



## Baltic Lagoons Indicators (BLI). Example of Szczecin Lagoon identification

Tomasz A. Łabuz PhD

University of Szczecin, Institute of Marine and Coastal Sciences

ul. Mickiewicza 18, 70-383 Szczecin,

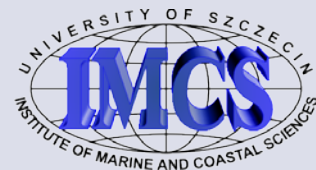
[labuztom@univ.szczecin.pl](mailto:labuztom@univ.szczecin.pl)



Part-financed by the European Union  
(European Regional Development Fund)



Web pages:  
<http://bramaswiny.szc.pl>,  
<http://polishdunes.szc.pl>





## Need of change in the thinking about environment...



So far were borders dividing  
interests & natural habitats

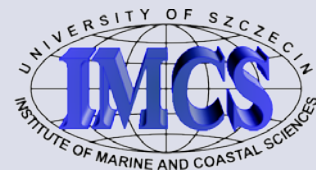
Now we are still building borders &  
fences by dividing environment into  
a parts, single elements.

But it is a one functioning body:  
Our human environment is also  
natural environment

Path of border zone on Uznam Island between Poland-Germany



Part-financed by the European Union  
(European Regional Development Fund)



development in areas of transitional waters is inevitable



Past Habitats



Future Gas Terminal



## Elements of the lagoon ecosystem



ARTWEI

settlement  
industry  
transportation  
tourism  
habitats  
landscapes  
species  
distribution  
border  
closed areas  
and potential  
threats...



Part-financed by the European Union  
(European Regional Development Fund)

All photos in the presentation from own  
collection and area of Szczeciński Lagoon



## Connections between environment elements



These elements form network of connections and influences

It is hard to talk about one of them when it may be influenced by other and can make pressure for another part of ecosystem

So one element can describe status or future changes of other one

It is whole ecosystem affecting and building our **transitional waters** environment and their condition

Can be described by the **indicators**





**Indicator** - Data which provide information about existing status or predict future changes.

It may be pointer (index) or instrument.

Can have descriptive form or numeric character

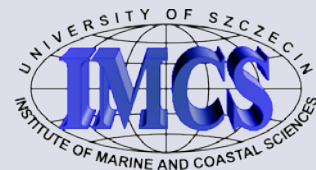
What they are talking, showing?

Why we need them?

What element of the ecosystem has weak indicators?



Part-financed by the European Union  
(European Regional Development Fund)





## Existing tools - instruments for indicating waters

Water Framework Directive  
(WFD)

Give an indicators for water monitoring

Integrated coastal zone  
management (ICZM)

Integration between land and water elements of the  
coastal zone

Integration between sectors & government decisions

HELCOM Commission

Give an indicators for Baltic Sea description  
and monitoring



Part-financed by the European Union  
(European Regional Development Fund)



## Helcom indicators for Baltic Sea



**Helsinki Commission**  
Baltic Marine Environment Protection Commission

Search HELCOM:  Search

**Front page**  
About HELCOM  
Vacancies  
Contact us  
The Helsinki Convention  
Ministerial Declarations  
Ministerial Meeting 2010  
Recommendations  
Baltic Sea Action Plan  
Groups  
Projects  
Publications  
Press office  
Meetings and Documents  
Manuals and guidelines  
Assessments and indicators  
Ecosystem health of the Baltic Sea  
Eutrophication assessment  
Hazardous substances assessment

### PROCEDURE FOR HELCOM MONAS INDICATOR FACT SHEETS

HELCOM MONAS 7/2004 (paragraph 5.12 (LD 9) of the Outcome of the Meeting) adopted the Procedure for HELCOM MONAS Indicator Fact Sheets as contained in this document.

#### 1. General procedures

The HELCOM MONAS Indicator Fact Sheets are to be developed taking into account the assessment needs of HELCOM and harmonized according to the needs of other international organizations, such as EEA and EU directives.

The target is that HELCOM will have a number of approved Indicator Fact Sheets available on annual basis at the HELCOM's website. The information contained in the fact sheets forms a fundamental basis for HELCOM other assessment products.

The Indicator Fact Sheets are produced and updated by responsible institutes. A list of these institutes and data centres providing Indicator Fact Sheets shall be kept updated by the HELCOM Secretariat and scrutinised by HELCOM MONAS on a regular basis.

#### 2. Guidelines for the Indicator Fact Sheets

The Indicator Fact Sheet should be scientifically sound and written in plain English.

The Indicator Fact Sheet should be based on time series and trends to greatest possible extent, so that changes in pressures and/or states can be evaluated.

Institute logos can be used to present the responsible institute(s) and data centre(s). Author name(s) should be given so that the sheets can be properly referenced.

The outline contained in Annex 1 should be followed in all fact sheets.

The basic report should be concise and preferably not longer than 5 pages, including figures. Links should be used to other relevant fact sheets or other information sources.

In order to make the Indicator Fact Sheets clear and reader-friendly, information could be presented, in addition to the basic report, in several linked hypertext documents - most important information on the "front layer" and the secondary information on deeper layers.

Helcom give us a lot of, let say plenty of indicators. Motly for scientists not for potential users. Also they are changing in time. Some of the mare being remowed some added

Procedure is not easy for ordinary man

Costs of the investigations may be to high for local authorities budgets

They may be not usable in lagoons

[http://www.helcom.fi/BSAP\\_assessment/ifs/en\\_GB/procedure/](http://www.helcom.fi/BSAP_assessment/ifs/en_GB/procedure/)



Part-financed by the European Union  
(European Regional Development Fund)





## 1. Environment condition

Environment health

Biodiversity & habitats  
condition/ diversity





## Environment health

Water quality and quantity

Coastal areas condition and development



Part-financed by the European Union  
(European Regional Development Fund)



## Water quality and quantity

Type	Description	Application
Water temperature	$^{\circ}\text{C}$ , temp. Gradient with depth	Important for plants and fish, circulation condition (vertical)
Quantity of oxygen	$\text{O}_2/\text{m}^3$ of water  Oxygen in bottom	Important for plants and fish
Acidification	Ph	Important for plants and fish
Salinity	$\text{NaCl}$ in ‰	Important for plants and fish, circulation condition (vertical)
Water hardness	Ilość wapnia	Important for photosynthesis for plant
Depth	Maks, średnia, min	The development of thermo-and halo cline, for the development and migration of fish

OTHERS

Salt water load

Bathing conditions

Transparency

Chlorophyll

River discharge



Part-financed by the European Union  
(European Regional Development Fund)





## Coastal areas condition and development



Type

Shoreline explication/development

Type of habitat on land

Land use

Ground water levels

Coastal processes





## Biodiversity & habitats condition/ diversity

biodiversity

habitats condition





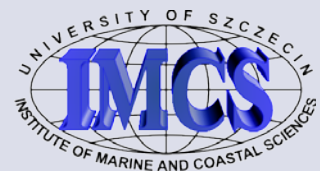


biodiversity



South Baltic  
PROGRAMME

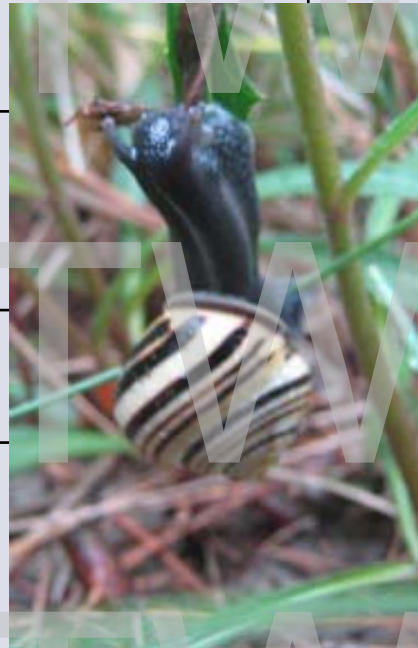
Part-financed by the European Union  
(European Regional Development Fund)



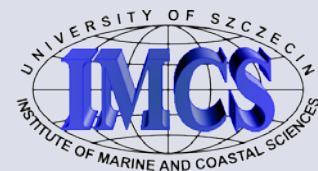


biodiversity

Type	Description	Application
Ecosystem development	Reletion of ecological gropups	
Fish condition	E.g. Fulton index: relation of fish lenght to its weight	
Types of fauna groups	Quantity of each group	
Ecosystem structure	Diversity, abundance, distribution, reproduction, density, etc....	



Part-financed by the European Union  
(European Regional Development Fund)





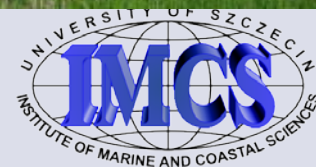


## habitats condition

Type
Non-indigenous species
Indigenous species (synanthropisation)
Loss of habitats
Fauna indicators...
Animals mortality
Also environment health



Part-financed by the European Union  
(European Regional Development Fund)





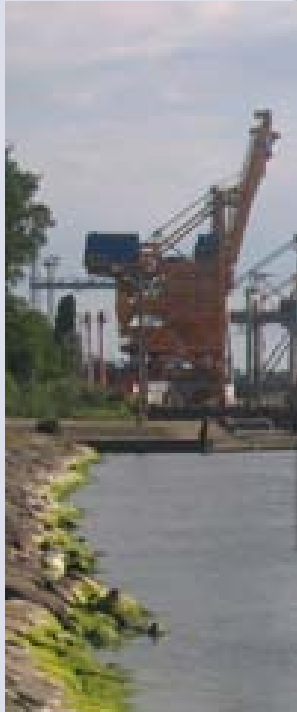
## 2. Threats, hazardous substances, development

Nutrients, organic  
pollution

Hazardous  
substances &  
events

Natural development  
pressure

Human development  
pressure





Human development  
pressure

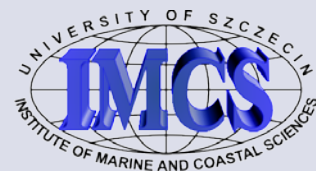
Seizing natural areas

Pollution

Negative behaviour



Part-financed by the European Union  
(European Regional Development Fund)





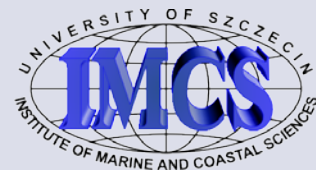
Natural development  
pressure

Climate change

Flooding from the  
land or sea



Part-financed by the European Union  
(European Regional Development Fund)



## Nutrients, organic pollution



Type
Nitrate in groundwater
Organic matter
Phosphorus
Discharge of polluted water
Loads of nutrients
Euthropication





## Hazardous substances & events

Type

Description

Water treatment

Water use by households, agriculture, industry etc

Heavy metals

Loads of heavy metals, quantity of it

Ammo

Places of appearance

Chemicals storage

Places of storage

Illegal waste disposals

Places



### 3. Management, water & land use, local authorities performance

Management & protection

Use & activities

Local authorities performance/ activities

Legislation (local, national & European)





## Use & activities

Settlement  
Industry/ harbours  
Agriculture  
Touristic zones  
Military zones  
Other closed zones  
Fishery areas, fishing nets  
Coast protection  
Areas of material sources  
Water consumption  
Public access  
Public activities  
Other: landfills etc



## Management & protection

Management, cooperation of the local authorities or cross border connections of the stakeholders associations etc...

Typ/ type
Progress in the implementation of the warter framework directive
Natura 2000
Nature reserves
Nature protection
Habitats or species protection
NGO activities
Cultural landscape values
Educational trails, quarters & centers
Management plans
Resolved conflicts



Part-financed by the European Union  
(European Regional Development Fund)





Local  
authorities  
performance/  
activities



Festiwal Wikingów. Wolin

Viking festival



Złot Żaglowców. Szczecin

Tail ship races

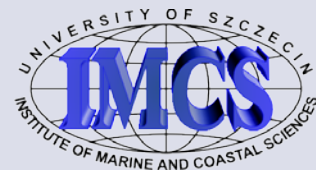


Legislation (local,  
national &  
European)

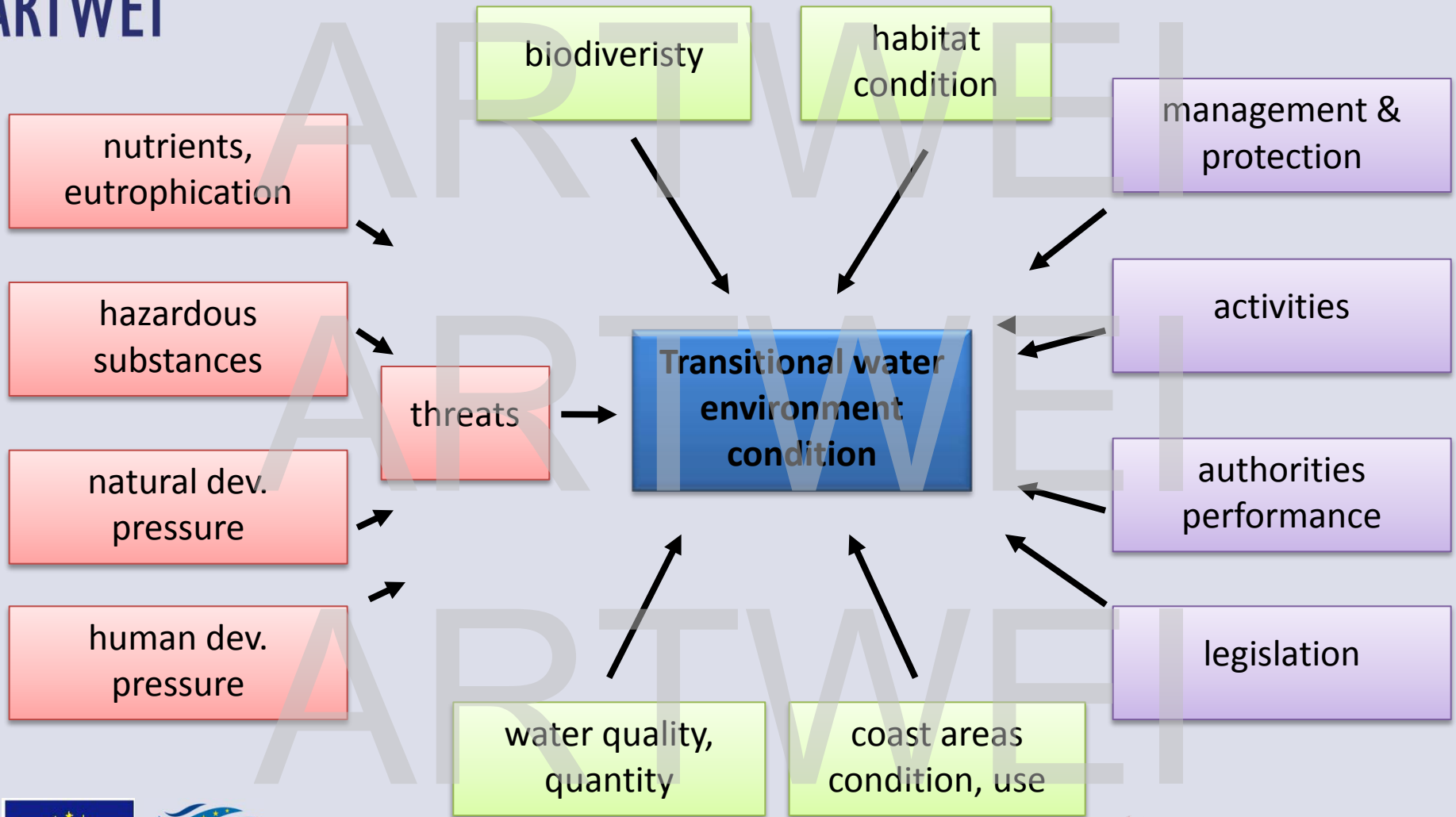
Environment protection  
Nature protection  
Natura 2000  
Construction law  
Waste storage legislation  
European Directives and Frameworks  
etc....



Part-financed by the European Union  
(European Regional Development Fund)



## Network of the indicators groups





**Package list of the indicators**

## **1.Environment condition**

### **1.1. Environment health**

1.1.1. Water quality & quantity

1.1.2. Coast areas condition & development

### **1.2. Biodiversity & habitats condition/diversity**

1.2.1. Biodiversity

1.2.2. Habitat condition/diversity

## **2. Threats**

2.1. Nutrients, organic pollution

2.2. Hazardous substances

2.3. Natural hazards (extreme events)

2.4. Human development

## **3.Management, water & land use, local authorities performance**

3.1. Management & protection

3.2. Use & activities

3.3. Local authorities performance

3.4. Legislation (local, national & European)

3.4.1. In area of infrastructure development

3.4.2. In area of nature protection

3.4.3. In area of good practice management

## **4. Education, knowledge?**



## Table of aplicable indicators for good practice or environment description

Potential use:	Activity X	Activity Y	Envrionment condition or response
Indicators list:			
Indicator 1			
Indicator 2			
Indicator n			



## Indicators-draft conclusions

The degree of understanding by local authorities, users of the lagoon

The degree of explanation/ description to users

Is the indicator:

1. Attractive to the eye?
2. Accessible to use?
3. Easy to interpretation?
4. Resolving problems, issues?

There is no need for creating a new tools we should check acciesibility for existing solutions or looking for gaps



Part-financed by the European Union  
(European Regional Development Fund)

