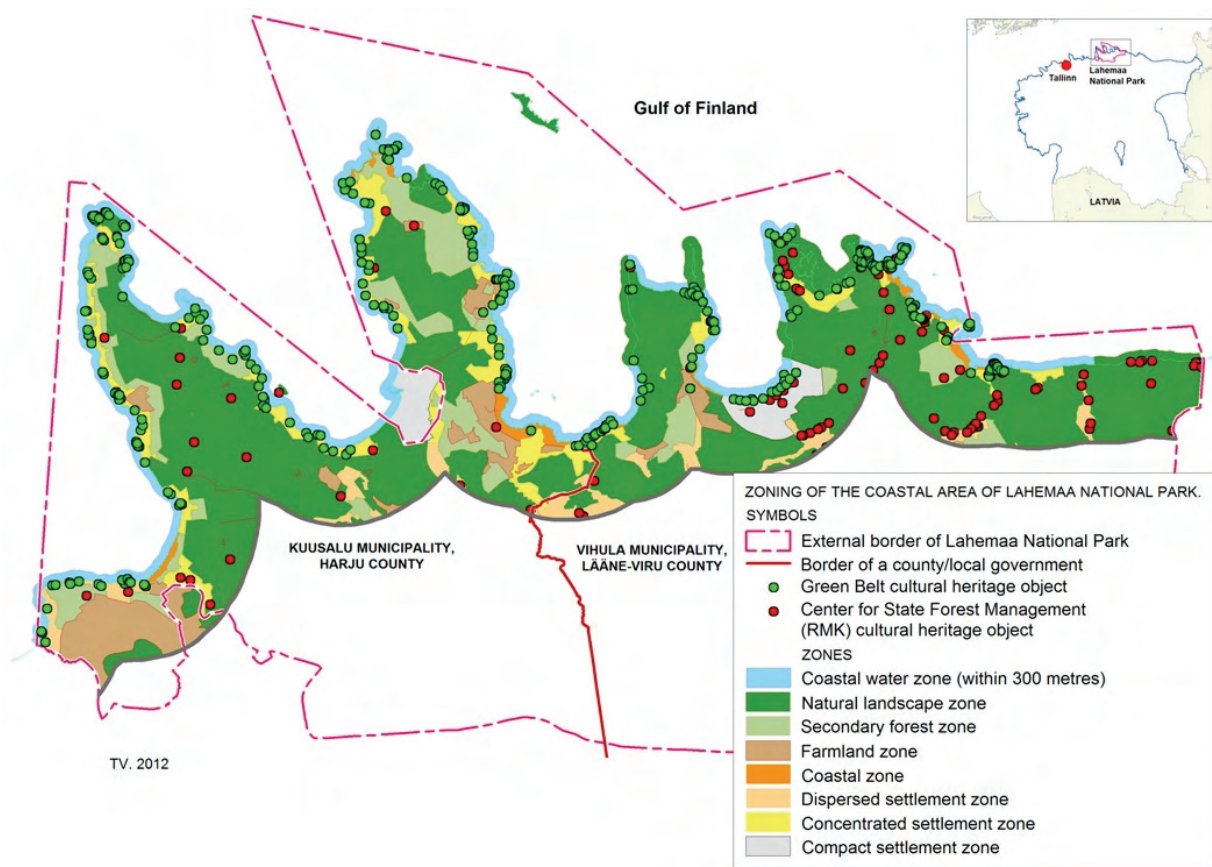


Figure 3: Zoning of the coastal area of Lahemaa National Park (Veersalu et al. 2012).

For the subzones specific use recommendations were formulated. There are two main criteria for determining the distinguished zones: 1) the land use of the determined zone is as homogeneous as possible and enables to set the terms of use, which would be accepted by the protection rules in the given location, characteristic to the landscape and support the consistency and sustainable use of the latter; 2) the borders of the determined zones are based on as natural and noticeable borders in the landscape as possible, such as rivers, forest division lines, ditches, field edges, but if necessary also roads, power lines, etc. It was also kept in mind that the zoning would support the protection of public interest and local interests, e.g. by guaranteeing the access to the coast, including the shore path would be guaranteed. Presently the protection rules of the national park are under review, which will bring along changes in the zoning as well.

## **6 Reflection of military tourism in the media and its possibilities in the Estonian green belt**

There are numerous examples of military facilities and buildings on the shores and islands of Estonia that have both historical and cultural value. Military objects are generally regarded in a negative light and their conservation is not thought of until many of them have already been destroyed. Compared to other cultural heritage objects, only a few valuable military objects have been taken under protection in Estonia, and their wellbeing has generally relied on private initiative. The value of historical heritage is the sum of both the good and the bad (the positive and the negative aspects), and therefore no nation should have the right to delete a profoundly negative aspect of their historical past. Furthermore, objects that seem disagreeable to the current generations may for future generations become an interesting and precious study tool. One of the possibilities of conserving military objects is to develop military tourism.

### **Tourism trends in Estonia**

In Estonia, tourism accounts for an essential part of the gross domestic product (about 8% of the GDP) and employment. In recent years, the number of tourists visiting Estonia, incl. the number of tourists who travel beyond Tallinn, has exhibited a growing trend (excluding the temporary decline due to the economic recession in 2009). A major part of the tourists who visit Estonia come from Finland, Sweden, Russia, Norway, Germany and Latvia. About 60% of the people, who visited Estonia in 2011, were holidaymakers who travelled in order to use local holiday and entertainment services, to visit cultural events, and to explore Estonia's nature and cultural objects (Statistics Estonia 2012).

The existing sights alone are not sufficient for the sustainable development of the tourism industry. So as to remain competitive, it is necessary to develop the sector continuously; to increase its efficiency and quality, while also developing new tourism products. As a result of several studies, it has become clear that Estonia has potential as a destination for military tourism. For example, the survey conducted by Etverk in 2000 among local tourists revealed that there is interest in military tourism, with Estonia's beautiful and pristine nature cited as one of the reasons. The respondents would be glad to visit military objects if they were presented safely, were tidied up as places to have an adventure in, or as museums for educational purposes. In addition, a large part of the respondents would participate in activities imitating the Soviet military, play war games etc. A third found that visiting a reconditioned military object/museum could be included in schools' history programmes. Elsewhere in Europe, it has been proved that the precondition to visiting military objects is their reconditioning and safety (BICC 1997). Thus, the providers of military tourism must ensure the safety of tourists and to some extent, the aesthetic appearance of the object/area, thus promoting the preservation of military objects and improving their condition.

### **Military tourism/objects coverage in virtual media**

Studies have shown that a large part of foreign tourists and the majority of domestic tourists travel in Estonia without a travel package, that is, they put their routes together themselves. According to overviews of the development of tourism, for foreign tourists, the most popular source of information about Estonia is the Internet, followed by personal experience from previous travels. Thus, the Baltic Green Belt project entailed a survey that looked into the coverage of the possibilities of regional military tourism in virtual media.

The homepages of local governments are the most widespread source of information relied on in finding tourist objects. Among the 78 homepages of local authorities under survey, only 17 homepages contained a reference of any kind to any object of military tourism in the region. The survey also examined the options provided by Estonian tourism portals, and whether and how search engines enable to find adequate information about military tourism in Estonia.

Although there are many good examples, unfortunately, the marketing activities related to military tourism, especially those targeted to foreign tourists have been inadequate. Informative materials in foreign languages are generally deficient or are available in one or two foreign languages only. Merely four homepages of local authorities provided some military-themed information in foreign languages. To improve the situation, the more important recommendations for the Internet marketing of military tourism were summarised and presented in the course of the study (Lõhmus et al. 2012).

Generally, the scarce coverage of military tourism can be linked to the fact that locals still associate military zones with negative memories and, hence, are not able to view them as tourist objects – that may be sources of interest, knowledge and experience for someone – and combine military tourism with other types of tourism. Many endeavours get stuck due to ownership issues, needs for large investments and doubts about potential profitability; people are afraid of the so-called bad surprises, i.e. discovering that the object is dangerous or contaminated.

### **Baltic Green Belt input to military tourism**

The Baltic Green Belt project has enabled to draw attention to the military heritage and development of military tourism in Estonia. This was identified also by key word searches that repeatedly retrieved articles or blogs about the green belt in Estonia. The project shows the situation and potential of military tourism in Estonia, encourages tourism organisations to engage in this sphere and provides marketing guidelines. In order to contribute to military tourism, a map application was prepared on the Soviet-time military objects studied during the inventory conducted in the Estonian green belt (Military heritage map application). The application displays the photograph and name of the object as well as a short description. In the future, it will be possible to add the oral history and information collected to the application (a more thorough description of the object, its history and condition). So as to determine which of these objects/areas have tourism potential, an assessment process must be carried out. However, it is already possible to visit the objects now – interactively or on one's own responsibility.

## **7 Distribution of research results**

In order to implement the study results, it is important to distribute them as widely as possible. The Estonian University of Life Sciences has distributed the results of the Baltic Green Belt project and increased the environmental awareness of people in many different ways (Baltic Green Belt).

More than ten awareness events with hundreds of participants have been conducted all over Estonia. In addition, the more significant events related to nature and environmental protection, as well as tourism, have been visited on the local and regional level. At certain intervals, people's awareness of the European and Baltic Green Belt projects and their results has been studied in the course of awareness-raising events. The results indicate that the number of people who are aware of the project has been increasing continuously and rapidly: less than 10% of the participants in the events organised in the first half of 2009 were aware of the projects, while in 2010, the number of aware people had reached approximately 60%, and by the end of 2011, the corresponding percentage was 75–80. The growth in the project's popularity was also reflected in media publications.

Since nature protection in itself is quite a popular subject at the moment and there are many projects, supported by European Union, going on in the field, then involving the press is initially difficult. But interesting subjects cause a so-called snowball effect – the circle of journalists is relatively small and information spreads fast; after the first positive experiences, they themselves try to establish contact. That is what happened to the Baltic Green Belt project in Estonia. However, this does not mean that press releases should not be prepared for more important occasions or events or that information should not be spread about in some other way. Involving the press is vital, as the stories published in the media and the views expressed therein largely determine the possibilities for future cooperation, as well as the general attitude towards the activities (an assessment is given to the usefulness of the



project). Popular science radio shows play an especially important role. By many occasions the organisers of the project were contacted after a radio show with offers regarding cooperation or materials (which are usually difficult to find) needed to carry out the activities of the project.

The database compiled on the basis of the inventory results and presented to the visitors of the tourism fair Tourest 2011 (which was visited by 20,853 people) has proven to be a great means by which to reach both domestic and foreign tourists, as has the bilingual (English and Estonian) travelling exposition, displayed in coastal museums and in ports. In addition, the recognition of the project and the Estonian green belt has been significantly increased by the book and the film *The Estonian Green Belt*. Since both are directed at a very wide range of readers and viewers, then they have achieved great popularity in different circles during a short period of time.

Important information does not always reach interest groups in a sufficient form. Therefore, various publications (leaflets, information sheets, project overviews etc.), which give people the chance to focus on the subject later in a suitable environment and gain the necessary information, have been prepared. The organisation of all events and the preparation of all information materials have been guided by the principle that they have to be informative enough, i.e. reflect the results of the studies conducted and include the information gathered, but at the same time be understandable to a great number of people.

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## **Involving Stakeholders along the Baltic Green Belt of Latvia**

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### **Abstract**

An essential part of nature protection is involving stakeholders by communicating the need and the benefits from conserving nature. This is very often not easy to handle, the communication with important stakeholders can be disrupted and communication with these stakeholders might malfunction. In these cases a neutral mediator can influence the process and atmosphere of communication in a way that most disruptions and barriers can be overcome.

The Slītere National Park is taken as an example for the processes of communication in nature protection and the impact of a neutral stakeholder in a complicated communication regime. This paper analyses the process of communication, which circumstances influenced this process, the history of the area and its stakeholders. As a result, general guidelines for strategic communication with stakeholders in nature protection are given.

### **1 Introduction**

An important part of nature conservation is to reduce the pressure of mankind on nature, for example by reducing the negative effects of stakeholders (organisations or key persons with an interest in the usage of land in a nature protection site), economic development and people's lifestyle. This means, nature protection depends on involving stakeholders; forming alliances and agreements with those who might harm nature with their actions, although it is not their aim – for example in tourism. Although it is not the aim of tourism developers to harm nature, the communication between developers and nature protectors is often negatively affected because the regulations for protecting nature are felt as obstacles. This process may be influenced by the history of the area, the introduction of nature protection, the personal background of the people and/or the organisation and aims of important stakeholders in the area. If the process of communication eroded over many years, the reestablishment of the connections is almost impossible for the stakeholders, because the personal history of each individual is too connected with dislike of others.

In these cases a neutral mediator, who is in contact with all stakeholders, can be useful to re-establish the communication regime between the stakeholders. In this paper, the process of stakeholder involvement with a neutral mediator is exemplified by the Slītere National Park in Latvia. We will give an overview of the park's history (which is important to know in order to understand the circumstances), the important stakeholders and the main activities of the neutral mediator. From this knowledge and expert-interviews with important stakeholders in the territory, we developed general guidelines for communication with stakeholders in nature protection.

## 2 Description of the area

The Slītere National Park (SNP) is located in the north-west of Latvia, on the edge of Riga Bay and Baltic Sea. The Park encompasses an area of 26,590 hectares, including about 10,000 hectares of marine habitat. The roots of the park were established as Slītere Nature Reserve in the year 1923. In the year 2000 the national park was established. The whole park is a Natura2000 territory as well.

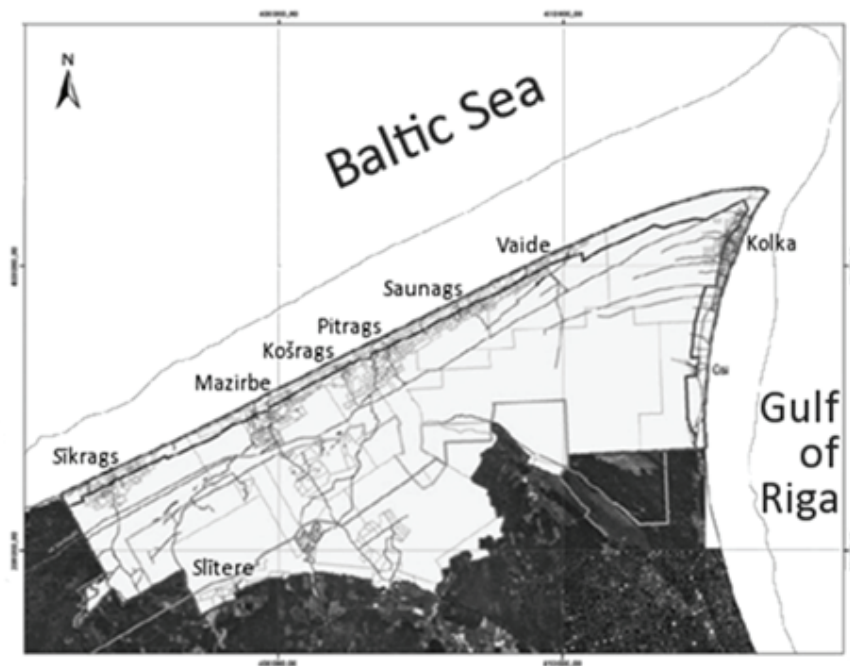


Figure 1: Slītere National Park management plan (www.slitere.lv, adapted).

The national park includes the up to 50m high ancient coastline of the Baltic Ice Lake with natural broad-leaved forests, as well as *kangari* and *vigas* complexes (several miles long dune ridges – *kangari*, alternating with dune valleys – *vigas*), sea coast with sandy beaches and dunes, dry meadows, dry pine forests and the seaside type of raised bogs, merging with *vigas* and *kangari*. The area's population is about 1,100, of which 950 live in Kolka. The population density (at 9.4 people per square kilometre) is rather low. The main nationalities in the area are Latvians (91.6%) and Livonians (1.8%). The population of this region traditionally lives in small fishing villages along the sea (see figure 1): Sīkrags, Mazirbe, Košrags, Pitrags, Saunags, Vaide, Kolka. One main income source for locals is the fish industry: Two fish factories and 15 fishermen are located in the area. Further, there is one wood working enterprise, nine tourist houses, five shops and one petrol station in Kolka parish. Dundaga is the largest city within a radius of 25km, inhabited by about 1,700. The national park is administrated by the Nature Conservation Agency Kurzeme Regional Administration, located in the village Slītere.

### 3 History of the Area

#### From Nature Reserve to National Park

The roots of the Slītere National Park were established in the year 1923 by the foundation of the Slītere Nature Reserve (SNR). It was a 1,100 ha large territory at Slītere Blue Hills. The Slītere Nature Reserve is the second oldest protected nature territory in Latvia. The area has been expanded several times: During 1950s it had a size of about 8,000 ha and in the 1980s it slowly grew to 16,500 ha. In the year 2000 these-protected lands and further marine areas received the status of a national park.

The goal for creating the Slītere Nature Reserve was consistent with the concept of nature reserves (*zapovedņik*) of that time; as territories without any economic activity. The reserve's task was to ensure undisturbed on-going of natural processes. Visiting of SNR and other nature reserves was restricted to and local inhabitants.

#### The time of Soviet-Occupation

As of 1940 Latvia was occupied by the Soviet Union. The nature reserves territory and the surrounding area were strategically important for state security for the following reasons:

- The eastern coast of the Baltic Sea was external frontier of Soviet Union
- The way through Irbe strait was the only way to access the Gulf of Riga and to reach Riga, so it was constantly controlled.

Only local inhabitants were allowed to reside at the border zone (via a stamp in the passport) and their guests had to receive permission from the Ministry of the Interior. State border guards enforced the regulations of movement and supervised the beach. Sunbathing and swimming was allowed only during specific hours at small parts of the beach, close to the largest villages.

During Soviet occupation, when no private property existed, old dunes and depressions (*kangari* and *vigas*) around Slītere, covered with coniferous forest and hard to manage but biologically highly valuable, were, together with the Bažu bog, attached to the Slītere Nature Reserve.

In 1979 an administration with staff was founded for Slītere Nature Reserve, not only supervising and managing the territory, but also performing scientific research, monitoring natural processes and educating society. In 1980s Slītere Nature Reserve was supervised by five foresters.

Similar to Slītere National Park nowadays, the Slītere Nature Reserve was divided into land use zones with different protection levels: strict protection zone, regulated regime zone and buffer zone. Each of them had different rules for visiting and the usage of nature's bounties. All soil and wood resources were owned by the state, so society had no interest in buying land, building houses or cutting down forest. The main activity was to collect berries and mushrooms within forests and swamps of the reserve. These natural resources were an important source of food and income, as mushrooms and berries were preserved for winter, and some were sold as well.

People remember how they were wronged because of bilberry, cowberry and especially cranberry gathering restrictions. Berries were only allowed to be gathered at special conditions. Only local people were allowed to gather them without any devices that might damage berry bushes. If these conditions were ignored, foresters fined the trespasser and sometimes even took away gathered berries. Berries and mushrooms grow in all forests of Dundaga parish, and gathering outside the territory of Slītere Nature Reserve was allowed, but those were not everyone's favoured gathering grounds.

At the same time student educational excursions were organised to the area. During Soviet times student excursions along places of natural and cultural heritage were very popular, as they were integral part of the school program. Slītere NR researchers developed educational routes and led lessons in forests. An independent educational exposition about nature was set up in Slītere Manor House for many years.

## **Independence, land reform and territorial spatial planning**

In the 1990s, after foundation of the independent state of Latvia, the border zone restrictions for visitors and locals ceased. From independence on, the beach was fully accessible and permission for entering the “zone” was not needed anymore.

However, Slītere Nature Reserve continued fulfilling its goal; to ensure conditions for natural processes according to the territorial land use zones. In the 1990s the first nature trails with covering were built and brochures for tourists about Slītere Nature Reserve were published. This was the start of public relations and environmental education of the general public.

Together with the independence of Latvia a land reform was started. Its aim was, and still is as follows: “The objective of the land reform is to reorganize the legal, social and economic relationships of land property and the use of land in the countryside during a gradual privatization in order to promote the renewal of the traditional rural lifestyle of Latvia, to ensure the economic use and protection of natural and other resources, preservation and raising of soil fertility, increase of qualitative agricultural product production” (Law On Land Reform in the Rural Areas of the Republic of Latvia, Section 1).

This law, dated November 21, 1990, provided special regulations for protected nature territories to avoid destruction of natural values. Slītere Nature Reserve had the right to not privatize the land (Section 12 of the law), however the administration decided to use the paragraph of the law about land exchange which states, that if a land owner’s previous property is located in the nature reserve or a regulated regime zone it can be replaced with identical land area within the buffer zone. As the buffer zone was at the seacoast, in the fishing villages and around them, most parcels of private land returned were in the zone between the sea and Ventspils-Kolka motorway. The Slītere forest remained property of the state and there was no obstacle to ensuring nature protection measures.

Together with the law on land reform, the state undertook a territory planning process. The Kolka parish was in favour for this plan, although 95 per cent of its territory was under administration of the Slītere Nature Reserve. A relevant part of the plan was to determine the borders of Livonian fishing villages according to the Protection Zone Law (regulating sea coast dune protection within village borders) where beneficial conditions for construction and forest management existed.

Kolka parish’s plan for the village borders was to draw a line from Mazirbe till Kolka, creating a 30km long zone between the sea and the motorway, including protected dune forests where no houses are built. Such editing of the plan was not accepted by the Ministry of Environment. This conflict, although indirectly, affected the relationship between Kolka parish and Slītere NR administration.

Without this territory plan it was hard to receive permission for construction in these villages, displeasing the landowners who were willing to build. These land owners blamed the Slītere National Park administration for this situation.

The spatial planning process was just finished in the year 2010.

## **European Union and financial crisis**

The entrance of Latvia to the European Union on the first of May 2004, (together with Estonia, Lithuania, Poland and six other eastern European countries) led to the designation of the Slītere National Park as a Natura2000 territory. The severe pressure from the Latvian society and economy, mainly the timber-industry, was a major problem for nature protection in woodlands during the financial crisis which started in 2008. The nature protection system itself is disputed in Latvia, but the government has to “maintain [...] at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest” (Council Directive 92/43/EEC of 21 May 1992, on the conservation of natural habitats and of wild fauna and flora) due to the European agreements.

## 4 Results

### The stakeholders – a short introduction

#### Kurzeme Regional Administration (former SNP administration)

During the Baltic Green Belt Project the SNP administration changed its name several times. The institution has changed subordination in the Environmental Ministry structure also. And as a result of the changes, the Slitere National Park is one of protected nature territories that are managed by the new Nature Conservation Agency (NCA). The NCA Kurzeme Regional Administration (KRA), the successor of the SNP Administration, is one of four regional administrations of the NCA in Latvia. Main functions of the NCA KRA are the management of all protected areas in the western part of Latvia; carrying out the cooperation with local authorities, tourism entrepreneurs, non-governmental organizations and education institutions to promote nature conservation, and to educate and inform the society about nature conservation.

The goal is to ensure the ecological value of the Slitere National Park.

#### Local entrepreneurs (Tourism Infrastructure)

There are 13 tourism entrepreneurs (Table 1) that offer accommodations for tourists in and around the SNP. This kind of business is quite seasonal. Only one or maybe two of them are able to earn a living during the tourism season.

Table 1: Accommodation infrastructure in the area.

Village	Accommodation type(s)	beds/pieces
Sikrags	Country house	6/-
Lapmežciems	Country house	12
Mazirbe	Country house + Camp houses	18/20
Vīdale	Country house	8/-
Košrags	Guest house / camp houses + Country house	22/24
Vaide	Camp houses	12
Kolka	Country house / place for tents + hotel + hostel	41/-
Pitrags	Place for tents	-
Dūmele	Country house	10

The majority of accommodation facilities were established in the last few years. The tourism sector is a (slowly) growing economic factor in the region. In general, the aim of the entrepreneurs is, of course, to generate an income, but there are three different groups. The first group consists of local people, who have lived in the territory for several generations, working in a regular job but generating some extra income with tourism. The second group are people that have lived and worked in a large city before, who are now returning to their parents' home. These people may be pensioners, and accommodations for tourists are a way to earn some money and spend a spare time. The third group is people that have purchased land in the national park with the aim to develop a business.

#### Summerhouse owners

There is no hard data about how many estates are inhabited permanently. Some owners have declared their place of residence as Kolka parish, but they live and work in Riga, another city or abroad. For example, there are four permanent inhabitants in Sikrags, but during weekends and summers there are a hundred or more inhabitants.

It is hard to involve the owners of summerhouses, because they do not have any strong relationships to other stakeholders, and they simply prefer the quiet atmosphere of the territory.

### **Tourism information centre of Dundaga (Dundaga district municipality)**

The Dundaga tourism information centre (TIC) started its work in the area in 2009. One permanent employee organizes the work and several tourism guides have seasonal jobs in the TIC. Dundaga TIC wants to promote a favourable ambiance for tourism in the whole Dundaga district. It provides services to stakeholders that work in the field of tourism, organizing seminars and meetings, and also funding to develop the touristic infrastructure and the tourism products of the area.

### **Cape Kolka Information and Visitors Centre ( Ltd. Kolkasrags)**

Cape Kolka Information and Visitors Centre is a business of Ltd. Kolkasrags. Ltd. Kolkasrags hires land (about 20 ha) between the Baltic Sea and Riga Gulf. They maintain parking places (paid service), keep information boards and sell souvenirs and snacks in Cape Kolka. They also organize some events for tourists. Kolka Cape is the most famous countryside destination of Dundaga district or even Northern Kurzeme. There are more than 50,000 visitors per year.

The aim of Ltd. Kolkasrags is to attract people to visit Kolka Cape.

### **Lauku Celotajs**

Lauku Celotajs (engl "Country Tourism") is a Latvian tourism association with registered office in Riga established in 1993, which develops products and measures for sustainable development in Latvia, Estonia and Lithuania. Lauku Celotajs connects rural tourism entrepreneurs and had around 350 members in 2009. Its aims are to develop tourism products for rural areas, "quality control and labelling, provider training and consultations, promotion and marketing its products in brochures, maps and internet, lobbying for interests of members and project activities" (Baltic Green Belt Project 2009).

The organisation, with currently nine workers, started to work in the Slītere National Park during a LIFE Project in the year 2004. The organisation is now involved in the Baltic Green Belt-Project as a project Partner within a pilot project to "preserve natural territories that are of a high level of ecological value in the coastal zone that was part of the iron curtain" (Baltic Green Belt Project 2009).

### **The situation of communication before the involvement of stakeholders**

The communication between the nature conservationists and other stakeholders was disrupted and influenced by the history and recent planning activities. Many local people compared the activities and rules of nature protection with the occupation of the soviet army, because restrictions were compared to be almost on the same level. Another huge problem was the unfinished process of spatial planning and the missing understanding of legal organisation in the territory.

The Slītere National Park administration was blamed by many people for preventing the development of the area. Although it was not their task to finish the spatial planning, the parish of Kolka and the ministry of environment were the competitors, the administration was perceived as guilty of the blockade. Subsequently, the atmosphere was poisoned and in many cases, when permission for the construction of any structure was complicated and long, the park administration was blamed.

The assertion of the administration, that it was not their fault, was not accepted by the recipients. Due to this development over several years, the communication of nature protection as an institution with the stakeholders was almost disabled.

### **The process of involving stakeholders**

The recent cooperation of Lauku Celotajs in the Slītere area started around the March 2009 (within the LIFE-Project LIFE07 ENV/LV/000981) when they met with local people and entrepreneurs they already were in contact with through their tourism board. They gathered stories and information about the national park area's history and step by step – concentrating individually on key persons – they involved about 30 local people from different stakeholders (e.g. from the Nature Protection Agency, tourism entrepreneurs, etc.) of the area. These personal recollections were gathered for publishing the



“Slītere National Park Tourism Guide”, which was published in the Latvian language in 2010 and soon afterwards also in English. The interviewed people were allowed to influence the finished text modules and also the layout.

When they had involved these people individually, they organized events and seminars in small groups in a “friendly atmosphere” – with local food and no pressure, trying to connect these individuals with each other. The dialogue during these seminars enabled the participants to understand the perspective and activities of the other stakeholders.

In these meetings, when Lauku Celotajs already developed five tourism products for the local people as a package (hiking, cycling, boating, skiing and animal watching), the idea for traveller days was born. The goal of which was to show these products and the beautiful landscape, home to the stakeholders, to a larger number of tourists. It is not sure whose idea it was, some say it was Lauku Celotajs, but Lauku Celotajs said it was the idea of local people.

The first Slītere “Traveller’s Days” were organized by Lauku Celotajs, the Dundaga municipality, the Kolka visitor centre, the Kurzeme regional administration (NCA) and local tourism entrepreneurs (including self-employed tourism guides). For the first “Traveller’s Day” (one day in July 2010) about 1000 “contacts” were achieved – the General Director of Nature Protection and the Minister of Environment held speeches. With the second “Traveller’s Days” (two days in June 2011) about 2000 “contacts” were accomplished. The number of contacts is not equal to the number of people visiting this area, because the visitors participated in different activities and thus most of them were counted more than twice.

Table 2: Historical overview for the Slītere National Park territory.

Year	Event
1923	Slītere Nature Reserve has a size of 1,100 ha
1950	Slītere Nature Reserve is expanded to 8,000 ha
1979	Slītere Nature Reserve administration is established
1990s	Independence, land reform, Kolka parish villages borders conflict starts
2000	Slītere National Park is established
2004	SNP becomes a Natura2000 territory
2009	Dundaga district, Kolka parish villages borders conflict ends; Lauku Celotajs starts their activities in SNP, first local people NGO appears
2010	SNP Management plan is finished, first Slītere Traveller Day (organized by Lauku Celotajs) involved municipality, SNP administration, local stakeholders
2011	Second Slītere Traveller Day, organized by Dundaga municipality, SNP administration and local stakeholders

## 5 Discussion

The communication activities of Lauku Celotajs in the Slītere National Park area were planned well and began with individual and personal contacts to tear down potential barriers. When this first (or second) contact was established, they organized events with different groups of local stakeholders, connecting them with each other. Lauku Celotajs’ role then was to act as a mediator between the groups by giving these people the possibility to work together on one project. While working on this project, the stakeholders got into contact with each other in a productive way – emotional barriers were set aside, because reaching the shared aim (contributing to sustainability of the region, creating a better economic perspective for the people) is a benefit for all groups. The stakeholders got to know each other and the communication between them had fewer disruptions in further contacts.

Lauku Celotajs’ communication activities were divided into many small steps; each step was built up on another, following a particular aim.

This success of work was possible due to the fact that a very short time before Lauku Celotajs started its work in the Slītere National Park the conflict in spatial planning between the village of Kolka and the Ministry of Environment was resolved. This event had a huge influence in the atmosphere of communication between the stakeholders, because from this point on the rules for development of the area were simplified. Many local people and especially those willing to develop tourism felt released from heavy restriction, which was unintended by nature protection.

The combination of releasing pressure on those who were willing to develop and the mediating activities of Lauku Celotajs led to a regaining of trust between the stakeholders. The atmosphere of communication was highly improved – by a lucky combination of planning and external events.

### **Guidelines for communicating nature protection**

Indicating a long lasting and successful regime of communication between stakeholders of a nature protection area is not very easy, especially in a short period of time as is common in projects funded by the European Union. The aims, positions and feelings of the stakeholders are connected with the history of the area and personal experiences; they developed over a long time and will not change rapidly.

However, it is possible to re-establish a certain process of communication between stakeholders that used not to speak with each other for several years. A neutral mediator from outside the territory can help to cease the conflicts.

The first task of the neutral stakeholder is to analyse the communication regime by identifying the stakeholders, their background and the binding connections. For Lauku Celotajs it was very helpful to have these connections to most stakeholders before they started their activities, so they knew the regime of communication already. Lauku Celotajs' aim then was to re-establish communication between the stakeholders in order to develop the area for sustainable tourism. Therefore they used collaborative projects (Travellers Days, Slītere National Park Guide) with a value for both the stakeholders and the main aim of Lauku Celotajs, which is developing tourism.

This case cannot be transported one for one to another area with a different history, a different society and different stakeholders. But it is possible to transport the way in which the communication was planned by Lauku Celotajs. The following guidelines were developed from campaigning literature (a project like the BGB is set on time – just like a campaign) and the extraction of interviews with eight organisations from the Slītere National Park in Latvia and the Pajuris Regional Park in Lithuania.

The communication process should contain different modules depending on each other. The most important modules are:

- Analysis of the communication environment
- Focusing the target group
- Describing the aim of communication
- Setting up the measures

By using these modules in a systemic way it is possible to focus efforts and to evaluate them, learning from mistakes but also from successes.

### **Environment Analysis**

The environmental analysis is the first step in planning a communication strategy. The aim of this analysis is to identify the circumstances in the area clearly. It starts with an Identification process, where the following questions shall be answered (Buchner et al. 2005):

- What is the problem? Why is the situation as it is right now? What happened in this direction already? Which political, economic and social events will influence the atmosphere in the near future?
- Who are the stakeholders? Who is working for the own organization? Who might be an ally?

- Who is a competitor?
- What are the resources? Which resources does the own organization have?

The results of the identification phase shall then be analyzed in a “strengths and weaknesses” profile, for example in the SWOT-Matrix; this allows structuring the situation (Figure 2).

	<b>internal</b>		
<b>positive</b>	<b>Strengths</b> <ul style="list-style-type: none"> <li>• <i>Good contact to...</i></li> </ul>	SWOT	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>• <i>Lack of money</i></li> </ul>
	<b>Opportunities</b> <ul style="list-style-type: none"> <li>• <i>UN-Year of biodiversity</i></li> </ul>		<b>Threats</b> <ul style="list-style-type: none"> <li>• <i>Financial crisis</i></li> </ul>
	<b>external</b>		
			<b>negative</b>

Figure 2: Example of a matrix for the SWOT Analysis.

These facts can then be analyzed in order to identify “friends” and “enemies” and their possible reactions to the planned issue (Buchner et al. 2005). The environment analysis is the basis for every following step; therefore it is useful to put a lot of energy into this identification phase. The SWOT analysis is not obligatory but useful, to create a structure of the environment.

**Target group (The Recipients)**

Knowledge about the target group is important to place the information in such a way, that the recipients receive the message. Therefore it is important to understand who the target group is (Kuckartz 2002). The more information about the target group that can be gathered, the more precisely targeted can be the message, tearing down the barriers of communication.

**The Aim**

Very important for a communication-strategy is the aim. Again, there are several models for defining an aim; one of the simplest is the SMART-Model. In order to evaluate the success or failure of the communication, according to Buchner (Buchner et al. 2005) the aim has to be:

- **Specific** and focussed
- **Measurable**
- **Achievable** and realistic
- **Relevant** for the topic
- **Timed** (reasonable timeframe, until the aim shall be achieved)

Aims in nature protection may be generating confidence, alertness or sympathy of the general public (or other interest groups). The well-defined aim is connected to the parameters “Celerity”, “Low Costs”, “High Quality” and “High Acceptance”. These parameters are highly connected with each other and one cannot be pushed forward while leaving the others behind. A ranking of these priorities should be defined before working out the measures.

## The Measures

The information compiled so far about aims, target groups and the communication-environment is the basis for the measures. The wheel of communication (Figure 3) is orientated on the Lasswell-Formula (Lasswell 1972) and helps to define, which activities shall be accomplished “how”, “when”, “where”, “by whom”, “to whom”, “by which channels”, “how often” and “with which aim”:

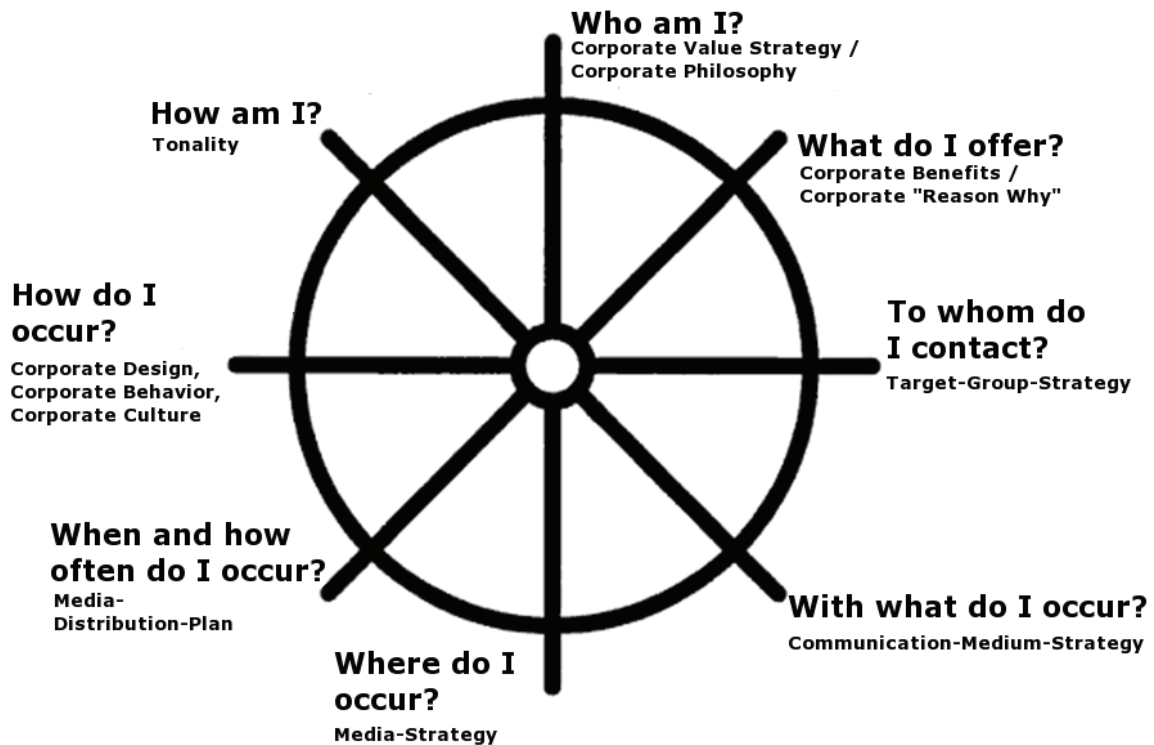


Figure 3: The Wheel of Communication (According to Linxweiler, Buchner 2005 - translated).

This information helps to transport the message in a way that fits to the organisation itself and the focussed aim. In many sectors the strategic communication with stakeholders is state of the art and has been practiced several years. This type of focussed communication has been developing in the sector of nature protection for several years (e.g. Feucht 2006), this paradigm shift in nature protection communication is necessary to compete with other sources of information. It might be useful to organize capacity building for the topic of strategic stakeholder communication in nature protection for governmental bodies and nongovernmental organisation.

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## **Coastal protection example programme for Lithuania**

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### **Abstract**

Lithuania has one of the shortest coastlines among all European countries, the length of the shallow sand Baltic coast shaped by wave induced processes being only 90.6 km (Gudelis 1967, Boldyrev et al. 1976). Intensifying use of coastal resources mostly because of the port development and increase in recreational activities, is one of the most important factors causing coastal erosion and resulting in application of coastal protection measures. Although coastal protection has a long history on the Lithuanian coast first coastal protection measures were not aimed to stop erosion but rather to mitigate the impacts of eolian processes (Žaromskis 2007). Current coastal management practices in Lithuania are implemented in accordance with existing international legislative documents: HELCOM recommendation 16/3 „On preservation of natural coastal dynamics“ (1995), European Parliament and Council recommendation „Concerning implementation of integrated coastal zone management principles“ (2002). According to the Lithuanian Law on the coastal strip (IX-1016, 2002-07-02), approved by Lithuanian Parliament in 2002 coastal protection measures are envisaged in Coastal Strip Management Programs which specify the application of coastal protection measures according to the functional priorities and natural coastal dynamics. Coastal segments are distinguished by their functional destinations, rates of coastal erosion, recreational load, etc. in order to identify the most problematic sectors. Afterwards, final coastal protection and management measures are agreed (Gulbinskas et al. 2009).

### **1 Background and Motivation**

First Coastal Strip Management Programme was approved in 2003 by the Order Nr. 442 of Lithuanian Minister of Environment and served as a basis for the implementation of coastal protection projects during 2004-2007 period. Until the beginning of 2008 several big projects were successfully implemented in Lithuanian coast (nearshore nourishment in Melnrage – Giruliai sector, Palanga beach nourishment, reconstruction of groine near Palanga pier, maintenance of protective foredune) giving positive results. The latest coastal management programme was approved by the Order Nr. D1-88 of Lithuanian Minister of Environment in January 2008. The document appeared as a continuation of previous programme in order to further mitigate the intensive degradation of Baltic Sea coasts by applying the concrete tools of coastal protection until the year 2013. Coastal protection measures were specified for separate coastal segments, which were defined according to the state of the coast, most problematic areas, possibilities and priorities of use of different type of coastal protection and management measures. Beach and nearshore nourishment are currently defined as priority measures.

From the beginning of 2013 the implementation of coastal protection measures will be done in accordance with newly elaborated Coastal management programme, covering the period from 2013 up to 2018. In order to prepare the basin for the development of new coastal management programme for the period until 2018 coastal protection example programme was prepared by Klaipėda University Coastal Research and Planning Institute in frame of Baltic Green Belt initiative.

## 2 Objectives

The objective of this research is to prepare Coastal protection example programme for Lithuanian coasts following national regulations, territorial planning documents, international recommendations and common world practices. Following factors were taken into consideration:

1. Current state and geodynamic tendencies of separate coastal sectors
2. Type of coastal usage and intensity
3. Anthropogenic factors, having potential impacts on coastal formation processes
4. Climate change impact

## 3 Location and Methods

Analysis of mentioned factors was conducted for the whole length of Lithuanian Baltic Sea coast (from the border of Latvian Republic until the border of Russian Federation) including the nearshore zone up to 20 meters depth and extending not less than 100 meters inland in accordance with the regulations set in Lithuanian Law on coastal strip. It is important to note that relatively short Lithuanian coast geologically and geomorphologically divided into two different parts: sand peninsula (Curonian Spit) – largest accumulative coastal landform in the Baltic Sea region, which was formed on the remnant of a glacial moraine as a result of sand accumulation by longshore sediment transport; and the continental coast comprising of different lithological sectors with the predominance of sand (northern part) and till (southern part) deposits.

Natural geomorphological development of Lithuanian coast is very much influenced by human activities: operation of ports, application of hard structures for coast protection in neighbour countries, etc. These factors have a major impact on current state of Lithuanian coasts and result in the intensification of coastal abrasion. Stabilization of the shore with hard hydrotechnical structures in Kaliningrad (Russia) partly blocked the flow of sediments from Sambian peninsula, as a result the amount of sediments reaching Lithuanian coasts significantly decreased. Breakwaters and the deep entrance channel of Klaipėda port also intercept more than half of the longshore sediment drift and as a result, the continental coast suffers an additional deficit of sand (Žaromskis 2007). Climate change also affect shoreline stability and acceleration of sea level rise has been observed on the Lithuanian coast (Jarmalavičius et al. 2007). Between 1970 to 2000, the Baltic Sea level rose by more than 15 cm (Johansson et al. 2001; Dailidienė et al. 2006). Results of long-term investigations of sea level rise in the Lithuanian part of the Baltic Sea, shows an annual increase of 6,5 mm. A rise of sea level up to 60 cm would cause significant problems for inhabitants and infrastructure on land (Žaromskis 2001). Though the current rates of the sea level rise so far do not induce marked land inundations in the Lithuanian coastal zone, their interaction with the wave set-up strengthen the coastal abrasion during storms (wind speed >24 m/s) (Žaromskis and Gulbinskas 2010).

Determination of coastal dynamic trends was based on the data of annual investigations of coastal dynamics (repeated leveling), carried out in 98 specially selected and equipped stationary stations (50 in the Curonian Spit and 48 in the mainland coast) since 1993. Evaluation of the long-term geodynamic coastal trends was based on the geindicator – the budget of surface littoral alluvium (m<sup>3</sup>/m): sum of the spatial and temporal changes of washed out or blown out and accumulated coastal material (calculated until the average long-term sea level) (Žilinskas 2008). The assessment of the state of the coast and the influencing factors was also based on the results of the previous investigations: (Kirllys 1990; Žaromskis 1998; Žaromskis & Žilinskas 1996; Žilinskas 1993, 1998, 2005; Žilinskas & Jarmalavičius 1995, 1996, 2007b; Žilinskas et al. 1994, 2000, 2001; Dubra 2006; and others).

Type of coastal usage was evaluated based on the territorial planning documentation (master plans of Neringa, Klaipėda city and district and Palanga city, National Park of Curonian Spit and Regional Coastal Park).



The impact of climate change is evaluated on the ground of material collected during the implementation of the international projects GRaBS and BaltCica.

Analysis of the whole Lithuanian marine coast (90.6 km in length) helped to define most vulnerable coastal sectors for the priority management and develop recommendations for possible coastal protection measures.

## 4 Results

### Most problematic coastal sectors

Analysis of coastal dynamics and coastal usage helped to identify most problematic coastal sectors, regarded as the priority ones in terms of coastal management and protection (Tab. 1).

Identification of priority coastal sectors helped to propose the complex of recommended coastal protection measures. The measures were divided into 2 blocks: I – measures that should be applied urgently in order to stop intensified erosion processes; II – measures to be applied later considering coastal development forecasting and possible impacts of planned economic developments (ports, terminals, fishery bases, etc).

Based on existing coastal management experience following protective measures were suggested:

- further protection and maintenance of foredune, using natural materials (branches, wooden footpaths, etc.)
- beach nourishment (Palanga is the top priority)
- nearshore nourishment (Palanga, Melnrage, possibly Butinge settlement)
- sediment deficit compensation using dredged material from Klaipeda port entrance channel (Melnrage)
- application of hard structures (gabions) (Kopgalis, possibly Melnrage I)
- protection of natural coastal formation processes (Seaside regional park)
- regular complex monitoring of coastal state (all the sectors)

Table 1: Most problematic Lithuanian coastal sectors.

Coastal sector	Coast characteristics			Shore dynamics	Coastal use	Other remarks
	Length (m)	Average beach height (m)	Average beach width (m)			
<b>Latvian border-Butinge settlement</b>	1,935	2,8	42	Stable	Nature conservation & Industry use	Reconstruction of Sventoji port in 2013 will stimulate the intensification of erosion processes in this sector, therefore possible coastal protection measures should be developed already now
<b>Palanga recreational zone: <u>Osupis-Kunigiskiai</u></b>	2,330	2,5	33	Erosion (2,6 m <sup>3</sup> /m per year)	Recreation	Increasing erosion because of the sand deficit

<u>Kunigiskiai-Raze stream</u>	3,800	2,5	55-80	Accumulation (1,7 m <sup>3</sup> /m per year)	Recreation	Stability of this sector very much depends on application of coastal protective measures in northern parts of the mainland coast
<u>Raze stream-Palanga pier</u>	700	2-2,5	15-55	Erosion (11,5 m <sup>3</sup> /m per year)	Recreation	Erosion in this place intensified after installation of groine near the pier
<u>Palanga pier-Birute cape</u>	1,680	1,9	35	Erosion (15,7 m <sup>3</sup> /m per year)	Recreation	Deficit of sand in the nearshore zone stimulates scour of sandy beaches
<u>Birute cape-Auska sector</u>	1,000	2,5	45	Accumulation (0,1 m <sup>3</sup> /m per year)	Recreation	Stability of this sector very much depends on application of coastal protective measures in northern parts of the mainland coast
<u>Auska-Seaside regional park</u>	1,400	2,5	42	Stable	Recreation	
<b>Seaside regional park:</b>						
Nemirseta landscape reserve	4,730	3	60	Erosion (5,1 m <sup>3</sup> /m per year)	Nature conservation	Preservation and regeneration of natural coastal formation processes are priority measures
Karkle talasologic reserve	2,680	2	25	Erosion (1 m <sup>3</sup> /m per year)	Nature conservation	Preservation of natural processes
Karkle ethnocultural reserve	1,550	2,5	30	Erosion (6,4 m <sup>3</sup> /m per year)	Nature conservation	Preservation of natural processes
Olando cape natural reserve	3,360	1,2-3	13-28	Erosion (8,6 m <sup>3</sup> /m per year)	Nature conservation	Naturally eroded cliff serves as sediment source for adjacent coastal sectors

<b>Melnrage recreational zone:</b>						
Melnrage II recreational area	850	3,5	45-55	Accumulation (4,1 m <sup>3</sup> /m per year)	Recreation	Future state of all sectors depends on further development of Klaipeda port
Melnrage II-Melnrage I recreational area	1,300	4	38	Accumulation (6,1 m <sup>3</sup> /m per year)	Recreation	
Melnrage I recreational area	1,050	5	35-40	Erosion (7,5 m <sup>3</sup> /m per year)	Recreation	Huge impact of Klaipeda port brakewaters
<b>Klaipeda port technogenic sector</b>	450	1-3,5	30	Erosion (10,2 m <sup>3</sup> /m per year)	Industry use	Huge impact of Klaipeda port brakewaters
<b>Curonian spit coastal sectors:</b>						
Kopgalis	900	2,5	60	Accumulation (11,7 m <sup>3</sup> /m per year)	Recreation	Despite of general accumulation trends this sectors suffers mostly from extreme storm events
Preila recreational zone	1,620	3	30	Erosion (1,6 m <sup>3</sup> /m per year)	Recreation	State of this sector depends on the functioning of the longshore sediment transport

## 5 Discussion

Coastal protection example programme was developed after the identification of most problematic sectors of Lithuanian coast. Coastal sectors were distinguished based on the detailed analysis of the factors affecting the development of the coasts. Following sectors were distinguished: Latvian border-Butinge settlement, Palanga recreational zone, Seaside regional park, Melnrage recreational zone, Klaipeda port technogenic sector, Curonian spit sectors (Kopgalis, Preila).

**Latvian border-Butinge settlement.** Although current geodynamic trends show the prevalence of accumulation processes it seems that from the beginning of 2014 erosion will be back. The main reason is reconstruction of Sventoji port, which will require construction of long breakwaters and deepening of the entrance channel, acting as a trap for sediments tracking from the south towards Latvian border up to Kolkss rags. The projected construction will possibly affect the state of adjacent coastal sectors (deficit of sediments in northern part of the port, accumulation in southern part), thus application of elementary measures for foredune protection and maintenance will be not enough. Supposedly, coastal management measures will need to guarantee permanent bypassing of nearshore sediments from south to north. Other problems include increasing recreational load and urbanization.

**Palanga recreational zone.** Being the most problematic coastal sector with regard to coastal erosion Palanga recreational zone requires permanent investigations and application of measures, helping to supplement sand resources in the nearshore zone and on the beach. Several beach and nearshore nourishment projects were successfully implemented here from the year 2005, however they should be continued in future in order to keep the status of most frequently visited health resort. Yet bearing in mind the deteriorating state of the southern part of the sector and seeking to preserve the unchanged total recreational space of Palanga, it is necessary to preserve the northern part of the sector in the best possible state, i.e. the reduction of recreational space in the southern part of the sector should be compensated by its expansion in the northern part.

**Seaside regional park.** Appropriate management of this coastal strip is extremely important not only for the purpose of nature protection, but also for the geodynamic state of adjacent coastal sectors (Palanga, Sventoji). Intensively eroded cliff in Olando cape landscape reserve acts as an important sediment supplier. Therefore, regardless of the negative coastal dynamic trends, only those coastal management measures that would neutralize the impacts of anthropogenic activity and would help to regenerate the natural coastal processes should be applied here.

**Melnrage recreational zone.** Recreational zone of Melnrage is popular destination for tourists during summer season. Although further expansion of recreational space is hardly possible due to existing environmental restrictions and less attractive stony beaches in the northern part (Olandu Cape landscape reserve) as well as presence of technogenic object (Klaipeda port) in southern part of the area number of visitors is constantly increasing. Moreover, planned construction of a deepwater port foreseen for the 2013-2018 period will have an impact on hydrolithodynamic situation in this area and possibly deteriorate state of the coasts. Therefore application of appropriate coastal protection measures in this area is of major importance.

**Klaipeda port technogenic sector.** This short coastal strip is currently used for the industry needs. Development of deepwater port is foreseen in the nearest future and potential impact zone seems to increase considerably. Detailed morphometric, hydrodynamic and lithodynamic investigations are currently underway and will help to determine the impact of the port on future coastal zone dynamics.

**Curonian spit coastal sectors.** All coastal sectors of Curonian Spit are used for intensive recreation purposes. Although state of the coasts in Curonian Spit is relatively good regular maintenance works are required in order to neutralize the hazards to the existence of Curonian spit as an integral geomorphological form. Koptgalis and Preila coastal sectors currently require particular attention due to deteriorative character of coastal dynamics, especially after extreme storms. One of the possible solutions to protect Koptgalis from the intensive erosion could be nearshore nourishment, which would help to keep sediments in shallow waters and ensure their supply for the protection of beaches during major storm events.

## 6 Conclusion

1. Possible impact of port development (Klaipeda port, Sventoji port) on coastal formation processes should be evaluated before the construction in order to plan most appropriate measures for the preservation of natural coastal features and recreational resources (sandy beaches).
2. Reconstruction and construction works should be carried out in parallel with the implementation of relevant coastal protection measures.
3. Possibilities to use boulders for the coast maintenance, dredged from Klaipeda port area during maintenance dredging works, should be evaluated
4. Permanent morphometric, hydrodynamic and lithodynamic investigations of the nearshore should be carried out for the appropriate modeling of coastal zone development tendencies, choosing of coastal protective measures and increasing the efficiency.

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## **Coastal protection and Management in Kaliningrad (Russia)**

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### **Abstract**

The coast of Kaliningrad Oblast shows three distinct segments: two sandy spits, one in the south and one in the north of the Kaliningrad territory, and in between a promontory cliff section. Coastal morphodynamics are dominated by massive retreat along the northern side of the promontory and by longshore sediment transport in a southwestern to northeastern direction. In recent times, almost Kaliningrad's entire coastline suffers from erosion. This is partly due to a relative to sea level rise trend and partly due to man's interference with the dynamics of coastal processes. This interference, which is taking place both in Kaliningrad Oblast and in the neighboring regions of eastern Poland and western Lithuania, is mainly a result of rapid development of coastal tourism. Building up along the waterfront in the region changes the downstream sediment regime and enhances erosional trends even further. The Baltic Green Belt project activities revealed the need and demand for cross-border cooperation in order to cope with the regional challenges.

The enclave of Kaliningrad Oblast, a part of Russian territory, lies like an island within the Baltic Green Belt region. Although serious attempts were made at the onset of the BGB project to integrate Kaliningrad into the group of BGB project partners, these attempts failed due to extended EU-Russian negotiations on regional cooperation in 2009 and a long delay in Russia's signing the INTERREG cooperation agreements. Nevertheless, within BGB project work the BGB partners continued to involve colleagues from Kaliningrad in the discussions of coastal development issues where possible. One major issue that is of importance for all coastal regions in the southern and eastern Baltic is shoreline morphodynamics and coastline changes in a soft-rock geologic environment. A primary concern commonly shared by coastal managers in all countries from Germany to Estonia is the problem of coastal erosion which affects both low-lying sandy coastal segments and soft rock cliff sections. As visits of the BGB lead partner to Kaliningrad and academic information exchange showed, coastal erosion is a rather serious problem both on the western and on the northern coast of the Sambian Peninsula which makes up for the core of Kaliningrad's coastal region (Figure 1).

South of the geologic structure of the peninsula Kaliningrad's coast comprises parts of long, narrow sandy spits which have formed only recently in late Holocene time. Thus, both the north-eastern part of Vistula Spit and the western part of the Curonian Spit are parts of the Kaliningrad coastal system. These sandy coastal stretches form an envelope for the central coastal portion from Primorsk to Zelenogradsk.

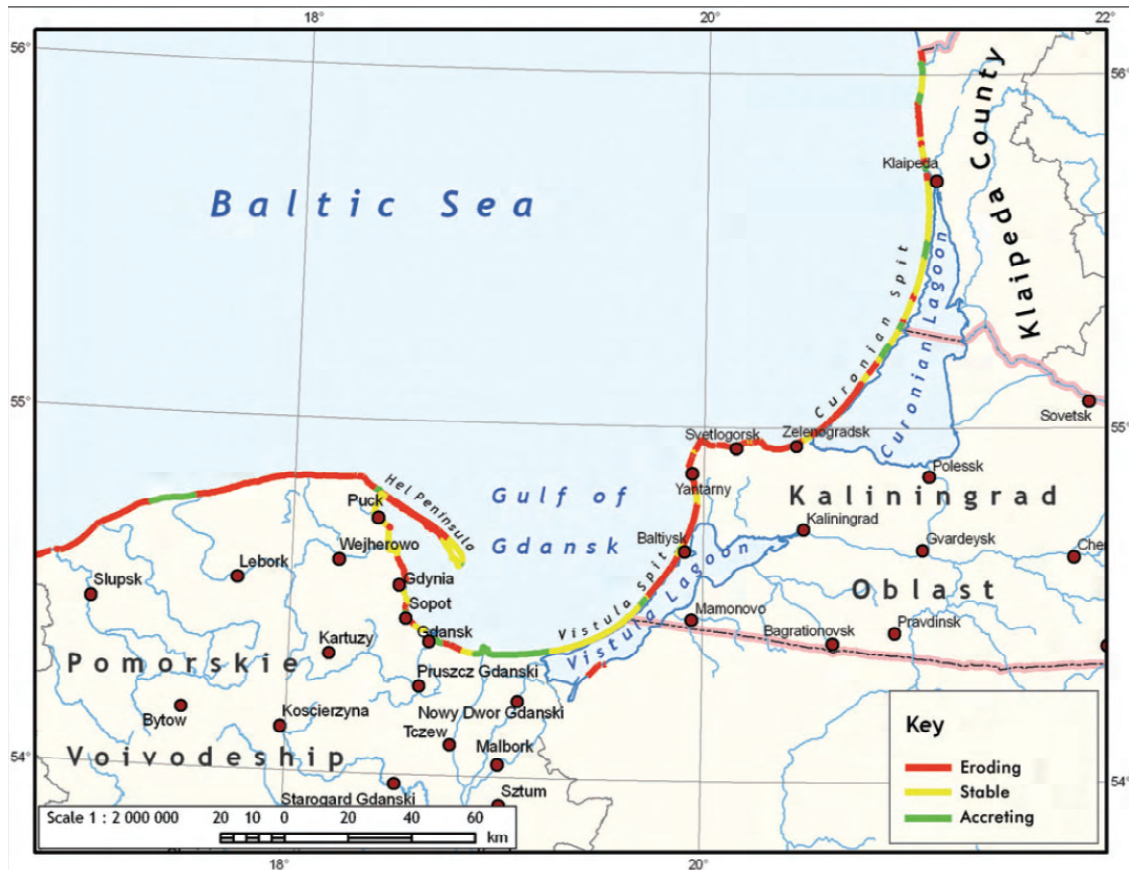


Figure 1: Coastline dynamics from eastern Poland to southern Lithuania (from Gilbert, 2009).

As Figure 1 shows, the larger Polish-Russian-Lithuanian coastal segment is a continuum of coastal cells, dominated by west-east oriented sediment transport, resulting from the dominating westerly wind and wave regime in this part of the Baltic. Due to slow but ongoing post-glacial isostatic subsidence this coastal region experiences a gradual steady sea level rise. In late Holocene times the sediments brought into the southern Baltic Sea by the two major rivers Vistula and Nemunas were used by waves and littoral drift to build up long spit structures which now block off the inner parts of the two bays. As a result most sediments brought by rivers to the coast are now trapped in these newly formed lagoons. In combination these factors lead to widespread sediment deficits and consequently to eroding shorelines. As Figure 2 shows most shorelines are depicted in red, marking erosion with stable shoreline stretches (yellow) and accreting sections (green) marking only shorter parts of coastline. In particular, virtually the entire Kaliningrad coast is undergoing serious erosion, both on the spits at the ends and in the central cliff section. This trend is believed to be enhanced significantly by climate change effects, such as the loss of protective ice covers during winter seasons.

For a long period following the Litorina transgression in the southern and central Baltic basin and, subsequently, the prograding sea levels the cliff coast of the western and northern flank of the Sambian Peninsula has undergone erosion and cliff retreat. The material derived from the eroding cliffs has been integrated into the longshore littoral drift system which is heading northeast across the Curonian Bay and has built up the 40 km long Curonian Spit. The Curonian Spit has diverse geodynamic regimes. As every spit system, the Curonian spit contains an erosive and an accumulative zone. The supplying erosion zone is at northern shore of the Sambian Peninsula and the southern edge of the spit. The middle part of the spit is in a state of equilibrium, where erosive and accumulative patterns, dependant on the direction of the sediment transport, are alternating.





Figure 2: Tourism infrastructure built alongside the eroding cliff coast at Swetlogorsk.

Kaliningrad Oblast has performed an ambivalent approach on the problems concerning the Curonian region. On the one hand, since the beginning of the 20th century, being under Prussian jurisdiction, hydro-engineering specialists tried to prevent the shoreline erosion of the Sambian Peninsula by installing groins in the near shore area. The moderate protective effect lasted only for 50 years. In the last decades the pressure on the coastal zone has been constantly increasing, mainly as a result of extended tourism development and encroachment of urban settlements towards the waterfront (Figure 2).



Figure 3: The picture documents recent approaches by Russian coastal engineers to prevent or reduce ongoing cliff erosion at Swetlogorsk at the northern shore of Kaliningrad.

This trend has been particularly prominent in the vicinity of the city of Swetlogorsk which has become the center of urban and touristic development in Kaliningrad Oblast. Building up valuable infrastructure along an eroding shoreline has recently documented the risks of coastal protection

management that is not really sustainable. Various engineering systems were installed to fix erosion problems, but without long-term local effects as of yet (Figures 3, 4). Distant effects, however, are more noticeable, as the reduction of eroding cliff material near Svetlogorsk is interfering with the sediment balance further to the northeast. Thus, both the Russian and the Lithuanian part of the Curonian spit now show increasing erosional tendencies (Zaromskis & Gulbinskas 2010).



Figure 4: Map showing artificial structures along Kaliningrad coasts, built to provide local shoreline stabilization (from Gilbert 2009). The protective measures along the northern coastal segment near Svetlogorsk and Zelenogradsk result in problematic sand deficits along the Curonian Spit all the way to Klaipeda and beyond (see chapt. 8).

The Curonian Area is a region of great socio-economic, recreational and environmental importance, both for Russia/Kaliningrad and for Lithuania. Here, the Baltic Green Belt project activities revealed the need and demand for cross-border cooperation in order to cope with the regional challenges.

Unfortunately, no official partner from the Kaliningrad region could get involved in the BGB activities. However, mutual visits and discussions on a scientific level suggest that both countries should combine their specific knowledge regarding the Curonian Area and together develop solutions for the problems related to coastal protection and management. Isolated approaches so far have not been beneficial in terms of financial, ecological, or territorial outcomes as they cover only parts of the problems. However, the benefits of a broad interdisciplinary cooperation covering the whole Curonian area are immense. Thus, the BGB project suggests considering the establishment of a Curonian Area Management Institution (CAMI) to launch or support bilateral policy making, planning and management. Such a cross-border ICZM approach could be an excellent good practice example for sustainable coastal development in the core of the BGB region.

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## **Lessons learned and transferability within the Baltic Green Belt Region**

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### **Abstract**

The priority objective of the Baltic Green Belt project was to observe how the region from Lübeck to St. Petersburg deals with the challenges of the 21<sup>st</sup> centuries under a special heritage setting.. This region, i.e. the neighboring countries of Russia, Estonia, Latvia, Lithuania, Poland and Germany, still have a great potential of natural and cultural heritage from the times of the Iron Curtain. Sustainable development of these coastal regions thus requires wise decisions towards heritage preservation on the one hand and towards mastering the challenges of rapid tourism development, eutrophication, climate change etc. on the other. Insight on good practice examples across borders and exchanging experiences on lessons learned is a promising approach which the Baltic Green Belt project has pointed out over more than three years.

### **1 Experience and outputs Viewing and adopting**

Over the last 20 years the former border region along the Baltic Sea coast has been converted into a zone where natural landscape features are still an essential element of modern coastal development. Thus, this region can truly be termed a Baltic Green Belt. Nevertheless, this Green Belt's coastal zone is undergoing rapid changes most of which are the result of urban sprawl, a rapid growth in the tourism sector and a marked intensification of agricultural land use in the Baltic hinterland. While sharing a similar 20<sup>th</sup> century history, the nations and subregions between Lübeck and St. Petersburg have experienced a variety of changes and adaptation processes in the social, economic and ecologic systems of their coasts. It was a priority goal of the Baltic Green Belt project to closely look into the individual transformation processes that the south-eastern Baltic countries have undergone since the early 1990s. In accordance with the EU INTERREG philosophy the project aimed at finding good practice examples for sustainable regional development and to analyze the suitability of these practises for trans-national application.

This evaluation is summarized here with respect to lessons learned across borders. It should be noted, however, that due to differences in the regional development processes and the underlying system characteristics, serious limitations do exist with regard to the transferability of some project results and outputs. Obviously, the greatest deviations exist between the regions which are parts of Russia (Kaliningrad Oblast and St. Petersburg region) and the other Baltic Green Belt segments, belonging to the EU. But even within and between the EU Baltic Sea regions significant variations are to be observed with respect to economic, social and ecologic developments and to the state of nature conservation. The BGB project attempted to highlight some noticeable common experiences and lessons.

### **2 Tourism**

Seaside tourism has seen a rather rapid development all along the Baltic Green Belt and this sector has made the coastal zone the most booming region in all Baltic nations. While in Germany, i.e. in the

new state of Mecklenburg-Vorpommern, the onset of the tourism boom came around as early as 1990, the major changes in the tourism sector of the other countries were brought about by their later EU membership. As a result, progress came at a somewhat slower pace, thus leaving room for the consideration of factors with potential conflict to the tourism situation at the local level. One potential conflict area for tourism development is the prevalence of military installations, established during cold war times at the Baltic waterfront by defensive socialistic governments. Careful problem consideration and discussion - as enforced by the Baltic Green belt project – has recently initiated the discovery of the cultural heritage, and thus touristic values of military objects and leftovers. On Russian territory (Kaliningrad, St. Petersburg) this process is in its very early stage only.

Another discussion was recently launched on the effects of climate change in the Baltic Green Belt region. According to the so-called PESETA study commissioned by the EU, tourism in Northern Europe could be one of the few sectors and regions to profit from climate change trends, as signalled by regional climate models (EU JRC 2009). Whilst tourism business might get stimulated by shifts in the climate regime (such as extended warm periods during summer months), adverse effect from climatic and meteorological changes on the marine, littoral and terrestrial ecosystems cannot be excluded (e.g. increased algae blooms or beach erosion). In combination this kind of trends might enhance or even multiply tourism-related problems along the Baltic Green Belt.

The BGB project has triggered some actions related to sustainable tourism and accompanied the tourism development process. Focal areas in this respect were, among others, in Latvia (such as at the Bay of Riga and Slitere National Park) and Estonia (e.g. Lahemaa NP, Vormsi Island). A few lessons learned might be deduced from these regional activities. Generally speaking, a cross-border transferability makes good-practice examples in tourism even more valuable. The following project findings are seen to provide added values to present and future work on tourism development:

1. Coastal tourism relies strongly on attractive landscape settings and healthy environments and ecosystems. Conserving these settings and environmental qualities thus provides the basic capital for “nature-friendly” tourism. Tourism development examples from coastal regions in eastern Germany show that harmonizing these developments with nature conservation efforts open up an alley for a sustainable approach in the tourism sector. Thus, ecologically oriented tourism seems to be a promising track to follow in all BGB regions. Within the project, some common terms (definition, target groups, desired and undesired effects) for Green Belt Tourism in the Baltic were compiled from experience in other parts of the Green Belt (see Sterzel and Maack, this volume).
2. As a result of non-sustainable tourism in other parts of Europe, e.g. in the Mediterranean, and perhaps due to climate change effects elsewhere, the tourism sector in the Baltic region is expanding rapidly, more than most other segments of the national economies. This means that the need and demand for coastal space dedicated to tourism and recreation increases constantly. In order to avoid further infringement of touristic infrastructure developments on valuable landscapes and seascapes, wise land use planning practises must be supported in all of the BGB coastal zone. Primarily, sell-out of environmentally attractive coastal areas to private owners (for summer housing or tourism entrepreneurship) is to be avoided; in addition land use planning by state (national or regional) authorities ought to be connected to nature conservation objectives by means of (more) rigid planning instruments such as environmental impact assessments. This increases chances for the touristic focal areas in Poland, Lithuania, Latvia and Estonia to avoid some malpractises such as “wild expansion” of tourism infrastructure into formerly intact landscapes and seascapes (e.g. like on Hel peninsula in Poland).
3. The planning of tourism development with strong concerns for nature and environment conservation is a difficult task. Often planners are faced with harsh pressure for land use and building permits from the tourism industry. The Baltic Green Belt experience shows that a close cooperation between planning authorities and regional NGOs may improve chances for nature-friendly decision-making. The Latvian NGO for rural tourism development Lauku Celotaijs

provides such an example for a positive alliance of planning authorities and an NGO with focus on tourism (see chapt. 6 of this volume). In other regions such as in Germany strong environmentally oriented NGOs do exist, e.g. BUND, WWF, NABU and others. Their intervention in tourism development, however, is often seen as biased in favour of ecologic and against economic development. Regardless of the actual working focus of these NGOs it seems necessary that they improve their image by making constructive offers towards guidance in tourism and land use planning.

4. The BGB project work has revealed that today chances exist to reconcile formerly adverse and conflicting uses of the coastal zone for recreation on the one hand and on military observation and defence on the other hand. All along the “Iron Curtain coast” military installations exist from the time before 1990. Whilst these military objects, such as bunkers, watch towers, shooting ranges, telescopes etc., are not aesthetically attractive per se, they are remains of an historic past that only the older generation of coastal dwellers has personally experienced. Younger people and inhabitants or visitors from inland regions may have no or little knowledge about these remains from the World War II and Soviet era. Therefore, it makes good sense to step up efforts for incorporating the military, i.e. former time cultural heritage into regional tourism development action. This calls for ways and tools to make the military heritage known to the public and available for tourism marketing. Such tools were designed in the course of the BGB project, e.g. in Latvia a map showing all military objects that might be of interest to visitors to the region; in Estonia a GIS-based inventory of military objects has been established and is now also available on the internet (chapt. 6). These tools assist the local and regional tourism managers in their efforts to wisely preserve and utilize military heritage. Similar efforts must now be extended to the coastal zone of Poland and parts of the German BGB region so as to increase fringe benefits from previously disgested military installations.
5. With all BGB nations being EU members states except for Russia it is obvious that the development of the tourism in Russia deviates strongly from that in the other areas. In the coastal zone of Kaliningrad Oblast and St. Petersburg region inland tourism prevails (except for the metropolitan part of the city) and military installations very often are still in use. At this point it appears difficult to convey lessons learned with respect to tourism development in neighbouring EU regions to planners and tourism managers in Russia. However, the BGB project has succeeded to establish close links to Russian NGOs dedicated to nature conservation and environmental concerns. In addition several BGB conferences and workshops with focus on tourism issues have been organized under participation of Russian academic partners, such as Emanuel Kant University in Kaliningrad. These personal as well as professional ties between tourism authorities, NGOs and academics are seen as suitable vehicle for transporting messages on nature-friendly tourism development and touristic use of military heritage to decision-makers in Russia.

Besides the lessons learned that are described here there is a variety of tourism-related issues that are still undergoing intensive discussions within the tourism, academic and NGO community. This discussion process needs to be continued for many years, well beyond the Baltic Green Belt project phase.

### **3 Eutrophication**

There is a direct link between the status-quo of the Baltic Sea ecosystem and its effect on or appeal for coastal tourism and recreation. The quality of the marine and littoral environment closely depends on the trophic water conditions in the various parts and basins of the Baltic Sea (Figure 1). In spite of longer-term international efforts the influx and immission of nutrients into the Baltic increased constantly until the end of the 20<sup>th</sup> century. Since then HELCOM and EU regulations on nutrient fluxes have brought about a noticeable decrease of nitrogen and phosphorus loads. Between 2001 and

2006 an average annual influx of about 650,000 t of N and about 30,000 t of P from the drainage basin into the Baltic have been registered – a decrease of approximately 15% compared with the annual input rates between 1995 and 2000. Nevertheless, the eutrophication state of the Baltic Sea is critical and recognized as the number one threat to the marine environment as a whole. Even though, the critical situation is mainly a result of the almost fully enclosed situation of this sea and its complex and irregular hydrographical conditions, characterized by only sporadic, limited exchange of water with the North Sea, the anthropogenic impact – mainly through agricultural nutrient inputs, partly through sewage and industrial effluents – must not be neglected. The most significant effects of strong eutrophication are massive algae blooms which decrease the transparency of the water column, limit the growth of benthic macrophytic plants in the photic zone and enhance oxygen depletion or even the release of toxic H<sub>2</sub>S gas in bottom sediments. Moreover, repeated algae blooms inhibit the bathing water quality in the nearshore zone whilst toxic algae (e.g. cyanobacteria) can even be harmful to the health of beach users.

When looking at the total drainage basin area, it becomes obvious that the regional pattern of nutrient input and degree of eutrophication is rather heterogeneous (Figure 1). Nutrient influx strongly depends on the water volume of inflowing rivers as well as on the type of land use in their respective drainage areas. Most often, nitrogen is emitted from diffuse sources, mainly washout or blowout from agricultural areas whereas point sources, such as urban sewage release, play a greater role in phosphorus emissions.

It is to be expected that regional warming as a result of 21<sup>st</sup> century climate change will still enhance the serious eutrophication problems of the Baltic Sea. Modelling of marine ecosystems suggest that warmer water temperatures and a decrease in ice cover will amount to algae blooms that are more extended both in space and in time (BACC Report 2008, see chapt. 3).

Recent surveys, some carried out by the Polish partner of the Baltic Green Belt project, reveal that comprehensive actions and measures must be taken to curb the negative impacts of the high degree of Baltic Sea eutrophication. Among the partner regions the following coastal segments are most strongly affected: the Gulf of Gdansk in general and the Vistula Lagoon in particular, the Curonian Lagoon and the Gulf of Riga. Russia/Kaliningrad has a share both of the Vistula Lagoon and of the Curonian Lagoon and therefore needs to be involved in trans-border policy-making and water management actions. The key player in this respect is HELCOM as the umbrella organization not only for the BGB partner countries but for all Baltic Basin neighboring states. Therefore, guidance provided by HELCOM on improvement policies have transferable quality and should be effective in all BGB regions and neighboring areas.



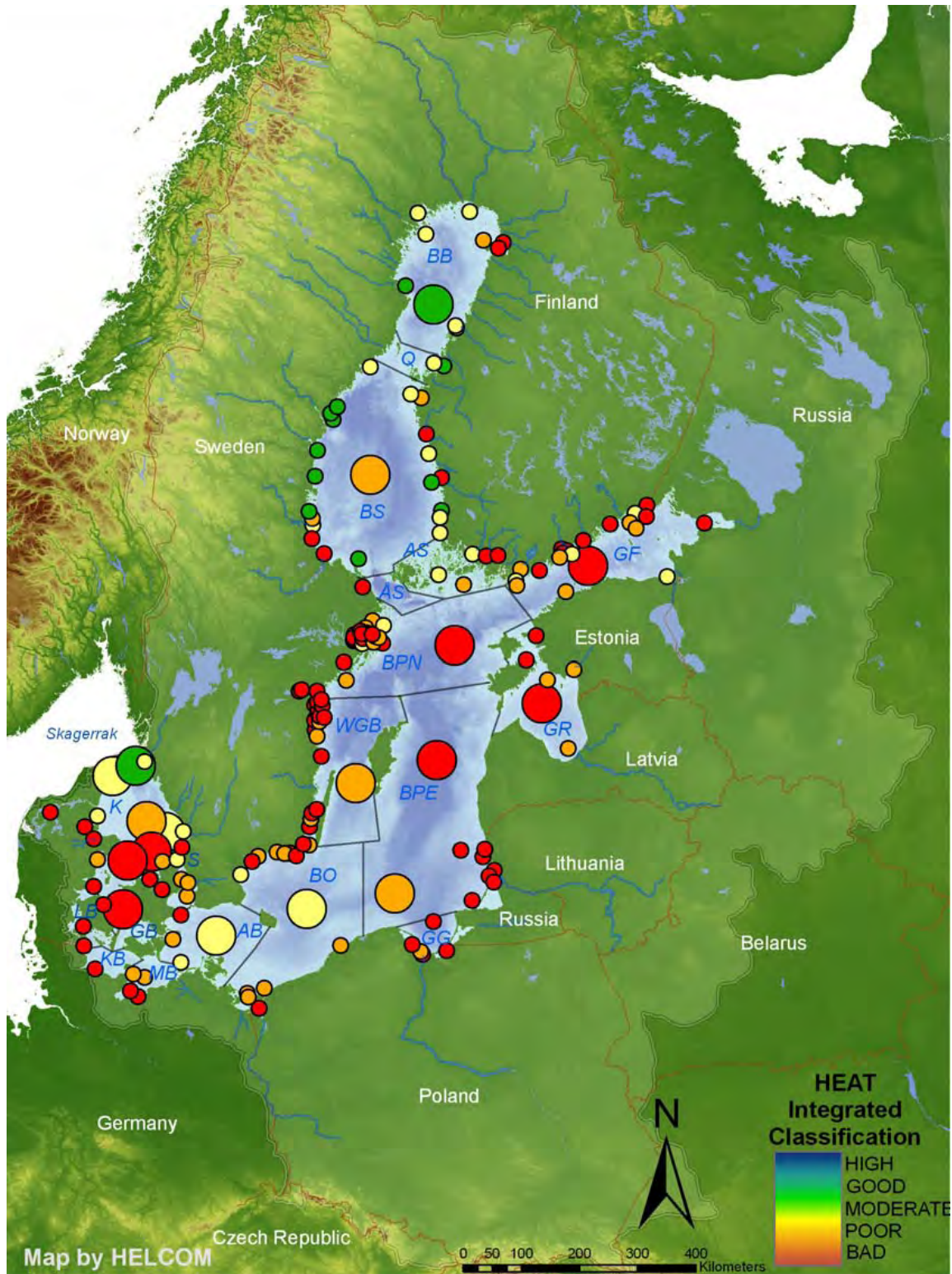


Figure 1: Integrated classification of eutrophication status based on 189 areas. Good status is equivalent to ‘areas not affected by eutrophication’, while moderate, poor and bad are equivalent to ‘areas affected by eutrophication’. Large circles represent open basins, while small circles represent coastal areas or stations. HEAT = HELCOM Eutrophication Assessment Tool. Abbreviations: BB=Bothnian Bay, Q=The Quark, BS=Bothnian Sea, AS=Archipelago Sea, ÅS=Åland Sea, BPN= Northern Baltic Proper, GF=Gulf of Finland, BPE= Baltic Proper, Eastern Gotland Basin, GR=Gulf of Riga, WGB=Western Gotland Basin, GG=Gulf of Gdansk, BO=Bornholm Basin, AB=Arkona Basin, MB=Mecklenburg Bight, KB=Kiel Bight, GB=Great Belt, LB=Little Belt, S=The Sound, K=Kattegat. (From HELCOM 2009).

The lessons learned on alleviating eutrophication problems may be summarized as follows:

1. Although reductions in nutrient loadings have been achieved by most partner countries and the long-term results are good, the short-term development is not as encouraging. Therefore, N and P reductions have not yet resulted in a Baltic Sea unaffected by eutrophication. This holds true particularly for Poland where nutrient influx from industrial farming prevents other measures such as urban sewage treatment to become noticeable to the full extent.
2. Thus, additional reductions are needed. They will be driven by proper implementation of national action plans and HELCOM recommendations, as well as by a number of legally binding international agreements and EU directives, including the Marine Strategy Framework Directive, the Urban Waste Water Treatment Directive, the Nitrates Directive, and the Water Framework Directive (WFD).
3. A consistent classification scheme, the HELCOM Eutrophication Assessment Tool (HEAT) has been proposed by HELCOM which should be regarded as baseline for eutrophication assessments in all countries. It applies for an overall assessment and classification of the eutrophication status on a regional and also local level (Figure 1).
4. Because most of the marine and coastal areas assessed were classified as ‘areas affected by eutrophication’, current actions and measures also need to be reviewed and strengthened immediately to prevent further degradation on a short-term basis and, in the longer term, to meet the objectives of the HELCOM Baltic Sea Action Plan (BSAP), the WFD, and the Marine Strategy Framework Directive.
5. HELCOM should conduct an annual review of progress in the reduction of nutrient loads to the Baltic Sea by its member countries as part of the BSAP implementation process.
6. The results from thematic assessment (Figure 1) represent a progression from a single-indicator based assessment of eutrophication status toward an integrated indicator-based assessment. HEAT distinguishes ‘areas affected by eutrophication’ from ‘areas not affected by eutrophication’. In addition, HEAT produces a provisional ‘accuracy assessment’ of the classification results in order to assess the reliability of the final classification.
7. The HELCOM strategy strives to harmonize the evaluation of the eutrophication status across all borders by applying a transferable methodology (Figure 2).
8. This strategy calls for water quality characteristics that are binding for each member state and its territorial waters. Quality criteria are: high water transparency, no excessive algae blooms, no oxygen depletion areas, abundance of typical marine species.
9. In order to achieve these objectives a framework for a Baltic Sea-wide nutrient management should be adopted. Its primary goal is the reduction of nutrients and pollutants from diffuse as well as from point sources.

With respect to the issue and problem of eutrophication the Baltic Green Belt region and project has been facing a serious challenge: to maintain or reestablish the beauties of the BGB landscape with the original good quality of the Baltic seascape and marine environment. This challenge, however, has a magnitude that goes well beyond the possibilities of Green Belt stakeholders. It rather needs to be on the minds and agendas of all policy-makers between Lübeck and St. Petersburg, and even beyond.

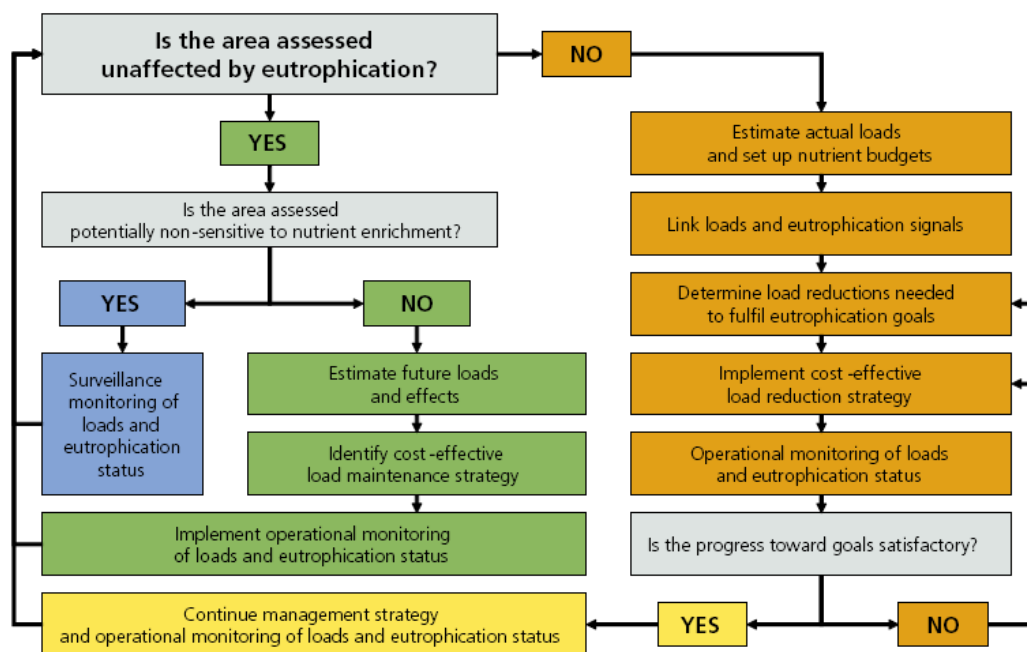


Figure 2: Framework for a Baltic Sea-wide nutrient management strategy (from HELCOM 2009).

#### 4 Nature Conservation

The topic of nature conservation was part of almost all activities within the Baltic Green Belt project in various ways, as it is the driving motivation for the Green Belt initiative as such. In Germany and Lithuania, conservation was the main theme of project activities. Selected aspects of conservation, which offer potential for transnational transfer, are described here in relation to the overarching goals they contribute to.

Following the European Green Belt vision to establish an ecological network, three priority goals for conservation activities at the Green Belt can be distinguished, all of which were pursued in one way or the other during the Baltic Green Belt project:

1. Prevention of habitat loss through immediate threats,
2. Long-term preservation of areas for the major/exclusive purpose of nature conservation,
3. Improvement of the ecological status of individual habitats.

With respect to goal 1 (prevention of habitat loss), the most widespread threats to Baltic Green Belt habitats result from housing, traffic/traffic infrastructure development and recreation/ tourism, some of which are large scale development projects such as harbour extensions or offshore wind parks (Schmiedel, this volume). Within the project, the partner in Mecklenburg-Western Pomerania demonstrated that pro-active participation by NGOs in planning processes related to development projects is crucial to prevent major impacts on nature and should be one contribution of the Green Belt to coastal conservation efforts in the Baltic. For example substantial changes in the construction plans favouring animal wildlife were achieved by a group of NGOs in case of the North Stream pipeline connecting Russia and Germany.

In most of the BGB countries such coastal planning process participation through NGOs currently takes place to a lesser extent than in Germany due to limited manpower, limited special qualification/experience and/or non-existence of public hearings. The project approach to establish a regional office and a position in an NGO with the main task to participate in planning projects can be transferred to all BGB countries, in which planning processes are currently carried out in an open, public manner such as Estonia or Lithuania. A second lesson learned is that fragmentation of

environmental NGOs often hinders effective action, e.g. in Russia and in Poland. In regions, in which several NGOs work for similar goals, the NGOs should try to find a way to unify in order to reduce organisational costs and to maximise contextual capacities. Such a development will be a long-term process within the ongoing diversification and professionalisation of civil society in the former Soviet Republics as well as Poland.

It is important to note here that for Russia we explicitly recommend to not actively push for more NGO involvement in planning processes, as the rule of law in Russia does not meet the minimum requirements for safe civil society action. In fact, involvement into planning processes by environmental NGOs in Russia frequently and even increasingly leads to personal physical threats to the health and lives of the environmentalists, as demonstrated also during the project period in the case of a member of Green World Russia in December 2011. In this matter, the project community calls to the European institutions to exert more political pressure on the Russian government in order to assure for the protection of human rights!

Goal 2 (long-term preservation) is usually - at other parts of the Green Belt pursued through land purchase (e.g. Germany) and lobbying for the establishment of new protected areas (e.g. Balkan Green Belt, Germany, Austria). Neither of these approaches is likely to result in spatially significant long-term preservation effects for the Baltic Green Belt, as land prices are comparatively much higher at the coast than in the hinterland, and capacities for new state protected areas are exhausted due to the designation of many protected areas over the past years as part of NATURA 2000. Therefore, the Baltic Green Belt tried to identify alternative means suitable for the long-term preservation of areas at the coast. Two approaches can be named: the designation as compensation areas for large development projects and public awareness campaigning for individual territories for the improvement or defence of protection statuses.

The long-term preservation of habitats as compensation measures can be a result of qualified NGO participation in planning processes. Of course, it is more desirable to avoid damage to nature altogether than to “compensate” for it elsewhere. This is particularly true, because one ecosystem cannot be replaced by another one in its function. However, if NGOs are well informed about the species and habitat status of the different habitats in their area, trade-offs with industrial players and authorities can lead to the preservation of the pearls of nature, while less valuable areas are “sacrificed” to development. In Germany, areas designated as compensation measures must not be touched for a period of 25 years – this is in fact, long-term preservation.

An active promotion of the values of a specific pristine territory can lead to broad support for improving the territory’s protection status. This was demonstrated by the Lithuanian partners. The campaign demonstrated that only limited financial resources (for making a film, leaflets and a mobile exhibition) are necessary, but continuous dedication of conservation experts and volunteers in film presentations, public exhibitions, field trips and media work. The great success was due to a clear focus of the campaign to one region over a period of three years. This approach can be transferred to all other countries at the Baltic Green Belt, except for Russia (explanation see above).

Goal 3 was part of side activities of the project (e.g. volunteer camps, beach clean-ups etc.), and therefore will not be described in detail here.

A special situation was found for conservation efforts at sea, which was the focus topic of one of the German partners. Two main points are noteworthy:

Marine conservation at its current stage takes place mainly the form of policy making on the EU/international level (e.g. Marine Strategy Framework Directive, Fisheries Policy etc.). The Green Belt initiative can try to influence these policies by qualified contributions. However, such international political lobbying is not among the core target activities of the GB. The Green Belt stakeholders will play a more important role in the future, once the international agreements need to be implemented in the field.

The capacities for conservation management in the marine environment are currently by far too small in all countries at the Baltic Green Belt. There is not enough personnel in the conservation agencies, there is too little expertise on marine management and there are not enough financial resources. The Baltic Green Belt initiative could in the future become a forum for knowledge exchange and involvement of non-governmental stakeholders into marine conservation.

## **5 Climate change and ICZM**

The Baltic Green Belt region is facing a number of challenges as described within this synthesis report. The highly vulnerable coastal zone has to deal with serious problems such as eutrophication of the Baltic Sea, a decreasing biodiversity in marine and coastal environments as well as wastewater discharges originating from sources outside urban wastewater collection systems. Potentials for better on-site wastewater treatment and sustainable agriculture are often unused due to a lack of public awareness on environmental questions and related possible solutions in particular in the eastern BSR countries. Furthermore, after the fall of the Iron Curtain additional social and economic problems came up along this coastal strip, e.g. conflicts in management and use of coastal areas due to booming sea tourism and urbanization in the coastal zone.

The impacts of such ecological, social and economic problems are threatening the whole coastal area. Often opportunities for a coastal economic development without harming the coastal ecosystems are not used due to a lack of awareness concerning these transboundary challenges. In this respect a lack of understanding the principles of ICZM and of coherent ICZM implementation across Member States seem to be responsible for deficiencies in regional sustainable development.

Furthermore, the coastal system of the Baltic Green Belt region is facing additional risks and possible impacts related to climate change in the future. General warming trends, especially during the wintertime, stronger winds, sea level rise and coastal flooding, increasing costs for coastal protection as well as the invasion of foreign species are only some of the future transnational challenges within this region.

With regard to problems related climate change and ICZM some lessons learned from the BGB project may be summarized as follows:

- The understanding and implementation of ICZM across the member states have to be further improved, even though the Baltic Green Belt project managed to raise consideration of consequences of climate change and pointed out the need of ICZM plans or comparable national and regional planning schemes.
- The administrative personnel at regional and national level who often is trained insufficiently has to be further educated in this regard in order to ensure the adaptation and implementation of the HELCOM and VASAB recommendations and EU regulations on ICZM and marine environment. Furthermore, strengthening the competences of coastal stakeholders in ICZM is essential to assist with a sustainable development of local communities across political and administrative borders.
- The awareness concerning the issues of climate change is seen quite inhomogeneous. Several partners expressed that the issue did not affect their everyday work noticeably. Few partners (Lauku Celotajs, Zvejone) expressed interest in educational material for further distribution. Slitere National Park expressed interest in specific local studies concerning the impacts to be expected from climate change to the coastal area of Latvia (especially the national park). The general expectation was that the area of the Baltic States will profit more than suffer from climate change and related effects.
- Several BGB-stakeholders from different backgrounds have joined to initiate ICZM processes at the local level, exchanged their experience between different regions of different countries (e.g. on Vormsi island, in Slitere National Park, and the Lithuanian Seaside Regional Park) and hence contributed to an ICZM process even on the transnational level. Therefore, the cooperation

between NGOs, GOs, science and economy on transnational level has to be strengthened in the future.

The evaluated and improved coastal zone planning and management tools described in this report by Sterzel & Maack, Järv et al., Sachtleber & Ratkeviča and Suzdalev et al. are mainly focussing on national activities but also considering transboundary issues. Supported by several country reports with policy recommendations for a sustainable development of the coastal zone along the Baltic Green Belt these tools are a profound basis not only for politicians and decision-makers involved in project related activities but also for NGOs and private stakeholders. The experiences and best practices on transboundary cooperation for nature conservation and sustainable coastal development (e.g. tourism) within the Baltic Green Belt project shall serve as impulse for similar future activities.

Especially the coastal regions of Lithuania and Russia are facing a wide range of challenges regarding transboundary cooperation with regard to climate change and ICZM, in particular with respect to coastal protection as described in Suzdalev et al.. The studies during the Baltic Green Belt project show that cooperation at the political and at the personal level is among the best solutions to cope with the challenges in this area. The Curonian Area is a unique and diverse environmental, social and economic area. The future changes affecting this area are considerable and potentially harmful. Therefore, the Curonian Region will be able to keep its special status and attractiveness in the future only if wise, effective approaches to solve the pending problems are chosen. Indeed this holds true for most other border regions along the Baltic Green Belt as well.

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## **A Baltic Green Belt Action Plan**

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### **Abstract**

A concise catalogue of future activities to further the development of the Baltic Green Belt shows the key areas where actions are necessary. The measures focus on political activities, regional and site development and on network building.

### **1 Complementation and integration of the Green Belt network**

With the help of the Baltic Green Belt INTERREG project it has been possible to start or enhance Green Belt activities in all nations along the Baltic Green Belt. However, substantial stretches are still not covered by regional activities or representatives. This accounts for the whole Kaliningrad region of Russia or parts of the Polish coast. Efforts will have to be taken to install an active Green Belt also in these areas.

1. A homebase for the Green Belt in Kaliningrad will have to be set up by acquiring at least one dedicated organisation or institution as a regional partner and actively incorporate it/them into the existing network activities. Substantial support will have to be granted for the start of work on Kaliningrad coast, also including the coastal lagoons.
2. On the eastern part of the Polish coast, a regional partner active in this part of the country should be located and integrated into network activities. Assistance to initiate Green Belt activities in this part of the country should be furnished by both the currently active parties in Poland and the international Green Belt network (e.g. the Regional Coordinator).
3. Currently, the European Green Belt consists of three geographical sections: The Fennoscandian, the Central European and the South Eastern European Green Belt. Experience from the Baltic Green Belt project shows that it would probably be a good idea to install an additional Baltic region. This would reflect common cooperative ties within the Baltic Sea Region and substantially ease cooperation and communication within this area. The extent of the Baltic section should be identical with the stretch of the European Green Belt running along the Baltic Sea coastline and thus incorporate parts of the Green Belt in Russia and Germany and the total Green Belt of Estonia, Latvia, Lithuania and Poland.
4. As EU funding options are only partly useable in Russia, special care will have to be taken to secure a sufficient funding base for partners in this country. Advice from the Regional Coordinators and efforts to initiate international cooperation projects which include the Russian activists are badly needed.
5. Extending the Baltic Green Belt and its partnership is a huge effort which cannot be achieved by one partner alone. Joint and concerted work, shared responsibilities and a multitude of active partners representing various interests and organisational forms are therefore a central asset for success. From the partners, this requires openness to differing or even non-standard approaches and a willingness to actively contribute both work and ideas.

## **2 Implementation of the Green Belt into policies and society**

The Green Belt's values and assets can only be considered in planning processes and land use when they are known to stakeholders and the public. Getting Green Belt information to the people and into the people's minds is therefore an indispensable prerequisite for successful protection. Likewise, the implementation into political programmes, policies and financing instruments ensures a constant progress in implementation.

1. The existing Baltic Green Belt information material constantly has to be spread to the public and stakeholders. Updates and additions should be realized whenever possible. Public events should regularly complement written information. Offering live experiences of the spectacular assets in the Green Belt is an excellent promotion measure.
2. The attention that the Baltic Green Belt web pages in national languages receive shows that they are a valuable communication instrument. Efforts will therefore have to be undertaken to keep them both current and interesting.
3. The awareness of the cultural-historical value of many military remains from the age of the iron curtain should be enhanced. Much of this heritage has already been destroyed, often without any notice or awareness that it might be a notable historical monument. Guided tours, publications and personal communication with stakeholders and planning staff are adequate instruments to arouse a change.
4. The Green Belt should seek implementation into the national and international natural and cultural conservation programmes. In this context, communication with authorities for nature conservation and cultural heritage should be enhanced.
5. For relevant financing instruments in the Baltic Region an explicit inclusion of the Green Belt should be targeted.

## **3 Secure sustainable construction and development activities**

Construction works are still going on at large in many areas of the Baltic Green Belt. While they are not per se a problem, care will have to be taken to concentrate them in areas where they will not conflict with Green Belt heritage and values and to realize them in a sustainable way that honours the special conservation needs of the area. Especially, a further fragmentation of the open landscape has to be prevented. Pressure is particularly high in metropolitan areas, notably around Riga agglomeration, and on the Kaliningrad peninsulas.

1. The illegitimate issue of building permits, sometimes only legalizing unlawful previous construction works and in some cases encouraged by bribery, is a pressing problem especially in some Green Belt parts of the eastern Baltic. It has to be made clear to politicians and inhabitants of these areas that this practice is highly detrimental for the development potential of the region, e.g. destroying touristic attractiveness. A full success will additionally need a strong political will on all levels and an effective control of the use of externally granted development funds.
2. A protected coastal strip to keep the seaside landscape free from buildings and urban sprawl should be installed and enforced in the whole Baltic Green Belt. In Germany, the reduction of the width of the protected coastal strip in Mecklenburg-Vorpommern state has raised dangers of further deterioration on an already highly built up and fragmented coastline; a revert of this measure is badly needed.

## **4 Apply site protection**

Although quite a lot of protected areas have been set up in the Baltic Green Belt since the fall of the iron curtain (and even before), many valuable sites still lack adequate protection. For the Green Belt's success, the conservation of its values is essential, and experience shows that this has not been



achieved to the necessary extent so far. Losses of cultural and natural values take place every day, and counteractive measures are urgent.

1. An urgency to grant valuable sites a protection status is apparent in all Baltic Green Belt countries. This applies not only to so far unprotected areas, but just as well to many sites that have been designated as part of the Natura 2000 or Emerald networks but still need a legal protection on the national scale for effective preservation. An especially important area for catching up with an adequate protection is the Kaliningrad coast.
2. Protection alone will not preserve the natural or cultural heritage of the Green Belt. Suited management schemes must go in line with the legal protection, and in many cases it requires some effort to not only have the protection regulations, but to also enforce them. The Green Belt network can assist in successful site protection by e.g. joining administrative, scientific and NGO partners who can each take up different tasks in site management.
3. Site protection can usually go well in line with land uses and often also with land use changes. However, all uses must be sustainable and it must be guaranteed that they will not interfere with the specific natural and/or cultural values of the respective site. In many cases, Green Belt heritage offers good options for sustainable usage schemes that will contribute to regional economy and income.
4. The sale of unsettled former military areas to private investors for a development incompatible with Green Belt aims and ideas, like practiced on the Polish coast, has to be stopped. A possible sale to developers must only be decided upon after a case analysis has been undertaken, taking into account both the kind of development anticipated and the site's natural and cultural assets. The concept of the "National Natural Heritage" which designates valuable former military areas in Germany for a natural development should be copied in other Green Belt countries and – if necessary – adapted accordingly.
5. The underwater habitats of the Baltic Green Belt are unique in the whole European Green Belt and are of special ecological and environmental value. They must therefore receive special attention in conservation efforts.

## **5 Ensure communication among the partners in the Green Belt network**

A network will only work in the long run with constant communication between the active parties. This includes everyday contacts by phone and email, but also periodical meetings. Contact persons and organisations/institutions should be appointed to streamline exchange. The Baltic Green Belt project has built a very good basis for this. Future work will have to focus on maintaining and preferably extending these communication channels and on an inclusion of all interested parties.

1. A newsletter, either by email, in print or both, should serve as the major instrument to keep all partners informed.
2. Contact persons should be available for specific tasks and coordination activities, serving both as a source and hub for information.
3. A regularly updated website where all active parties have access, both in reading and writing, is a central instrument for constant communication. The European Green Belt's Facebook pages can complement that, but cannot be a complete substitute.
4. Pan-Baltic Green Belt meetings should be held at least bi-yearly to sustain personal contacts of activists. They should be complemented by thematic workshops that can enable further communication and joint in-depth work on pressing topics.
5. Joint project development is a basis for the essential financing for the initiative, but also for continuous exchange between partners, both during project development and implementation.

6. Communication with other parts of the European Green Belt is essential to ensure a coordinated development of policies, ideas and projects on the European scale and to enable a transfer of knowledge and useful experiences.

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