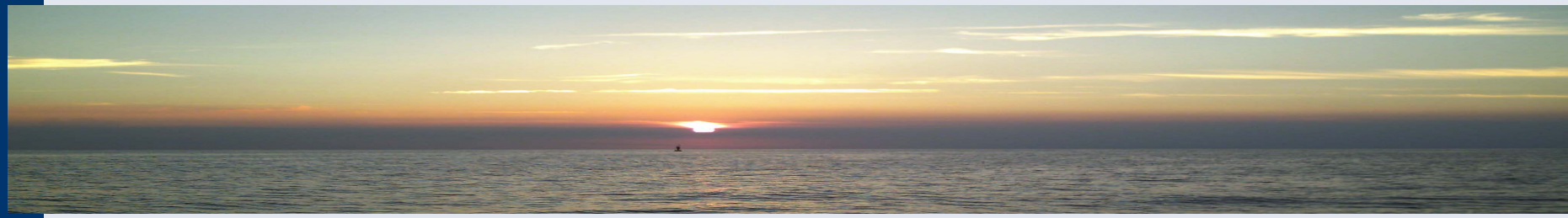
AMBER Annual Meeting 2010

Translation: Science into Policy



AMBER

***A**ssessment and **M**odelling of **B**altic **E**cosystem **R**esponse*

Hannah Brocke

Table of Contents

Why is it necessary to translate science into policy?






Changi

Risk?

But How?

tection needed?







Management on International Level needs policy decisions.

DPSIR Model

- Driving Force Pressure State Impact Response Model

- Simplified model to describe exposure and actions towards environmental problems.

- Used by EEA (European Environmental Agency), UNEP (UN Environment Programme) and BUWAL (Schweizer Bundesamt für Umwelt, Wald und Landschaft)

Referring to BAFU

DPSIR Model

- Driving Force Pressure State Impact Response Model

1 **Driving Forces**

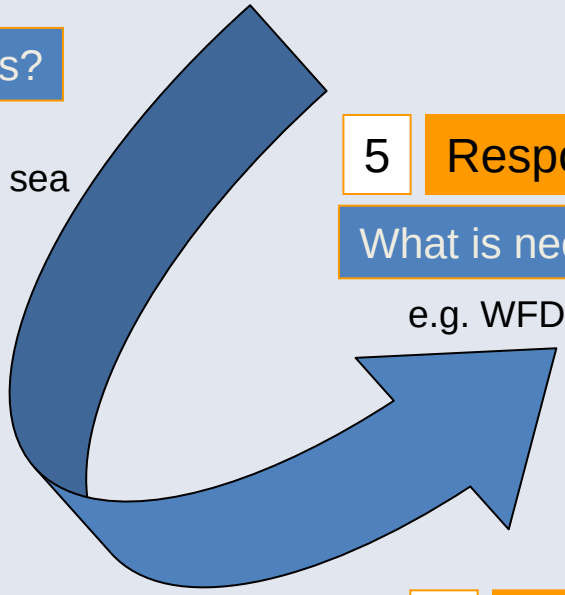
What cause the problems?

e.g. 85 million people in the catchment area of the Baltic sea

2 **Pressure**

What are the consequences?

e.g. waste water runoff



3 **State**

How is the environmental state?

e.g. nutrient enrichment in costal water

4 **Impact**

How does the environment change?

e.g. eutrophication
– marine ecosystem change

5 **Response by society**

What is necessary to change the impacts?

e.g. WFD guidelines

Referring to BAFU

EcoQO Overview

- Ecological Quality Objectives

1	**Strategic Goals**	What is the overall goal to achieve in terms of environmental, social and economic benefits?
2	**Ecological Objectives**	What has to be done to change the environmental condition(s)?
3	**Operational Objectives**	What is influenced by the Ecological Objectives? What are the components of EcoO?
4	**Indicators**	What shows the state/ change of the environmental conditions?
5	**Targets**	What needs to be changed/ reached until when? TARGET LEVEL IN TIME RELATION **EcoQO – Ecological Quality Objectives**

Referring to ICES Cooperative Research Report No. 273

EcoQO Example

- Ecological Quality Objectives

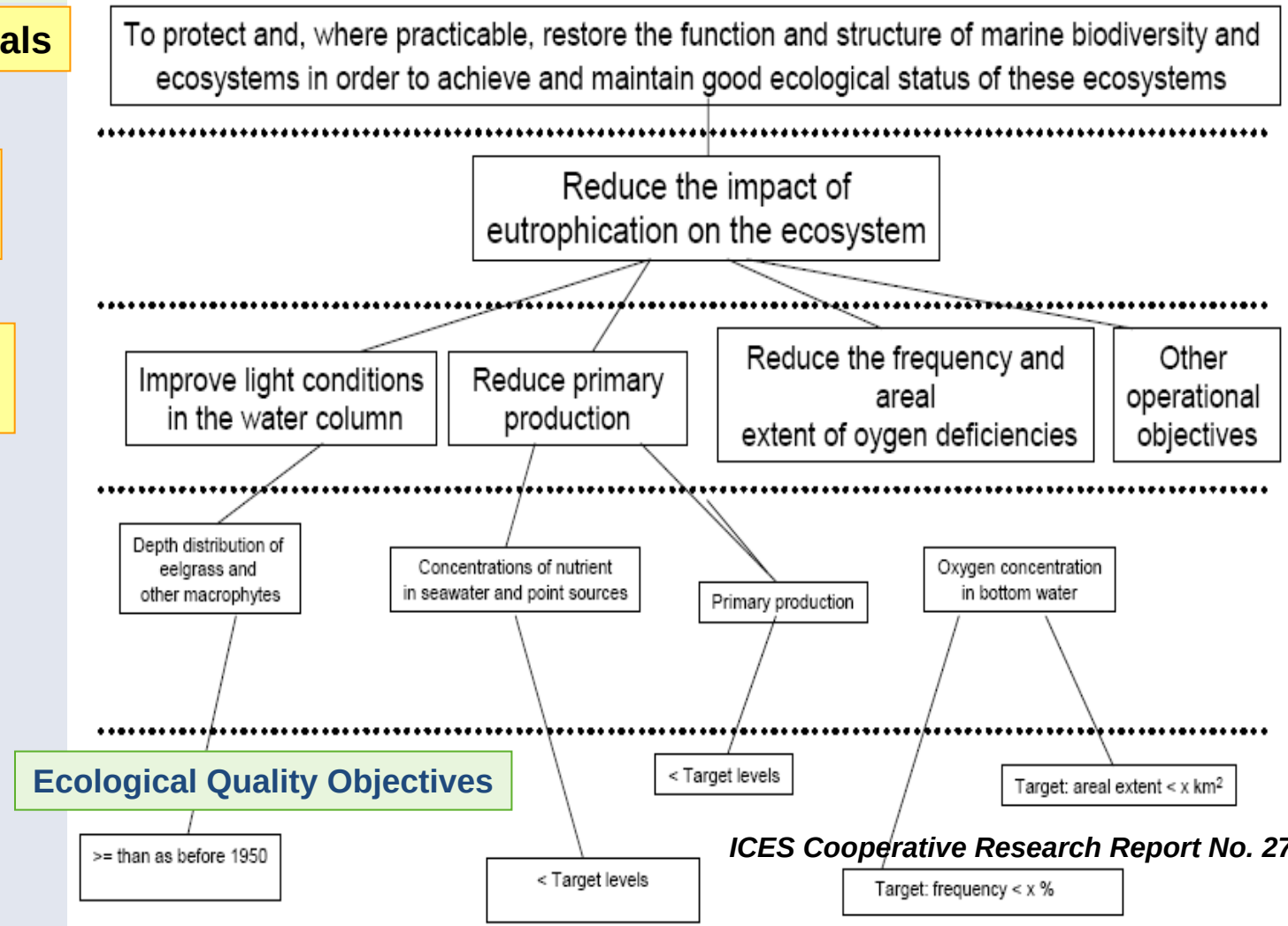
1 **Strategic Goals**

2 **Ecological Objectives**

3 **Operational Objectives**

4 **Indicators**

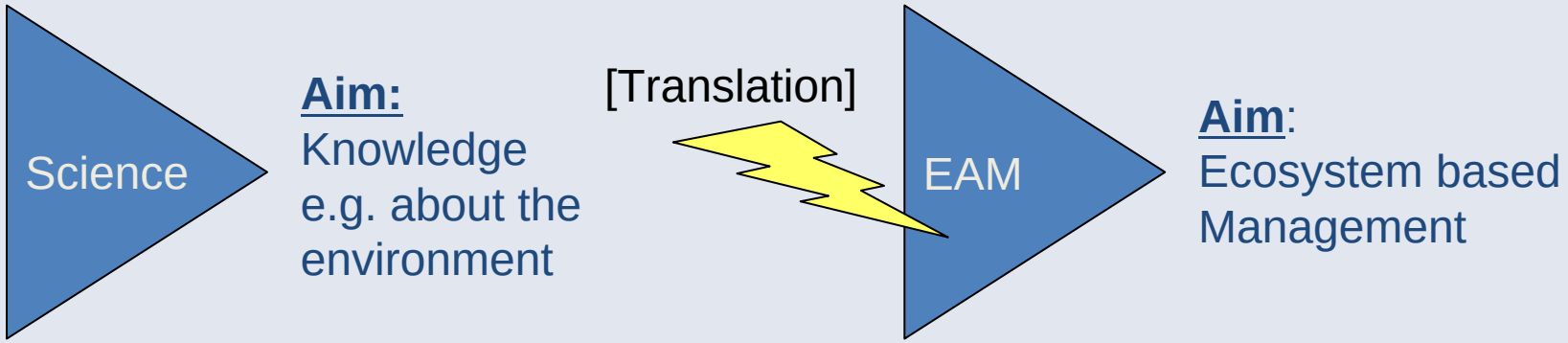
5 **Targets**



ICES Cooperative Research Report No. 273

EAM

- Ecosystem Approach to Management



- Part of European Marine Strategy (EMS)
- Established by ICES (International Council of the Exploration of the Sea) and European Commission

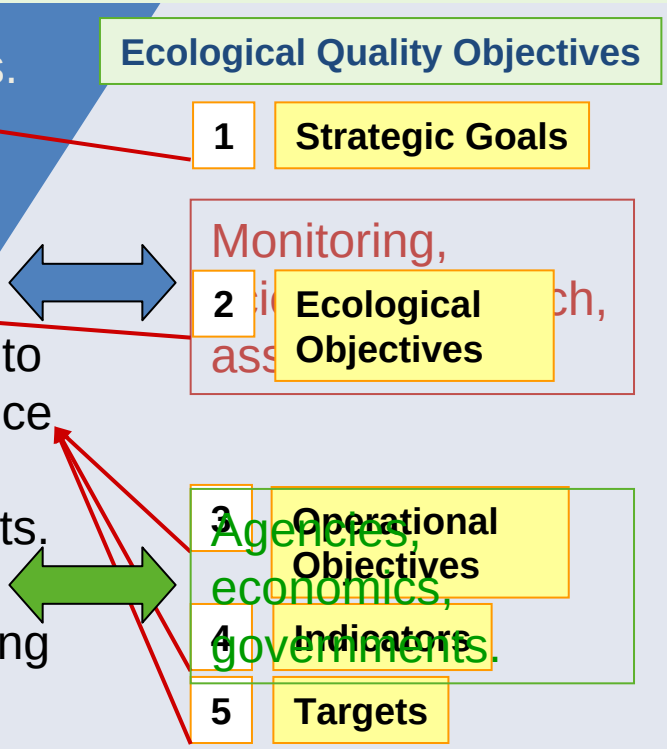
Referring to ICES Cooperative Research Report No. 273

EAM Concept

- Ecosystem Approach to Management

1. Evaluate the current situation and impacts.
2. Define the vision of the ideal outcome.
3. Identify ecosystem properties of particular importance.
4. Setting Ecological objectives.
5. Deriving Operational Objectives (reduced to the necessary) with indicators and reference points.
6. Ongoing management for moving to targets.
7. Periodic updates for comparing changes (environmental or human activities), revising strategies and gathering new scientific knowledge.

"...Integrated management of land, water and living sources that promotes conservation and sustainable use in an equitable way" (CBD, Convention on Biological Diversity)



Referring to ICES Cooperative Research Report No. 273

And what can AMBER do?

…

EcoQO…

Operational Objectives…

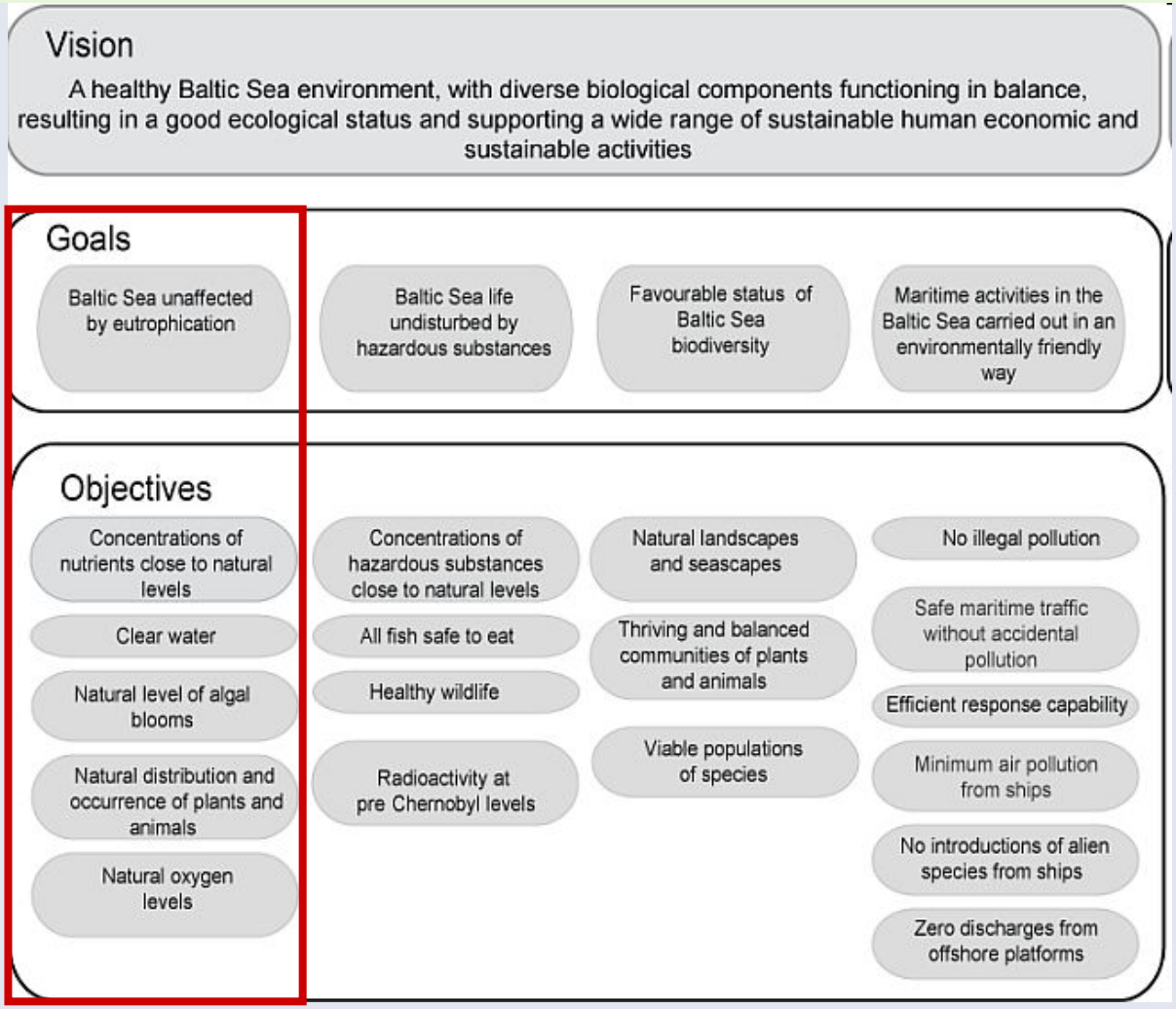
…

AMBER

HELCOM
- Helsinki Commission

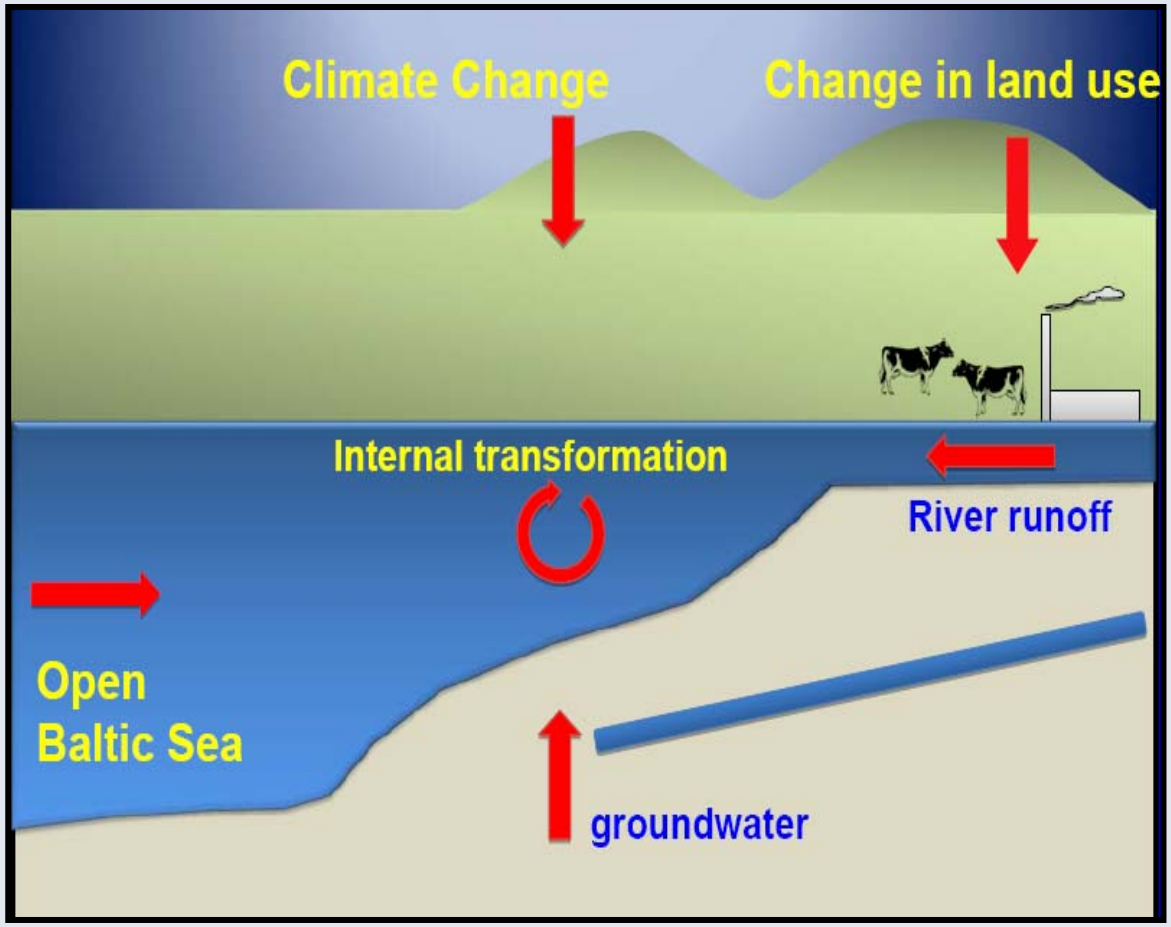
HELCOM – EcoQO

- Ecological Quality Objectives



HELCOM website

Possible Effects of Climate Change to the Baltic Sea

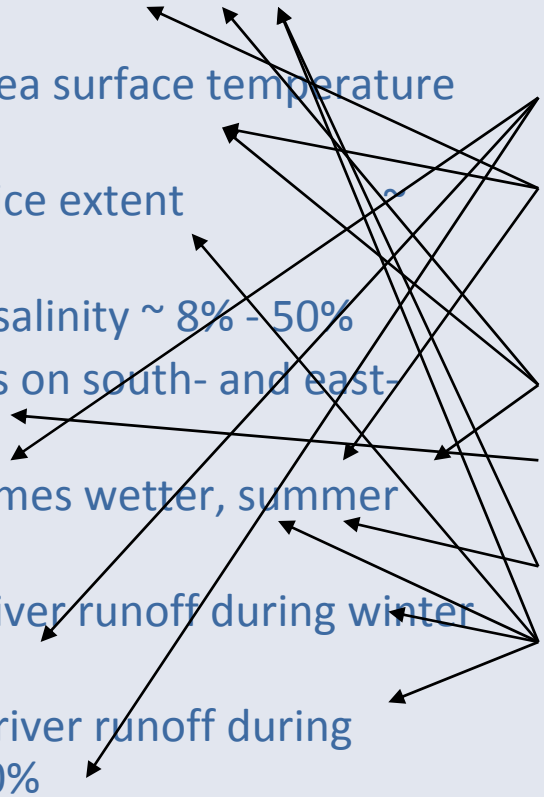


AMBER 2009

Climate Change Scenario

Projection of Climate Change (2100)

- Increase of air temperature ~ 3 – 5° C
- Increase of sea surface temperature ~ 2 - 4° C
- Decrease of ice extent 50% - 80%
- Decrease of salinity ~ 8% - 50%
- Risk of floods on south- and east-coasts
- Winter becomes wetter, summer drier
- Increase of river runoff during winter ~ 50%
- Decrease of river runoff during summer ~ 20%
- No robust results for wind and storms



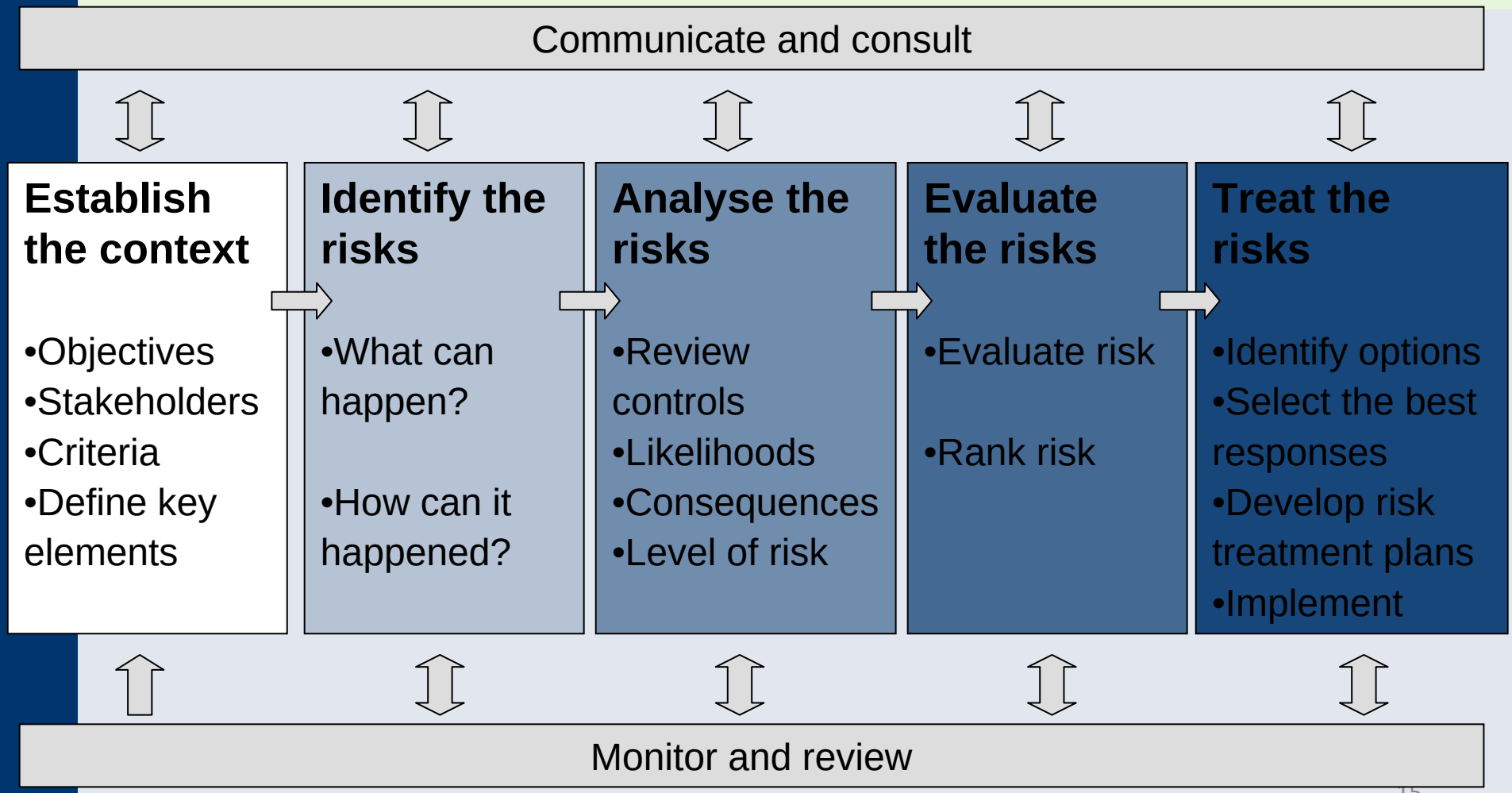
BACC 2008

Possible Effects:

- NO_3 eluviation of the soil
- Change of agricultural geography, result: agriculture move northward
- Change of agriculture, e.g. corn
- Change of waste water runoffs
- Watering of crops (groundwater)
- Groundwater: Direction of flow

Thank you for your Attention!

General Risk Assessment Process



Referring to AS/NZS 4360:2004

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EAM

- Ecosystem Approach to Management

Assessment, monitoring, scientific research will be required to support the Ecosystem Approach

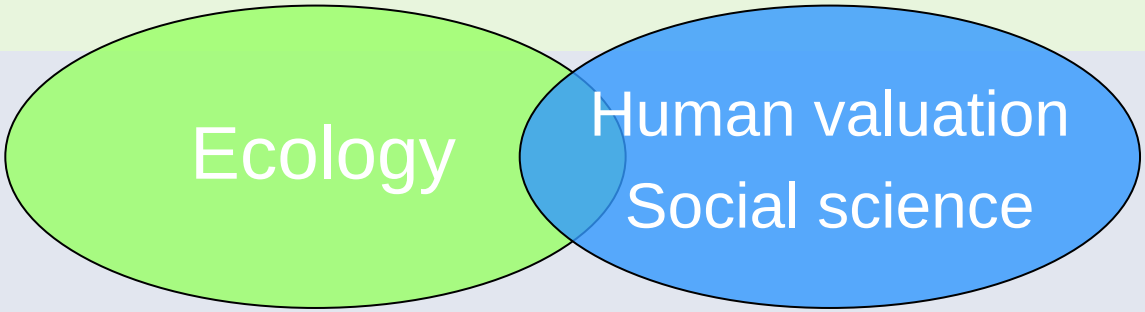
Steps 1-7:

- Evaluate the current situation and impacts.
- Define the vision of the ideal outcome (high-flown).
- Identify ecosystem properties of particular importance.
- Setting Ecological objectives (inter-compatible to each other).
- Deriving Operational Objectives (reduced to the necessary) with indicators and reference points.
- Ongoing management for moving to targets.
- Periodic update for comparing changes (environmental or human activities), revising strategies and gathering new scientific knowledge.

EcoQO

- Ecological Quality Objectives

Problems?



- the “ideal” ecosystem state is dependent on the specific management context (not the same quality standard)

- the definition of quality is sensitive to the identification of societal demands
- not necessarily all societal demands (quantitatively) can be met by an ecosystem

Referring to Paetzold