

Watersketch, The River Kokemäenjoki case study, second milestone 2005

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1. Introduction

The coastal northwest corner of the city of Pori is well known for its nature, landscape and recreational use. In these respects the area is nationally and even internationally significant. There are also substantial industrial activities in the area, and two harbours. The cultural heritage is seen as rich. The case study of River Kokemäenjoki deals with this area of land and water.

Before the project started, two background reports were produced. In 2003, 19 local stakeholders were interviewed in Meri-Pori. The report documented their opinions concerning the state of nature conservation, land use problems, and desired directions of development (Kivinen & Hiedanpää 2003). In 2004, the structured interview-study focused on site-visitors' preferences on recreation, landscape, and desired future. A total of 279 visitors were interviewed in Meri-Pori (Riikonen et al. 2004).

General questions of Kokemäenjoki case study are how the multiple interests take in consideration 1) in Kokemäenjoki Delta, 2) in inshore waters, 3) in the planning of traffic and 4) in Yyteri area.

2) The aim of study

The purpose project is to create a collaborative plan that facilitates multiple uses of land and water in the region. The area covers the delta of River Kokemäenjoki and Yyterinniemi Peninsular. In this project multi-criteria decision-making methods (MCDM) are applied in sketching possible alternatives or scenarios for controversial uses of land and resources.

3) The problems encountered

There are a lot of activities in Meri-Pori area and the area is limited. If one or several activities expand, it may cause problems the rest of activities. The areas of multiple interests were detailed in the meeting that was held on February 15, 2005. We call these areas of multiple interests by name hot spots.

The four meetings dealt with "hot spots". Hot spots were identified: Kokemäenjoki Delta, inshore waters, traffic and Yyteri area. The meetings were hold between May and June 2005. In the each hot spot, the current situation and conflicts will be identified and documented. The following activities influence strongly to the development of the hot spots:

Kokemäenjoki Delta;

1) Nature conservation, 2) flood protection, 3) experience and nature tourism, 4) waterways and 5) landscape.

Inshore waters;

1) Nature conservation, 2) seabed gravel extraction, 3) wind power farm, 4) recreation and nature tourism and 5) shipping.

Traffic;

1) Industrial and commercial activity, 2) harbour service, 3) road transport, 4) incineration and 5) the storing of seabed gravel.

Yyteri;

1) Tourism, 2) recreational use, 3) industrial and commercial activity, 4) harbour service and 5) nature conservation.

4) The impact matrix

In this case study Kokemäenjoki Delta is brought into focus. However, the whole drainage basin has an influence on the area of delta. That's the reason why the impact matrix deals with the whole River Kokemäenjoki.

River Kokemäenjoki has been changed strongly by human activities. There are several hydroelectric power plants along River Kokemäenjoki that influence both hydrological and morphological pressures. Agriculture diffusive and forestry bring significantly nutrient pollution and suspended load to the river. In addition, there are a lot of settlement and industry in drainage basin. Settlement brings nutrient pollution as agriculture diffusive and forestry. Industrial wastewaters content heavy metals and other pollutants.

It is a lot of problems, which can't solve locally in Kokemäki Delta. For instance, nutrient pollution and suspended load influence the quality of water. This causes problems with free-time activities as free time housing, recreation and nature tourism.

	Impacts =>	Physico-chemical quality elements										Biological quality elements					Hydromorphological quality elements					
		Transparency	Temperature	Oxygen conditions	Conductivity	Salinity	Nitrogen	Phosphorous	Suspended solids	Diss. org. matter/Humic subst.	Acidification	Priority substances	Other pollutants	Phytoplankton	Planktonic blooms	Macrophytes	Benthic invertebrates	Fishes	Hydrological regime	Morphology	River continuity	Tidal regime
Diffuse sources	Scattered settlements sewage																					
	Agriculture diffuse																					
	Forestry																					
	Urban storm waters																					
	Atmospheric deposition																					
Point sources	Industrial wastewaters																					
	Municipal wastewaters																					
	Mining																					
	Contaminated sediments																					
	Animal husbandry																					
	Solid waste management																					
	Aquaculture																					
	Peat production																					
Abstraction	Raw water supply																					
	Agriculture																					
	Industry																					
	Fish farming																					
	Hydropower																					
	Open cast coal mining																					
Morphological pressures	Dams (transversal)																					
	Weirs (transversal)																					
	Longitudinal embankments																					
	Straightening																					
	Dredging																					
	Shore protections																					
	Urbanisation																					
Hydrological pressures	Flow regulation (rivers)																					
	Hydropeaking																					
	Level regulation (lakes)																					
	Change in river profile																					
Other anthropogenic pressure	Recreation																					
	Fishing/angling																					
	Climate changes																					
	Land drainage (forestry)																					
	Overgrazing																					
	Introduced species																					
	Introduced diseases																					



5) Conclusions

At the beginning of the process controversial or conflicting values should also be fully articulated and documented. In our case the alternatives and the scenarios are based on the respects and knowledge of the participants. The idea is to create the credible alternatives or scenarios. Which are the best choices that our participants will decide.

6) References

Kivinen, E. & Hiedanpää, J. 2003: Meri-Porin luontoarvot matkailun ja ympäristönsuojelun ristipaineessa – Toimijoiden näkökulma virkistyspalveluiden kehittämiseen Kokemäenjoen suistossa ja Yterinniellä. Turun yliopisto, Satakunnan ympäristöntutkimuslaitoksen tutkimusraportti 1/2003, 54 s.

Riikonen S., Kankaanrinta S. ja Hiedanpää J. 2004: Kävijätutkimus Yterinniemen ja Kokemäenjoen suiston luontoarvoista ja alueen kehittämisestä. Turun yliopisto, Satakunnan ympäristöntutkimuslaitoksen tutkimusraportti 1/2004. 49 s.