

IMPERIA: tools and practices in EIA for systematic impact significance assessment

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Conference on the revised EIA directive

Luxembourg 12.11.2015

IMPERIA project



- Duration:

01/08/2012 - 31/12/2015

- Budget info:

- Total amount 1,292 million €
 - EU funding 50%
 - Finland's Ministry of Environment, Ministry of Agriculture and Forestry, and beneficiaries finances 50%

- Project's implementors:

- Coordinating beneficiary: SYKE (Finnish Environment Institute)
- Associated beneficiaries: Thule-institute/University of Oulu, University of Jyväskylä, Ramboll Finland Ltd, SITO Ltd

- **Project manager:** Leading expert Mika Marttunen, SYKE, Mika.Marttunen@Environment.fi



IMPERIA AIMED TO IMPROVE THE QUALITY AND COST-EFFECTIVENESS OF ENVIRONMENTAL ASSESSMENTS (EIA, SEA...)

Identifying and developing good practices

Developing and demonstrating methods and tools

Educating consultants, authorities, students...

Multi-Criteria
Decision Analysis

- ✓ Stakeholder participation
- ✓ Problem structuring
- ✓ **Impact significance assessment**
- ✓ Evaluation of alternatives
- ✓ Understandability of EIA reports

Support for impact significance assessment (ISA)



“How large impact is significant?”

Findings from the literature

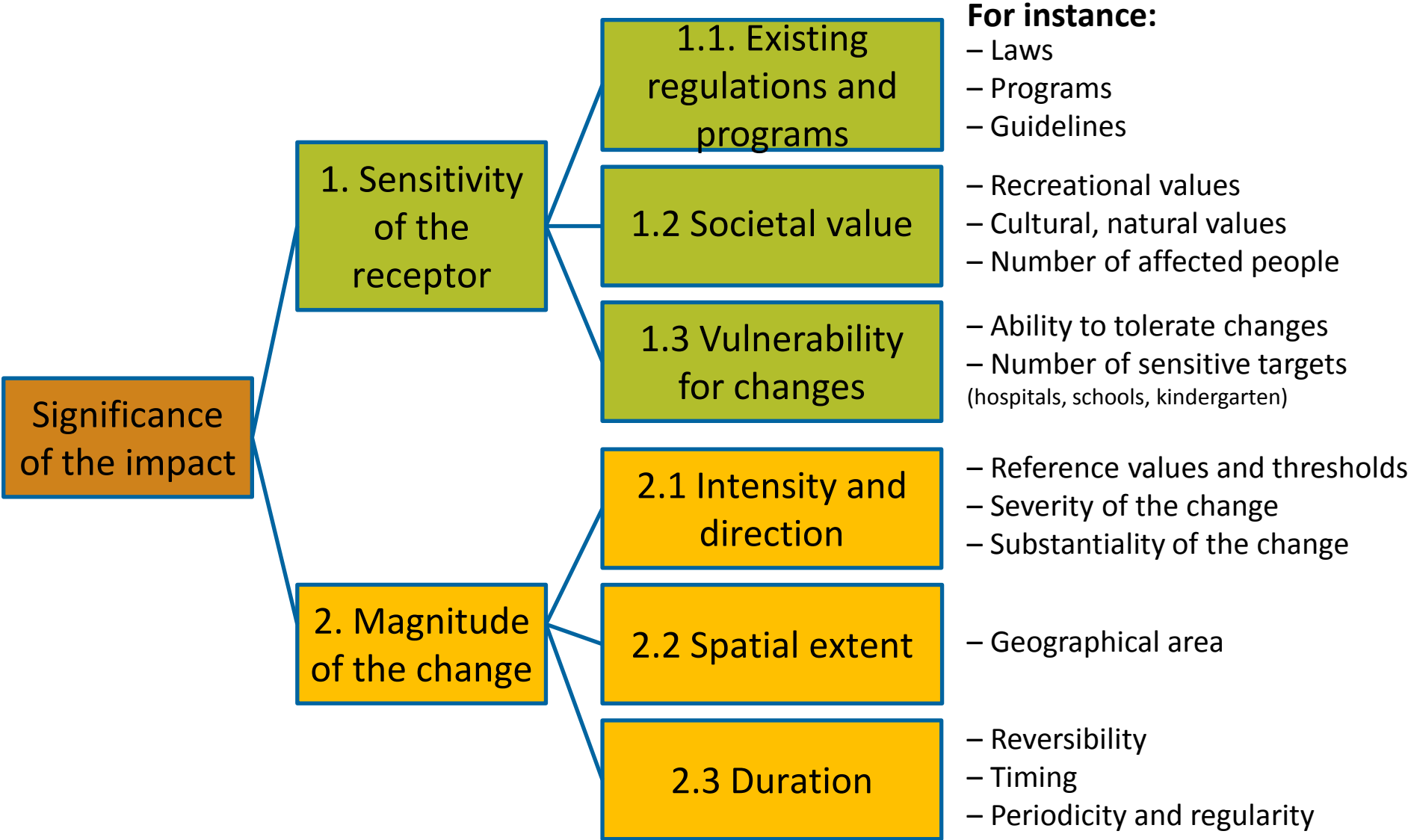
1. Impact significance assessment is a central and perhaps the most difficult phase in EIA
2. No agreement which is the best way to realize ISA
=> Large diversity in the practices and methods
3. Subjectivity is essential part of the ISA
 - Subjectivity \neq arbitrariness
4. Communication of the ISA is difficult
 - Terminology and the assessment process
5. More focus on the most significant impacts
 - Often too much resources are used to the impacts which relevance is not high from the planning or decision perspective

IMPERIA approach for impact significance assessment

- Developed on the grounds of **best practices identified** in international and national projects
- Core of the approach is a **structured framework** based on
 - **Sensitivity of the target/receptor**
 - **Magnitude of the change**
- Developed support material
 - **ARVI tool** for helping the assessment
 - **Forms for the experts** to support the use of the impact significance assessment framework
 - **Template scales** for classifying different dimensions of various types of the impacts



Impact significance assessment framework in the IMPERIA project (ARVI approach)



Criterion 1.1: Existing regulations and programs

The following issues could be considered in the evaluation of this criterion:

- Are there any regulations in the legislation for the receptor?
- Are there any targets in the area with preservation orders or classified as valuable?
- Are there any species in the area classified as endangered or threatened?
- Does the receptor belong to any national or international protection program?



Very high * * * *	The impact area includes an object that is protected by national law or an EU directive (e.g. <u>Natura 2000</u> areas) or international contracts which may prevent the proposed development.
High * * *	The impact area includes an object that is protected by national law or an EU directive (e.g. <u>Natura 2000</u> areas) or international contracts which may have direct impact on the feasibility of the proposed development.
Moderate * *	Regulation sets recommendations or reference values for an object in the impact area, or the project may impact an area conserved by a national or an international program.
Low *	Few or no recommendations which add to the conservation value of the impact area, and no regulations restricting use of the area (e.g. zoning plans).

Tentative rules for deriving overall assessments from criteria information

SENSITIVITY OF THE RECEPTOR

Use the maximum of existing regulations and programs (criterion 1.1) and societal value (criterion 1.2) and then adjust that value depending on the level of vulnerability.

MAGNITUDE OF THE IMPACT

Intensity (criterion 2.1) is used as a starting point, and the assessment is adjusted based on spatial extent and duration.

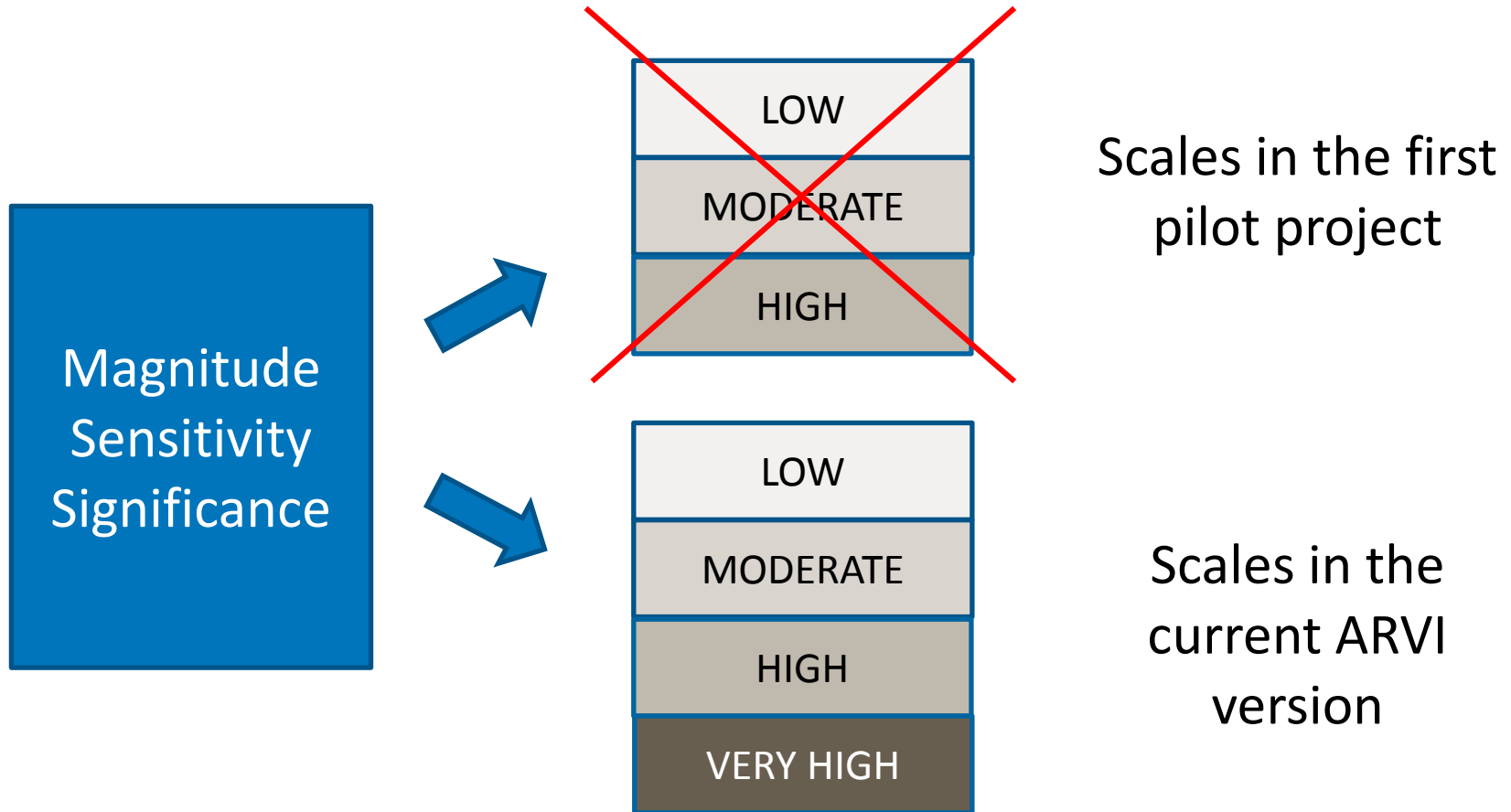
Indicative table for helping the impact significance assessment on the basis of magnitude and sensitivity



Impact significance		Magnitude of change								
		Very high	High	Moderate	Low	No change	Low	Moderate	High	Very high
Sensitivity of the receptor	Low	High*	Moderate*	Low	Low	No impact	Low	Low	Moderate*	High*
	Moderate	High	High*	Moderate	Low	No impact	Low	Moderate	High*	High
	High	Very high	High	High*	Moderate*	No impact	Moderate*	High*	High	Very high
	Very high	Very high	Very high	High	High*	No impact	High*	High	Very high	Very high

* Especially in these cases, significance might get a lower estimate, if sensitivity or magnitude is near the lower bound of the classification

Change in ARVI scales



Reasons why "Very high" class was added

- 1) the first pilot project indicated that experts have a tendency to avoid the classification to the most extreme class
- 2) to better distinguish in the most significant impacts and

ARVI-tool

- Excel-based tool for supporting the use of an impact significance assessment framework

QUESTIONNAIRE FORMS

- Facilitates the collection of the information from the experts
- Tool reads the information from the forms

SUMMARIES AND VISUALISATION

- Several charts and tables for reporting

GUIDANCE MATERIAL

- A hands-on guide to the practical use of the tool
- Guidance explaining the impact significance assessment framework
- Over ninety templates including tentative proposals how to define sensitivity and magnitude criteria
- More general level guidance material demonstrating good practices for carrying the whole process

Characteristics of magnitude			→	Magnitude of the change
Intensity and direction	Spatial extent	Duration		
Very high ++++	Very high ****	Very high *****		Very high ++++
High +++	High ***	High **		High +++
Moderate ++	Moderate **	Moderate *		Moderate ++
Low +	Low *	Low		Low +
No impact	None	None		No impact
Low -				Low -
Moderate --				Moderate --
High ---				High ---
Very high ----				Very high ----
Reasoning:				

Significance of plants and vegetation

Magnitude	Low	Moderate	High	Very high
	Sensitivity			
	Low	B		
	Moderate		A	
	High			
Very high				

A = Alternative 1

B = Alternative 2

Scale for significance

	= Low
	= Moderate
	= High
	= Very high

Main phases in the use of ARVI tool

1. DESIGNING THE ASSESSMENT

- Which impacts are assessed, level of detail?
- Which phases: construction, operation phase, closure?
- Is there need to consider separately different impact areas?

2. SPECIFYING CLASSIFICATION SCALES

- Tentative templates available, need to be contextualized

3. DESCRIBE AND ASSESS IMPACT'S CHARACTERISTICS

- With respect to each impact criteria
- Scale: No impact – Low – Moderate – High – Very high

4. ASSESS IMPACTS' SENSITIVITY AND MAGNITUDE

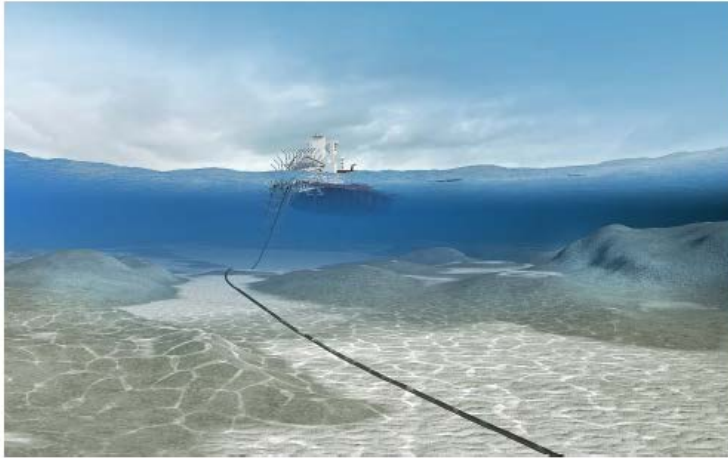
- Tentative rules developed, but ultimately expert judgment

5. ASSESS IMPACT SIGNIFICANCE

- Utilization of sensitivity–magnitude matrix, but ultimately expert judgment

BALTICCONNECTOR PILOT 2014-2015

ENVIRONMENTAL IMPACT ASSESSMENT REPORT



BALTICCONNECTOR

Natural gas pipeline between Finland and Estonia

2015

Environmental impact assessment report

Finland

Gasum

EG  Vörguteenus
maagas

 PÖYRY



Figure O-2. The routing alternatives of the Balticconnector natural gas pipeline in Finland.

Balticconnector pilot: Significance of the impacts on water quality in archipelago area and offshore area during different the phases of the project

Table 8-4. Overall significance of impacts on water quality. C = during construction, O = during operation, A = archipelago area, OS = offshore area. The differences between the alternatives are minor.

Impact significance		Magnitude of change								
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Sensitivity of the receptor	Low	High	Moderate	Low	Low	No impact	Low	Low	Moderate	High
	Moderate	High	High	C/A Moderate	C/OS Low	O No impact / Very low	Low	Moderate	High	High
	High	Very high	High	High	Moderate	No impact	Moderate	High	High	Very high
	Very high	Very high	Very high	High	High	No impact	High	High	Very high	Very high

Experiences from three pilot projects

1) Wind farm EIA, 2) wastewater management EIA, 3) gas pipe EIA between Finland and Estonia (Balticconnector)

Advantages

- Facilitates discussion between EIA experts
- Helps to include and analyse systematically all relevant impact characteristics
- Supports giving reasons for the assessments and illustrates how they were formed
- Harmonizes the significance assessments between experts
- Helps to identify differences in opinions and their reasons
- Directs impact assessments to the most relevant issues



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Challenges

- Laborous if many alternatives
- Identification of the most appropriate way to apply the approach in each case
- Presenting reasoning chain and results understandable and concise
- How to present and discuss the assessment with local people
- Communication challenge: if only few individuals are affected => not significant impact (ARVI)

Feedback from the users of ARVI

"IMPERIA has improved the way of expressing the impact significance assessment in EIA reports a lot in couple of years"

•"The terms created by IMPERIA are well known among experts which improves the coherence of assessments between different experts."



•"The ARVI-tool unifies the impact significance assessment which is very useful especially in complex and conflict projects."

Final remarks

- “Comprehensive package” to ISA
 - Evaluation framework, description of the process, supporting material, Excel-based tool
- ISA is ultimately an expert judgment
 - ARVI provides support for the assessment
- The criteria of the ARVI also applicable in the scoping phase
 - Identification of potentially significant impacts
- Revisions to the EIA directive increase the importance of systematic ISA and the usefulness of the ARVI approach
- ARVI tool and other material will be at imperija.jyu.fi/en available in December 2015

THANK YOU!

<http://imperia.jyu.fi/en>