

Risk management standards for regulatory frameworks and the ecosystem approach

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United Nations Economic Commission for Europe

- UNECE's major aim is to promote pan-European economic integration bringing together 56 countries from the European Union, non-EU Western and Eastern Europe, South-East Europe and Commonwealth of Independent States (CIS) and North America.

The UNECE Group of Experts on Risk Management in Regulatory Systems

- Established in 2010 by the Working Party on Regulatory Cooperation and Standardization Policies.
- Experts from 13 countries participating with perspectives from authorities, standards-setting organizations, conformity assessment bodies, universities and research institutions as well as business companies.
- Goal is to improve the management of hazards that have the potential to affect the quality of products and services, and/or cause harm or damage to people, the environment, property and immaterial assets through the use of risk management in regulatory and management activities.

Risk Management in Regulatory Framework

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

United Nations Sustainable Development Goals



- Jake, R., Trujillo, V., Jennings, S., Hylland, K., Olle Hagstrom, O., Astudillo, A., and Jensen, J.N.. 2005. Guidance on the Application of the Ecosystem Approach to Management of Human Activities in the European Marine Environment, ICES Cooperative Research Report, No. 273. 22 pp.
- Cormier, R., Kannen, A., Elliott, Hall, P., and Davies, I. 2013. Marine and coastal ecosystem-based risk management handbook. ICES Cooperative Research Report No. 317. 60 pp.
- Cormier, R., Kannen, A., Elliott, M., and Hall. P. 2015. Marine Spatial Planning Quality Management System. ICES Cooperative Research Report No. 327. 106 pp.
- Cormier, R., Kannen, A., and Elliott. M. 2016. Bowtie analysis of the of the EU Marine Strategy Framework Directive program of measures. ICES Cooperative Research Report (in preparation).

Polycymaking and Management Contexts

Polycymaking

- Stakeholder engagement expressed concerns
- Scientific research and evidence of trends
- Assessments identify potential consequences
- Establish policy goals and objectives
- Monitor environmental trends

Management

- Identify the courses of action to achieve policy objectives
- Establish the outcomes for the management measures
- Implement measures to achieve the objectives
- Conformity assessments of the operational controls

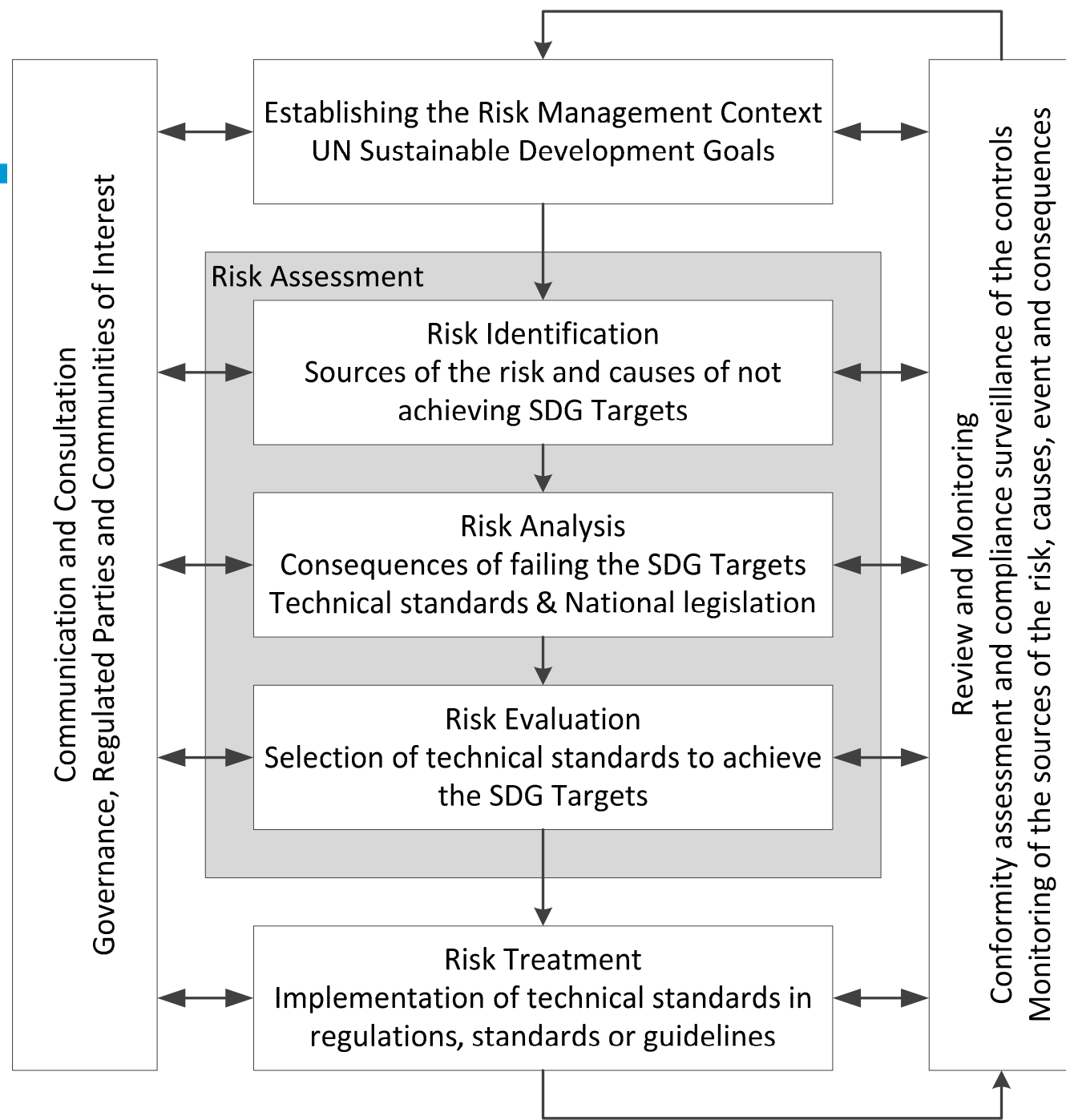
ISO Standards

- **ISO 31000:2009 Risk Management Standard**
 - Risk management process
 - Applicable to legislation and regulatory analysis
 - Support ecosystem approaches to managing environmental risks
- **ISO Guide 73:2009 Risk Management Vocabulary**
 - Vocabulary and definitions (Risk: effect of uncertainty on objectives) applicable in the management of risk within a legislative and regulatory context
- **IEC/ISO 31010:2009 Risk Management - Risk Assessment Technics**
 - Controls assessment applicable to legislation and regulatory analysis
 - Identifies gaps, redundancies and overlaps in regulations, standards and guidelines

ISO 31000

Risk Management SDG's

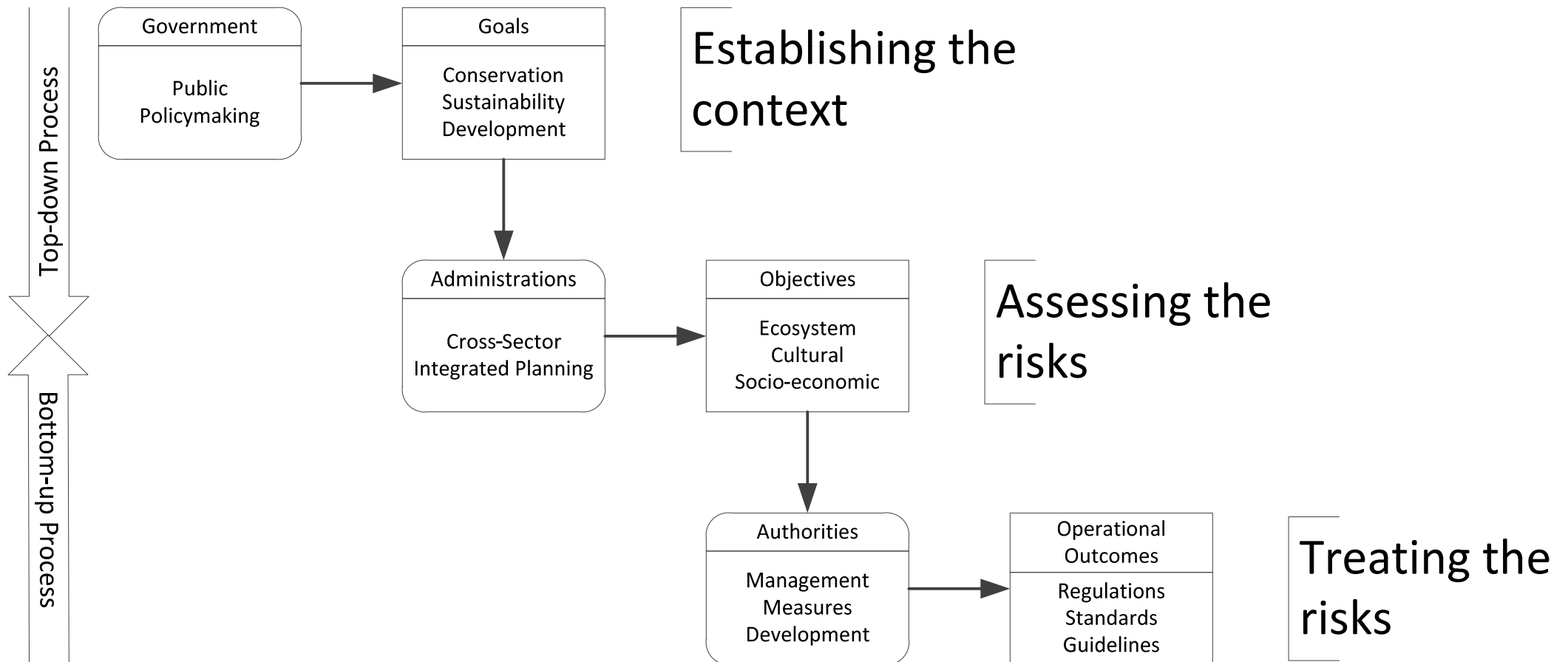
- The SDG's set the goals and the context for the risk management process
- Technical standards and national legislation are used to reduce risk as defined as "Effect of uncertainty on objectives"
- Technical standards and national legislation carry into effect the objectives of the SDG Targets
- Regulations, standards and guidelines are mechanisms of implementation



Risk Management Process

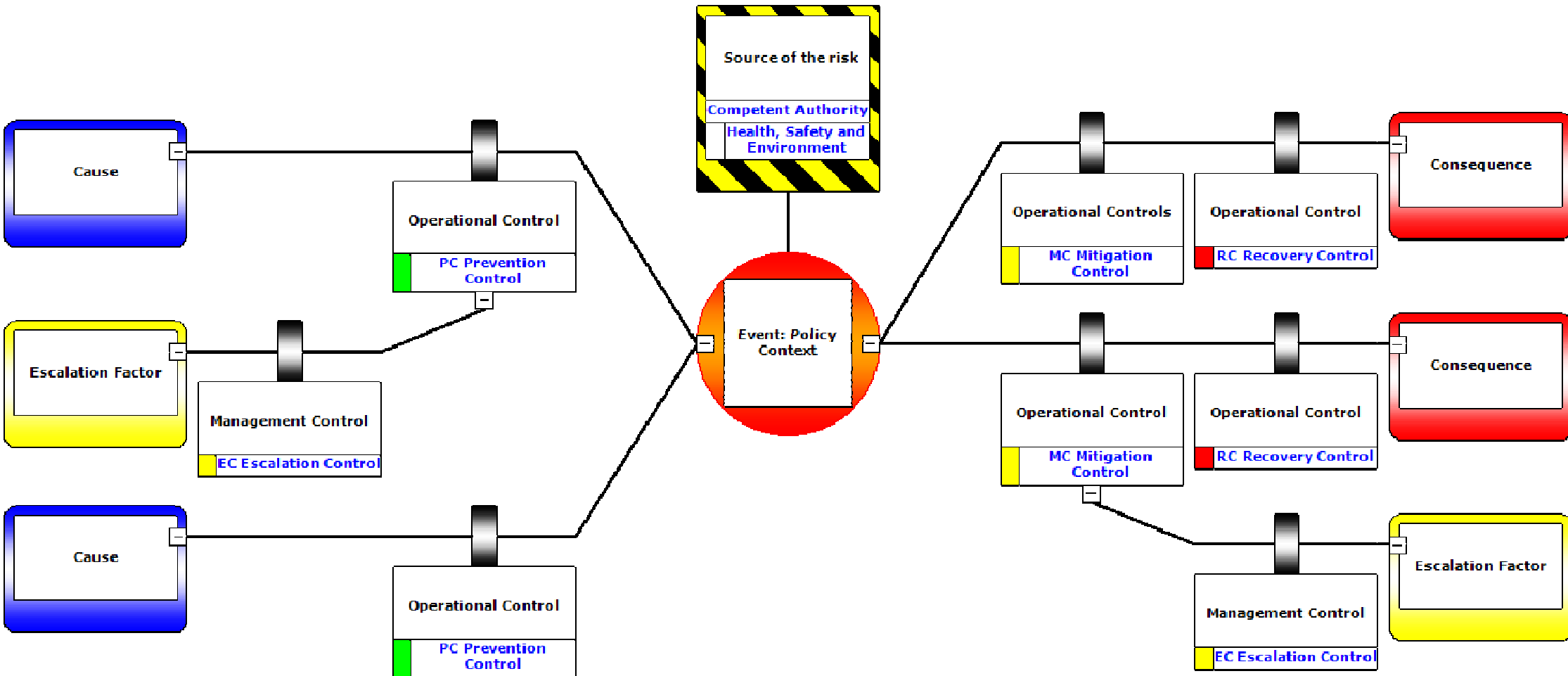
- What are the management measures needed to reduce the uncertainty of achieving an objective?
- Risk is set in the policy objective.
- Integration of the risk assessment function within the policy objectives.
- Without objectives, it is an assessment of a current situation or potential consequences.

Risk Management: Operational Implementation



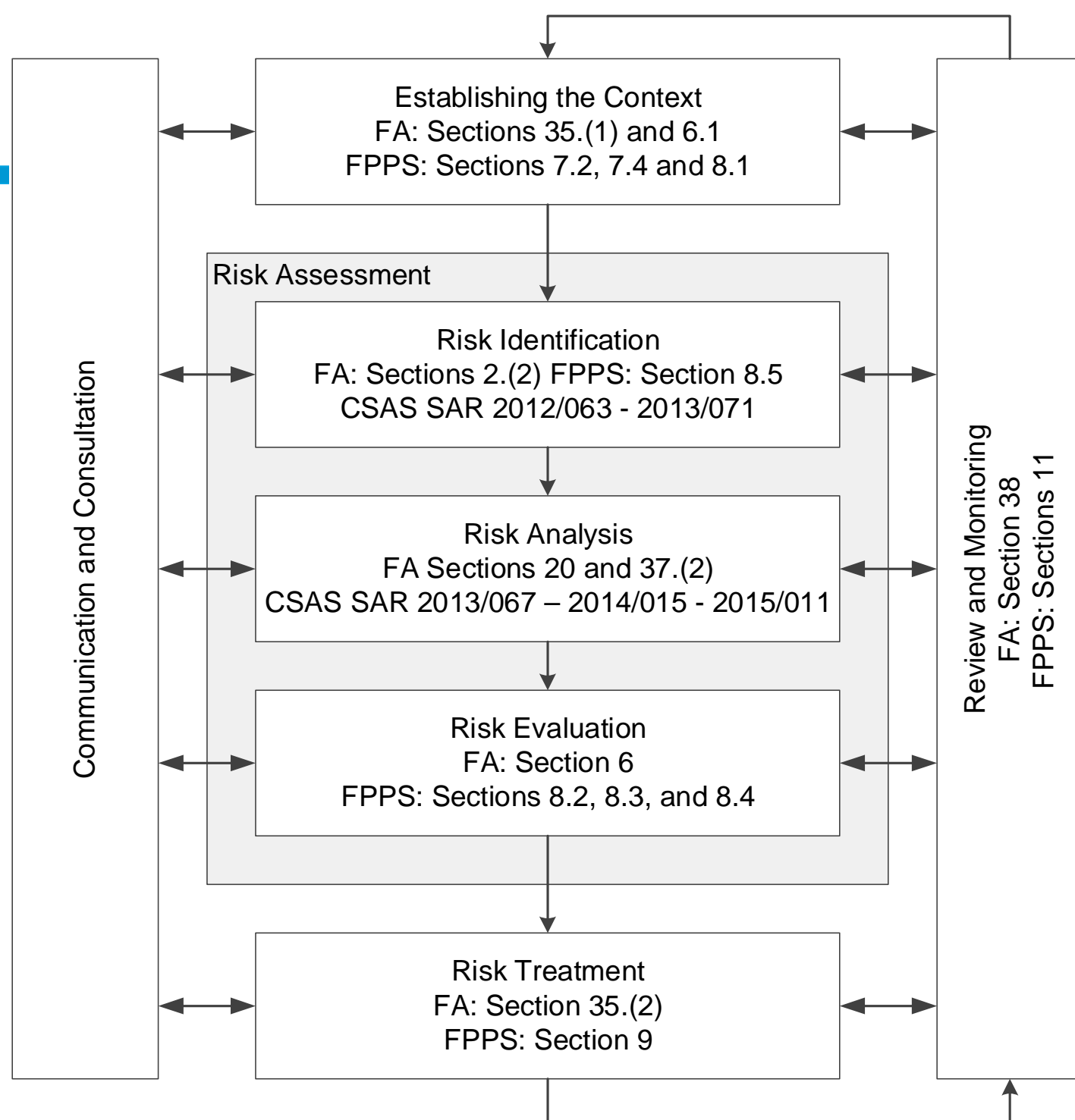
IEC/ISO 31010

Controls Assessment: Bowtie Analyses



ISO 31000 Fisheries Act

- Serious harm to fish is the death of fish or any permanent alteration to, or destruction of, fish habit
- Avoid: completely prevent serious harm to fish
- Mitigate: reduce the spatial scale, duration or intensity of serious harm to fish
- Offset: Counterbalance the serious that cannot be avoided



Risk Analysis

Preventing, Mitigating, Restoring

Risk Manager: What are the prevention controls needed to maintain the status? What are the mitigation controls to reduce the changing functions?

Scientist: What is the current status of the ecosystem components and functions?

Maintaining Status

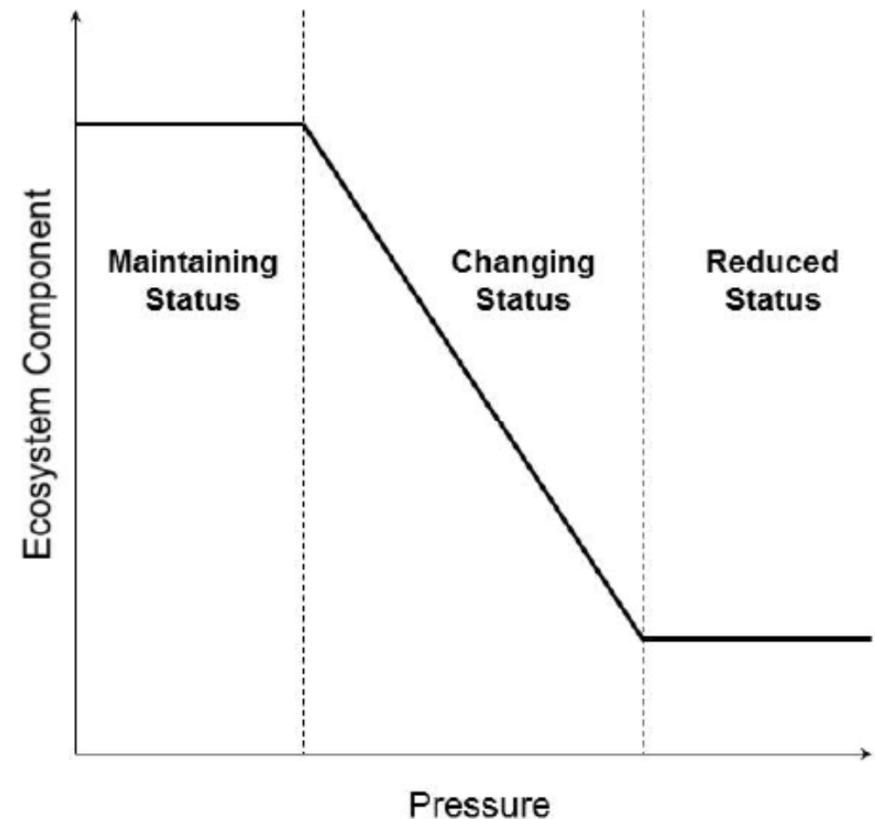
- Function maintained although there may be changes in the status and can resist or rapidly compensate

Changing Function

- Function systematically changes and recovery expected

Loss of Function

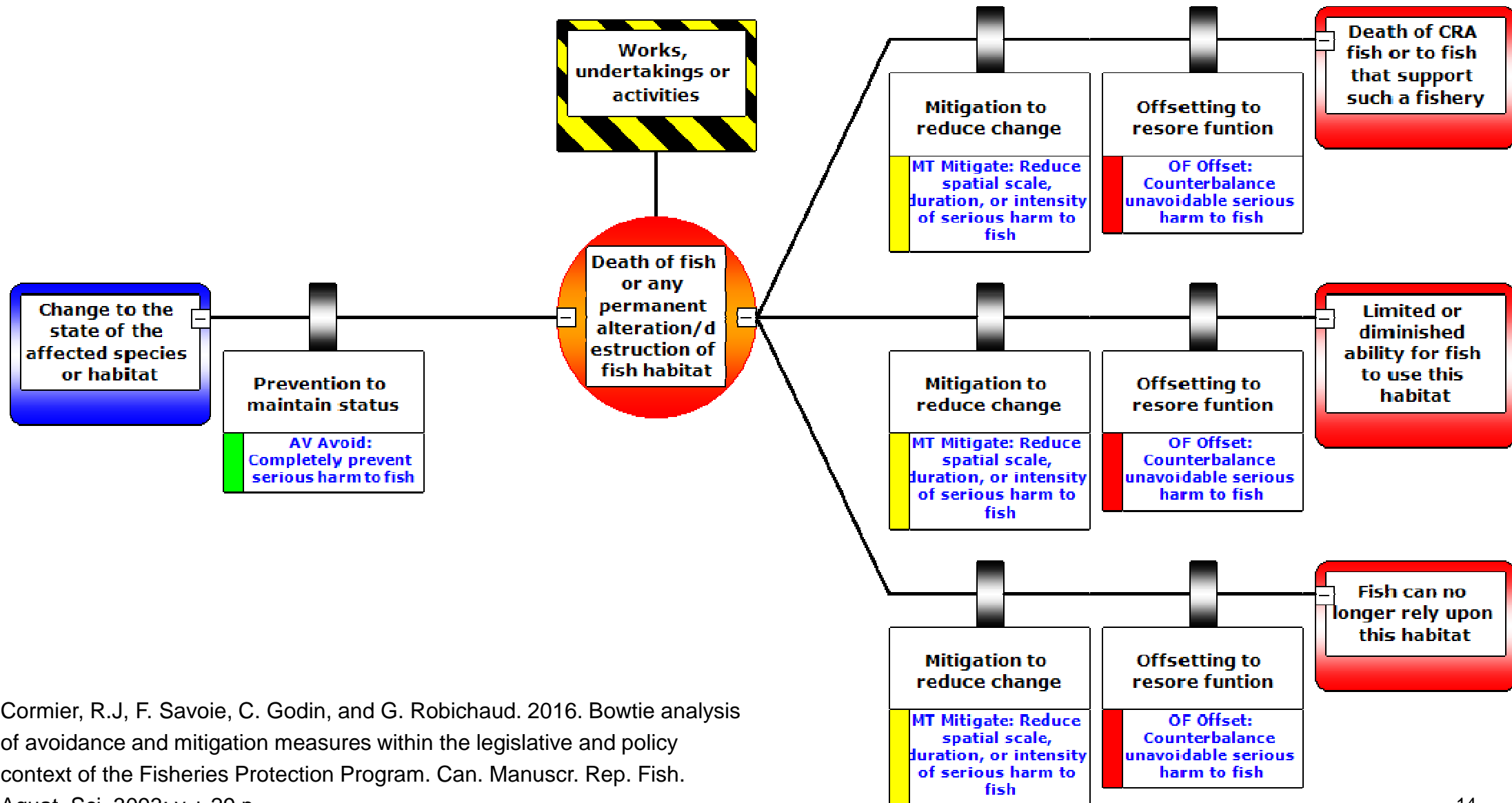
- Function no longer supported and recovery no longer secure



Bowtie Analysis: Canadian Fisheries Act

Prevention Strategies

Mitigation Strategies

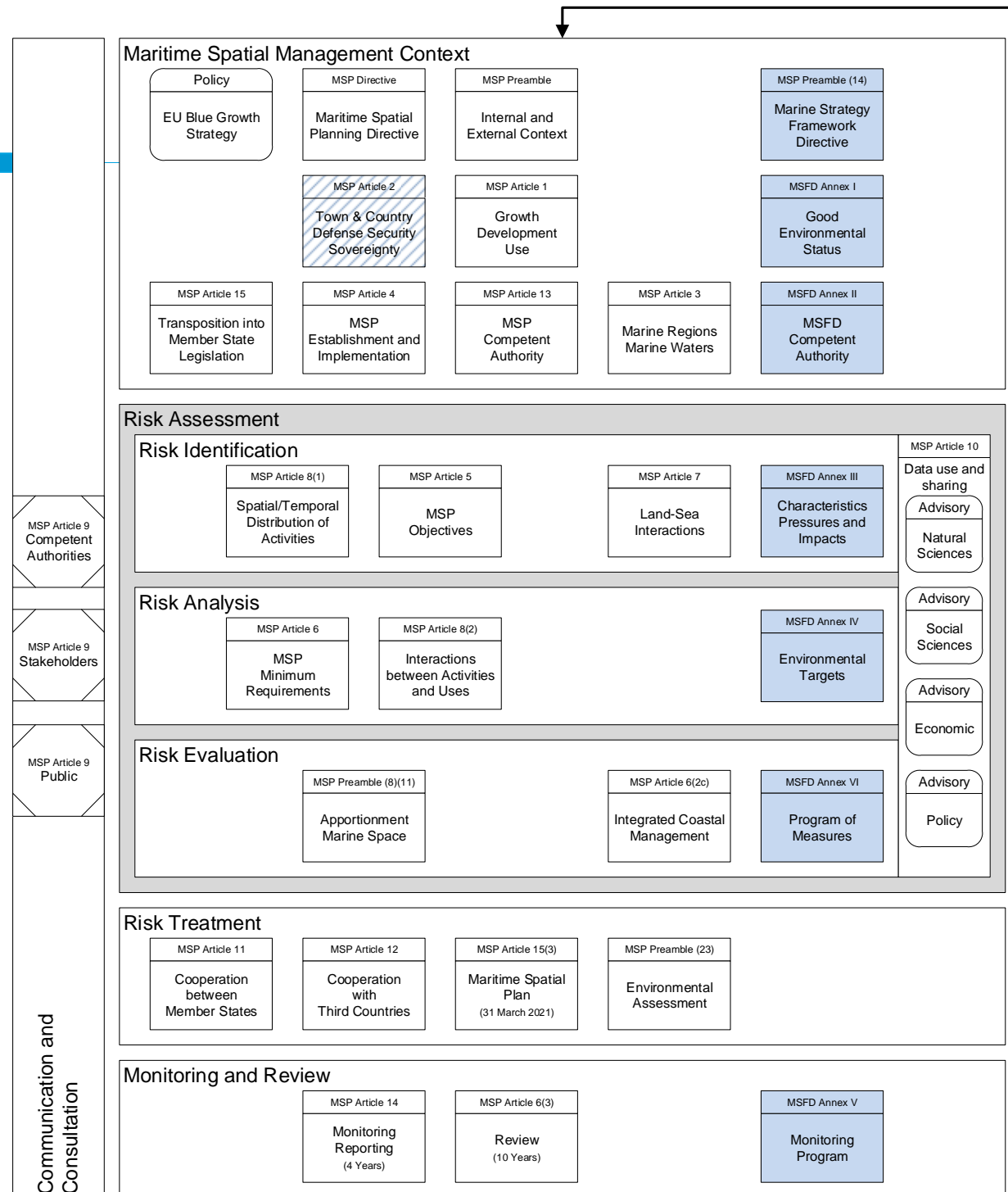


Cormier, R.J, F. Savoie, C. Godin, and G. Robichaud. 2016. Bowtie analysis of avoidance and mitigation measures within the legislative and policy context of the Fisheries Protection Program. Can. Manuscr. Rep. Fish. Aquat. Sci. 3093: v + 29 p.

Parallel Processes

Risk Management Process

- MSFD set the environmental basis
- MSPD set the socio-economic basis
- Each process is lead independently by a competent authority
- MSPD depends on the MSFD to address MSP environmental considerations

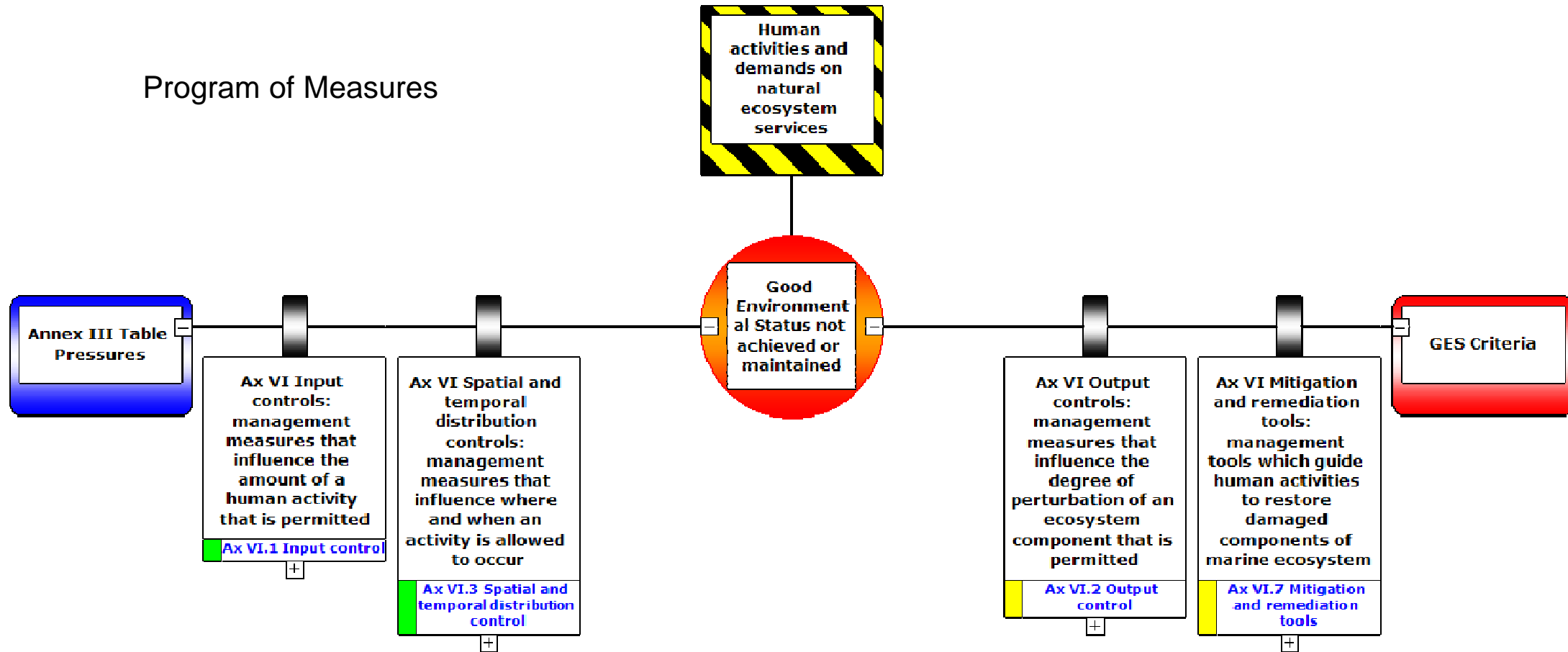


Bowtie Analysis: Risk Management Context EU Marine Strategy Framework Directive

Prevention Strategies

Mitigation Strategies

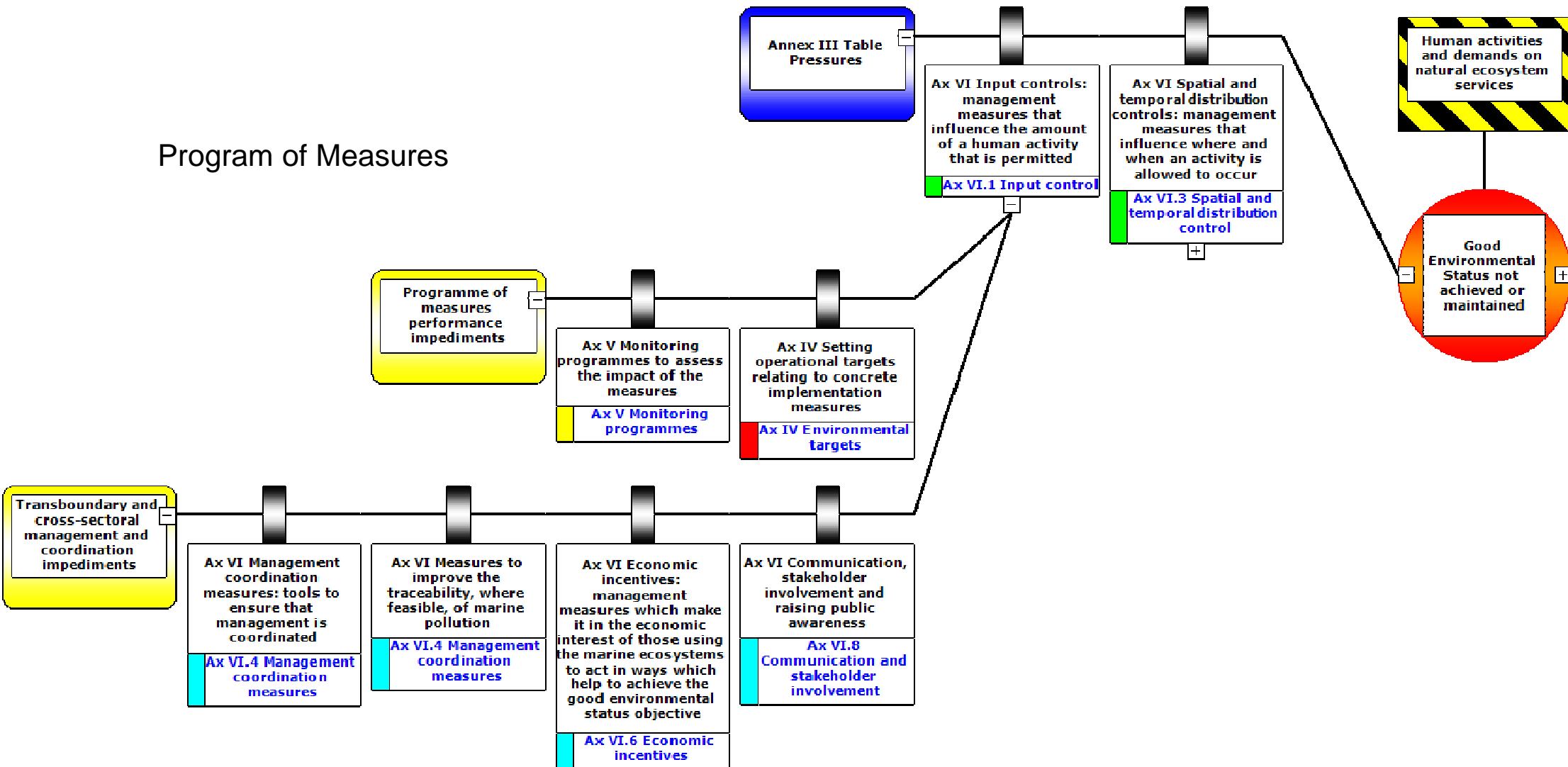
Program of Measures



Bowtie Analysis: EU Marine Strategy Framework Directive

Prevention Strategies

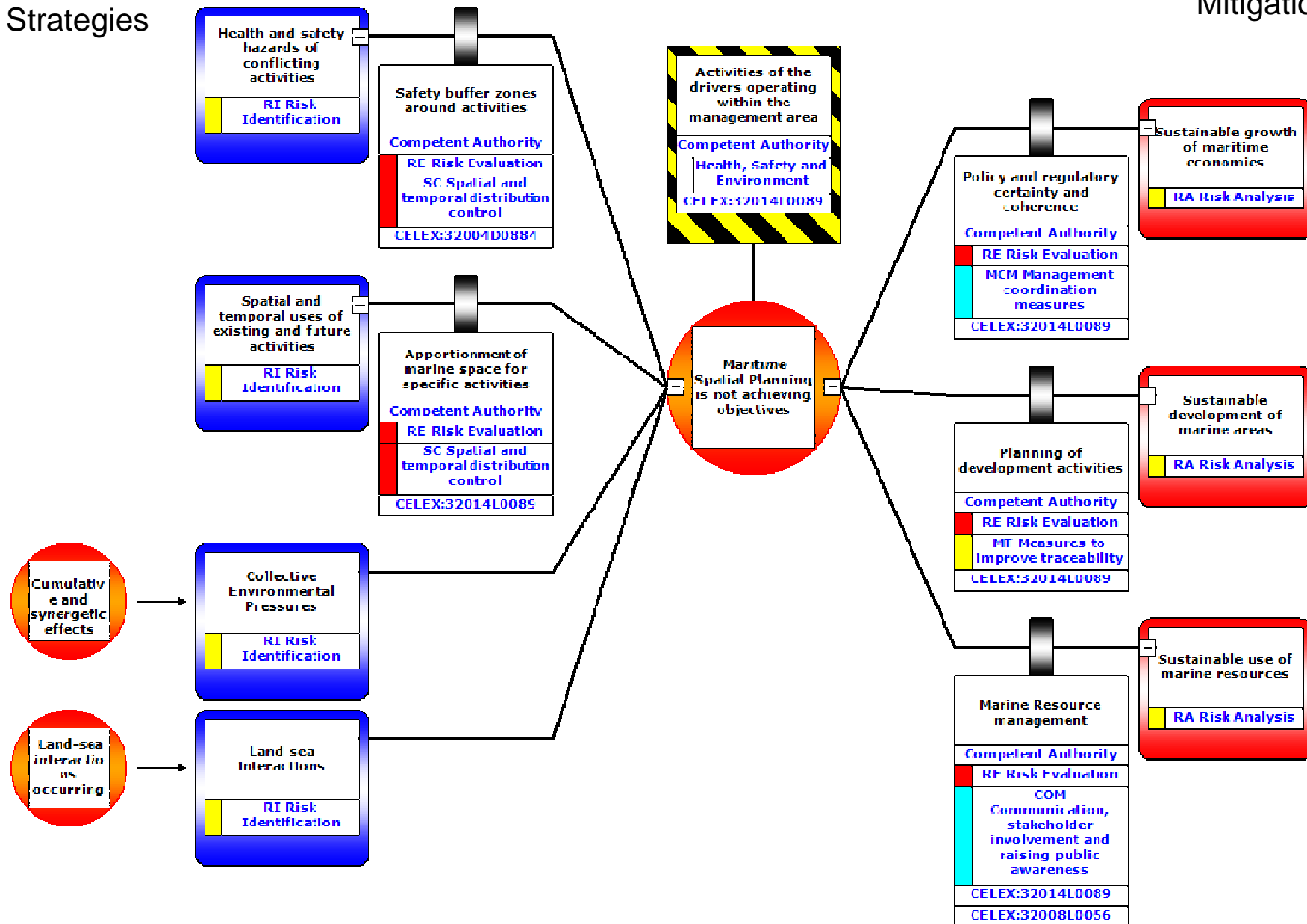
Program of Measures



Bowtie Analysis: Multiple Competent Authorities EU Maritime Spatial Planning Directive

Mitigation Strategies

Prevention Strategies



The management perspective

| Manager's Question | Input from |
|------------------------------|--|
| Why do we need to do this? | Legislation and public policies |
| Where do we need to do this? | Scientific advice and stakeholder feedback |
| When do we need to do this? | Scientific advice and stakeholder feedback |
| What do we need to do? | Technical advice and feedback |
| Who has to do it? | Sector competent authority |