

# Baltic Sea Hot Spots - Hazards and Possibilities for the Baltic Sea Region

CCB YEARBOOK 2002



*Coalition Clean Baltic*  
FOR PROTECTION OF THE BALTIC SEA ENVIRONMENT

In Helsinki, February, 1990, non-governmental environmental organisations from nine countries of the Baltic Sea Region united and established the Coalition Clean Baltic (CCB) in order to co-operate on activities for protection of the Baltic Sea environment. CCB is a politically independent, non-profit association. Currently CCB unites 25 member organisations from Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. CCB is gathering, producing and distributing information about environmental solutions for the Baltic Sea area. CCB co-operation projects help the member organisations to combine their efforts in the attempt to restore the Baltic Sea.

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## FOREWORD

The yearbook and map "Hazards and Possibilities for the Baltic Sea Region" presents CCB organisations' perspectives on the real Hot Spots for the region in the new millennium.

The HELCOM Baltic Sea Joint Comprehensive Environmental Action Programme, the intergovernmental co-operation for protection of the Baltic Sea environment, presented an action programme for 132 Hot Spots in 1992. The Hot Spots specified by HELCOM focused on big point sources, such as cities, industries etc. Identification of such pollution sources is important, but in order to solve the pollution problem of the Baltic Sea, it is imperative to recognise also diffuse sources with more consequential and aggregate effect.

The CCB Hot Spot map presents more of the upcoming threats to the Baltic region that all Baltic citizens, including politicians and officials should be concerned about. The CCB Hot Spot map consists of Green Spots and Red Spots. The former stand for positive environmental activities and projects as well as possibilities for a sustainable development in the Baltic Sea Region, while the latter represent threats and hazards for the Baltic Sea environment.

We believe that the future focus must lie more on Green Spots, i.e. on positive actions that inspire and convince the people around the Baltic Sea to direct resources for a positive sustainable development.

This publication by the Coalition Clean Baltic (CCB), a network of 25 environmental NGOs in nine countries bordering the Baltic Sea, is a joint co-ordinated activity with CCB organisations from all countries of the Baltic Sea Region.

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Gunnar Norén  
Executive Secretary  
Coalition Clean Baltic

# INTERNATIONAL: GREEN SPOTS

## 1. NOMINATION OF THE KVARKEN AREA TO THE WORLD HERITAGE LIST

A proposition has been made to include Vaasa Archipelago in the eastern part of the nominated area in the World Heritage list by the Council of Nordic Ministers in 1996. The significance of Vaasa Archipelago as a moraine archipelago was emphasised. Later the inclusion of the western part of the area was decided to represent the complete picture of the diverse moraine forms of the archipelago, brackish water and terrestrial ecosystems, and the ecological processes characterised by land uplift. Kvarken area is an important complement to the High Coast, which has been included in UNESCO's World Heritage list since 2000. Together they tell the whole geological story, both being geologically linked by the process of isostatic uplift. However, the geomorphology and topography of these areas is contrasting and consequently, the plant and animal life varies.

The High Coast has a dramatic land surface of bedrock hills, high islands, steep shores and deep bays - features that do not occur in other parts of the Baltic. Kvarken is a low-relief area characterized by extensive archipelagos of moraine and intervening shallow sea.

The combination of these areas provide a paramount example of ongoing geological processes resulting in a biophysically dynamic landscape, illustrating spatial and temporal sequences of original formation of boreal ecosystems. The nominated area consists of mainland, archipelago and sea, crossing the Gulf of Bothnia. It represents an exceptionally illustrative example of dynamic coastal landscapes. In a long term scale, the shallow sea across the Kvarken-Merenkurkku Strait is the origin to the threshold that, in approximately 2000 years will disconnect the Bothnian Bay from the Bothnian Sea, forming the largest lake in Europe (ca 24 000 km<sup>2</sup> and 900 m<sup>3</sup>).

The highest rate of present uplift in Fennoscandia, 9.2 mm/year, is found in the north-western part of the Kvarken area. The average uplift rate in the nominated area is 8.5 mm/year. The uplift rate decreases southwards.

The main dynamic trend involves the successions from wet to dry ecosystems. The ecosystems show a magnitude of succession pathways responding to a range of environmental gradients, for instance decreasing maritime influence, exposure to waves and ice-drift, and seawater salinity with decreasing distance towards the mainland.

New bays develop, become successively disconnected from the sea, turn into lakes, and further develop towards wetlands. The transitional stages between brackish water and freshwater environment are called fladas and glo-lakes. Biologically, they are highly productive and form very special habitats of significant ecological value. The colonisation of recently emerged islands and the development of plant communities are of great scientific value in terms of biogeographical aspects. Some species become isolated from the rest of the population and form metapopulations. The area offers excellent opportunities for studying this kind of populations. Knowledge related to the behaviour of metapopulations is a key factor in the field of conservation biology.

## INTERNATIONAL: RED SPOTS

### 2. DRIFT NET FISHERIES OF WILD BALTIC SALMON

The unsustainability of drift net fisheries has been realised by many countries. In 1989 the United Nations decided to stop drift net fisheries. A respective resolution recommending all member states to implement the moratorium on all large-scale pelagic drift net fishing was adopted. In the South Pacific large-scale drift net fisheries were banned by the Wellington Convention in 1989. In Europe the EU Council of Ministers at first decided to impose a maximum limit of 2.5 km on drift nets used by fishing vessels from EU member countries. In 1998 a decision was made by EU countries to ban the use of drift nets in the Atlantic and the Mediterranean from January 1, 2002. However, due to heavy lobbying by Denmark, Sweden and Finland, the Baltic Sea was excepted from both these decisions, based on the argument that drift net fishing poses no ecological damage on the sea.

In the Baltic Sea it is still allowed to use up to 600 nets, 35 metres each per vessel. These regulations mean that every fishing vessel catching salmon in the Baltic Sea can set drift nets with a total length of 21 km, i.e. almost ten times as long as the maximum length allowed elsewhere in the waters of EU. As a result, this destructive fishing technique seriously threatens naturally spawning Baltic salmon.

The reared and released salmon makes up 90% of the Baltic salmon stock, and only the remaining 10% is naturally spawning salmon. No distinction can be made between the threatened wild Baltic salmon and the reared salmon when using drift nets. This can result in too few wild salmon returning to their spawning river, which in turn increases the risk of extinction of many populations. Unpredictable incidents like the M74 disease have also drastically reduced the reproduction during several years. Therefore, harmful fishing methods such as drift nets must be banned to protect the populations of wild Baltic salmon.

Drift net fishing techniques cause substantial by-catch, mainly of sea birds such as guillemots, but also of harbour porpoises. Long-term studies of ringed guillemots have shown that 33% of all recoveries are made in salmon drift nets, indicating that the impact of drift nets is even bigger threat to them than oil pollution. The Baltic population of harbour porpoise, consisting of about one thousand individuals, is endangered. By-catch in fishing gear is one of the biggest threats to these small whales nowadays. Since the population is so small and the reproduction is slow, the by-catch of as few as six porpoises trapped in salmon drift net would have damaging effect on the population and threaten the survival of harbour porpoise in the Baltic Sea.

All governments in the Baltic region have signed the Biodiversity Convention for the protection of biological diversity and threatened species and should take concerted actions to save the naturally spawning salmon before it has become extinct. Countries of the Baltic region should also fully implement the EU Habitat Directive that demands to follow the development of the populations of threatened species such as harbour porpoise, and implement measures to minimise the risk of by-catch.

*CCB demands:*

- *EU should apply the same rules in all its waters.*
- *All governments in the Baltic Sea region must implement the Biodiversity Convention and the EU Habitat Directive.*
- *The use of long drift nets in salmon fisheries in the Baltic Sea must be stopped and the EU ban should be enforced in the Baltic Sea by January 1, 2002.*
- *New model of the management of Baltic salmon should be elaborated. Such management should be directed towards reared and released salmon, and avoid catching of wild Baltic salmon who must be able to reach its spawning grounds.*

### 3. SEAL HUNTING IN THE BALTIC SEA



Photo: Estonian Fund for Nature

*Seal hunting in Baltic Sea violates the HELCOM recommendation 9/1*

The population of grey seal in the Baltic Sea has recovered from its very low levels to at least ten thousand seals today. A better reproduction, due to lower concentration of some toxic substances (DDT and PCB) in Baltic fishes, has increased the population, but at the same time this has created conflicts with coastal fisheries, especially in the Gulf of Bothnia and in Danish waters.

Denmark, Finland and Sweden have started so-called scientific seal hunting and regular hunting and kill a couple of hundred seals feeding on fishing gear each year. This hunting is a violation of the HELCOM recommendation 9/1, which has imposed a ban on seal hunting.

The conflict between seals and fisheries forced HELCOM to initiate a special Seal Project in 1999 to develop a new HELCOM recommendation by 2002 with

an intention to allow seal hunt in order to handle this conflict. Concerned Baltic countries have started seal hunting (on a pretext of research) without waiting for a new HELCOM recommendation. Many governmental representatives also favour hunting interests and show low interest in implementing the international management of the Baltic seals, including annual international hunting quotas set by HELCOM.

Seal populations of the Baltic Sea have still not reached a level which could support sustainable hunting on big scale. Grey seals in the Baltic Sea still show some pathological changes as well as clear biochemical and physiological signs of increased environmental stress. The reproduction is still below the normal satisfactory level. The incidents of serious pathological intestinal changes are in fact increasing among the population today.

Estonia has adopted the National Seal Action Plan in February 2001, with no proposals of the prospective seal hunting. This decision by Estonians can be considered reasonable, as they conceive that introduction of seal hunting will not solve the seal-fishermen conflict. The only long-term sustainable method to avoid damage and predation by seals is to construct seal-safe fishing gear and methods.

## 4. SHIPPING WITHOUT APPROPRIATE SAFETY SYSTEMS AND THE RISK OF ACCIDENTS AND OIL-SPILLS

The economies of the states of the Baltic region are growing rapidly and so does the number of oil terminals along the eastern coast of the Baltic Sea. Since 1995 the amount of oil transported over the Baltic Sea has doubled, at the same time the number of ships with hazardous substances on board (e.g. oil and other chemicals) is increasing tremendously. Many of them have to pass the narrow and shallow Kadetrenden Strait on their way to the Atlantic. This bottleneck in international waters is exposed to intensive maritime traffic of more than 55 thousand ships per year travelling without any guidance services through the shallow waters near the coast of the Danish island Falster and the German eastern coast. There is no emergency management plan for this area and no powerful emergency vessel to prevent the worst in case a ship would hit the ground.

Ship accidents and spillages of oil or other hazardous substances would have disastrous consequences not just for the ship and its crew, but also for the neighbouring coast, its inhabitants and tourists, and last but not least, for the Kadetrenden area itself. The coast provides breeding areas for several bird species and spawning grounds for many fish species.

Kadetrenden Strait is characterised by a distinct diversity of Baltic Sea species, which cannot be found in other areas. In order to preserve this extraordinary underwater habitat, Kadetrenden Strait has been proposed to be designated as a Baltic Sea Protected Area (BSPA).

Combining the needs of maritime traffic and nature conservation the following should be achieved for Kadetrenden Strait in international waters in the near future:

- enhanced surveillance of ships entering Kadetrenden by mandatory registration to safety management stations;
- mandatory pilotage in Kadetrenden, „Route T„ and „The Sound„ not later than 2003;
- ban on single hull tankers in the Baltic Sea;
- protection of this sensitive area by BSPA status;
- apply for Particularly Sensitive Area (PSSA) status for all the Baltic Sea at the International Maritime Organisation (IMO).

## 5. NUTRIENT LOAD FROM SMALL AND DIFFUSE SOURCES CAUSING EUTROPHICATION

The HELCOM Hot Spot programme (JCP) has focused on point sources. As an outcome of the first implementation phase of the JCP 5-15% of the total load of nitrogen and phosphorus to the Baltic Sea was reduced. The main nutrient load to the Baltic however, comes from small and diffuse sources. Wastewater from tens of thousands of small and medium sized municipalities, single-family homes, agricultural run-off etc. in the Baltic Sea catchment area gives substantial contributions to the nutrient load and the subsequent eutrophication of the sea.

The implementation of effective sustainable wastewater management systems in small and medium sized municipalities and single-family homes forms an important component of the strategy to fight the eutrophication of the Baltic Sea.

Application of new innovative systems with recycling nutrients back to crop production is an important part of the treatment process, providing alternative to systems creating wastewater pollution problem.

Mineral phosphorus is an ending resource on the Earth approximately within 100 years. In sustainable society, nutrient resources from the toilet waste must be used in an efficient way, e.g. soils that are suffering from the lack of humus could be improved by respective supply from toilet waste.

In coming years, thousands of municipalities of transition countries of the Baltic region will restore their wastewater treatment systems. This gives them a chance to choose new and more sustainable systems instead of old conventional technologies of wastewater treatment.

The following techniques can be used in new innovative systems:

- wastewater treatment in natural systems such as irrigation in non-edible crops, soil filter systems (with recycling of adsorbed phosphorus), constructed wetlands, bio-ditches, precipitation with limestone in bio-ponds (for removal of phosphorus and organic material) etc. for nitrogen and phosphorus removal;
- new low-flushing eco-toilets with direct recycling of black water (urine and faeces) to the crop production systems;
- urine-diverting toilets (low-flush or dry systems) with recycling of urine to the crop production.

These new technologies can also be used in combination with conventional treatment technologies, as this provides appropriate and cost-efficient solutions for many settlements.



## 6. EXPANSION OF EUTROPHICATION DUE TO INCREASED ROAD TRAFFIC AND NO<sub>x</sub> POLLUTION

There is no doubt about it - more traffic, road traffic in particular, leads to higher NO<sub>x</sub> emissions, which in turn means that more nutrients precipitate to the Baltic Sea environment, subsequently causing its eutrophication. Although the countries around the Baltic Sea have promised over and over again to do everything to decrease the nutrient load to the sea, in all countries the road traffic is still increasing. Furthermore, the transport policies of governments support rather than avoid this development. Large-scale road traffic projects stimulate the transport of people and goods on the roads and only small attempts are made to introduce a shift to shipping or rail transport.

A fair example of the increased road traffic can be drawn from Germany. The planned bridge across the Fehmarn Belt between Germany and Denmark that is under discussion as a four-track motorway would lead to a considerable increase of traffic and would have severe impacts on the environment.



Similar effects can be anticipated in connection with the construction of the new motorway between Hamburg and Szczecin and its projected continuation Via Baltica road leading to Saint Petersburg. Numerous sensitive nature areas on this track face the danger of being destroyed and the air pollution is likely to increase.

These examples illustrate the mismatch of transport policies and the well-formulated promises of the governments of the countries around the Baltic Sea.

## 7. IMPACT OF HOUSING AREAS, INDUSTRIES, RECREATION CENTRES AND MARINAS ON COASTAL ECOSYSTEMS

The local coastal authorities in Latvia disregard the law "About the Protected Areas", which defends the dune zone in distance of 300 metres from the Sea. State and local authorities do not react to the occasions of illegal constructions in the protected 300-meter dune zone. Many of these illegal buildings are expected to be legalised, within the process of the territorial and spacial planning. New territories of the dune zone are planned as the construction and camping areas. Thus, the unique coastal ecosystem will suffer or will be destroyed. The Engure lake ornithological restricted area in Mersrags, protected by the Ramsar Convention, which is endangered now can be drawn as an example here. Above mentioned problems were the result of the action of Mersrags community of Talsi region, which is one of the most environmentally unfriendly coastal communities in Latvia.

Tourism development in the coastal areas of the Baltic Sea reveals great expectations in terms of economic outlook. Consequently, numerous installations of recreation centres and marinas in shallow areas are planned or already constructed. These can have strong impact on coastal ecosystems (e.g. on breeding and nursing areas for fish species) and pose serious threat to landscapes and biodiversity of respective areas.

Proposed tourism practices on the coast of Mecklenburg-Vorpommern in Germany can be regarded as an impressive example of this. Numerous fun parks and marinas are planned on the coast to attract tourists. On Bug Peninsula on the isle of Rügen, a recreation centre with up to 2000 beds and 400 places for leisure boats is planned. The peninsula forms a part of a NATURA 2000 area. Two hotels, three areas with holiday houses on more than 10 ha, a marina, and a golf field with golf infrastructures will be constructed on an old military site right next to the Vorpommernsche Boddenlandschaft National Park. Intensive tourism activities would dramatically increase the disturbances in these sensitive surroundings, endangering the flora and fauna of the area.

The dunes (up to 30 m) of the south shore of the Gulf of Finland (Russian Baltic) will be destroyed due to the construction of the Batarynaja Oil Product Terminal and nuclear objects of the Nuclear Technology Institute.



### 8. SUSTAINABLE WASTEWATER MANAGEMENT IN VÄSTANFJÄRD MUNICIPALITY

The future of coastal waters is the most pressing environmental issue for the people of Västana fjärd, a small municipality with 800 inhabitants in the Finnish Archipelago Sea. The municipality strives to find the possibility to improve the environment by the sustainable wastewater management project, so that people could swim in clean water again.

Instead of building a conventional sewer system, which can be expensive for a sparsely populated community in this problematic terrain, Västana fjärd has decided to collect necessary information to find ecologically most sound solutions for its wastewater management.

The project aims, within the period of 15-20 years, to diminish discharges of nutrients in the waste water to a level that the recipient waters would face no harm. The first step was collecting information about ecological toilets and discharge solutions adaptable to recycling of nutrients in the wastewater. The second step involves seeking information about the use and installation of different types of urine separating and composting toilets and the advantages and disadvantages of these. The households willing to choose ecological wastewater systems serve as models for others and receive economic support from the project.

By separating urine from other waste, the amount of nutrients in sewage water can be effectively diminished. If urine is used as a fertiliser, the nutrients are naturally recycled. Urine collection tanks have been bought for this purpose. Laboratory tests are to be taken during the storage time.

Västana fjärd municipality is building a centralised sewer system for about 100 households in the community centre. The system should be able to reduce the BOD by 90%, phosphorus by 90% and 50% of nitrogen at the start and later on reach a 90% reduction of nitrogen. Urine separation at the source seems to be the only way to reach these targets. To ensure the efficiency of the system, the installation of double pipelines is also planned.

Until now the focus has been placed on environmental education to make people understand how much can be achieved by these ecological systems. A new composting toilet has been installed at the municipality office to replace the traditional water toilet. Today, after three years of work, it can be clearly seen that the attitudes of people have changed and that the work has been worthwhile. People accept the idea of urine separation and environmental issues are perceived as everybody's responsibility. Also the local farmers have taken actively part in the discussions about nutrient flows and outlets. Today the farmers of Västana fjärd recognise the role they have in nutrient recycling circle, and are willing to contribute to the work for a healthy Baltic Sea.

## 9. AGENDA 21 IN ÅLAND ISLANDS

The Åland Agenda 21 office was founded in June 1995. The office is run by the NGO called Åland Nature and Environmental Association. All 16 municipalities as well as the Government of Åland finance the office.

The main task of the office is to explain to the public as simply as possible the connection between global environmental problems and local everyday actions. The Agenda 21 action plan involves all societal groups and every citizen, conveying the message that everybody should try contribute to sustainable use of the environment, fight poverty and minimise environmental threats.

The so-called three-step model is often applied in the projects of Åland Agenda 21. These steps include outlining the problem, describing the causes of the problem, and showing solutions and possibilities for citizens to participate.



Several campaigns concerning the Baltic Sea have been initiated to make people more aware of the environmental problems. Two information folders have been produced. One of these addresses boat-tourists to describe the problem of sewage and algal blooms,

and the other one is about what people can do in everyday life to preserve the Baltic Sea. Messages on the same issue have been printed on milk-jars produced by the local dairy and can be read daily at breakfast at home. Additionally, exhibitions have been displayed, trying to visualise the amount of 1 kg of algae and show how much everyone of us adds to the growth of this amount, for instance when driving 30 km on the car without a catalyst, or mowing the lawn for 20 minutes, or eating 300 g of farmed trout.

The campaign called "Is your breakfast suffering from travel sickness?" focused on consumption and its links with transportation and effect on the Baltic Sea eutrophication. During the project, the public was informed of the benefits of consuming local products instead of food originating from distant countries. To draw a parallel between the sustainability of consumption habits, this information was visualised by putting three different breakfasts on three trays: one with products that had travelled far, one with local products, and another one with products produced at home. Then the amount of fuel consumed for transportation of food was calculated and compared.

Many other projects on different topics are going on as well, for example on fair trade, biological diversity, air quality, energy consumption, traffic and transportation, garbage and wastewater, nature and the use of natural resources. Seminars and lectures are arranged on respective issues.

Agenda 21 office co-operates with schools, church, and peace movement and with others and distributes materials to anybody who asks for it. A newsletter is printed monthly and a homepage on the Internet informs about the current activities.

The main tasks of the office are to inform and inspire people and create discussion on environmental issues. Agenda 21 aims to provide good examples on what we all can do in everyday life for the better environment.

### 10. FISH FARMING IN THE ARCHIPELAGO SEA AND ÅLAND ISLANDS

Around 120 tons of phosphorus and 950 tons of nitrogen are annually released directly into the Baltic Sea from the Finnish fish farms. The vast majority of them are situated in the Archipelago Sea and on Åland Islands. For every kilogram of rainbow trout produced in fish farms, in average, 7.4 g of phosphorus and 58 g of nitrogen is released into the surrounding waters.

This is a remarkable contribution to the acceleration of eutrophication of the Archipelago Sea, and the waters surrounding the Åland Islands. As a result, dead zones can be found in some parts of the seabed and increasing amounts of decaying filamentous algae in shallow waters degrades the environment. Toxic blooms of blue-green algae, harmful to marine animals as well as to people, have become more frequent and pose a threat also to the fish farms themselves.

Fish farming practices have also socio-economic consequences, as the economies of many small communities are almost entirely dependent on fish farming enterprises.

Calculating the "ecological footprint" of one ton of farmed trout, one would need an area that is 20 000 times bigger than the area of the cage itself to produce the food and to take care of the residues, according to a recent study\*. This example illustrates the heavy local impact of intensive fish farming.

\* Wikström, M. 1998. *Intensive aquaculture in the archipelagoes of Stockholm, Åland and SW Finland: A Comparison of environmental impact and socio-economic consequences. Institutionen för systemekologi, Stockholms universitet. Examensarbete 1998:14*

### 11. THE VUOTOS HYDROPOWER RESERVOIR PROJECT

Finnish company Kemijoki Ltd. plans to build a hydropower station and reservoir in northern Finland in the river Kemijoki basin. The Vuotos reservoir, an artificial lake of 237 km<sup>2</sup> would submerge internationally important nature areas and increase considerably nitrogen and phosphorous emissions to the Gulf of Bothnia. The economic and energy political gains of the project raise several questions.

Vuotos is a small river joining the river Kemijoki at its upper parts. The river Kemijoki is the biggest river in Finland, and it is harnessed with many hydropower stations. The idea of the Vuotos reservoir dates back to the 1950s. The Kemijoki Ltd. presented its plan for the Vuotos project in the 1970s at the time when two other big reservoirs were constructed to the river Kemijoki basin. In 1982, after debates on national level the government of Finland decided to cancel the plan. The decision was motivated by the economic unviability and its harmful effects on the environment. The decision was decreed as binding for all future governments. However, the energy company continued planning and submitted new plans in 1987. In 1992 the government changed the earlier decision and decided to let Kemijoki Ltd. to apply for the permission from the Water Court that granted the construction permission in February 2000. However, the court gave a restricted permission for deforestation to ensure that the ecological values would not be destroyed.

<None>In June 2001 the Administrative Court overturned the lower court decision and denied the construction permit. However, Kemijoki Ltd. has made an appeal on the decision to the Supreme Administration Court.

The planned reservoir would drown the Kemihaara mires. The European Commission has urged Finland to designate this area as a NATURA 2000 area. The Kemihaara mires are also listed in the international catalogue of Important Bird Areas on account of the rich concentration of birds. The reservoir waters would inundate what is, even by Finnish standards, a unique landscape comprising e.g. aapa mires, alkaline fens, forests and small bodies of water. The reservoir would cover not only the Kemihaara mires but also part of the Kemijoki riverbank environment, which is unique at the Keminsaari islands.

Large number of birds nest in the reservoir area. For them the mires of northern Finland are the most important breeding grounds in Finland and the European Union. Construction of the reservoir would mean destruction of habitats for example of smew (*Mergus albellus*), Hen harrier (*Circus cyaneus*), crane (*Grus grus*) and Peregrine falcon (*Falco peregrinus*). Building of the reservoir would harm 45,000 nesting pairs. There are no other projects pending in Finland that would alter the biodiversity and indigenous natural environment so significantly.

The reservoir project also threatens the water quality of the lower reaches of the River Kemijoki and ultimately the Bothnian Bay. The phosphorus load into the Bothnian Bay would increase by 50 tons per year. In the early years the phosphorus load would be greater than the present load discharged in Helsinki; it would also increase the total load discharging into the Bothnian Bay from Finland by five per cent. Besides phosphorus, the reservoir would also lead to a rise in mercury concentrations. In a situation where the environmental loading of the Baltic Sea is already too high, this would be unacceptable.

## 12. THE VUOSAARI HARBOUR

City of Helsinki is planning to build a massive harbour for cargo traffic in Vuosaari, the suburban area in the eastern part of Helsinki, close to Mustavuori and Östersundom nature conservation area. The expected capacity of the Vuosaari Harbour would be 12 million tons per year. It would embrace an area of 150 hectares and additional business area of 50 hectares. The new harbour would replace the old West and North Harbours situated in the centre of the city. With the new harbour Helsinki would compete more effectively with other Finnish harbours and the areas in city centre would be transformed to housing and office areas.

The regional environmental agency and the Finnish Environmental Agency have clearly identified in their expertise assessments large-scale negative impacts the harbour construction would cause to the nature conservation area. These problems are mainly connected to the projected transport lines (road and rail) that will cross the area.

The Mustavuori and Östersundom nature conservation area is designated to the EU ecological network Natura 2000 both by bird (SPA) and habitat (SCI) directives. According to the EU directives the project with deteriorating impacts to the NATURA 2000 area can get the permit for construction only if there is no other alternatives for the project, and if there are imperative reasons of overriding public interest, and if compensatory measures are taken to compensate the loss caused to the ecological network.

Against all expertise statements the government decided in 1999 that the nature conservation values would not be decreased by the harbour construction. Conservationists made an appeal to the Supreme Administration Court. The court returned the decision to the government in 2000. In 2001, leaning on the court ruling, the Ministry of Environment stated that the project is having deteriorating impacts to the area. However, in January 2002 the majority of the government forced the Ministry

of the Environment to deny the risks for nature in order to avoid the Natura special licence process. The Vuosaari could not get special licence because it has several alternatives. Beside the existing harbours in Helsinki one of the old harbours could be transformed to Pikkala harbour in Kirkkonummi municipality west of Helsinki. Moreover, the need for the extra harbour capacity in Helsinki can be questioned, as there is plenty of capacity in other harbours in southern Finland (e.g. at Hanko, Kotka and Hamina). The conservationists will continue the appeal process. Possibly, also a statement from the European Court of Justice is needed. The Vuosaari case will establish a remarkable precedent in terms of the implementation of the EU habitat and bird directives.

### 13. THE PLAN FOR A NEW NUCLEAR POWER PLANT

In November 2000 Finnish energy company TVO Ltd. submitted an application to the Government of Finland for a decision concerning the construction of a new nuclear power plant in Finland. It would be the fifth nuclear power reactor in Finland. The intended location is either the town of Loviisa or the Eurajoki municipality. In both sites the existing nuclear power stations operate since the turn of the 1980s. Both are situated on the shore of the Baltic Sea: Loviisa by the Gulf of Finland and Eurajoki by the southern part of the Gulf of Bothnia.

The Government made the decision in January 2002, that the plan complies with the interest of the nation and approved the plan. The decision of the Government has been submitted to the Parliament for the approval. After an affirmative decision in the parliament, the energy company can apply for the building permit.

Reasoning behind the application of TVO Ltd. is invalid in several ways:

- Investing in the energy savings and energy production based on renewable energy sources would boost domestic employment more effectively.
- Finland can reach its obligations under the Kyoto Protocol better without the new nuclear power plant. Possibilities of energy savings and energy efficiency have not been fully used. Furthermore, the potential of energy production from biomass and wind power has been underestimated.

Nuclear power is unsustainable source of energy causing a series of direct environmental problems and enormous risks throughout its whole production cycle from uranium mining to the disposal of nuclear waste. Investing in the old technology instead of the sustainable energy production based on renewable resources is not economically viable nor environmentally or socially acceptable.

Finland is the only western country planning to build a new nuclear power plant. The decision in favour of the nuclear power plant would have far-reaching influences on the future energy policy not only in Finland but also in the region, as well throughout the world. The Finnish example would give the international nuclear power industry the needed western model to boost its marketing, which has faced troubles after the decisions made in Sweden and Germany to close their nuclear power stations. The development of sustainable decentralised solutions would support environmental and social development in the region, and also globally, by fostering low capital energy production solutions which would be more applicable in different investment environments.

The subject of the application of TVO Ltd. also covers the nuclear facilities needed for the storage of fresh fuel, interim storage of spent fuel as well as for handling, storing and final disposal of low and intermediate operating waste of the plant unit. Finland would be the first country to approve a site for a deep geological disposal of high level waste.

## RUSSIA: GREEN SPOTS

### 14. ENVIRONMENTAL EDUCATION PROGRAMME NATUREWATCH AT VISHTYNETS LAKE

Vishtynets Lake, a unique water body of glacial origin and the biggest lake in Kaliningrad region, is designated as a state nature monument. It takes up the area of 17 thousand hectares, its length is 8 km and its maximal depth is about 50 metres. The water of the lake is very clear, having the transparency of 6-8 metres. Various fish species, such as crucian, pike and perch, live in the lake. For some rare fresh water fish, the lake is the only habitat in the region. Beautiful landscape of the surroundings with lakes and river systems is a popular tourism attraction.

A network of rural schools (Nesterov Secondary School, Nesterov House of Youth Creative Work, Babushkino Secondary School, Dubovoroschenskaya Secondary School, Ilyushino Secondary School, Kalinino Secondary School, Krasnolesye Secondary School, Zamkovskaya Secondary School) in the area, under the leadership of Nadezhda Grib, local education department inspector, and the co-ordination of Ecodefense group, is taking actively part in the international environmental education project Naturewatch. Teachers and students conduct surveys on rivers, lakes and forests; clean up the banks of water bodies; establish recreation sites; breed crayfish in small rivers; collect tree seeds and plant trees in accordance with the regulations of forestry commissions, and participate in other environmental programs initiated by the Environmental Centre for Students at Kaliningrad University. The annual regional Naturewatch summer seminar and camp is organised at Vishtynets Lake.

### 15. ENVIRONMENTAL EDUCATION NETWORK FOR PROMOTION OF ENVIRONMENTAL AWARENESS AND SUSTAINABLE DEVELOPMENT

This network joins teachers, schoolchildren, students and other residents of coastal areas around the Gulf of Finland in Saint Petersburg and Leningrad region. Four local information centers in Lomonosov, Kipen, Sosnovy Bor and Primorsk were equipped by the NGO Children of the Baltic with computers and free e-mail service to provide province teachers access to information and promote local and regional co-operation.



*Regional environmental seminar and training for teachers in Lomonossov*

The network was established by the NGOs Children of the Baltic and Green World in 1998 in the framework of the programme "Map of Habitat Values on the South Shore of the Gulf of Finland". Teachers and local environmental youth groups investigated and described nature objects most important for residents, assigning these with the informal protection status. The information obtained at the investigation was mapped. The map of values is being constantly developed by adding new objects onto it. This continuous process reveals which values are to be protected and conserved for the sake of sustainable development in the area.

In summer local environmental groups organise expeditions to the locations recognised as valuable, e.g. to Karasta River, Glukhovka River, Strelka River, Kipen springs; Lebyazhiy, Kurgalsky and Beryosovy Islands Nature Reserves and others. Young environmentalists together with teachers and specialists observe and investigate these places, exchange and sum up their results, prepare publications, organise different follow-up activities to attract attention of local people and authorities.

Traditionally, young and adult activists of the network gather several times a year: in February at the annual meeting and youth seminar of the Children of the Baltic; in spring at the teachers' River Watch workshop; in October during the Days of the Gulf of Finland at the youth bus campaign devoted to the protection of coastal areas and Habitat Values, in November at the youth seminar "Energy and Environment" and at teachers' round table.

The network has close co-operation with other environmental NGOs and teachers' networks, both at international (CCB, AVA, SPARE, EEEF) and regional (Naturewatch Baltic, Ecoshield, Youth Round Table of Saint Petersburg) level. In efficient co-operation with Estonian and Finnish teachers and youth NGOs, in 2000 the Local Agenda 21 network around the Gulf of Finland was established.

Members of the network of environmental teachers and schoolchildren work actively on the independent monitoring of the state of the environment of coastal areas and on environmental education. They launch local environmental initiatives for sustainable development and foster the care for our environment the future of which is our common responsibility.

## **16. CENTRE FOR ENVIRONMENTAL INFORMATION FOR CITIZENS OF SAINT PETERSBURG**

The NGO Centre for Environmental Information (CEI) was opened in 2001, in the building of the Russian Geographical Society in Saint Petersburg. The purpose of the Centre is informing the inhabitants of Saint Petersburg and the Leningrad region on environmental issues and involving them in nature protection activities. The Centre was established as a joint project of two CCB member NGOs - the Green World and the Children of the Baltic, and the Transboundary Environmental Information Agency. The support was also provided by the Gagarin Fund.

CEI has a library of environmental materials and a collection of environmental videos. Free access to Internet-resources about environment is also provided for the visitors by two computers installed in the Centre. Four more computers with Internet access are located at two public libraries.

CEI organises meetings with specialists and consultations on actual environmental problems in Saint Petersburg, North-West Russia and the Baltic Sea Region. CEI renders methodical help to teachers and students on educational programs related to energy production and energy saving, Local Agenda 21 and sustainable development, river and bank watch and protection etc.



The Centre organises educational events for students and teachers, including seminars, action games, and Internet-trainings. Besides the indoor activities, the Centre is also the place for organising several outdoor actions and campaigns.

Publishing and free distribution of popular materials on environmental issues is also performed in the Centre. The Centre publishes two electronic newsletters, two analytical bulletins, a joint Russian-Finnish environmental newspaper and other informational materials about the environment. Main publications of CEI are also available on the web-sites ([www.greenworld.org.ru](http://www.greenworld.org.ru); [www.baltchild.org.ru](http://www.baltchild.org.ru); [www.teia.ru](http://www.teia.ru); [www.moct-silta.net.ru](http://www.moct-silta.net.ru); [www.spare.nw.net.ru](http://www.spare.nw.net.ru)). The updated information about the Centre for Environmental Information is available at: <http://ecocenter.spb.org>

## RUSSIA: RED SPOTS

### 17. POLLUTION OF PREGOLYA RIVER

Pregolya River is the main waterbody in Kaliningrad city, forming an important part of the peculiarity of the city's landscape. It is also the main source of drinking water. Pregolya River enters Kaliningrad in its eastern suburb, splitting the city into halves. The river gives charm and liveliness to the urban landscape and provides the residents with drinking water. At the western suburb the river leaves the city. But what has happened to Pregolya River on this short trip of about 15 kilometres through the city? Being clear near the Berlin bridge, the river has become a dirty stream covered with oil spots and smelling decaying at the mouth of Vistula Lagoon. The level of pollution in the water exceeds the admissible limit values.

In fact, this is not H<sub>2</sub>O in terms of its chemical composition, as most of the elements of the periodic table can be found in the bottom sediments of the river. Pulp and mill industry discharge cellulose, dissolved organics, phenols, methanol, nitrates, sulphates and chlorides into the river, contributing to the spread of diseases of liver, kidney, allergies etc. Other factories and enterprises contribute with oil products and heavy metals that can cause cancer, mutations, and diseases of future generations. The Marine Fishing Port, Marine Commercial Port and Oil Terminal, all locating inside the city, dump oil products and waste into the river without any treatment. Moreover, the municipal sewage system spews its sewage water directly to the river. As there is no water treatment installations in the city, one has no reason to be surprised about epidemic diseases such as hepatitis or dysentery.

Adverse environmental conditions in Pregolya River have direct impact on the quality of municipal drinking water, which mainly (up to 2/3 of the total use) coming from the river, creates potential threat to the citizens' health. Kaliningrad Centre for State Sanitary and Epidemiological Regulation has identified the impact of drinking water quality on the development of such diseases as virus hepatitis, cancer, several diseases characteristic to new-born babies and their mothers, and blood-circulation system diseases.

Eventually, Pregolya River flows into the Baltic Sea, bringing all the contaminating substances it contains, such as oil products, organics etc. into the sea.

### 18. KRAVTSOVSKOYE OILFIELD

Kravtsovskoye (D-6) oilfield, discovered in the Baltic Sea in 1983, is located 22 km away from the shoreline in Kaliningrad Region. The sea depth at the site is 25-30 m. The oilfield presents the largest oil deposit in the region.

Ministry of natural resources has issued a license for *OAO LUKOIL-Kaliningradmorneft* company to develop the D-6 oilfield project.

The detrimental environmental impacts accompanying the exploration and transportation works at D-6 oilfield cannot be avoided even in the presence of high-level safety system.

Additionally, the situation may be worsened by a wide range of effects a drilling installation may cause to the environment (even in conditions of accident-free operation). These threats include:

- toxic drilling solution;
- dumping of sewage water;
- pollution and salting of underground waters at drilling;
- air pollution from burning gases.

Insurance and compensatory payments foreseen by *LUKOIL* would not be able to abate significantly the negative environmental consequences of the project for the Baltic Sea ecosystem.

## 19. TSELAU WETLAND SUFFERING FROM OIL EXPLORATION

The Tselau moor is a typical marsh, the most western one in Russia. Pool complex and hummock-ridge complex ecosystems prevail here. One can also encounter pine bogs, rivers and lakes in this area. It is located in the middle of Kaliningrad region in the Pravdinsky district, encompassing 2336 hectares.

Tselau moor has a great importance in the natural water circulation as it feeds the Prohladnaya, Baydukovskaya and Gvardeyskaya rivers. Prohladnaya River, which begins in the wetland and flows to Vistula Bay is navigable at its lower course and has industrial significance.

Meeting the criteria listed below, Tselau wetland is a Ramsar Convention site:

- a typical Baltic coastal wetland;
- plays important hydrological, biological and ecological role in Prohladnaya, Baydukovskaya and Gvardeyskaya watersheds;
- supports biodiversity of the region, as other wetlands there have been drained.

Tselau moor provides habitats for several valuable plant and animal species, e.g. *Rhynchospora alba*, *Scheuchzeria palustris*, *Carex limosa*, *Drosera rotundifolia*, *D. anglica*. Twenty-three bird species nest on the wetland, including rare ones, such as *Pluvialis apricaria*, *Lanius excubitor*, *Tringa glareola* and grey crane (*Grus grus*).

Currently, Tselau moor has no official protection status, however, it is included in the list of territories that are proposed to receive this status by 2005, according to the Russian Federation Governmental order No 572-p from April 23, 1994, and to the Nature Conservation Plan for Kaliningrad region, which is now being developed by Kaliningrad Region Committee for Nature Protection jointly with WWF-Sweden.

The wetland area belongs to the military department, functions of which are detrimental to the environment. Oil exploration has been carried out by using heavy caterpillar transport, tramping down the wetland.

As a result of oil exploration and drilling works conducted by *LUKOIL-Kaliningradmorneftgas* company, the forest ecosystems will experience damage - the annihilation of the forest floor, soil and the natural moss cover of the moor. Vast territories will be destroyed due to oil spilling. Reclamation activities would most likely lead to drying and disappearance of the moor and disruption of hydrological conditions of Prohladnaya River.

Exploration works have already caused serious damage to the area, as the road for heavy vehicles was constructed, machinery parking lots were established in the forest, and cross-country prospecting vehicles are driving across the forest and the moor. Drilling and exploration of the site would lead to the total destruction of the unique wetland.

## 20. BALTIC OIL-PIPELINE SYSTEM AND PRIMORSK OIL TERMINAL

The first stage (12 million tons per year) of the construction of new oil port in Primorsk in the eastern end of the Gulf of Finland will be completed by the end of 2001. The total capacity of the terminal will be 30 million tons per year.

Synchronously with the construction of the port, a branch of the Baltic Pipeline System (BPS) through Karelian Isthmus from Kirishi to Primorsk (280 km) is being completed. In Primorsk 10 oil tanks of 50 thousand tons each are tested and commissioned in July 2001.

Such a neighbourhood sows anxiety among the inhabitants of the Beryozovy Islands wetland nature reserve (Ramsar Area), situated just over a narrow Björke sound. This protected area meets 20-30 thousand swans every spring during their migration from southern and southwestern Europe to the Arctic nesting sites. The most abundant of them are common swans (*Cygnus cygnus*), followed by up to 5 thousand Bewick's swans (*Cygnus bewickii*) and few mute swans (*Cygnus olor*).

The area is important also for other bird species, among which there are some red book species, e.g. osprey (*Pandion haliaetus*) and white-tailed eagle (*Haliaetus albicilla*).

As to the fish fauna, the area of Beryozovy Islands is considered to be one of the most favored spawning sites for important commercial fish species, namely for Baltic herring (*Clupea harengus membras*), white fish (*Coregonus lavaretus*), and sport fishing species such as perch, pikeperch and others.



Primorsk Oil Terminal

According to the published data, the mean oil losses, originating from different sources, including tanker leakages and accidents, are estimated to be 0.02% of the total oil bulk. Hence, these ecologically important areas will face a serious anthropogenic threat due to the proposed projects. The famous Russian ecologist and the correspondent member of the Russian Academy of Sciences Alexey Yablokov has predicted that if all new projected oil terminals in the Baltic Russia would start their operation, all Ramsar sites in the Russian part of the Gulf of Finland would be transformed into industrial areas during the life time of one generation.

## 21. PROLONGATION OF THE OPERATION OF THE LENINGRAD NUCLEAR POWER PLANT

Russia has planned to prolong the operation time of the reactors of Leningrad Nuclear Power Plant (LNPP) for 10-15 years. At the same time, more environmentally friendly energy resources are ignored. The potential of the wind energy is much higher and energy saving potential in the northwestern of Russia is equal to the LNPP power production capacity.

LNPP is the biggest and one of the most dangerous nuclear power plants in the Baltic Sea region. It is located in Sosnovy Bor, at the Baltic Sea, 80 km west of Saint Petersburg and 70 km from Estonia and 100 km from Finland. LNPP uses four RBMK-1000 reactors with the total capacity of 4 000 MW, producing about 40% of the electricity used in Saint Petersburg region.

LNPP extracts cooling water from the Baltic Sea (200 m<sup>3</sup>/sec), destroying the marine ecosystem and promoting the eutrophication of the sea. Over 60 000 m<sup>3</sup> of radioactive waste and about 4 000 tons of the spent nuclear fuel (SNF) have been accumulated during the operation of the plant. The storage facility for SNF is overfilled, keeping over 24 000 assemblies instead of the designed 17 500. There is no technology in the plant for reprocessing or utilisation of the RBMK-1000 SNF. The radioactivity in SNF exceeds 40-60 times that of the Chernobyl catastrophe contamination. The operation of this radioactive hazardous facility violates the respective Russian legislation.

In 2003 the designed lifetime of the oldest reactor will expire and it should be decommissioned. One after another, all Chernobyl-type reactors of LNPP will reach the retirement age. But instead of shutting down these morally and physically obsolete monsters, the Ministry for Atomic Energy of Russia and other authorities are looking for the possibilities to extend this deadline. One of the solutions is to invite foreign companies to invest into the old reactors' refurbishment.

The American *Alutech Corporation* and the Government of Leningrad Region have signed the preliminary agreement for the construction of Aluminium plant at a short distance from the LNPP and Kurgalsky Nature Reserve (Ramsar area). The foreign partners will build a separate power transmission line between the LNPP and Aluminium Plant and contribute 70 million USD for the reconstruction and prolongation of the lifetime of the old nuclear reactors.

According to the media releases, Oman is ready to invest 1.5 billion USD into the production of doped silicon by the RBMK-1000 reactors of Leningrad NPP. The project would involve the production of neutron-doped (irradiated with neutrons in the reactor) silicon, the annual output of which could be several hundred tons.

## 22. UST-LUGA PORT NEAR KURGALSKY NATURE RESERVE

The new port of Ust-Luga at Luga Bay will start its operation in the end of 2001. It will be the first coal terminal (with the capacity of 8 million tons per year and with 450 employees) of the new port designed for the mineral fossils and another export cargoes from Russia to the Western countries. The total designed cargo bulk is planned to reach 35 million tons per year. In order to operate the transport more effectively, the railways near the port will be reconstructed. The cost of the project together with the establishment of infrastructures will be approximately 4 billion USD according to the estimation of the Green World.

The port is situated at the eastern shore of Luga Bay, 8 km from Kurgalsky Nature Reserve, which is located at the western shore of the bay. The area is an internationally designated Ramsar site and belongs with the European NATURA 2000 network as a Special Bird Protection Area. More than 200 bird species live or stop for the rest in migration season in this nature reserve. Some of them, e.g. Bewick's swan (*Cygnus bewickii*), osprey (*Pandion haliaetus*) are registered in International Red Book.

The construction of Ust-Luga port is in progress in spite of the protest of environmentalists who believe that the additional human activity in this area will produce detrimental transformation of the wetland area. In addition, Luga River is one of the most important watercourses for successful spawning of Atlantic salmon and other anadromous fish species in the Russian part of the drainage basin of the Gulf of Finland.

In addition to the coal terminal, also other developments are planned. The terminal for the export of mineral fertilizers (5 million tons per year) will be constructed later. Ust-Luga terminal of oil products (5 million tons per year) will be constructed by Saint Petersburg Oil Terminal and Ust-Luga companies. They have planned to start the construction in 2002 and to finish in 2003.

Germany provides funding for this ecologically hazardous terminal. German companies have started to supply the Ust-Luga terminal with transshipment equipment worth 2 billion DEM. The German government is about to open the credit line for prospective financing of the project after receiving the guarantees of the insurance company.

The famous Russian ecologist Alexey Yablokov (the correspondent member of the Russian Academy of Sciences) has stated that if all new proposed ports will be constructed in the Russian part of the Gulf of Finland, all local Ramsar nature reserves will be transformed into industrial areas in 40-60 years.

## ESTONIA: GREEN SPOTS

### 23. PUBLIC PARTICIPATION IN PÄRNU RIVER BASIN MANAGEMENT

Conforming with the European Water Framework Directive (2000/60/EC) water management should be planned and implemented according to river basins. In addition to designing waterworks and pipelines, any activity having impact to water quality, e.g. tourism, agriculture, forestry, land reclamation, fishing, preservation of protected habitats etc. must be discussed. The directive stresses the importance of public participation in the compilation of river basin management plans (RBMPs).

Estonia has decided to apply one administrative river basin for whole Estonia (divided into 8 sub-basins), in relation to the EU Water Framework Directive, and one small nitrate sensitive area in central Estonia. The biggest river basin is the Pärnu River basin, which covers 6 690 km<sup>2</sup>. In addition to the hydrological catchment area, coastal areas of Pärnu County, coastal sea with some small islands and areas near the Latvian border are observed. By today, the first water usage project has been compiled and published for Pärnu River catchment area. The next step is to compose the detailed water management plan for the whole river basin. On April 1, 2001 an amendment to the Estonian Water Act, describing the procedures of making and publishing RBMPs was enforced.

Population of Pärnu River Basin area is 151 400; of this 61% live in 134 settlements and towns. Environmental authorities are making preparations for the involvement of the public and NGOs into water management planning. The main office will be located in the Environmental Department of Pärnu County where all relevant documents and information will be accessible for general public.

In August and October 2001 Friends of the Earth-Estonia (Estonian Green Movement) together with Estonian Water Association organised seminars and conferences for the representatives of NGOs, environmental authorities, water specialists and entrepreneurs to introduce the process of drafting RBMPs and the possibilities for the public to influence it. NGOs will demand that all types of human activities influencing water quality and quantity were thoroughly analysed and taken into account. In Pärnu County, non-point pollution from agriculture should be attentively addressed in this respect. NGOs will examine the maps on monitoring surface and ground water status and the relevance of the location of the monitoring stations, as sometimes the existing monitoring stations are remote from actual pollution sources and the measurements fail in reflecting the pollution loads adequately.

NGOs should also help the authorities to organise an exhibition on the Pärnu River Basin to introduce the topics under discussion and planned future solutions to the public as well as to propose ideas to make the exhibition attractive, e.g. to hold it on the ship or some water body.



*Pärnu river*

Involvement of the public and NGOs should ensure that the RBMP would not only meet the interests of water users but also those of the whole public. The most important decisions to be checked by the public will be:

- postponing the deadlines for achieving good ecological status of the surface and ground water;
- application of exemptions from pricing policies with the principle of cost recovery and inclusion of environmental costs;
- designation of heavily modified water bodies;
- setting environmental quality standards.

According to the Article 38 of the Estonian Water Act, the RBMPs should be finalised within 4 years after the law was enforced. So the public and NGOs should be ready to play their role in this process in time.

## ESTONIA: RED SPOTS

### 24. RADIOACTIVE POND AT SILLAMÄE

The radioactive tailing pond of Sillamäe is located in Ida-Viru County, in the western part of the town, directly on the coast of the Gulf of Finland. The depository occupies a territory of approximately 40 hectares and contains about 12 million tons of uranium process tailings and oil shale ashes, deposited there since the uranium production factory of the Soviet Union was established in 1948.

The construction of the depository started in 1950s. The intention was to surround the depository by a 12-metre high dam; by now the absolute height of the embankment is 24.5 - 25.5 metres. The embankments are filled with gravel and pit sand, ashes from the depository, construction waste and tailings.

The tailings of the factory, greyish-brown poisonous slurry containing uranium and heavy metals, acids and other chemicals are the remains from the processing of the uranium ore, both dictyonema shale and up to 100 times richer ore, later imported from the Eastern countries. 12 million tons of these substances - uranium refuse mixed with oil-shale ashes - make up the so-called Uranium Lake of Sillamäe.

Eventually, the substance consolidates and changes into a clay-like mass. In Sillamäe, it has happened partially: paradoxically, there are places where one can walk on the surface of the lake as well as places where a stone thrown into the lake disappears immediately.



Photo: Arne Ader



Sillamäe depository is located directly by the sea. The seaside dam is not farther than 30 to 50 metres from the waterfront.

Research has proved that both direct (constantly spreading pollution) and indirect hazards (the dam is liable to break down due to its instability) exist there. In case the seaside embankment breaks, incalculable quantity of dangerous substances may flow into the sea. The pollution spreads from the depository in three different ways:

- rain and water pouring from the mainland from time to time slowly seep through the mass of tailings and carry dangerous substances (uranium, thorium, barium, strontium, arsenic) to the sea;
- in summer almost the whole surface of the depository is dry and wind carries dust from the depository to the surroundings and residential areas of Sillamäe, located approximately 1.5 to 2 km from the depository;
- depository emanates radon, a radioactive gas, which partially spreads over the town as well.

Remediation of the tailing pond is planned to be carried out in 2000-2005. The cost of the project reaches 20 million Euro that is provided by foreign aid and loans mostly. On March 31, 1999 the first report on the general conception of environmental remediation of Sillamäe tailing pond to the representatives of the government of Estonia and *Silmet Grupp* was submitted.

The remediation concept foresees the following means:

1. Reinforcing the dam of the depository by building breakwave on the shore and establishing a pile grillage on the area between the embankment and the shore;
2. Blocking the water flowing from the mainland by a diaphragm wall;
3. Contouring the surface of the depository into a system of shallow valleys with several water-sheds and finally covering the depository with a multi-layer waterproof covering.

## LATVIA: GREEN SPOTS

### 25. ECOLOGICAL ENGINEERING AND ORGANIC FARMING IN RENDA

Renda, a municipality in Kuldīga region in Courland, is situated 120 km west from Riga. The poor soils of the region have led to the need to find alternative farming practices. Now, biological and biodynamic farming methods are being widely practised in the region. Out of a total of 43 officially productive farms very few use chemicals and many apply biological methods, although paradoxically many of them are not aware of this. Four farms are officially certified as organic farms.



Upmali farm is the biggest and most active biodynamic farm in the region. People from Upmali organise educational seminars on biological farming not only for local people but also for those interested in the subject from all around Latvia. The farm also performs as a demonstration farm of non-depletion forestry. This project is running in co-operation with WWF.

Upmali farm also has introduced some ecological engineering techniques, e.g. a modern urine-separation toilet without wastewater and sand filter for grey-water treatment has been installed. This was one of the first eco-technological projects in Latvia. It is run as a pilot project and being displayed to the visitors. Additionally, training courses on ecological technologies are frequently organised in the farm.

### 26. PLANNING OF WASTEWATER TREATMENT AT GROSTONA SCHOOL

Grostona private Christian school is located in Madona region. About 50 orphan children attend the school. People from all over Latvia as well as from abroad often visit the school. As the school did not have any wastewater treatment facilities it was selected for setting up the demonstration project. Besides, people serving in the school are recognised for their so-called green conviction.

In 1999 an investigation was started to find out the needs and possibilities for wastewater treatment by using separation toilets and sand filters. In 2000 Swedish experts visited the school twice. The situation was thoroughly investigated and the action plan was drafted. Afterwards, local experts of Madona designed the technical project, which was translated and agreed with Swedish experts in 2001. All field works are planned to be finished in 2002.

In the future, the school is also willing to organise different green events such as summer camps etc. In addition, this pilot project will be described in the magazine Environmental News and the press conference will be held to lure mass media and people to visit the school.

### 27. PLAN FOR NEW PULP MILL ON DAUGAVA RIVER

Since long ago, Latvian Government is developing the idea about constructing a new pulp mill, the biggest investment project in the Baltic States. Many potential places for construction have been discussed, but the most convenient railway station Ozolsala in Krustpils parish, Jekabpils region was chosen. Four Scandinavian companies and one Singaporean showed their interest in this project at its early stage, but only one company was selected for further investment discussions. A new company *Baltic Pulp* is established to work with this project. The distribution of its capital shares is as follows: 33% Latvian state, 33% Swedish company *Södra Group* and 34% Finnish company *Metsäliitto Group*.

The planned annual production capacity of the factory is 600 000 tons of pulp; 3 million m<sup>3</sup> of wood will be processed in the mill. Initially, 800 new workplaces were promised, now this number has decreased down to 630. To get job in the mill one has to have special qualification and knowledge of foreign languages, which is a problem for the local people. Ten percent of the staff will be foreigners and salaries for them are planned to be ten times higher than salaries for local people.

In the beginning the demand was that the government would invest 500 000 ha of state forests into the project. As a result of the negotiations and public pressure this plan was withdrawn and it was decided to invest in cash. The total needed investment is about 960 million Euro, of which the share of Latvian government is 127 million Euro. Foreign investors demand for tax allowance for the first 10 years of factory work, motivating it with hard competition in the pulp market.

Project will have huge influence on Latvia's forestry. Small wood processing companies are afraid to lose their businesses, as all the wood will go to new pulp mill.

Environmental standards are going to comply with the HELCOM recommendations and EU directives. However, it is planned to use chlorine dioxide for pulp bleaching. Such technique will produce high amounts of chlorinated substances. Every year about 30-40 tons of nitrogen oxide will be emitted to the air. For producing 1 ton of pulp, 70 kg of solid waste and 1 kg of sulphur dioxide (SO<sub>2</sub>) will be discharged. Many different organic substances will be released into the water. The major concern is the ecological situation in river Daugava, as it is the main drinking water source for Riga city.

Adverse environmental impacts of the planned pulp mill include:

- Pollution of 90-150 tons of chlorinated organic substances (AOX) per year to Daugava River. This comprises an obvious risk to the ecosystem and drinking water supplies in Daugava river. The inhabitants of downstream settlements and in Riga will be exposed to increased health risks, especially under periods with minimum water flow in Daugava, at Jekabpils 70 m<sup>3</sup>/sec (lowest summer level), compared to the pulp effluent flow of 0,5 m<sup>3</sup>/sec (a dilution level of 140 times).
- Pollution of 12-18 tons of total phosphorus per year and 120-150 tons of total nitrogen per year to Daugava River, which already has symptoms of eutrophication.

*CCB proposes the following requirements for new pulp mills:*

- *no use of chlorine chemicals (including chlorine dioxide) in pulp production. Only production of TCF (Totally Chlorine Free) pulp. Use of BAT (Best Available Technology).*
- *wood supplies should be certified in accordance with FSC (Forest Stewardship Council) criteria. A plan for increased use of certified wood should be presented, with the final goal that the majority of wood will be FSC-certified.*

## **28. PLAN FOR NEW HYDROELECTRIC POWER STATIONS ON DAUGAVA AND SALACA RIVERS**

The idea to construct the hydropower plant on Daugava River near Daugavpils was developed already in 1980s, but because of the public resistance and the collapse of Soviet Union the project was never implemented. In the end of 1990s the idea was reanimated.

The city council of Daugavpils is the initiator of this project. At the same time, members of the local community are fighting for the protection of Daugava River valley and biological diversity of the region, which is endangered by this project. The main argument in favour of the project is that it would decrease the reliance of Latvia on imported energy from the neighbouring countries. However, the economical, social and environmental consequences of the hydropower plant dam are insufficiently discussed yet.

Similar problems result from the construction of other small power stations that are currently very popular in Latvia due to the law that allows the state to purchase energy from small power stations (production below 2 MW) at a double normal rate. The aim of this policy is to increase the energetic independence of Latvia and to promote alternative forms of environmentally sound energy. It is claimed that Latvia could obtain about 10% of its energy from small-scale production plants.

The unfavourable side of these developments is the construction of dams in protected areas in the river basins of Gauja, Salaca and Venta rivers. The dams might have a significant impact on river ecosystem and biological diversity and cause changes in fish communities. Around 45 small-scale power plants have been built in Latvia by now and the environmental consequences have already emerged. An example of the problematic situation in Staicele Region can be used to illustrate the adverse effect of these hydroelectric facilities. The Staicele municipality is promoting the hydropower development on Salaca River as something that will bring significant investments to the local economy. The proposed site of the dam is very close to the town of Staicele. Salaca River, the so-called wild salmon river, is included in the list of Baltic Salmon Rivers. The catchment area of Salaca River forms a part of the Northern Vidzeme Biosphere Reserve. The commercial fishing, except the catch of lamprey, is prohibited in the river. It is estimated that the wild salmon smolt production in Salaca River is between 20 000-30 000 individuals per year that is the highest rate in the Eastern Baltic region.

Latvia has ratified the recommendation of HELCOM on the protection and improvement of the wild salmon populations in the Baltic Sea area (1998, 19/2), which states that any new mechanical impediments should not disturb salmon migration in rivers. This should be another unavoidable consideration in the debate on hydroelectric developments.

### 29. CONSTRUCTION OF SMALL HYDROELECTRIC POWER STATIONS

At present, there are 36 small hydroelectric power stations in Lithuania. None of them has the fish passageway to assist fish to migrate over dams. Twelve new hydroelectric power stations without fish passageways are projected. The passageway for migrating fish has already been blocked on Virvyte River and the landscape there has been destroyed. Approximately 15 hydroelectric power stations are located along this river.

A fund has been established to support the construction of the fish passageway near the Kaunas hydroelectric power station on Neman River. Half of the salmon spawning grounds have been blocked by the Kaunas hydroelectric power station. Moreover, the investment proposal for the construction of two more hydroelectric power stations on Neman River have been made.

Lithuanian Green Movement is concerned that the previous rules on construction of hydroelectric power stations might proceed and environmental considerations will be disregarded.

### 30. BUTINGE OIL TERMINAL

The Butinge terminal started to operate in July 1999. On December 6, 2000 the first oil spillage took place in the terminal. Approximately 3.5 tons of oil was spilled out, but the pollution was not detected. On March 6, 2001 there was a similar accident and about 4 tons of oil was spilled then. A dispersing agent, named Simple Green, which is prohibited in the European market, was utilised to sink the major part of oil to the bottom of the Baltic Sea.

According to Ramunas Povilanskas, a member of the Zvejone Council, the constant oil spillages provide evidence that the stories about the renowned safety of the Butinge terminal are misleading. Environmentalists warned about this long before the terminal was built. New accidents can occur at any time.

Lithuanian environmentalists suggest to cease the exploitation of Butinge terminal since it causes danger to the environment of the Baltic Sea, first of all to the spawning grounds of Baltic herring and secondly to wintering places of rare waterfowl. Lithuanian environmentalists absolutely agree with the Latvian environmentalists who demand that Lithuania would open a risk fund to eliminate the consequences of possible accidents caused by the terminal.

## POLAND: GREEN SPOTS

### 31. COALITION TO SUPPORT ORGANIC AGRICULTURE

Until the mid-1990s, the number of organic farms and arable land under organic cultivation was increasing in Poland. Since the mid-1990s, a stagnation of this process has occurred and the number of organic farms and arable land under organic cultivation has been decreasing. This situation gave an impetus to organisations active in organic agriculture throughout the country to revise their promotion methods and strategies.

In 1998, with this aim in mind the Polish Ecological Club (PKE) initiated the Coalition to Support



*Decorations made with agraric grains at, the fair "Health for Gliwice citizens" in 2000*

Organic Agriculture. The coalition gathers non-governmental organisations and public institutions (today 21 groups), with the goal to promote development of sustainable agriculture in Poland. Coalition members defined programme initiatives for increasing public consciousness about the importance of organic agriculture, as well as concrete initiatives to support organic agriculture. Within this program, coalition has organised many local, national and international meetings, seminars, workshops, exhibi-

tions, fairs etc. to give support for sustainable development. Together with representatives from the Polish Parliament the coalition has developed national legislation on organic farming, which was adopted in spring 2001.

The coalition also plays crucial role in working out sustainable alternatives, instead of traditional intensive farming, for Polish rural development and agricultural production. The position of Polish officials is that large farms and intensive agricultural production is the only alternative for Polish farmers to survive, when joining the EU. If such a standing position would win, the agricultural run-off of nutrients from Poland to the Baltic Sea would increase considerably, and the eutrophication problem of the Baltic Sea would get worse. Moreover, such development would clearly contradict the international political decisions agreed on the restoration of the Baltic Sea environment.

The Coalition to Support Organic Agriculture represents an exemplary force as a promoter of sustainable development and environmental protection. Creation of similar initiatives in other countries of the Baltic Sea Region would give a strong support for a sustainable development of the region.

## 32. THE MARINE RESEARCH STATION ON HEL PENINSULA

At the beginning of the 20th century grey seals were extensively hunted and were treated as pests. The Polish government paid for killing of each seal individual. As a result, of one thousand individuals still present in the Baltic Sea in Pomeranian region 100 years ago no single specimen remained. Since that time there has been no natural reproduction of grey seals in Polish coastal waters. The nearest sites of natural reproduction are located in southern Sweden and Estonia, where the majority of young seals found in Polish coastal waters come from. Following the HELCOM recommendation 9/1, a project of re-establishment of grey seal colony has been launched. Main goals of the project are the creation of seal sanctuaries, rescue of wounded animals, release of captive-born seals into the natural environment, and promoting public awareness of the importance of marine nature protection.

The Hel Marine Research Station has been established to deal with the project. It is supported by the local NGO Association Friends of Hel that promotes the educational part of the project, using current and reliable information to influence public awareness. It aims at protecting the environment and endangered species in an efficient way, beginning from every single person and single household. The educational activities of the association aim at convincing the public of the necessity of the reintroduction of grey seal as a natural component of the marine ecosystem of the southern Baltic. The main methods used in the project called "HELp SEALS ACTION" include ecology lectures for schools, citizens and tourists, printing and distribution of information materials, helping rehabilitation of sea mammals and birds, providing ecological articles for local newspapers and other media channels, and participation in ecological research. This project has managed to bring seals back to the remembrance of Polish public community, as well as to create the "HELp SEALS ACTION" as a symbol of the protecting the Baltic Sea environment.

The number of visitors in the rehabilitation and breeding centre in Hel Marine Station has surpassed the expectations. Over 300 thousand people visiting the place in 2000 have been informed about seals and the necessity of their protection. Seal is used as a symbol and enticement in the project to address broader issues of nature conservation and environmental protection.

## 33. REINTRODUCTION OF SALMON IN REGA RIVER

For the last decades the wild Baltic salmon stocks have declined because of its reproductive problems due to over-fishing, destruction of spawning grounds and environmental pollution. The last two factors are the main reason why salmon stocks have become extinct in Polish rivers. The state of the rivers has improved for the last few years but salmon population has not completely recovered.

A plan for the restoration and conservation of wild salmon stocks in the Pomeranian rivers has been prepared. Summer fry coming from Daugava salmons has been used by the Green Federation GAJA from Szczecin for stocking the Rega river catchment area since 1998. A total of 25 000 young salmon individuals have been released since that time. These activities are complementary to the "IBSFC Salmon Action Plan 1997-2010". The goal of the project is to create naturally spawning salmon stocks in the Western Pomeranian rivers.

Streams in the Rega river basin suitable for future spawning grounds are identified and prepared for stocking with salmon summer fry so that young fish could grow to a smolt stage, migrate to the sea, and subsequently return to the same river as spawners for nesting. Local young students and their teachers have been involved in the public awareness campaign focusing on restoring and protecting spawning grounds. The project also aimed to reduce the illegal fishing. Brochures, leaflets, posters, and postcards on above-mentioned issues have been distributed.

The results of the project are expected to become visible soon, after the homing of adult salmon. The team of scientists of the University of Szczecin in co-operation with the Polish Anglers' Association (PZW) in Szczecin does the research work to monitor the results of the project. The results are promising, as the survival rate of young salmon is about 40%. Information on the project is disseminated in local and national mass media. Additionally, lobbying local self-governments for creation of protected areas on selected sections of the potential salmon rivers and streams as well as active counteraction against poaching in Rega River catchment area are also planned. The project was awarded the Ford Motor Company Environmental Award in 2000.





### 34. SEWAGE TREATMENT IN SZCZECIN

Each day the city of Szczecin drains off to Odra River almost 100 000 cubic metres of wastewater that is treated only mechanically. The quality of water Odra River up-stream of Szczecin has improved recently, yet the municipal sewage carries heavy load of pollution affecting the Odra estuary. Some of the sewage collectors are placed in the residential part of the city. Sometimes during the warm season with high temperatures, the low amount of oxygen causes the death of fish. Further decrease in the amount of oxygen related to the mineralisation of organic matter in the bottom sediments, causes emission of methane and hydrogen sulphide.

The construction of the Pomorzany sewage treatment plant has been planned for many years. Finally, at the end of 2000 a chance for reaching this aim appeared. The city of Szczecin has been donated over 30 million Euro from the EU pre-accession fund ISPA to develop the sewer system. Construction of the sewage treatment plant is a part of this big project. The investment is to be financed from the credit contracted by the city and from the donation of the National Fund for the Environment Protection and Water Supplies Management. Currently, the city council is preparing the detailed project proposal. Several years ago the project of building the plant was rejected and did not receive financial support because of the incorrectly prepared documentation.

### 35. OIL TERMINAL IN SWINOUJSCIE

The construction of the fuel terminal Porta-Petrol in Swinoujście has been controversial from the very start of the project. The main reservations in this respect are the wrong location of the terminal, collision with the general plan of spatial management of the area and impeding the public access to information. According to the opinion of the harbour pilots, the location of the fuel base on the arch of the fairway increases the danger of collision of floating units. Till now, there were no necessary solutions prepared serving to the tankers' manoeuvres on the fairway. Despite meeting all requirements of the safe exploitation, the Porta-Pertol terminal may cause serious danger.

Stopping the tanker with 20 000 tons of gasoline on the arch of the fairway causes serious danger of collision in the direct neighbourhood of the passageway of ships. It may result in fire, explosion or oil-spills that, transmitted by the strong current, in case of inflammation may cause serious fire danger for the nearby area of the port, announced the captain of the Swinoujście Port in his letter to the Chief of the City State Fire Brigade.

It should be stressed that in the Szczecin-Swinoujście port complex there are no special units, which in case of sudden spill of petrol substances, could efficiently prevent environmental disaster. Despite the protests of several NGOs and local community, the investor of the project declared that the terminal would be launched in the middle of 2001.

## 36. NEW DAM ON VISTULA RIVER

Vistula River is one of the largest rivers in Europe. It flows into the Baltic Sea at the Gulf of Gdansk. Between the middle and lower courses of the river, at Włocławek, a large dam is located. The dam was built over 30 years ago and was designed to form a part of a series of dams. Over 30 years, the untreated waste, which includes untreated industrial and chemical waste from places such as Silesia and Piock,



has settled in the sediments behind the reservoir. These sediments are highly toxic. The dam has been used for peak and emergency power. The Polish government and parliament intends to build the next dam downstream of Włocławek, at the place called Nieszawa. Regrettably, even the Environmental Minister is in favour of the project. Many scientists and organisations however, object this intention, arguing that problems cannot be solved by building a new dam and that the solutions for the old dam must be worked out first.

## 37. WASTEWATER MANAGEMENT WITHIN THE VISTULA LAGOON AND ITS DIRECT CATCHMENT

Vistula Lagoon is located in the Southeast of the Polish coast, by the border with Kaliningrad District (Russia). Its area is determined by the Vistula Mierzeja and Sambia Peninsula. Total area of the Lagoon is 838 km<sup>2</sup>, of which 328 km<sup>2</sup> are located on the Polish side. Average depth of the lagoon is 2.6 m, while the deepest place is 5.1 m.

Direct catchment of the Lagoon is determined by catchments of thirteen rivers, the largest of which are Pasleka, Elblag and Nogat. Actually, these three rivers are the biggest contributors carrying pollutants to the Lagoon. Thus, ecological conditions of the Vistula Lagoon shall be considered in aspect of rivers flowing into the Lagoon. In the case of Pasleka River (the longest river flowing into the Lagoon) there are ca 15 facilities discharging waste directly into the river. These include several industrial plants, wastewater treatment plants and a hospital.

Along the second longest river Elblag, there are six plants discharging their waste into the river, including two wastewater treatment plants, dairy, combined heat and power plant. Besides that, the Lagoon receives direct discharges from six sources - four mechanical and mechanical-biological wastewater treatment plants located in Krynica Morska, Frombork, Piaski and Tolkmicko, untreated waste from fish processing plant in Tolkmicko and mechanically treated waste from fruits' and vegetables' processing plant.

Analysis of the data concerning environmental conditions of the Lagoon discloses that Pasleka and Elblag Rivers are the main contributors of high loads of COD, BOD<sub>5</sub>, phosphorus and nitrogen. The respective data from 1995-1996 and 1999 are as follows:

	1996		1999	
	COD [t/year]	BOD <sub>5</sub> [t/year]	COD [t/year]	BOD <sub>5</sub> [t/year]
Pasleka	18171	2440,4	14790,4	1954,4
Elblag	9465,2	1293,4	10794,2	938,4

Comparison of the data reveals improvement of the parameters throughout the three-year period. Comparing the data from 1996 and 1999, the load of total phosphorus has decreased while total nitrogen has increased:

	1996		1999	
	total P [t/year]	total N [t/year]	total P [t/year]	total N [t/year]
Pasleka	142,6	1584,6	132,1	1362,8
Elblag	89,49	840,7	86,8	970,9

In 1998, Pasleka river suffered from excessive concentration of faecal bacteria *E. coli* and biogenesis causing eutrophication of the water. However, the concentration of organic and other specific substances allowed classifying the river as a second purity class river. Generally, the research performed in 1998 reveals that the bacteriological conditions of the Vistula Lagoon is acceptable, oxygen concentrations are also good and do not constraint biocenosis development.

Remarkable positive changes took place throughout the 3-year reporting period, due to the decrease in application of artificial fertilisers and development of the biological wastewater treatment plants. Character of the Lagoon provides many possibilities for the sustainable tourism development. Thus, more efforts shall be put for further improvement of the water conditions. These can be accomplished through the development of sustainable tourism, which can be more beneficial, as the region of Warmia-Mazury still belongs to the areas untouched by industry. Also the construction of wastewater treatment plants, covering the needs of all the communities inhabiting the direct catchment of Vistula Lagoon, would highly benefit from its environmental conditions. Development of organic agriculture would further contribute to the decrease in the concentration of harmful organic substances, such as DDE, DDT and gamma-HCH, the increase of which was notified in 1999. In addition, bilateral actions for the protection of the Lagoon shall be initiated by the governments of the Republic of Poland and Russian Federation.

## GERMANY: GREEN SPOTS

### 38. INFORMATION CENTRE IN THE JASMUND NATIONAL PARK

The World Wide Fund for Nature (WWF) Germany has developed the concept of establishing an information centre in the Jasmund National Park, giving a good example how to combine nature conservation and tourism. The project of building the visitor centre is carried out in the most famous site of Rügen Island, at Königsstuhl Cliff by the WWF-Germany and the municipality of Sassnitz.

The aim of the centre is to provide visitors with innovative thematic information and experiences on the nature of the national park. The centre will be combined with sanitary and gastronomic facilities and will reuse the old hotel and barracks on the site. Environmentally sound techniques will be applied in the renovation of buildings and for the energy and water supply.

The centre has advantages not only with respect to environmental questions, but also as an attractive site for the guests of the region. It will attract people and contribute to the development of sustainable tourism.

The WWF will take responsibility for the guiding system, providing visitors with the possibility to experience nature without destroying it. The latter principle is taken into account also in the transportation of the visitors to the famous cliff in the National Park. Environmentally friendly transport systems will be applied in order to minimise the individual motor vehicle traffic. The overriding goal of the centre is to show people how attractive and exiting a National Park can be in order to make them ambassadors for the nature of Rügen.



### 39. THE WALLNAU WATER BIRD RESERVE

The Wallnau water bird reserve is located at the western coast of Fehmarn Island and represents an exemplary concept of combining nature protection and environmental education. The area of 297 hectares is rich in different structures of wetland and used for resting and breeding by many waterfowl.

Since 1976 the German NGO Naturschutzbund Deutschland (NABU) is managing the area, which encloses many former ponds, reeds, meadows and small woods. About 80 bird species are breeding here, among them there are Greylag goose (*Anser anser*), avocet (*Recurvirostra avosetta*) and bittern (*Botaurus stellaris*).

In spring and autumn they are joined by great flocks of migratory birds as well as by many winter guests. For ornithologists, Wallnau is a paradise, but also those interested in amphibians and insects are fascinated by seeing species like Egyptian toads (*Bufo viridis*), edible frogs (*Rana esculenta*), leaf-cutting bees (*Megachile sp.*) and variable damselflies (*Coenagrion pulchellum L.*).

Not only animals and plants, but also humans are welcomed guests in Wallnau. Each year more than 30 thousand visitors study birds from inside the observation huts, so-called hides. In this way, the bird watchers can observe the behaviour of many rare species from a very short distance without disturbing them. In the information centre visitors can learn about the plants and animals of Wallnau and other parts of the Baltic Sea coast. Well planned nature protection and guided visitor education proves to be a successful concept already for 25 years, performing as an example worth following.

#### **40. SUSTAINABLE HERRING FISHERY ON RÜGEN ISLAND**

A sustainable fishing sector around the Greifswalder Bodden is aimed to be established in the framework of a research project at the University of Greifswald, funded by the German Environment Foundation in Osnabrück. As the Greifswalder Bodden, a shallow lagoon, is the main spawning ground for the herring stock of the Western Baltic Sea, fishing by static gear is feasible and ecologically acceptable during the spawning season from February to May in this area.

Fishing with static gear, e.g. gill nets or traps, provides three ecological advantages: gill nets in particular are highly selective, by-catch of birds and marine mammals especially is very low and the by-catch can even survive in traps.

The economic point of view is opposite: as the large-scale fishing is financially supported by the EU, the small-scale fishing of individual fishermen does not prosper. Therefore an economic scenario to estimate the funding needed to maintain ecologically sound practices of small-scale fishing was composed. Another way to improve the economic situation of local fishermen is to certify the herring caught in a sustainable mode with a widely recognised eco-label and sell it at higher price. The Marine Stewardship Council attempts to realise the eco-labelling of sustainably caught fish. At the moment the marketing strategy is about to be analysed.

The overall aim of this project is to establish a sustainable fishing sector in this region of Rügen that would meet the future needs of traditional fishery as well as guarantee the maintenance of the splendid nature of Rügen Island.

## GERMANY: RED SPOTS

### 41. HARMFUL INDUSTRIAL INSTALLATIONS IN LUBMIN

Lubmin village is located in the very north-east of Germany on the Baltic Sea coast. The village has a long history as a site of nuclear industry. Since 1990 the Greifswalder Bodden nuclear power plant has been the pride of the former German Democratic Republic. Then it was closed down because serious safety lacks were detected in the plant. The first plan after closing the power plant was to restore the site as a green meadow.

The present situation is far from reaching this goal. At present, one of the biggest interim storage for nuclear waste in Europe and a plant for processing nuclear mud are located in the area of the former power plant. These facilities



*Nuclear power plant Greifswald Lubmin*

were projected to be used only for the waste of the old Greifswalder Bodden power plant, but the actual capacities reach considerably higher levels.

Recently, plans have been proposed to use the area for extensive industrial projects. Among others the establishment of several gas power plants, a factory for processing wood, a terminal for a gas pipeline from Russia and a new harbour are under discussion. Together with the open capacities of the stor-

age for nuclear waste in particular the harbour would open the way to trade (e.g. to the former USSR areas) and store more and more nuclear waste. Lubmin might become the main centre for nuclear waste in the entire Baltic Sea Region and Europe. Environmental citizens organisations aim at resisting the realisation completion of this project.

## DENMARK: GREEN SPOTS

### 42. NATIONAL PLAN FOR SUSTAINABLE DEVELOPMENT

The Danish Ministry of Environment and Energy has developed a new national strategy for sustainable development that is expected to be adopted in 2001. The strategy outlines eight visions for creating sustainable development:

- To break the linkage between economic growth and environmental impact.
- To create a safe and healthy environment for all citizens.
- To preserve biodiversity and protect ecosystems.
- To improve resource efficiency.
- To make sure that Denmark plays an active role on the international arena.
- To make sure that environmental concerns are integrated into all sectors.
- To make sure that the market structures in place support sustainable development.
- To make the process of achieving sustainable development a common public interest.

This document reveals great prospective hopes and along with the European Union's new strategy for sustainable development, serves as a good basis for the future development in Denmark and in the whole Baltic Sea Region.

## DENMARK: RED SPOTS

### 43. INTENSIVE FARMING PRACTICES WITH HIGH NUTRIENT RUN-OFF TO THE BALTIC SEA

Danish agriculture is extremely intensive, being practised on two thirds of the entire Danish area. Denmark has the largest cattle-farms in Europe and exports more pork than any other nation in the world. Unlike most other countries in Western Europe, agriculture still plays a considerable role in the national economy. Mainly due to massive nutrient losses to both aquatic and terrestrial biotopes, Danish agriculture has drastic negative impact on biodiversity and on overall environmental quality. The most serious problem is agricultural run-off of nitrogen, however, also phosphorous has become a potential problem in recent years as a result of the concentration of pig farms in some areas of the country.

Biodiversity in Denmark has been experiencing degradation for a long time. There is barely any authentic wild nature left in Denmark, except for the coastline. Nature in Denmark mostly consists of semi-cultivated areas related to agriculture. These areas all suffer from excessive nutrient application, either by the disposal of manure and fertilisers that also reach field borders, hedgerows, streams etc. or in the shape of ammonia evaporation from housing, storing and application of animal manure. Despite several ambitious plans to reduce nitrogen losses, the results have been modest.

In addition, ground water quality is threatened by agriculture. Good ground water quality is of extremely high importance for Denmark as 99% of its drinking water is extracted directly from ground water sources. Moreover, many areas are particularly nitrate sensitive due to sandy soils. Therefore, ground water extraction in sufficient amounts in heavily populated areas might prove problematic in the future.



## SWEDEN: GREEN SPOTS

### 44. SUSTAINABLE WASTEWATER TREATMENT IN TROSA

Since 1993 Trosa municipality, south of Stockholm, has been working on implementing more sustainable waste water management system, including ways to achieve better water quality and recycling of nutrients from wastewater back to the farmland.

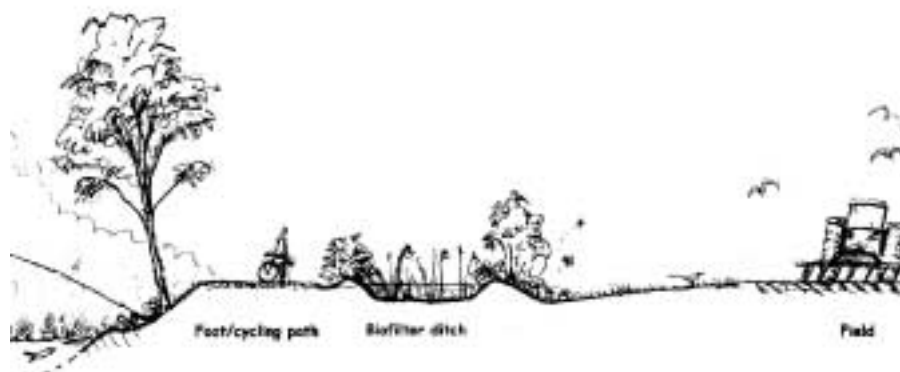
The wastewater treatment plants in Trosa and Vagnhäräd apply mechanical, biological and chemical treatment, arriving at the standard outlet levels (15 mg BOD/l and 0.5 mg total P/l).

To reach 50% of nitrogen removal, and substantial phosphorus and bacteria reductions, a natural biological system has been constructed in Vagnhäräd. After the treatment in the conventional management plant, the wastewater is treated in overland-flow wetland (nitrification) and pond (denitrification) for the nitrogen removal. The wetland treatment also secures that the hygienic requirements for bathing are met in terms of the water quality. The plan also strives to reduce the use of chemicals in the phosphorus removal phase (chemical treatment) by reconstructing the conventional biological step and using the wetland and pond system for phosphorus removal.

Trosa wastewater treatment system will also be complemented with a natural biological system like in Vagnhäräd. The intention is to use the wastewater from the ponds for the irrigation of energy forest. In this way, no outlet will reach the Baltic Sea.

#### Wastewater sludge from single-family houses

Trosa municipality has introduced a system where wastewater sludge from septic tanks of single-family homes will be collected and treated by the municipality. Normally, the sludge is taken to the wastewater inlet at the sewage plant. But in this case, the sludge will be stored for 6 months, and when agreed with farmers, it will be spread as a fertiliser on their farmlands. The nutrient load to the Baltic Sea would be reduced significantly.



*Principal section of the Vagnhäräd pond system*

### **Bio-gas from food residues**

An exemplary recycling concept will be implemented in autumn 2001. The remains of food from schools, restaurants, and other facilities will be collected and treated in a digestion process for bio-gas production. The residues will be forwarded to farmland as fertilisers.

If a significant number of municipalities of the Baltic region would have the same ambitions as Trosa municipality, we would have much better chances to solve the eutrophication problem of the Baltic Sea as well as the better water quality in rivers and coastal waters.

## **45. COASTAL MANAGEMENT PLAN FOR HANINGE AND NYNÄSHAMN MUNICIPALITIES**

Two adjacent municipalities in the Stockholm archipelago, Haninge and Nynäshamn, have completed a pioneering joint-project to protect and develop their coastal area. The project with its recommendations focuses on the preservation of this precious and unique archipelago.

Main topics in the plan are the following:

- Communications
- Coastal fisheries and water management
- Agriculture and forestry
- Shipping and navigation
- Baltic Sea as a recipient
- Ecologically sensitive areas
- Vast unexploited skerries and islands
- Cultural heritage
- Energy and windmills
- Noise
- Specific issues for Nynäshamn
- Specific issues for Haninge

The plan also deals with:

- Stockholm archipelago ecosystem
- Analysis of problems and possibilities to solve these
- Threats to shallow and deep sea water and bottom
- Action program for short-term and long-term efforts and measures

## 46. HILLEVIK NATURE SCHOOL AND MARINE FIELD STATION

### Hillevik nature school

The Hillevik Nature School is situated at the Gulf of Bothnia, 15 km north of Gävle city. It was founded in 1994 and has been supporting and supplementing the environmental education at primary and secondary schools.

The school is situated at the seaside and therefore, studying marine subjects has always been an important part of its activities. Studies on the local pelagic and bottom ecosystems have been conducted continuously during the years. Visiting groups from primary schools as well as from the University of Gävle can obtain knowledge on the dynamics of the coastal sea.

### Hillevik marine field station

The investigation of the prerequisites for combining the nature school and marine field station started in 1997. Several institutions, e.g. the cellulose industry, municipal companies, and the county government board revealed their support to these investigations that resulted in the establishment of the Hillevik Marine Field Station. Today the nature school and the field station exist in a symbiotic relationship.

### Studies on the coastal sea

The salinity in the Gävle Bight is slightly above 5 ‰, which results in the lowest species diversity of the entire Baltic Sea. Both marine and limnic species live under natural stress and changes in the marine environment might cause big disruptions in the species composition. The vegetation of the shallow bays and sea bottoms are continuously studied.

Since 1980 big changes have occurred in the bottom vegetation. The most striking change is the strong increase of the bladder wrack (*Fucus vesiculosus*). In 1989-1990 very favourable conditions endured for the increase and re-establishment of the *Fucus* vegetation. Reasons behind this are probably mild winters as well as the conversion of the bleaching process in the pulp industry (several studies have documented the sensitivity of the *Fucus* to chlorate). Another aspect of this positive situation might be that the consumers have chosen to buy the paper produced by using non-chlorine bleaching technology.

During the 1990s, the decrease of the benthic green algae *Cladophora glomerata* was noted. From an earlier total cover of the rocky bottoms in the outer archipelago down to a depth of two meters, *Cladophora* now covers only a narrow zone just under the surface. Instead, two filamentous genera of brown algae, *Pilayella* and *Ectocarpus*, together with the red algae *Ceramium* are the successors. The inner part of the archipelago is sparsely covered with *Cladophora*, while the green algae *Enteromorpha sp.* is dominating here.

### 47. NEW HARBOUR SOUTH OF STOCKHOLM THREATENING IMPORTANT NATURE CONSERVATION AND RECREATION AREAS

The Stockholm harbour handles about 8 million passengers and 7 million tons of goods every year. The turnover of the harbour tends to increase. Eighty percent of the vessels calling at Stockholm are so-called Ro-Ro ferries, which combine passenger and freight transport. Ships arrive at the centre of the city generating a flow of heavy trucks through the most densely used streets in the country. Only a very small portion (20%) of this traffic has any relation to the Stockholm area. Eighty percent of the trucks come from or are going to the other parts of the country, to Denmark or even further. The traffic of container ships is also increasing and there is not enough space in the harbour to handle the estimated growth.

Therefore, the Public Port Authority is planning a new deep-water port at Norvik, about 65 km south of Stockholm. The idea is to rearrange the distribution of goods in central Sweden, and in Baltic States, Poland and Germany to the Norvik port. According to the preparatory estimations of the Public Port Authority about the profitability of the new port construction, a new highway (E4-South) is required, that will be routed over the beautiful Mörkö Island and its nature conservation and recreation areas. From the environmental point of view, it would be rational to move handling of goods from the port of Stockholm to the ports situated nearer to the final destination of the freight. Ro-Ro ships mostly come from the east and are going south and the best solution would be to direct those vessels to the ports in Germany or Poland. Container ships come mostly from the south and are destined to the Stockholm region, containers therefore should be handled in a port close to the region. But instead of building a new harbour, which leads to the destruction of an important and beautiful landscape it would be much smarter to use the capacity of the existing port at the Swedish eastern coast.

The plans of the Stockholm Port Authority show that without proper planning of location of harbours, great part of the environmental benefits connected to shipping would be eliminated by the impact of the activities on land connected to the ports. A comprehensive spatial planning is necessary to obtain optimal solutions.

### 48. HOBURGS BANK - IMPORTANT BIRD AREA SUFFERING FROM SHIPPING

The Hoburgs Bank, located in southern Gotland, is a mosaic of sand and gravel banks, with water depth varying between 15 and 40 metres. Several surveys on wintering birds in the Baltic Sea have shown that Hoburgs Bank is of outstanding importance as a wintering area for long-tailed duck (*Clangula hyemalis*). In the winters of 1992 and 1993 almost one million long-tailed ducks were recorded here that makes up almost 25% of the north-west European population. The bank is also internationally important wintering site for black guillemots (*Cephus grylle*). Long-tailed ducks feed almost exclusively on blue mussels (*Mytilus edulis*), which are very abundant on the bank.

More than 40 thousand ships are passing Hoburgs Bank every year on their way to and from harbours in the northern Baltic Sea and the Gulf of Finland. Several hundreds illegal oil spills from ships are recorded annually along the shipping route by the coastguard. These recurrent spillages are causing the death of tens of thousands long-tailed ducks each year. In the winter of 1999/2000 almost 15% of the long-tailed ducks on Hoburgs bank became oil damaged. Surveys on Hoburgs Bank in the winter of 2000/2001 indicate that the number of long-tailed ducks has declined considerably since 1992/1993 and that the effects of illegal oil spills are as severe as in previous years. Therefore, there is an urgent need to establish protection measures on Hoburgs Bank and to move the shipping route eastward away from the banks.

## 49. INDUSTRIAL FISHERIES CLOSE TO COASTAL AREAS

Due to the fishing of under-sized sprat and herring in the Baltic Sea, the catches are mainly of the interest of fishmeal production and not for human consumption. This type of fishing is called fishing for reduction. After joining the EU, Sweden and Finland were the only countries in the union holding the permission for fishing for reduction. Recently also Denmark started fishing for reduction. The main reason for the growth of such practices is the heavily increased demand for fishmeal. The salmon production from the fish-farming industry that consumes fishmeal for fodder has increased notably over the last decades.

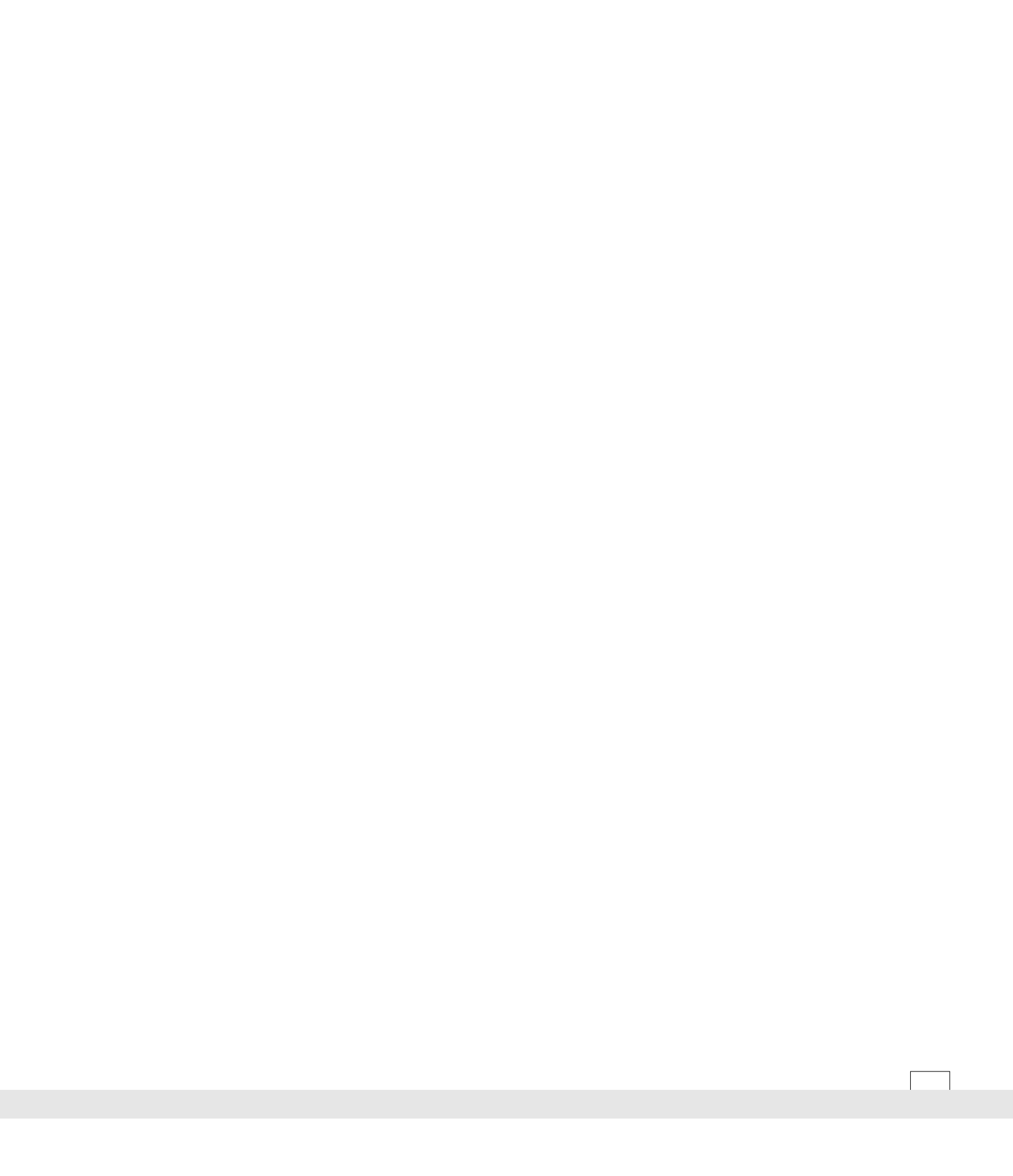
The by-catch in the fishing for reduction can also pose problems, as small-sized mesh is used, which significantly increases the risk of by-catch of other fish species that stay in the same area where fishing is performed. The by-catch in fishing for reduction is not well studied, but most probably there is a by-catch of cod, when fishing is performed in the same area where cod fisheries take place. In coastal areas the by-catch includes species like salmon, sea trout and pike.

Trawling for herring and sprat has been allowed very close to coastal and archipelago areas on the Swedish eastern coast. Such fisheries can destroy coastal marine ecosystem. Industrial fisheries should not be allowed to distract the coastal fisheries.

Extensive fishing for reduction with big trawlers has so far exhausted the Baltic herring population migrating from Bornholm Island to the Swedish eastern coast, north of the Öland Island. This herring population was an important resource for coastal fishermen of the Blekinge region in Sweden.

*CCB proposes:*

- *to give the states of the Baltic Region control on adopting conservation measures applicable to all vessels within their territorial waters;*
- *to recommend Baltic governments to stop fisheries using trawl and seine nets inside the national zone of 12 nautical miles;*
- *that licenses for fishing for reduction in the Baltic Sea should only be issued on a case-by-case basis and for limited periods only. Licenses should be regularly reviewed.*



# **Baltic Sea Hot Spots - Hazards and Possibilities for the Baltic Sea Region**

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