Management tools and standards in support of Sustainable Development Goal 14 "Life below water"

OCTOBER 9TH TO 11TH 2018
MARINE AND FRESHWATER RESEARCH INSTITUTE
SKÚLAGATA 4, IS-101 REYKJAVÍK, ICELAND
Management tools and standards

➤ Why
➤ SDG 14 Life below water: Conserve and sustainably use the oceans, seas and marine resources

➤ What
➤ By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
➤ By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
➤ Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels
➤ By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
➤ By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
➤ By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation
➤ By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
➤ Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries
➤ Provide access for small-scale artisanal fishers to marine resources and markets
➤ Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want.

➤ How
➤ Standards, conventions, harmonization, risk management, technical measures, regulatory framework?
Risk Management

- ISO 31000 Risk management process
  - Risk assessment is scoped by the policy context
  - The output of the process is to make a decision regarding the course of action and implement the controls to reduce the uncertainties of achieving the objectives

- Risk Management in regulatory frameworks
  - The coherent application of risk management to regulatory work is intended to develop a well-balanced system, as opposed to one that veers between two extremes:
    - (a) Excessive or over-regulation, i.e., regulations that are too stringent with respect to the risk they set out to address, and
    - (b) Insufficient regulations, which fail to address risk and unnecessarily or inordinately expose citizens and economic operators

What is risks?
Operational and ecosystem outcomes

Assessing and managing risks of achieving SDG 14 targets

- Identify the risks to delivering some of the 10 targets of SDG14
- Assess worst case impact and probability of each risk (gross risk)
Risk management process

- What is the source of the risk?
- What is the causes of risk?
- What is the undesired event that would happen if the risk occurs?
- What are the consequences of the risk if it happens?
ISO 31000 Risk Management Process
IEC/ISO 31010 Bow-tie Analysis

1. What is the policy objective that would not be achieved?

2. What is the source of the risk of this event?

3. What could happen if this the policy objective is not achieved?

4. What could stop us from achieving the policy objective?

5. How could this cause be controlled to reduce the likelihood of this event occurring?
   - Prevention control

6. How could this consequence be minimized if this event occurs?
   - Mitigation control

7. How could this consequence be recovered from if the mitigation don’t work?
   - Recovery control

Impact of human activities
Pressures – Component - Function

Worse case scenario

- What is the worst thing that could happen?
- What would be the situation you would worry most about?
## Risk Criteria: Worse case scenario

<table>
<thead>
<tr>
<th>Maintaining Function</th>
<th>Changing Function</th>
<th>Loss of Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem function is maintained although there may be changes in the status of the ecosystem component</td>
<td>Ecosystem function systematically changes as the ecosystem component changes in the face of perturbation</td>
<td>Ecosystem function can no longer be supported by the ecosystem component</td>
</tr>
<tr>
<td>The ecosystem component resists or rapidly compensates in the face of perturbation so that it can be inferred that the ecosystem function it supports is maintained</td>
<td>The ecosystem component changes with perturbation, and is in states where decreases in function are generally likely to occur. Recovery of the ecosystem component is expected to be secure, but a period of altered status of the component is expected</td>
<td>The ecosystem component has reached a status where evidence indicates that the function can no longer be provided; OR The ecosystem component has been degraded to a status where recovery is no longer secure; even if the pressure is removed the loss of function will continue to accumulate</td>
</tr>
</tbody>
</table>

Assessing and managing risks of achieving SDG 14 targets

- Identify current controls (including legislation and regulation)
- Assess the reduction in impact and probability of each risk with the current controls (net risk)
Reducing risks

➤ How would you reduce the risks?
➤ What do you think you have to do to reduce the risks?
➤ Who should do something to reduce the risks?
EU Legislation & policies

➢ **Operational controls**
  ➢ More than 450 regulations as input controls, spatial and
temporal distribution controls and output controls

➢ **Management controls**
  ➢ More than 7000 treaties, agreements, directives as
management coordination measures, measures to improve
traceability, economic incentives, as well as communication,
stakeholder involvement and public awareness

EU Marine Strategy Framework Directive
Operational integration

Assessments to inform

Introduction of synthetic compounds
- Influence the amount of a human activity that is permitted
  - Ax VI Input control
  - Prevention control
- Influence where an activity is allowed to occur
  - Ax VI Spatial control
  - Prevention control
- Influence when an activity is allowed to occur
  - Ax VI Temporal control
  - Prevention control

Introduction of non-synthetic substances and compounds
- Management measures that influence the amount of a human activity that is permitted
  - Ax VI Input control
  - Prevention control
- Management measures that influence where an activity is allowed to occur
  - Ax VI Spatial control
  - Prevention control
- Management measures that influence when an activity is allowed to occur
  - Ax VI Temporal control
  - Prevention control

Introduction of radio-nuclides
- Management measures that influence the amount of a human activity that is permitted
  - Ax VI Input control
  - Prevention control
- Management measures that influence where an activity is allowed to occur
  - Ax VI Spatial control
  - Prevention control
- Management measures that influence when an activity is allowed to occur
  - Ax VI Temporal control
  - Prevention control

Introduction of other substances, whether solid, liquid or gas
- Management measures that influence the amount of a human activity that is permitted
  - Ax VI Input control
  - Prevention control
- Management measures that influence where an activity is allowed to occur
  - Ax VI Spatial control
  - Prevention control
- Management measures that influence when an activity is allowed to occur
  - Ax VI Temporal control
  - Prevention control

Human activities and demands on natural ecosystem services

Exceeding a permitted degree of perturbation by contaminants

Pollution effects of contaminants are occurring
- Management tools which guide human activities to mitigate the damage to components of marine ecosystem
  - Ax VI Mitigation control
- Management tools which guide human activities to restore damaged components of marine ecosystem
  - Ax VI Remediation tools
  - Recovery control

Effectiveness

The likelihood of the consequences

<table>
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<th>Risk Analysis</th>
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<td>Reduced or loss of function Loss of as a result of the pressures on the ecosystem component</td>
<td>$P_R$</td>
</tr>
<tr>
<td>Transition point to a reduced function as a result of the pressures on the ecosystem component</td>
<td>$C_L$</td>
</tr>
<tr>
<td>Changing function as a result of the pressures on the ecosystem component</td>
<td>$M_R$</td>
</tr>
<tr>
<td>Transition point to a changing function as a result of the pressures on the ecosystem component</td>
<td>$E_R$</td>
</tr>
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<td>Maintaining the function that supported by the ecosystem component</td>
<td></td>
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<th></th>
<th>Rare</th>
<th>Unlikely</th>
<th>Possible</th>
<th>Likely</th>
<th>Certain</th>
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Assessing and managing risks of achieving SDG 14 targets

- Assess the acceptability of the net risks (Tolerable/Not Tolerable) realizing that zero risk cannot be achieved
- Recommend additional controls, regulation, legislation, protocols to reduce unacceptable risks to acceptable
Evaluate what to do

- How much risk would you tolerate?
- What would you implement to reduce the risks?
- What would you consider as severe?
- What would you consider as likely?
Monitoring

Impact of human activities

Pressures – Component - Function

- Maintaining Ecosystem Function
- Changing Ecosystem Function
- Loss of Ecosystem Function

State of the ecosystem component

Increasing pressure

Prevention Controls
Mitigation Controls
Recovery Controls

A
B

## Risk of not achieving policy objectives

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<th>Risk Evaluation</th>
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<tr>
<td>Reduced or loss of function as a result of the pressures on the ecosystem component</td>
<td>Policy objectives will not be achieved because recovery is no longer secure (Take alternative course of action)</td>
</tr>
<tr>
<td>Transition point to a reduced function as a result of the pressures on the ecosystem component</td>
<td>Policy objectives may not be achieved because of uncertainties in the recovery (Manage for continuous improvement)</td>
</tr>
<tr>
<td>Changing function as a result of the pressures on the ecosystem component</td>
<td>Policy objectives may not be adequately achieved although recovery is expected (Incorporate risk reduction measures)</td>
</tr>
<tr>
<td>Transition point to a changing function as a result of the pressures on the ecosystem component</td>
<td>Policy objectives will be achieved because the function is maintained (Maintain the current course of action)</td>
</tr>
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<td></td>
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### Likelihood Event

- Rare
- Unlikely
- Possible
- Likely
- Certain

Policy: A societal choice

The 10-tenets for successful and sustainable environmental management

1. Socially desirable/tolerable
2. Ecologically sustainable
3. Economically viable
4. Technologically feasible
5. Legally permissible
6. Administratively achievable
7. Politically expedient
8. Culturally inclusive
9. Ethically defensible (morally correct)
10. Effectively communicable

Lessons learned and recommendations

- Science and management needs to move forward
  - Roland Cormier Wojciech Wawrzynski, Kevin Knight, Sigurður Guðjónsson and Andreas Kannen

- Conclusions and wrap up of the meeting
  - Grímur Valdimarsson
Food chain pathways of effects

https://doi.org/10.1300/J030v13n03_10
HACCP and Quality Management

World Trade Organization
Sanitary and Phytosanitary Agreement

**Problem:** How do you ensure that your country’s consumers are being supplied with food that is safe to eat — "safe" by the standards you consider appropriate? And at the same time, how can you ensure that strict health and safety regulations are not being used as an excuse for protecting domestic producers?

**Assessment of Risk and Determination of the Appropriate Level of Sanitary or Phytosanitary Protection**

**Human health and food safety**
- WHO The World Health Organization of the United Nations
- FAO The Food and Agriculture Organization of the United Nations
- Codex The FAO/WHO Joint Codex Alimentarius Commission

**Animal Health**
- OIE The Office International des Epizooties, also known as the World Animal Health Organization

**Plant health**
- IPPC The Secretariat of the International Plant Protection Convention, based in the FAO

**Ecosystem health?**

Institutional approach for technical measures?

Compliance Continuum

- Cost and benefit analysis
- Regulatory impact assessments