

WP4 Work plan

Work plan 22-33 month, October 2010 – September 2011.

4.1.1. High spatial resolution (0.5 nm) coupled physical-biogeochemical model simulations of present and future climate slices: **month 30 (end of June 2011):**

a) Improved GETM: **month 23 (end of November 2010),**

b) Coupled GETM and 3D ERGOM: **month 24 (end of December 2010),**
Cooperation with A. Stips group in JRC, Ispra

c) Preparation of forcing, initial fields and boundary conditions for simulation future climate slice: **month 24 (end of December 2010),**

d) Simulation of present climate slice (1997-2006) with coupled GETM and ERGOM and validation: **month 26 (end of February 2011)**

e) Simulation of two 10-year future climate slices (2007-2030?) with coupled GETM and ERGOM: **month 30 (end of June 2011).**

4.1.2. Uncertainty estimates of simulated fields: **month 33 (end of September 2011).**

4.1.3. Distribution maps of water quality indicators in the coastal zone and open Gulf: **month 33 (end of September 2011).**

4.1.4. Recommendations for future country-wise actions on achieving and preserving good water quality of the Gulf management its marine resources: **month 33 (end of September 2011).**

T4.2: Impacts on Vistula Lagoon (1-33) (ABIORAS)

***Objective:* To assess the impact of climate change on the ecosystem in a coastal lagoon and on the socioeconomic local development**

Deliverables:

- model data sets of hydrography and water quality indicators in Vistula Lagoon (30)
hydrography – OK (MIKE21)

- water quality - ??? (which 1D biogeochemical model will be applied?)

- uncertainty estimates (33),

- Leaflet for stakeholders and public (in Russian/English) about consequences of the climate change for the Vistula Lagoon with segment about uncertainty (its sources)** - we need recommendations how to present for public so 'huge' uncertainty

- socioeconomic impact assessment (33):

- Attitude to climatic changes in everyday management practice at the level of Kaliningrad region municipalities** (already done together with T4.4)

- Analysis of strategies of socio-economic development of local municipalities in Kaliningrad Oblast and their sensitivity to climate change: profits and disadvantages** (draft prepared in Russian)

Task 4.3

- **Economic assessment of ecosystem goods and services of key ecosystem/habitats on the Polish Economical Zone based upon biological valuation maps in present and future climates (33)**
- Economic and social values included
- Biological valuation in future climate will be done. Input from WP2 is needed.

Ongoing work – Task 4.3

Impact on the Polish Exclusive Economic Zone

	jobs		dependance on env health	dependance on resources
Merchant navy	10 000		no	no
Salvage seaman, coastguard	1 000	no		no
Deep-sea fishery	2 500		high	very high
Inshore fishery	1 000		high	very high
Amber industry	20 000		no	very high
Shipyard worker	15 000		no	no
Coastal tourist services	80 000		very high	moderate
Sea fish processing	10 000	high		high
Coastal protection & inspection	1 000		low	no
Maritime education & research	1 000		low	moderate
Wind farms	???		low	no
Seabed mining	1 000		low	very high
Port services	12 000		low	no
Yachting & other sports services	1 000		high	no
Navy & border defence	5 000		low	no

Goods and services – general classification

Direct use value

Production Services
Food provision
Raw materials

Cultural Services
Cultural heritage and identity
Cognitive values
Leisure and recreation

Non Use value

Bequest & existence
Option use value

Indirect use value

Regulation Services
Gas and climate regulation
Disturbance prevention and alleviation
Bioremediation of waste

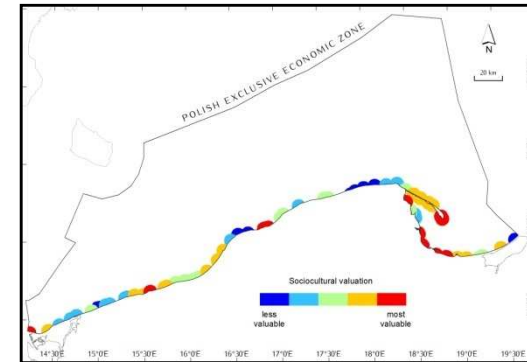
Supporting Services
Nutrient cycling
Resilience and resistance
Biologically mediated habitat

Goods and services – examples of valuation

Mineral resources	Gravel, sand	Limited exploitation (?)
	Oil, gas	Exploited (40 mln euro?)
	Amber	Extensive grey zone. Over 20 mln euro?
Biological resources	Comercial artisanal and sport fishery	Extensively exploited and regulated: 60 mln euro (100?)
Other	Mineral resources	Planned investment 5 bln euro

Socio-cultural values of the sea space

Cultural function	Ecosystem services	Assessment features
Community support function	Social relationship Cultural identity	Number of Google hits - how known the place is Ethnic community / local folklore
Aesthetic experiences	Enjoyment of scenery	Trailblazing
Recreation	Landscape, sea space, natural resources and variety in nature for potential recreation use	Tourists density Water sports availability, marinas Water quality (Blue Flag) Hea Wa Re cru
Spiritual.	Cultural heritage,	Nu



Ongoing work – Task 4.3

Impact on the Polish Exclusive Economic Zone

Level of spatial management

Legal act on Polish Marine Areas

and maritime administration

Ministry of Infrastructure

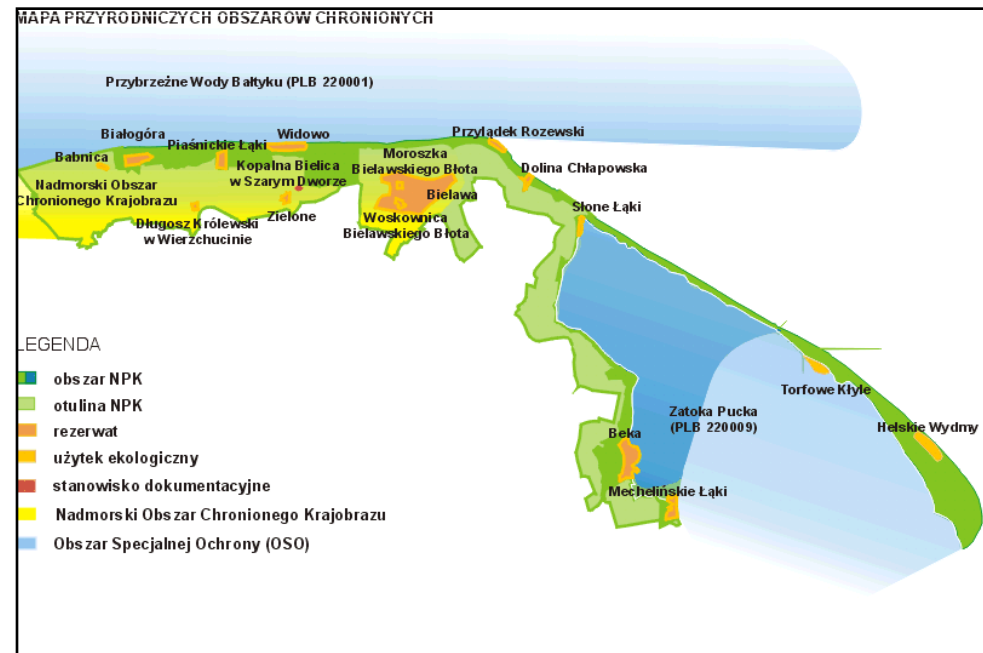
Maritime Offices

National Spatial Arrangement Policy

No legal frames for MPA

Coastal Landscape Park

Environment Impact Assessment



Project PlanCoast – pilot maritime plan in Poland: **western part of Gulf of Gdansk**

Large infrastructure & *Extraction of mineral resources*

Existing investments:

- SWEPOL (600 megawatts)
- Platforms – Petrobaltic, Baltic Beta, PG-1,

Planned investments:

- Wind power farms (approximately 1500 offshore stands)
- Liquid Natural Gas (LNG) terminal
- New navigation route between the city of Elbląg and the Gulf of Gdańsk
- Proposed gas pipe connecting Norway and Denmark with Poland
- New electric power station in Gdańsk



Ongoing work – Task 4.3

Impact on the Polish Exclusive Economic Zone

Literature review on the local effects of different sea level rise scenarios

List of the functional and structural links between analysed factors and processes

Output needed from other WPs: prediction of

- temperature rise,
- salinity drop – precipitation,
- wind patterns,
- oxygen,
- nutrient loads.



Task 4.4

- **Cost estimates of potentially required nutrient reductions to compensate for climate-induced changes in the water quality (33)**
- **Socioeconomic impact assessment (36)**
 - BNI will estimate the additional potential cost to obtain the basin-wide water quality targets of the Baltic Sea Action Plan due to climate-induced changes in the Baltic Sea. This will be done in two different approaches:
 - Approach one:
 - The change in the water quality for each basin will be obtained from the biogeochemical models in ECOSUPPORT. The worsening of the water quality in relation to the BSAP targets (delta change) will be used to approximate the cost per basin of the extra nutrient (N and P) load reduction necessary to obtain the water quality targets in a changing climate. The approximations will be based on the costs reported in the study by Katarina Elofsson (Baltic-wide and Swedish Nutrient Reduction Targets, Report to the Expert Group for Environmental Studies 2010:2, Ministry of Finance 2010).
 - Approach two:
 - In close co-operation with the Bonus project “RECOCA” (Reduction of Baltic Sea Nutrient Inputs and Cost Allocation within the Baltic Sea Catchment, co-ordinated by Christoph Humburg, BNI) the updated cost model will be applied to approximate the cost of the BSAP.

T4.4: BS-scale socioeconomic impacts (1-36) (BNI, ABIORAS, IOPAS, CSPR)

Analysis of action plan for Kaliningrad (which is now developing by authorities to meet the BSAP) versus possible local consequences of climate changes in Kaliningrad area