

SWAP Training Seminar
Bari, November 20th , 2007



Measuring Sustainability Indicator Principles + Creation

Theory & practice

- **Bellagio Principles**
- **Compare: development assistance indicators**
- **Difficulties**
- **Mgmt examples for the Mediterranean**

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Bellagio Principles

- **1987: World Commission on Environment and Development (Brundtland Commission) called for development of new ways to measure and assess progress toward sustainable development.**
- **1996: international group of measurement practitioners and researchers from five continents develops ‘Bellagio Principles’ for development of indicators for sustainable development at Rockefeller Foundation’s Study and Conference Center in Bellagio**

Bellagio Principles

- **Guidelines for the whole of assessment process including the choice and design of indicators, their interpretation and communication of the result.**
- **Interrelated and to be applied as complete set.**
- **Intended for use in starting and improving assessment activities of community groups, non-government organisations, corporations, national governments, and international institutions.**

Bellagio Principles

4 aspects of assessing progress toward sustainable development:

- **Starting point of any assessment - establishing a vision of sustainable development and clear goals = vision**
- **Content of assessment and need to merge sense of overall system with practical focus on current priority issues.**
- **Key issues of assessment process**
- **Necessity for establishing continuing capacity for assessment.**

Bellagio Principles

- **Guiding vision and scope**
- **Holistic Perspective**
- **Essential Elements**
- **Adequate Scope**
- **Practical Focus**
- **Openness**
- **Effective Communication**
- **Broad Participation**
- **Ongoing Assessment**
- **Institutional Capacity**

Theory & practice

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Compare: indicators in development assistance

- **Valid** – measure what they are supposed to measure
- **Reliable (verifiable)** – conclusions replicable if measured by different people at different times
- **Relevant** – to the project objectives & different information needs
- **Sensitive** – to the situation observed and changeable over time
- **Cost effective** – worth the time & money to apply them
- **Timely** – collect data reasonably quickly
- **Targeted** – specified in terms of quantity, quality, time, target group and location

Theory & practice

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Difficulties

- **complexity of SD strategies**
- **unsatisfying or missing concepts, definitions, methods or data**
- **interlinkages between different dimensions of SD**
- **long term issues**
- **compromise between global and local indicators**
- **indicating causes or effects?**
- **need for international comparability and standards**
- **easy interpretation?**
- **easy and cost-effective data access?**
- **difficulties of aggregation, resorting to controversial weighting**

Theory & practice

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MATISSE

Methods and Tools for Integrated Sustainability Assessment

- EU FP6 Project – 3 years (2005-2008)
- aimed at developing basic research in the area of sustainability science, transition theory and Integrated Assessment.
- Focus on Integrated Sustainability Assessment (ISA)
- For MATISSE, the primary objects of assessment are socio-ecologic systems under a range of dynamic driving forces, including the influence of prospective policies, programmes and action plans.
- Core activity: develop, test, and demonstrate methods and tools for ISA
- Using conceptual ISA framework
- In (complementing) case studies complete ISA or developing tools/approaches

ISA

Integrated Sustainability Assessment

Cyclical, participatory process of scoping, envisioning, experimenting, and learning through which a shared interpretation of sustainability for a specific context is developed and applied in an integrated manner, in order to explore solutions to persistent problems of unsustainable development.

Conceptualised as a complement to other forms of sustainability assessment, such as Sustainability Impact Assessment, Integrated Assessment and Regulatory Impact Assessment.

Not ex ante screening of incremental sectoral policies developed within the prevailing policy regime, but conceptualised as support to longer-term and more strategic policy processes, where objective to explore persistent problems of unsustainable development and possible solutions to these.

ISA

Concept

1. it is transition oriented, rather than simply incremental and at building on existing regime,
2. it aims a reframing, social learning and empowering stakeholders
3. follows a multi-level, agent based approach.
4. It's mostly anticipatory, being concerned with ex-ante assessment
5. Departs from a precautionary stance in which impacts are largely unknown
6. And takes an holistic and cyclical approach
7. Assesses multiple trade-offs between option and attempts to create pathways synergetic of policy action and social change to overcome these.

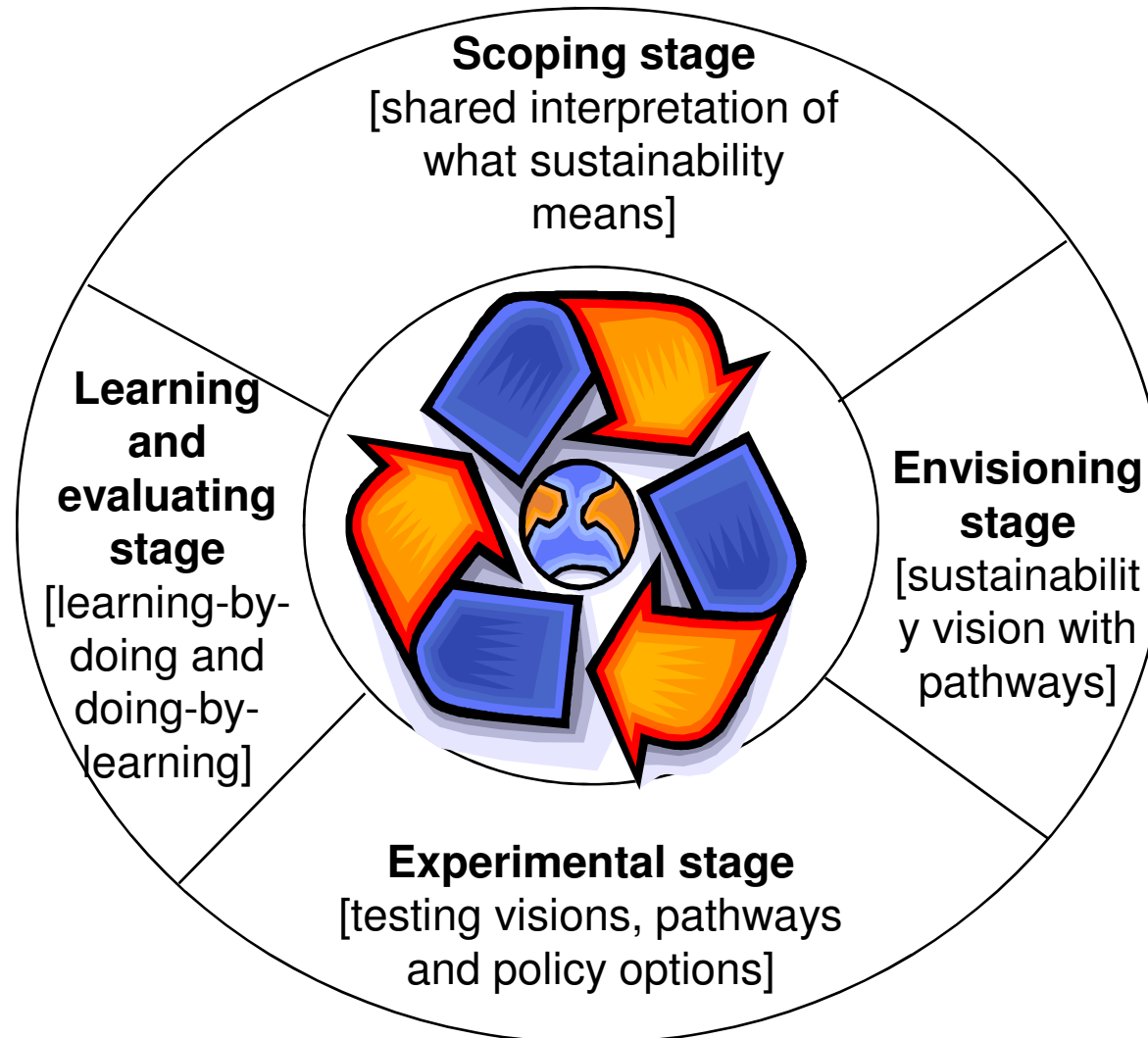
SIA ↔ ISA

Table 1 Comparison of sustainability impact assessment and integrated sustainability assessment:

	Sustainability Impact Assessment	Integrated Sustainability Assessment
Paradigm	Incremental	Transition
Scope	Narrow problem formulation	Broader systems view
Scale	Single level	Multi-level
Stakeholder	Regime	Niche
Goals/Constraints	Given	Searching, explorative
Object	Partial	Holistic
Learning	Cognitive/one-off assessment	Social learning/iterative
Power	Structural	Innovative/empowering

ISA

In the MATISSE project

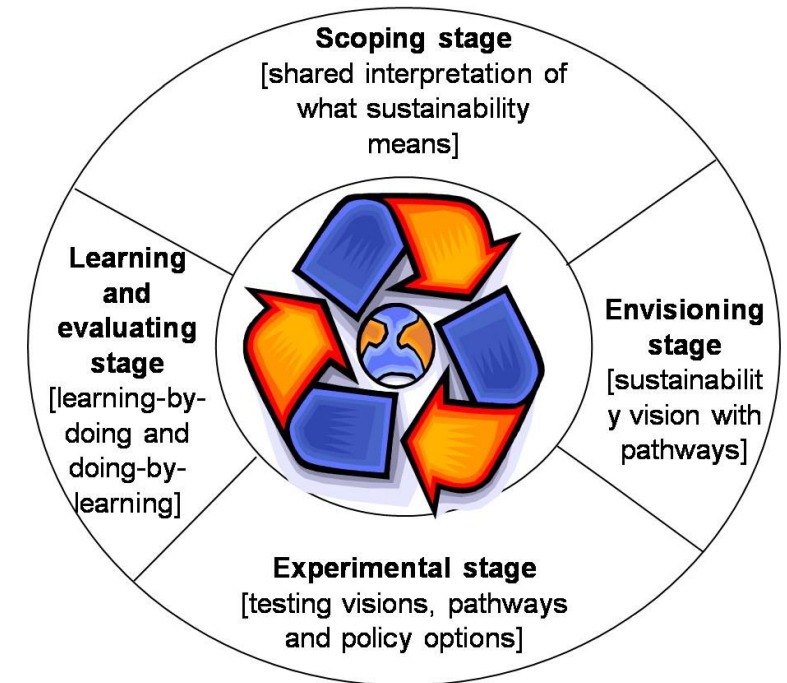


ISA

Scoping stage

Aims at exploring in a participatory and qualitative way the definition of persistent unsustainability problems of the system of reference, the main forcers driving such change and the different perceptions and definitions about them.

Should be based on accurate integrated system analysis at different scales and a careful identification of stakeholders capable to provide socially and ecologically robust description of context in which the ISA is to be applied.



ISA

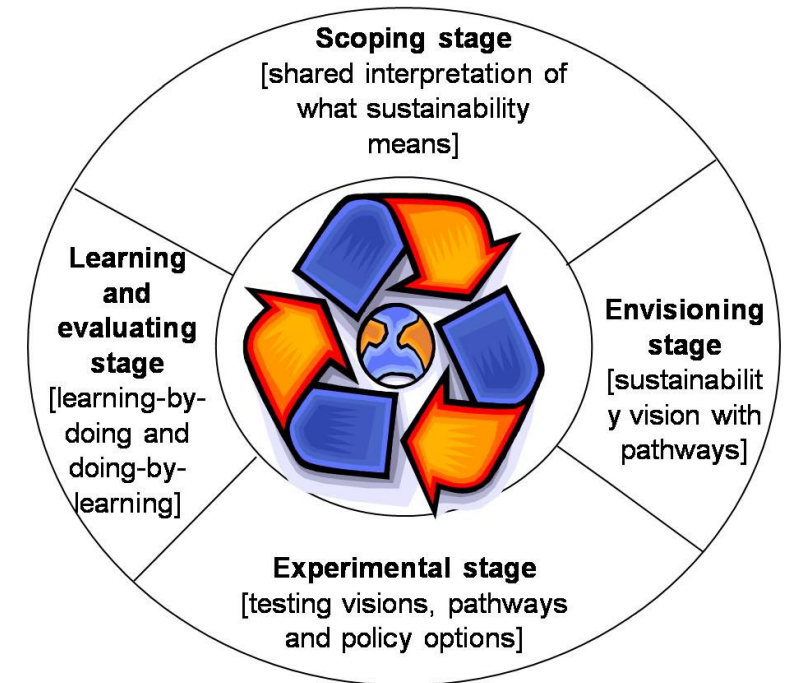
Envisioning stage

Aims at development of visions of sustainable futures in context of application of PAF by providing a common interpretation of sustainability.

The 'problems' of unsustainability need to be transformed into challenges for action and specified in empowering and engaging narrative.

Scenarios can be designed and different pathways to attain to different future need to be evaluated according to their social-ecological effects.

This phase involves formulation of policy options in close interaction with stakeholders implicitly or explicitly considered in the scenarios.



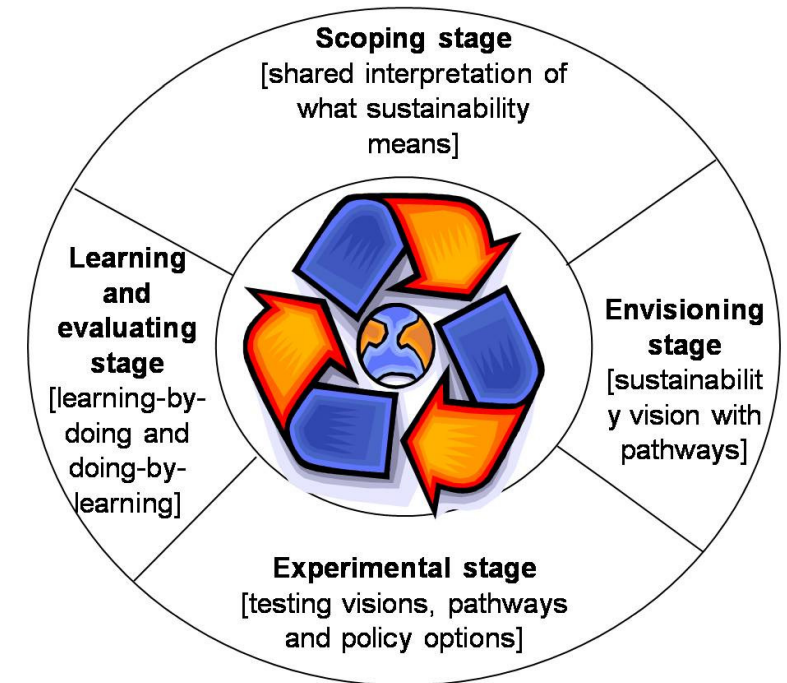
ISA

Experimental stage

Series testing and reflection activities are carried out by systematic use of specific tools which allow participants to experience situations and alternatives of action. May include the use of modelling, role gaming, and field experiments.

Series of ISA oriented experiments selected, designed and evaluated on basis of previous two stages and sustainability visions, and policy proposals tested in terms of consistency, adequacy, robustness and feasibility.

Impacts and the trade-offs for each transition pathway (scenarios) are explored.



ISA

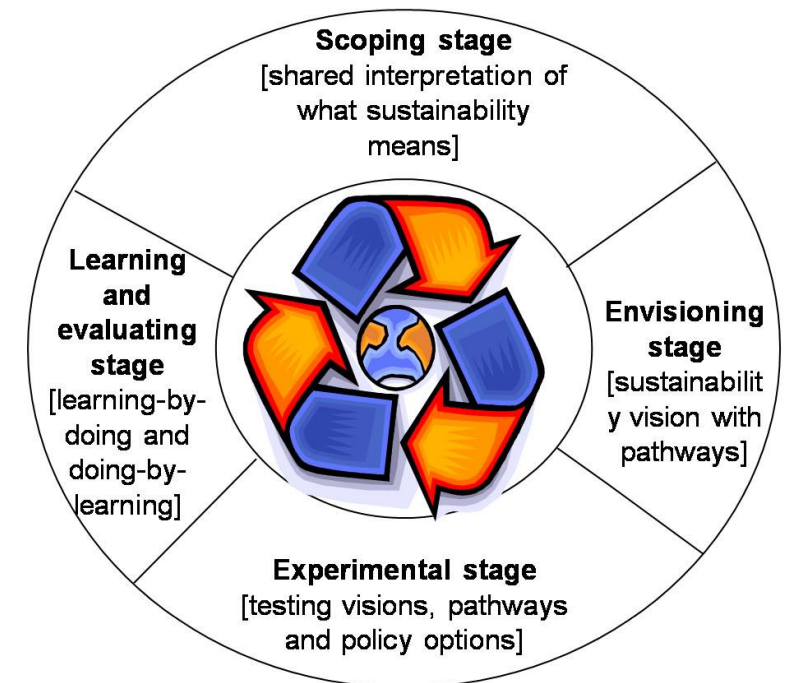
Learning and evaluating stage

Social learning is assessed both on content (e.g. what specific policy proposals) as on process (what tools and methods worked or not).

The evaluation stages should provide inputs for project team to adjust processes, tools, methods and assumptions in the next round.

This stage include an evaluation of the stakeholder interaction as of the monitoring of different stages and of process.

ISA process includes at least a full iteration of each of these four stages.



Case study

Ebro Delta

- Ebro River Basin located in north-east of Iberian peninsula
- Largest hydrological basin of Spain
- Delta most one of most interesting wetland areas in Mediterranean basin with rich biodiversity.
- 330 km² characterised by flat landscape, low population (15.000 inhabitants) and high ecological value (several Ramsar sites important for bird migration; rare plants, fish and invertebrates).
- Strongly shaped by human activities; more than two centuries of human intervention.
- Mainly primary sector (e.g. agriculture, fishing, aquaculture and hunting) has shaped its current landscape.
- Rice occupies ~65% of delta surface.
- Tourism
- Urbanization pressure, mostly as second house residence

Example for ISA methods

Integrated assessment focus groups

Kasemir, et al. (2003) and Dürrenberger, et al. (1999); Water Mgmt: Hare et al. (2006)

Participants recruited from representative institutions for Ebro Delta management

- New Water Foundation Culture, Birdlife-Spain (environmental NGO)
- Catalan Water Agency
- Regional Council of Ebro Delta
- Municipality
- Farmers
- Ebro Delta Natural Park.

Example for ISA methods

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Main purpose of the meeting:

Can ISA process encourage emergence and integration of different types of knowledge

learn how approach could be implemented in practice - including type of tools (e.g. computer models), necessary or useful to support processes.

obtain insights on how stakeholders perceive and interpret persistent problems (driving forces)

how they see relationships among different dimensions of the problems at scale

how they see scales of possible action within the river basin.

Method: Participatory exercises (Kasemir, 2000)

- cause-effect-response matrix
- visioning exercise using collage technique

Integrated assessment focus groups

Kasemir, et al. (2003) and Dürrenberger, et al. (1999); Water Mgmt: Hare et al. (2006)

Results of scoping stage

First, main focus on *environmental dimension* (e.g. pollution, subsidence, deforestation, ...) = result of past and present practices in exploitation and management of natural resources of river basin.

Then, a more systemic and relational worldview emerged → Delta's changes and evolution = close, dynamic relationship betw. natural resources and their exploitation ('Changes in rice crop production affect biodiversity'; 'water irrigation management affects crops...') → more complex and richer perspective needed to comprehend system → *economic dimension* significant driving force of change. (increasing tourist pressures and the crisis of the agricultural sector)

Finally, shift to participants that *institutional dimension* has major role. Lack of integrated management of river basin due to institutional fragmentation.

Integrated assessment focus groups

Kasemir, et al. (2003) and Dürrenberger, et al. (1999); Water Mgmt: Hare et al. (2006)

	ECONOMIC	ENVIRONMENTAL	INSTITUTIONAL	CULTURAL	TECHNOLOGIC
C A U S E S	<ul style="list-style-type: none"> • Agricultural market sustainability • River Basin Regulations • Tourism • Lack of Economic Resources at local level 	<ul style="list-style-type: none"> • Intensive agriculture • Deforestation • Wind engery parks • Foreign species introduction • Ecosystems fragility • Landscapel 	<ul style="list-style-type: none"> • Absence of integrated management • Public Participation • Urban Laws disconnected with landscapel 	<ul style="list-style-type: none"> • Traditional Power structures • No individual conscience • No Universitys in the region • Old water Culture • No participation • Humaniz action process 	<ul style="list-style-type: none"> • Hydroelectric Powertrains • Uncontrolled groundwater
E F F E C T S	<ul style="list-style-type: none"> • Rice production dereasing • New project, now social conflicts • Human occuation of risky spaces close to the river 	<ul style="list-style-type: none"> • Salinization • Subsidence • Habitat loss Contamination • Species lossDisadvateges to the primary sector • Delta regression 	<ul style="list-style-type: none"> • Non coordinated administions 		<ul style="list-style-type: none"> • River flow stabilization • Breaking dynamics of water systems
R E S P O N S E S	<ul style="list-style-type: none"> • Quality Labeling for local Farm product 	<ul style="list-style-type: none"> • Hard protective measures • Water quality • Water circulation • Environmental indicators 	<ul style="list-style-type: none"> • Associations • Institutional coordination • Agenda 21 • Non normative management plans • Cooperation plans 	<ul style="list-style-type: none"> • Social movements 	

Integrated assessment focus groups

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Results of envisioning stage

Two scenarios:

Technical-expert future:

Focussed on explaining causes of problems on an individual basis.
(e.g. derived from energy extraction, coastal erosion loss of aquaculture or population growth)

Technical and expert solutions.

Generally, proposals improve and reinforce the biophysical capacity of the system to cope with environmental problems.

Several identified innovative with quite systemic perspective

Integrated assessment focus groups

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Results of envisioning stage

Two scenarios:

Socio-institutional future:

Enhance collaboration between agents working at different levels

Urgent need to coordinate and strengthen social networks to achieve sustainability

Sustainability implies empowerment and coordination between different agents at different scales.

Landscape and the ecological value of the Delta is main sustainability

Resource - depends on better organisation, planning and coordination of institutional context

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AquaStress

- **AquaStress is an EU funded integrated project (IP) - 6th Eu Framework Programme**
- **delivering interdisciplinary methodologies**
- **enabling actors at different levels of involvement and at different stages of the planning process to**
- **mitigate water stress problems.**

AquaStress

AquaStress generates scientific innovations to improve the **understanding of water stress** from an integrated multisectoral perspective to support:

- diagnosis and characterisation of sources and causes of water stress;
- assessment of the effectiveness of water stress management measures and development of new tailored options;
- development of supporting methods and tools to evaluate different mitigation options and their potential interactions;
- development and dissemination of guidelines, protocols, and policies;
- development of a participatory process to implement solutions tailored to environmental, cultural, economic and institutional settings;
- identification of barriers to policy mechanism implementation;
- continuous involvement of citizens and institutions within a social learning process that promotes new forms of water culture and nurtures long-term change and social adaptivity.

The end



Thank you for your attention!