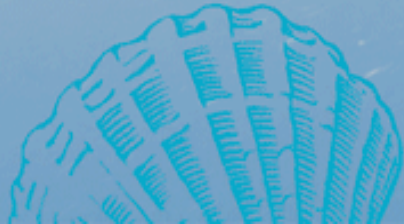
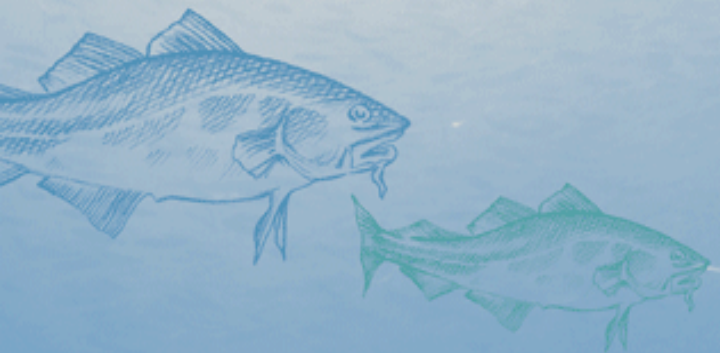




HAVFORSKNINGSINSTITUTTET
INSTITUTE OF MARINE RESEARCH



The Norwegian Ecosystem-Based Management plan for the Barents Sea; Strengths, Flaws and Further Developments.

GI van der Meeren,

G Ottersen , AB Storeng, CH von Quillfeldt, P Arneberg



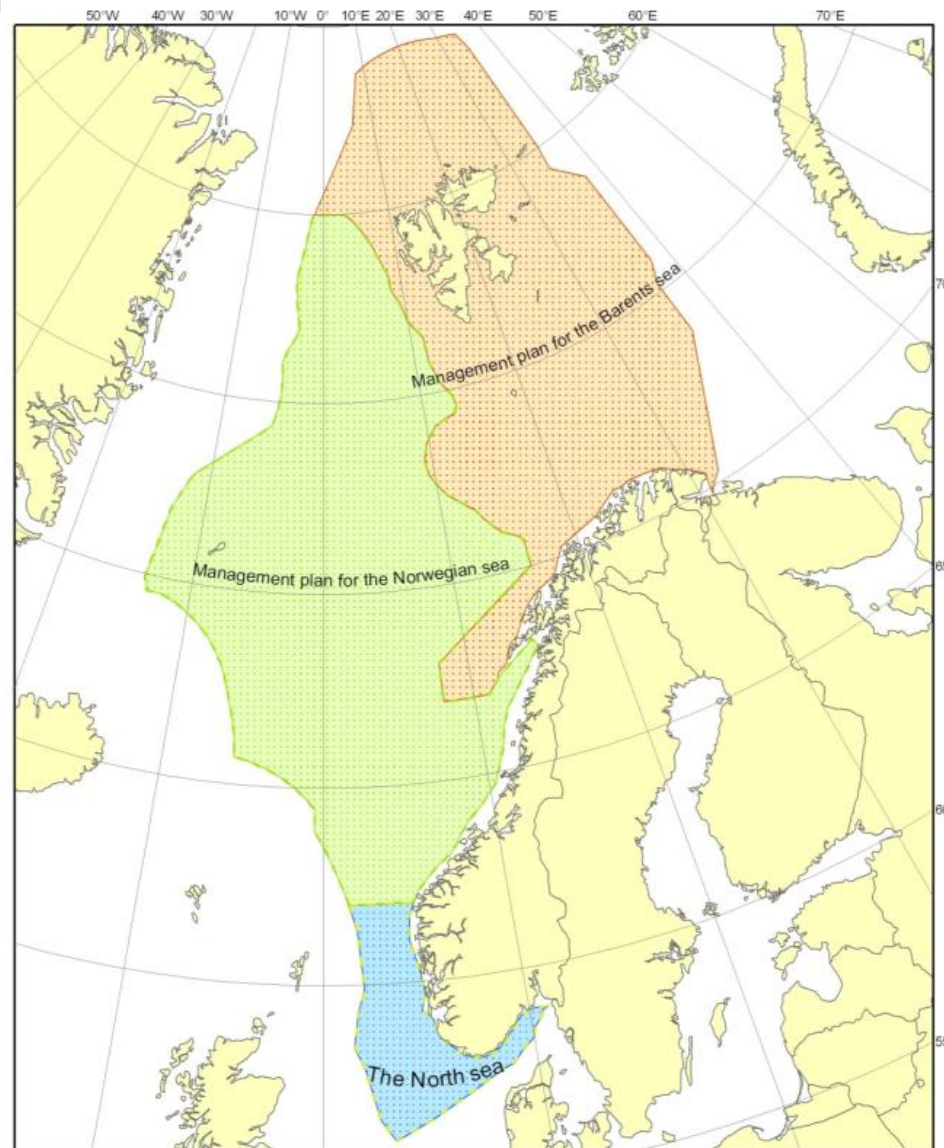
THE ECOSYSTEM APPROACH TO MANAGEMENT OF ARCTIC ECOSYSTEMS
PAME EA Conference August 2016, Fairbanks, Alaska, USA

- The Norwegian Management plans
- Outcome, improvements and flaws
- Indicators
- International approaches (NOAA and ICES)
- How to implement IEA in the Norwegian EBM

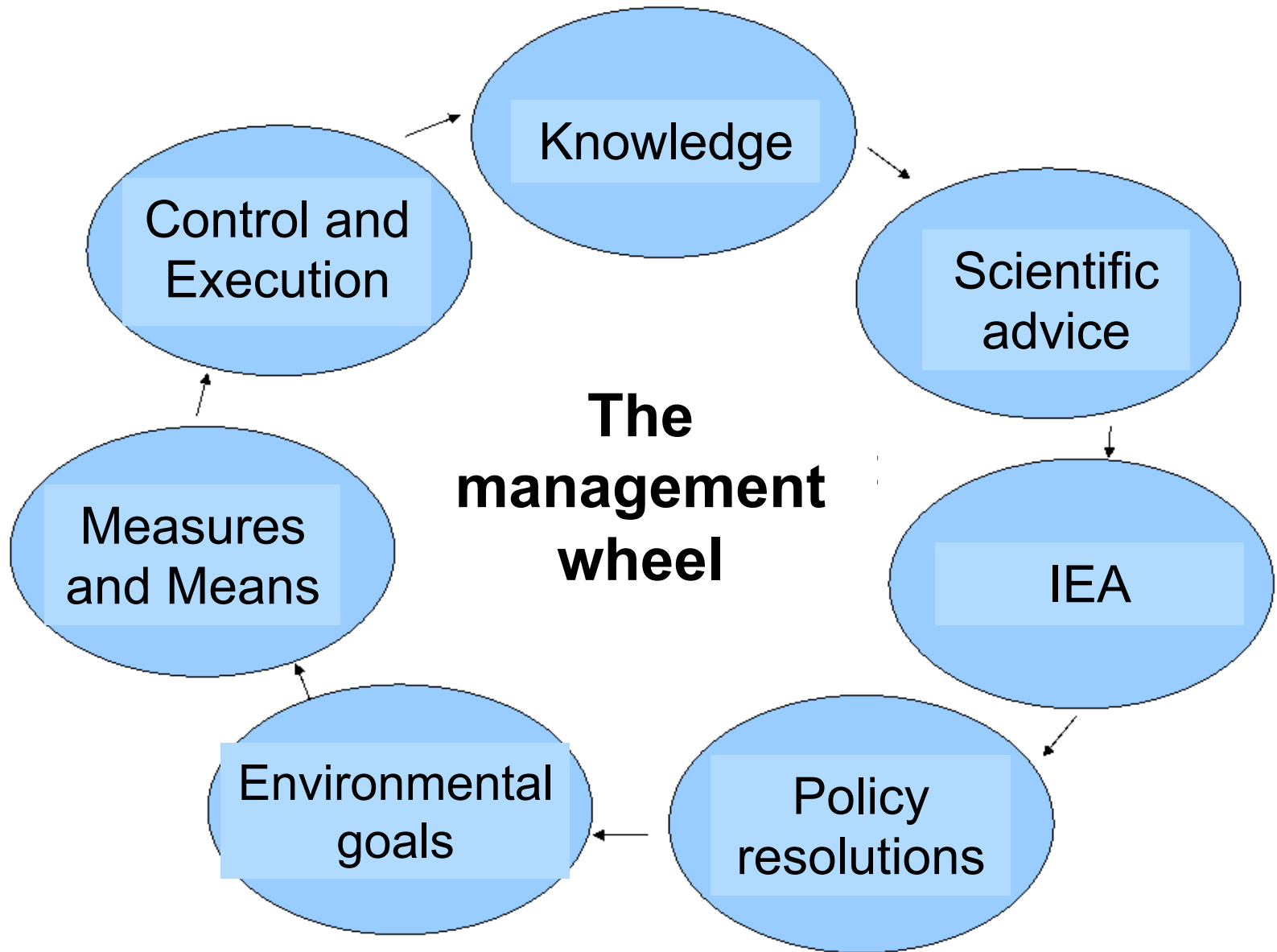


Purpose of the Norwegian ecosystem-based management plan:

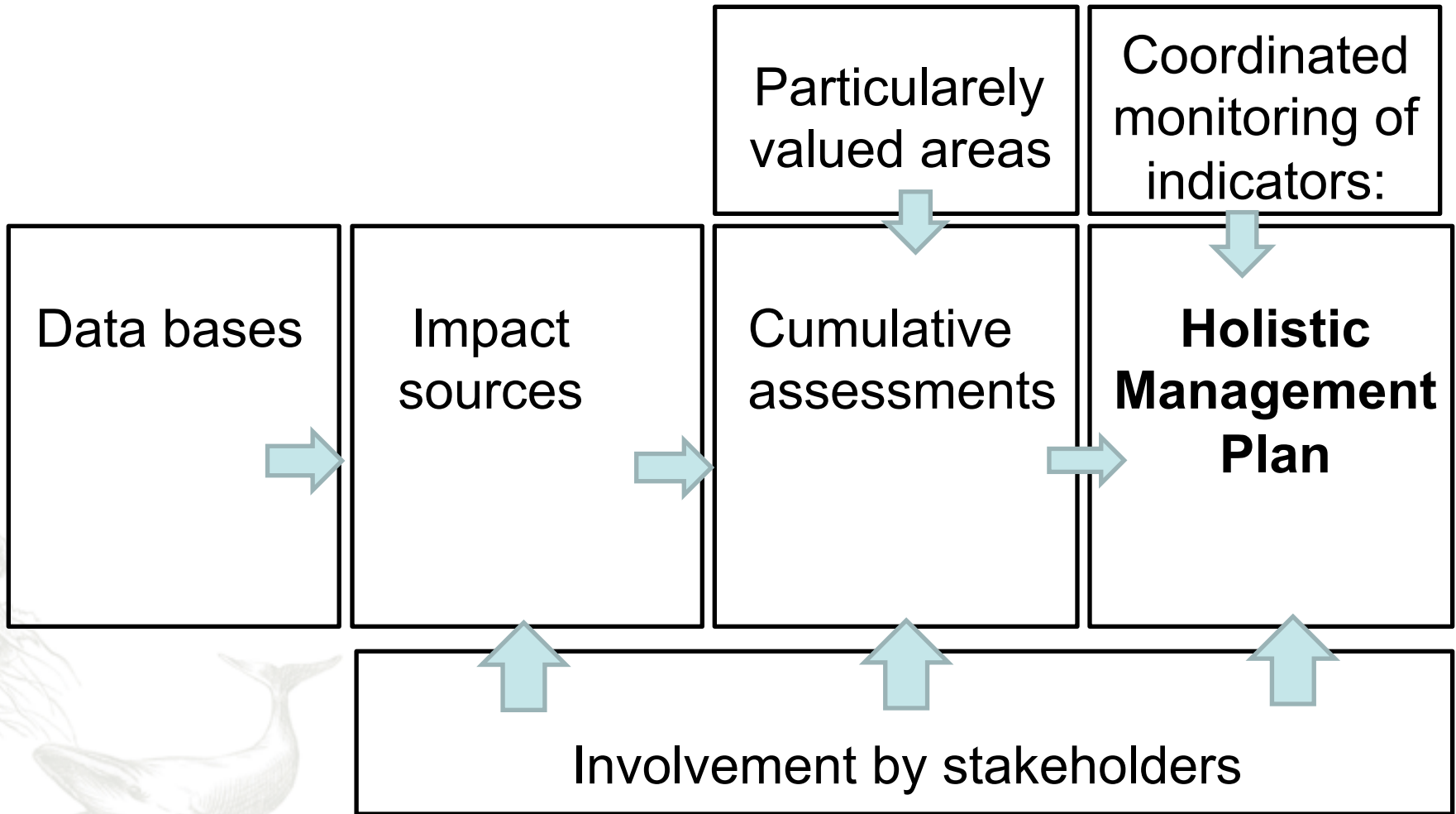
- i) To provide a framework for the sustainable use of natural resources and ecosystem services
- ii) At the same time maintain the structure, functioning, productivity and diversity of the area's ecosystems



EBM set-up in Norway



Process for EBM plans development



Organisation

**The intergovernmental
steering committee**
(5 ministries)



Management Forum
led by the Directorate
of Environment



12 units:

3 research institutes
9 management units
The Monitoring Group

The Monitoring Group
led by IMR

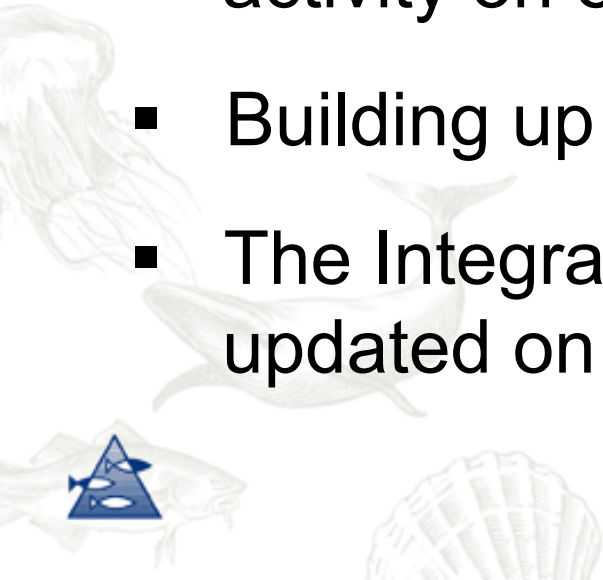


15 units:

7 research institutes
8 management units
The Management Forum

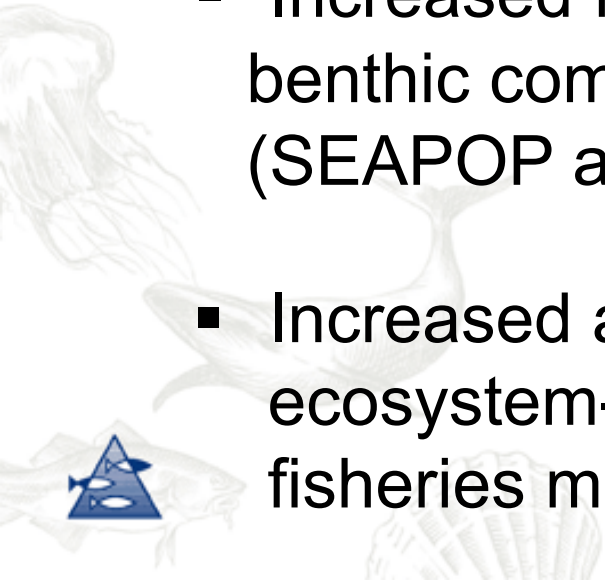
Knowledge based management

- Norway's management plans represent a strictly knowledge-based management regime
- They are based on currently available knowledge of ecosystem structure and functioning, and of the impacts of human activity on ecosystems
- Building up a sound scientific basis is essential
- The Integrated Management Plans are to be updated on a regular basis



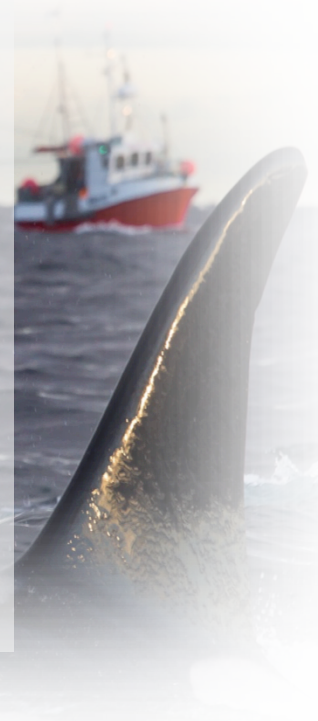
Some long-term positive results

- International ecosystem surveys
- Areas of particular value closed for petroleum exploration in Barents Sea
- Increased knowledge on pollutants distribution and levels
- Increased focus on sea birds and benthic communities and species (SEAPOP and MAREANO)
- Increased acknowledgement for ecosystem- considerations in the fisheries management



Focus

- Improve on the over-arching process and revisions of plans
- Research and monitoring
- Reports and publications
- **Continuos developments of the scientific basis, incl. evaluation of indicators**
- **Further movements towards Integrated Ecosystem Assessment**



How to assess not-quantified goals?

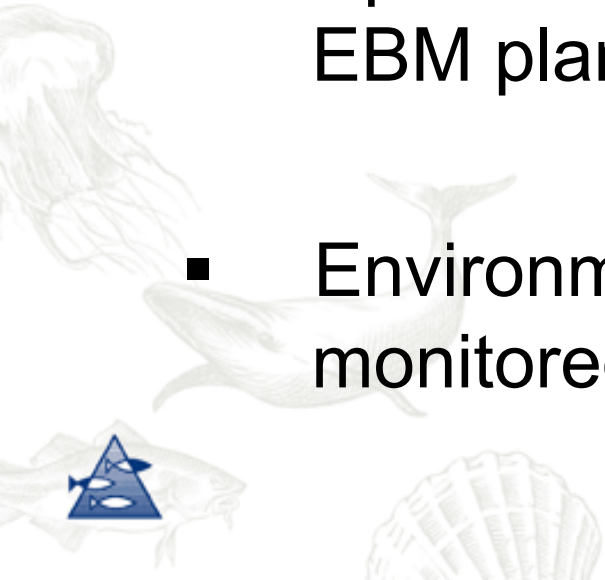
- Be specific on types of goals (strategic; operational)
- Indicators for evaluation of operational goals
- Develop indicator sets to be relevant for the specific goals
- Environmental goals to be linked to measures



Setting of environmental goals

Based on:

- International conventions and agreements and nationally decided environmental goals
- Specific regional goals defined by each EBM plan
- Environmental goals defined for monitored parameters (indicators)



Complexity in the Arctic

How to ensure Norwegian fulfillment of international obligations



Meld. St. 10

(2010-2011)

Melding til Stortinget

Oppdatering av forvaltningsplanen for det marine miljø i Barentshavet og havområdene utenfor Lofoten



IMR/PINRO
1
2008
JOINT REPORT SERIES



JOINT PINRO/IMR REPORT
ON THE STATE OF
THE BARENTS SEA ECOSYSTEM IN 2007
WITH EXPECTED SITUATION AND
CONSIDERATIONS FOR MANAGEMENT

IMR



Polar Research Institute of Marine
Fisheries and Oceanography - PINRO



**OSPAR
COMMISSION**



ARCTIC COUNCIL

Barentshavet



Bjørnøya

International Council for
the Exploration of the Sea

Conseil International pour
l'Exploration de la Mer



**ICES
CIEM**



Environmental monitoring
of Svalbard and Jan Mayen



Indicator selection

Present:

- Various selection criterias
- Expert advice
- Workshops
- Acceptance by the intergov. steering committee

Future improvements:

- Systematic, transparent and systematic process for selection
- Operational goals
- Dynamic process

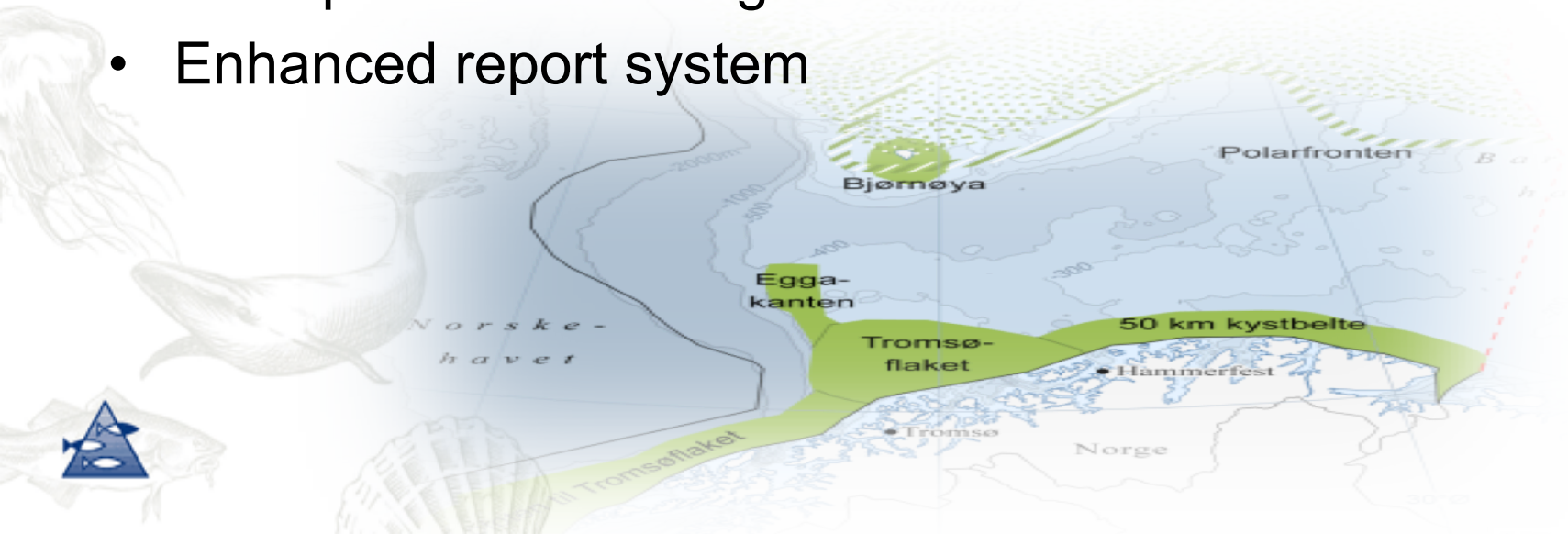


Integrated Ecosystem Assessment

Generic : Holistic statement of a defined area, incl. evaluation of man's impact and natural variability

Improving knowledge bases

- Relevant data series based on ecosystem knowledge
- Avoid excessive data and surveillance
- Transparent knowledge bases
- Enhanced report system



Integrated Ecosystem Assessment,

Key component of EBM approaches*

Some examples:

NOAA and ICES



ICES

International Council for
the Exploration of the Sea

CIEM

Conseil International pour
l'Exploration de la Mer

**Altvater et al (2011)*

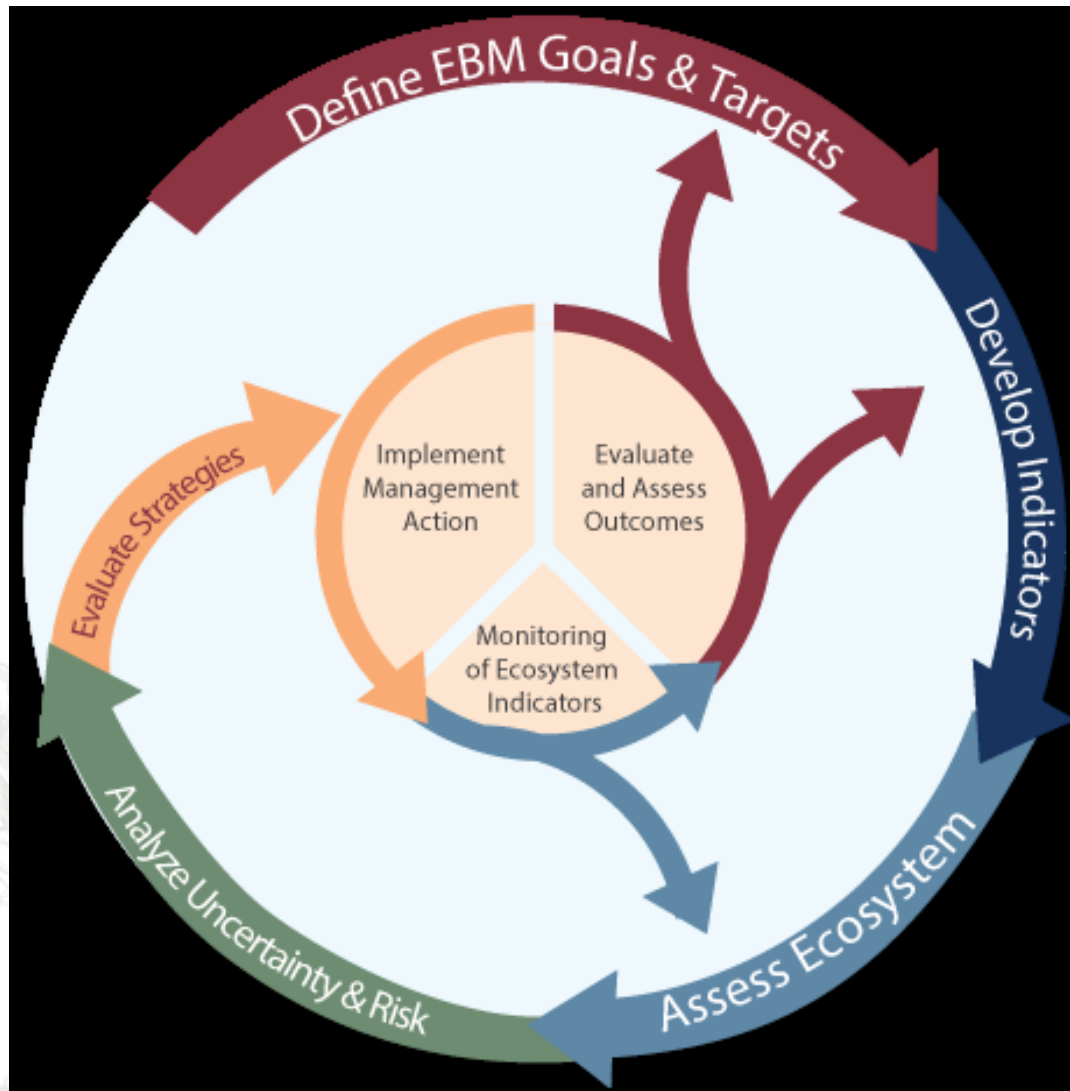
Integrated Ecosystem Assessment (IEA) in EBM

- A central component to achieve ecosystem-approach to management (*EAM=EBM*)
- A bridge between science and advice
- Explore trade-offs, including human dimensions
- May [initially] be a “modular” build up of assessment elements



Rebecca Shuford,
NOAA

NOAA



“IEA is an iterative
science-based
process that
provides products
to resource
managers who are
operating under
the principles of
EBM”

Based on Levin et al (2009)



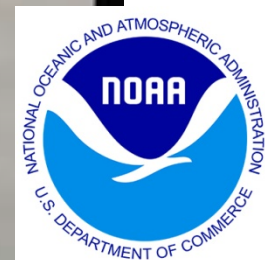
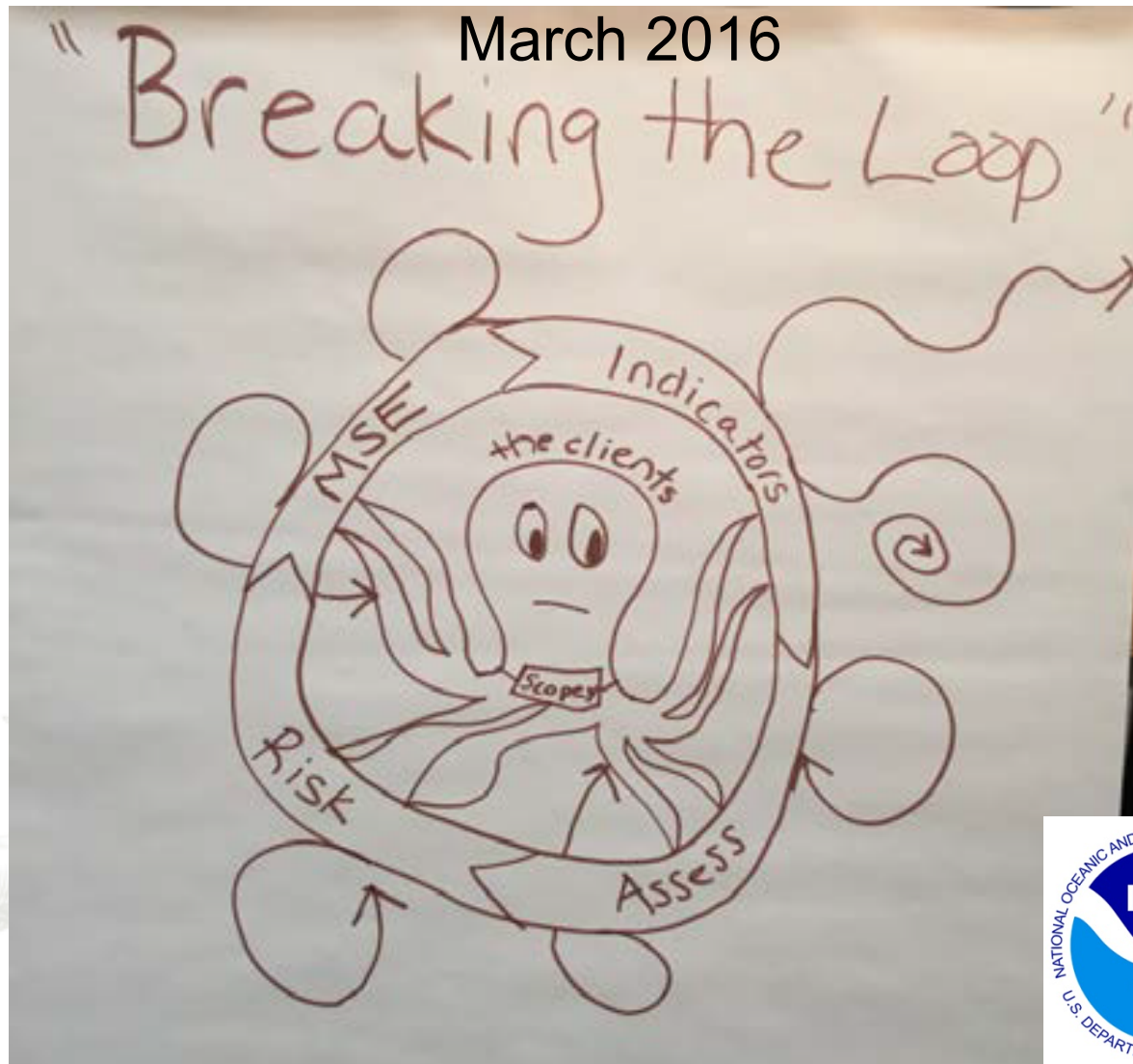
Kerim Aydin (NOAA)

: PAME IEA workshop

2014

"Closing the Loop"

NOAA Face2Face seminar, theme IEA,
March 2016



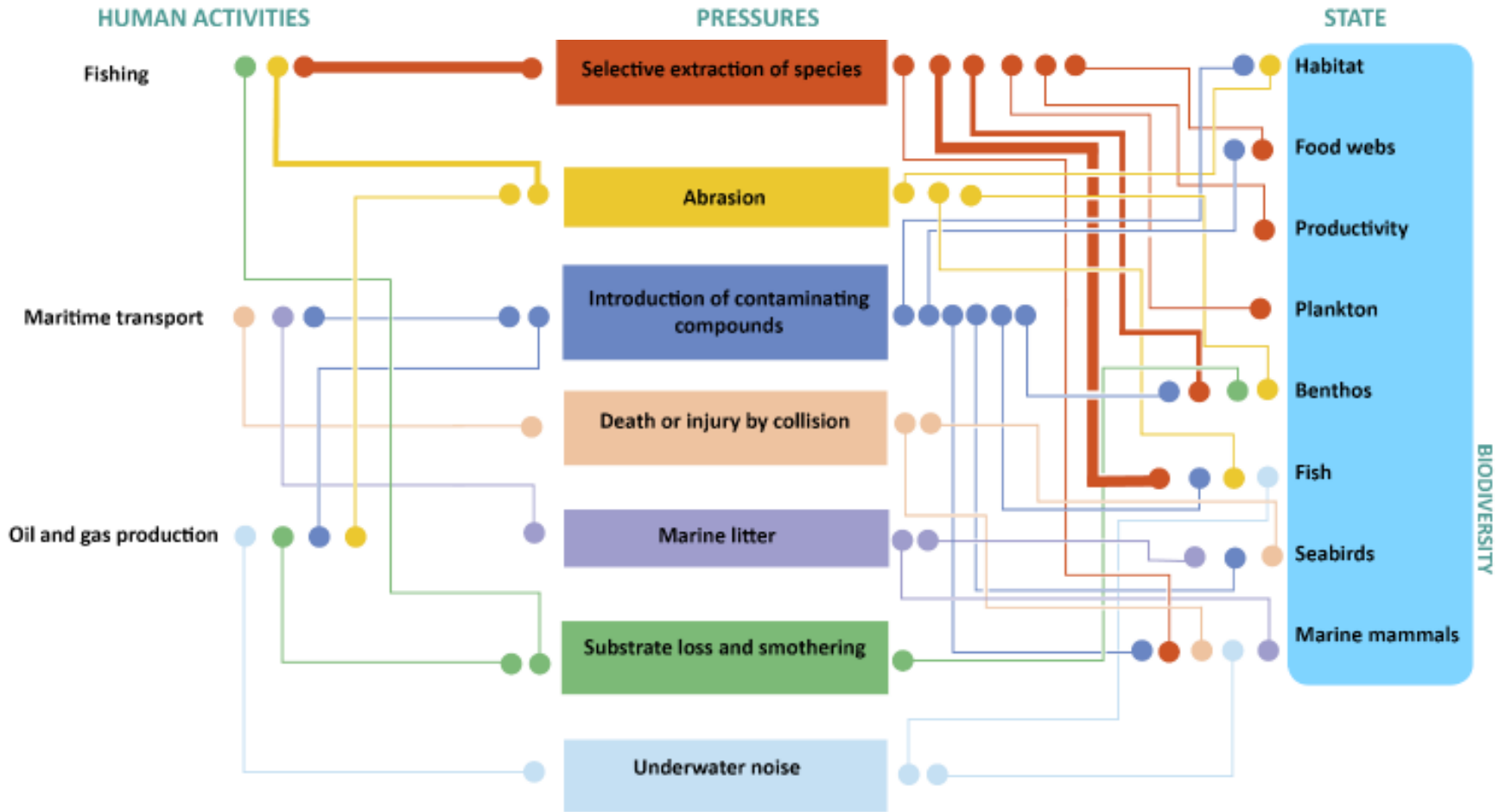
ICES strategic plan and IEA



”Building a foundation of science around one key challenge; integrated ecosystem understanding”

ICES

Barents Sea Ecosystem Overview, May 2016



Reports on the Barents Sea state

- Int. and nat. fisheries authorities
- Int. and nat. environmental authorities
- Stakeholders
- NGOs
- R&D journals etc.
- Public press releases



Way forward

Process for a generic IEA

- Relevance for stakeholders and NGOs
- Transparent and based on data
- Keep policy and science apart

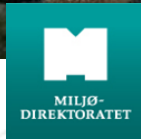
Goals and evaluations

- Specific (strategic; operational)
- Indicators fit for evaluation of operational goals
- Measures linked to environmental goals
- Regular goal evaluations





Thank you



HAVFORSKNINGSINSTITUTTET
INSTITUTE OF MARINE RESEARCH