

3rd INTERNATIONAL SCIENTIFIC MEUSE SYMPOSIUM

THE MEUSE DISTRICT : CHALLENGES FOR TOMORROW

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ECOSYSTEM SERVICES and RISK-BASED RIVER BASIN MANAGEMENT

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Content

Three parts:

1. Ecosystem services: what is that?
2. Rapidly attracting interest for ecosystem services
3. Ecosystem services and risk-based river basin management

Part I

Ecosystem services: what is that?



Some definitions

Ecosystem

- A dynamic complex of plant, animal, and micro-organism communities and the non-living environment interacting as a functional unit



Ecosystem services (ES)

- The benefits people obtain from ecosystems
- The “services of nature”



Biodiversity

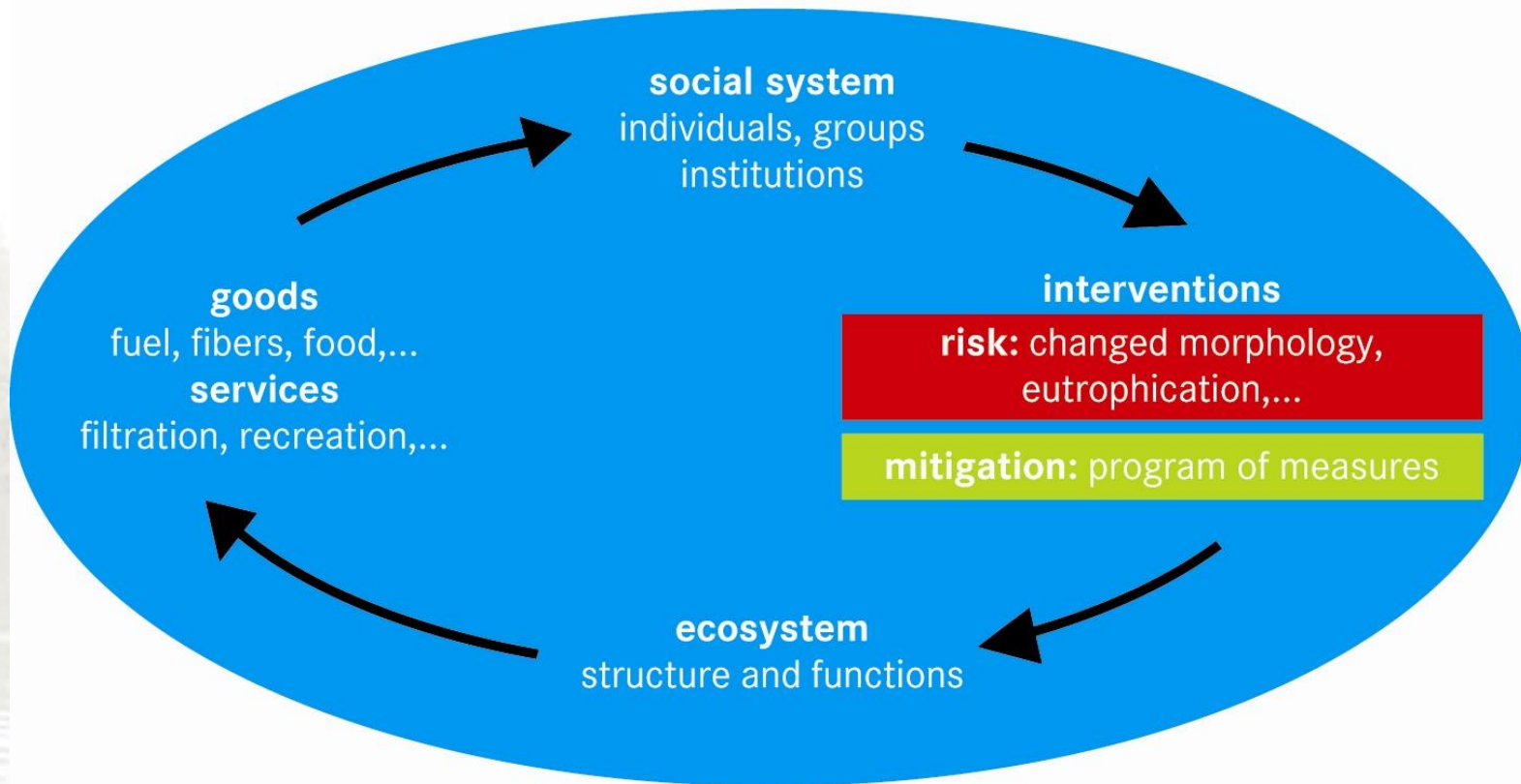
- The variability among living organisms within species and populations, between species, and between ecosystems
- Serves as the foundation for all ecosystem services



Source: *Ecosystem Services: A Guide for Decision Makers* (WRI)

Ecosystem services (ES)

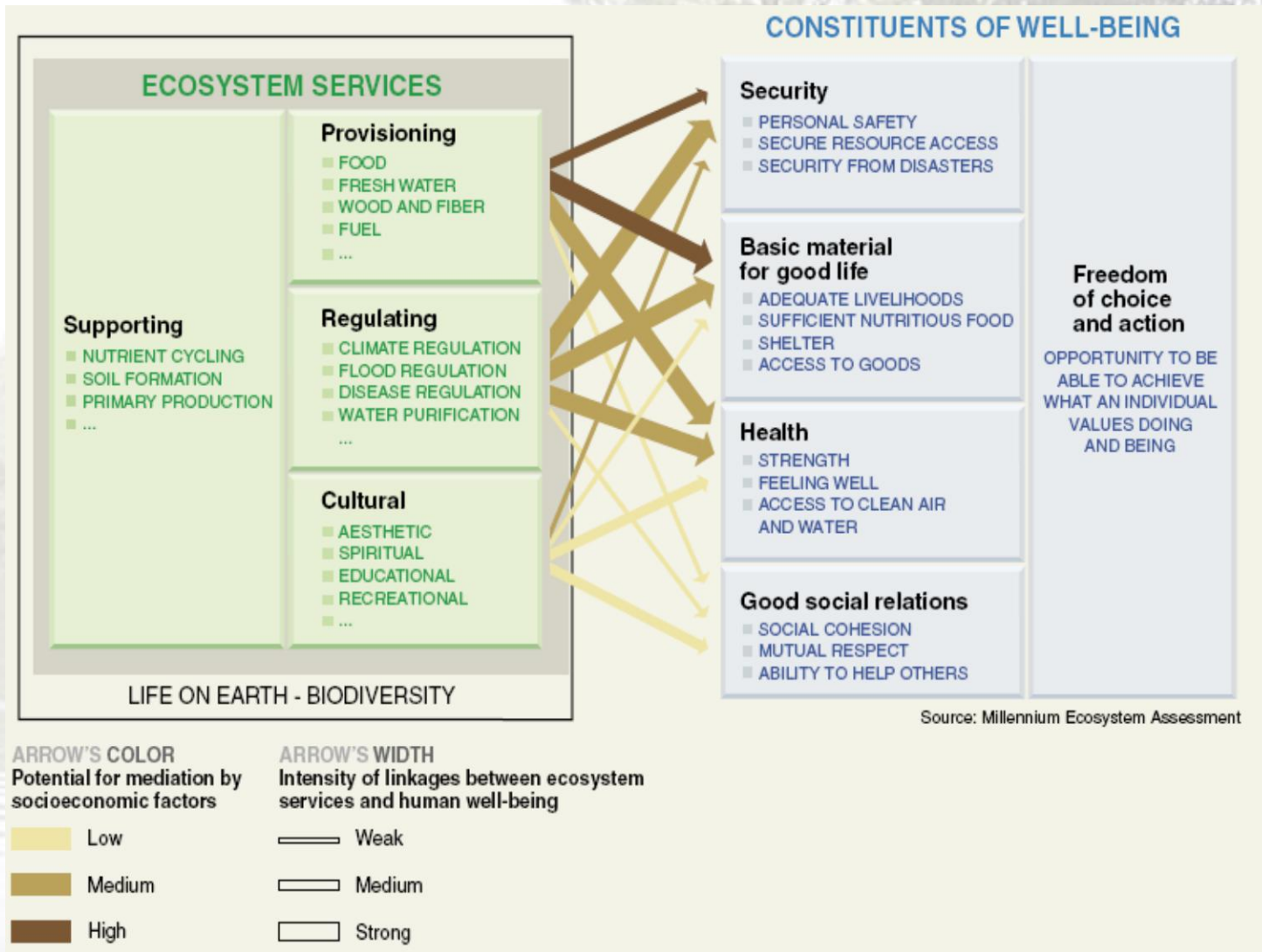
policy



biophysical science

Source: www.resalliance.org and Brils & Harris, 2009

ES and human well-being



Source: Millennium Ecosystem Assessment, 2005

ES and biodiversity (1)

According to EC DG Environment:

“From an economic perspective, biodiversity provides benefits for present and future generations by way of ecosystem services. ...

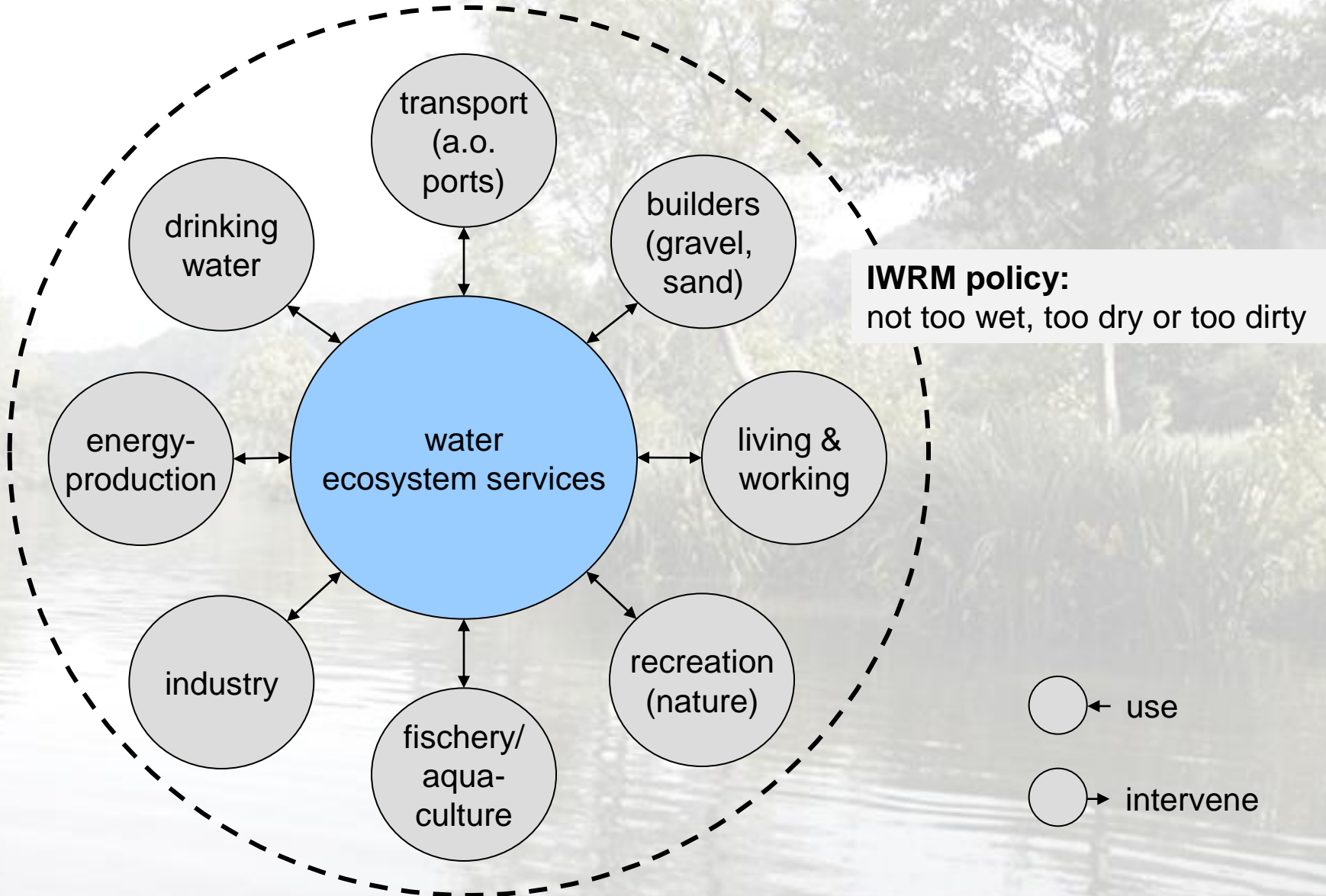
... It is difficult to put precise monetary values on these services worldwide, but estimates suggest they are in the order of hundreds of billions of Euros per year. These services underpin EU growth, jobs and wellbeing”

ES and biodiversity (2)

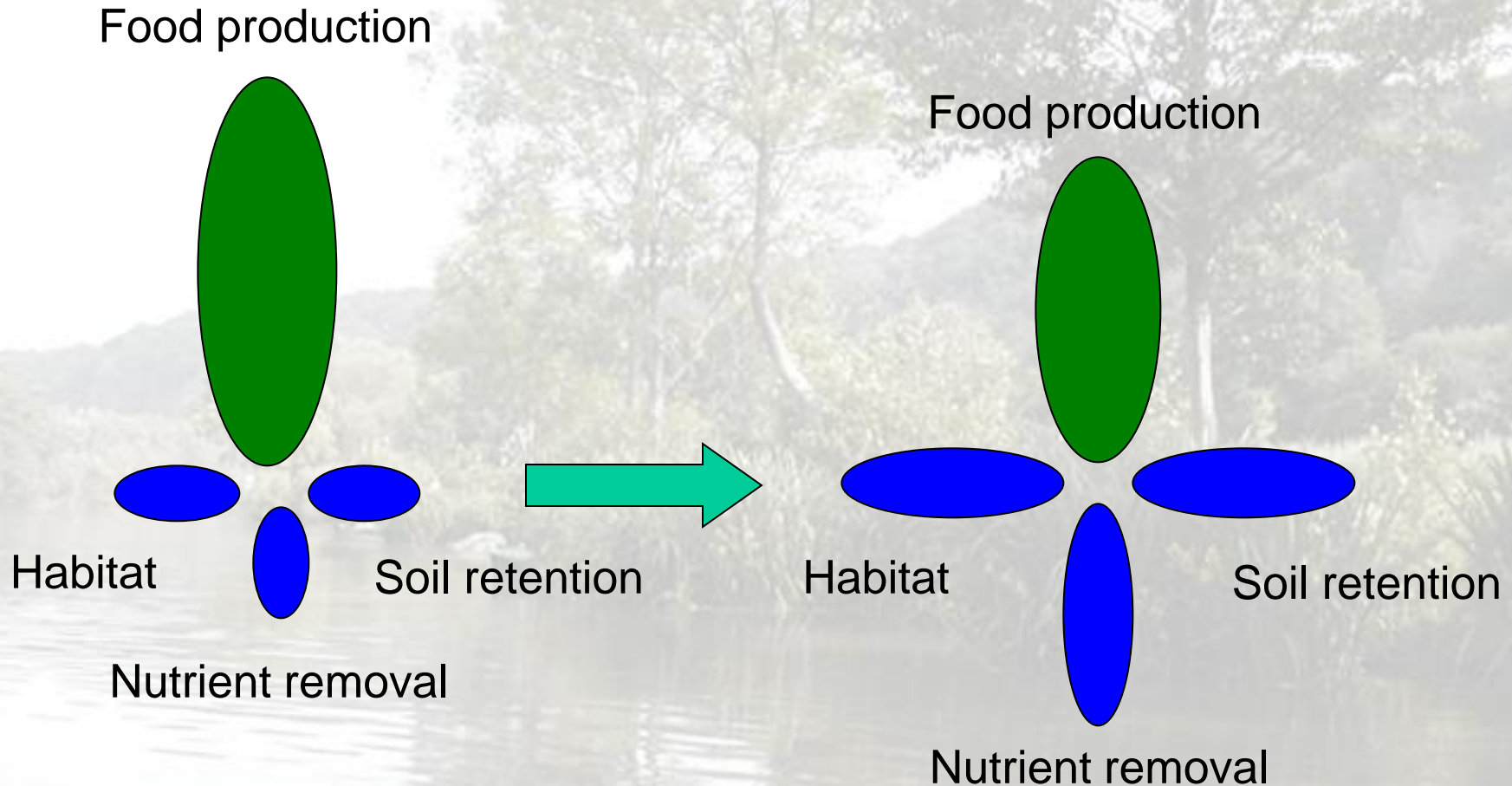
According to several policy and scientific documents, biodiversity seen as:

- indicator for the health/functioning of ecosystems and specifically its potential to deliver ES
- foundation for all ES
- ES: the ecosystem provides biodiversity. This overlaps with indicator function, but also stresses the intrinsic value of biodiversity

Some users of water ES

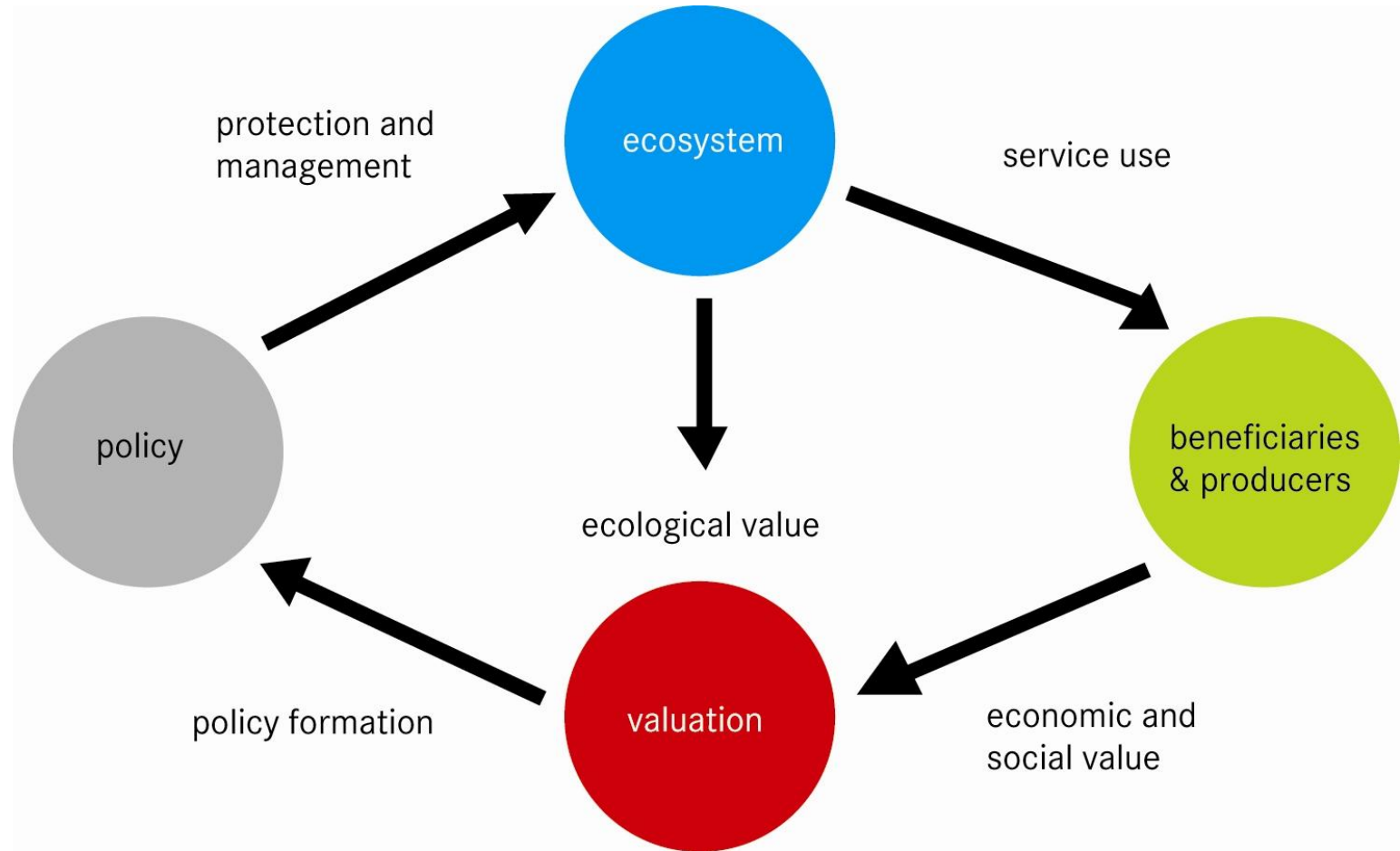


Important notion: ES are coupled!



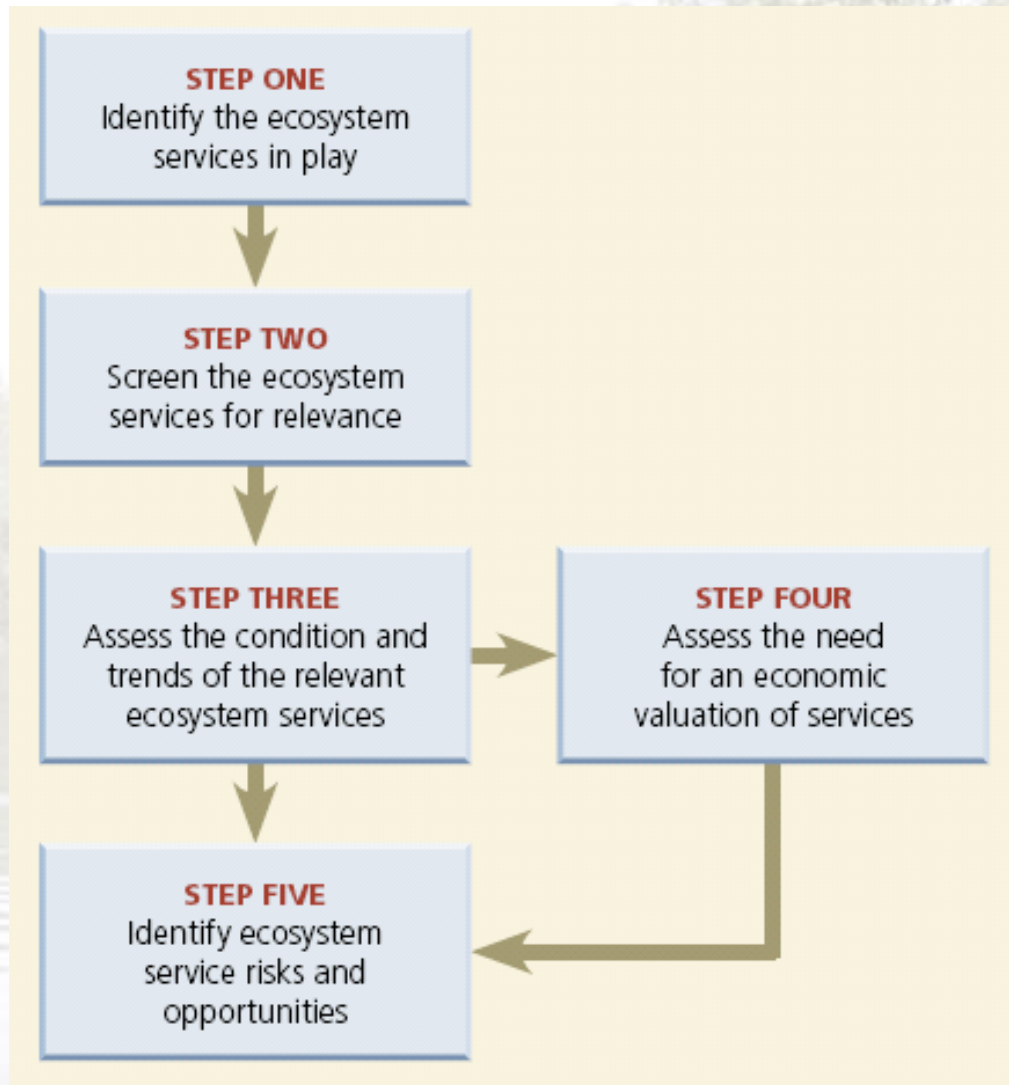
Source: Brauman, final RISKBASE conference, Mechelen, 2009

Generic framework for ES management



Source: Brauman, final RISKBASE conference, Mechelen, 2009

Generic framework for ES (e)valuation



Source: *Ecosystem Services: A Guide for Decision Makers* (WRI)

Part II

Rapidly attracting interest for ecosystem services



Negative cause for ES interest

	Degraded	Mixed	Enhanced
Provisioning	Capture fisheries Wild foods Biomass fuel Genetic resources Biochemicals Fresh water	Timber Fiber	Crops Livestock Aquaculture
Regulating	Air quality regulation Climate regulation Erosion regulation Water purification Pest regulation Pollination Natural hazard regulation	Water regulation Disease regulation	Carbon sequestration
Cultural	Spiritual values Aesthetic values	Recreation & ecotourism	

Two thirds of ES are in decline across the world!

Source: *Ecosystem Services: A Guide for Decision Makers (WRI) and Millennium Ecosystem Assessment, 2005*

Positive causes for ES interest

Many see a huge potential in the application of the ES concept due to several attractive features (but hardly demonstrated in practice yet):

- Guiding concept to sustainable management of soil, sediment, and water resources
- Common language (thus facilitating participatory approaches)
- Broadens scope / widens perspective (more systemic view)
- Addition to 'sustainability' concepts such as: Societal Cost Benefit Analysis (SCBA), Environmental Impact Assessment (EIA), Cradle-to-Cradle (C2C), People-Profit-Planet (PPP)

Transition of EU environmental policy towards ES

Year	Policy	Scope (exact extracts from policy text)
1979	Birds Directive	<ul style="list-style-type: none"> • conservation of all species of naturally occurring birds • measures to maintain the population of the species referred to in Article 1
1992	Habitats Directive	<ul style="list-style-type: none"> • measures ... to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora
2000	Water Framework Directive	<ul style="list-style-type: none"> • prevents further deterioration and protects and enhances the status of aquatic ecosystems • achieve the objective of at least good water status
2002	Working document Natura 2000 network	<ul style="list-style-type: none"> • community-wide network of nature protection areas • ... to assure the long-term survival of Europe's most valuable and threatened species and habitats.
2006	Proposed Soil Framework Directive	<ul style="list-style-type: none"> • preservation of soil functions • current scientific knowledge on soil biodiversity and its behaviour is too limited to allow for specific provisions
2008	Marine Strategy Framework Directive	<ul style="list-style-type: none"> • applying an ecosystem-based approach to the management of human activities while enabling a sustainable use of marine goods and services

conserving
single
species

conserving
status of
communities
of species

enhancing
connectivity

sustaining
Ecosystem
Services

Part III

Ecosystem services and risk-based river basin management



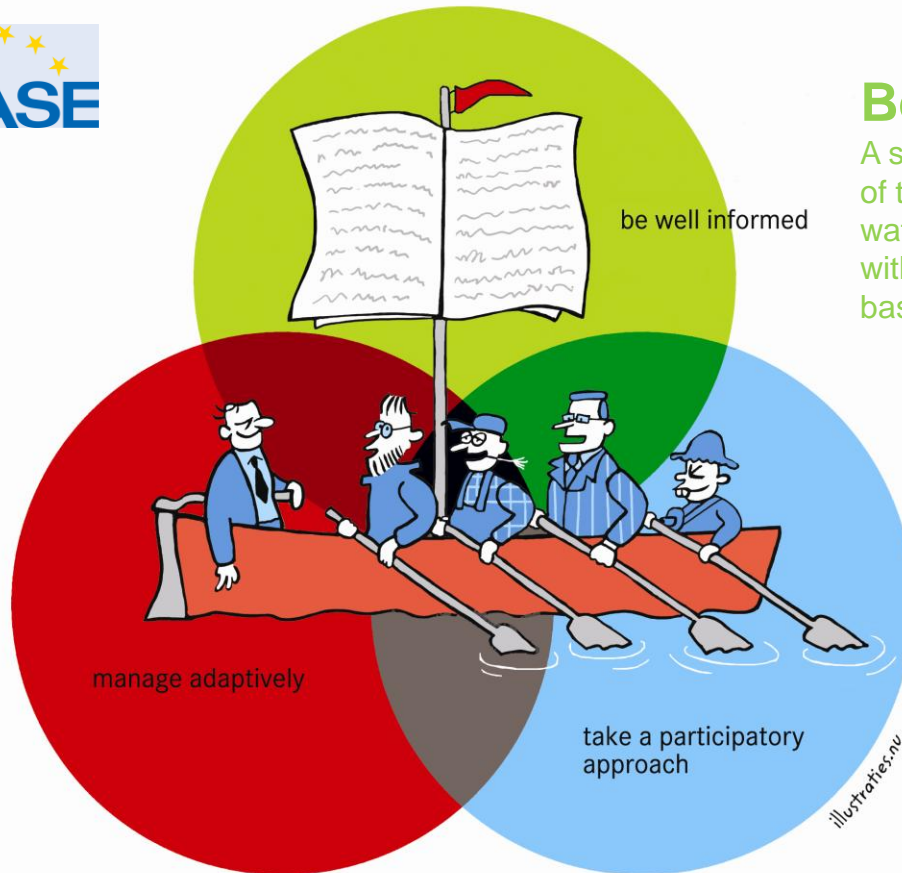
Risk-based river basin management

RISKBASE:



- EC FP6 Coordination Action project (2007 - 2009)
- Review and synthesis of FP projects, and other major initiatives, related to integrated risk assessment based management of the (ground)water/sediment/soil system at the river basin scale
- aimed to deliver (a.o.) a generic approach (guiding principles) to integrated risk-based management of European river basins
- Website: www.riskbase.info

Key-principles to risk-based management



Be well informed:

A sound, evidence based understanding of the functioning of the soil-sediment-water ecosystem and of its interaction with the social system is the basis to river basin management.

Manage adaptively:

We have to learn-by-doing as social/ecological systems are complex and dynamic and can respond in non-linear and unexpected ways.

Take a participatory approach:

The involvement of stakeholders will improve management, e.g. because they may bring in local knowledge.

ES and risk-based river basin management

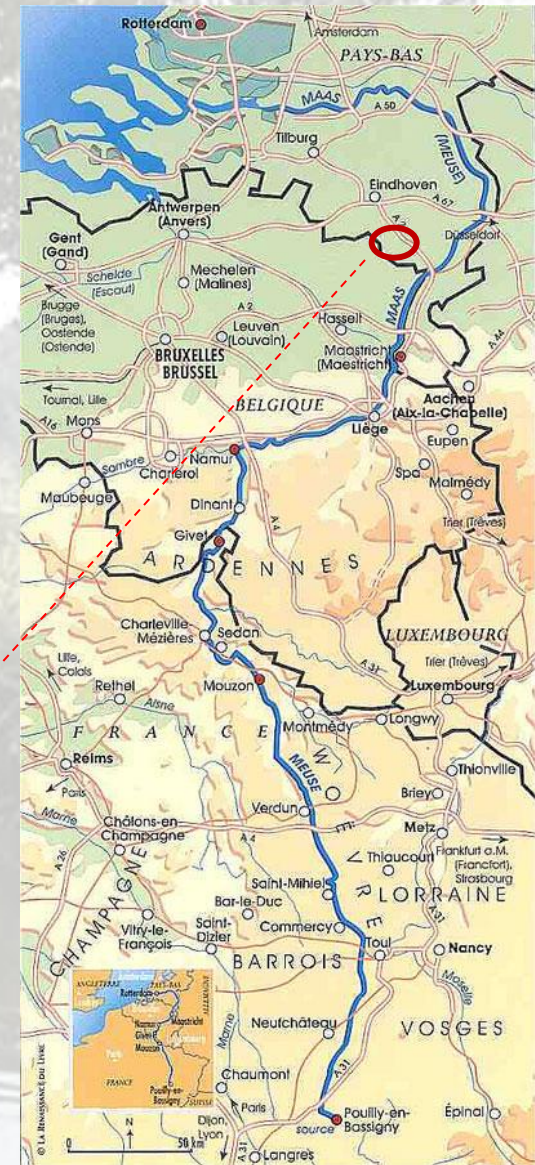


- ES is target objective: risk-based management aims to enable the sustainable use of ES provided by river basins
- ES has promising potential as facilitating, common language



Tested in pilot project: **'Boulder Aa'**
(Deltares & Waterboard De Dommel)

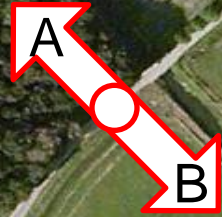
See also: www.dommel.nl/projecten/projecten_in/renheide_op_peil



Picture: www.riva-maas.org



current situation

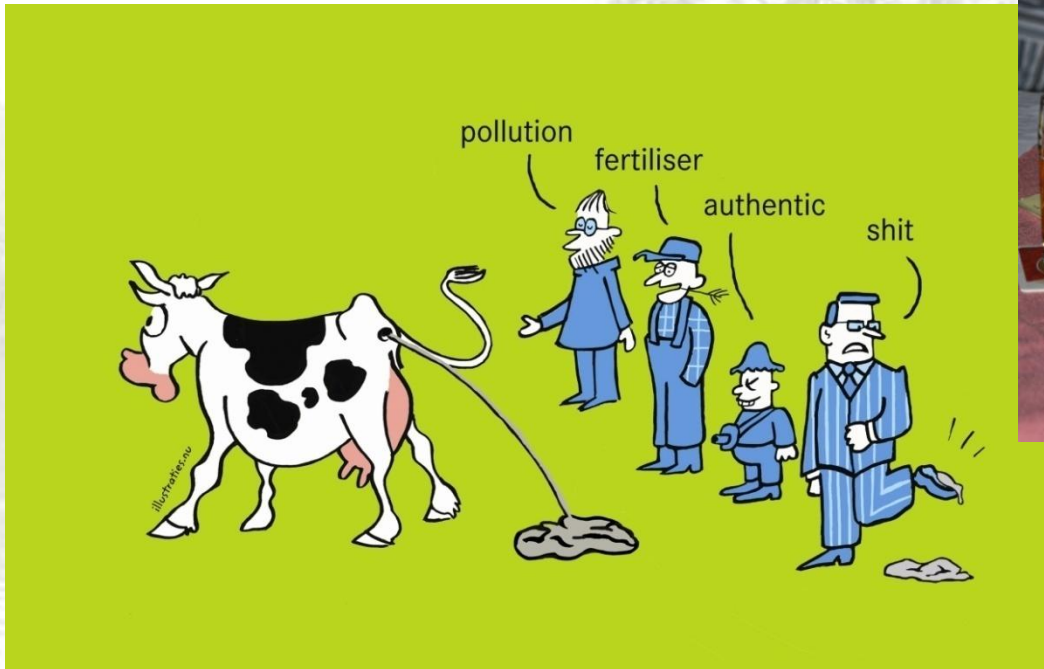


WFD objective

Aerodata International Surveys
© 2010 Tele Atlas

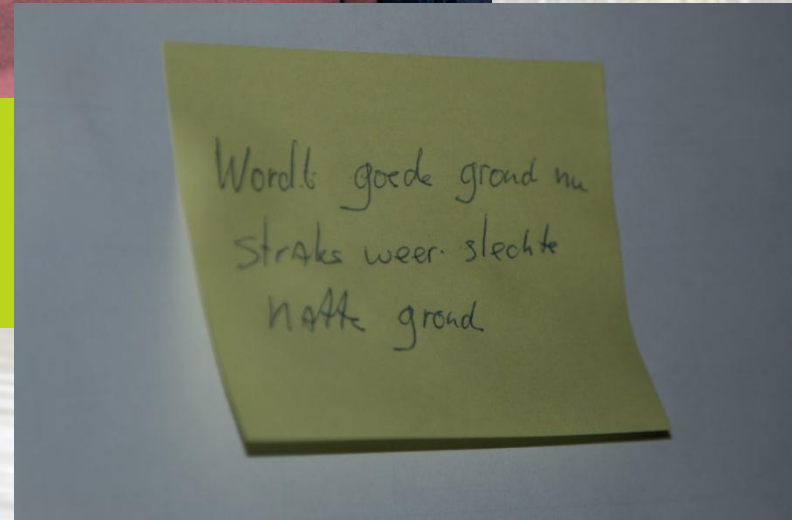
©2009 Google

Is ES facilitating, common language for 'Buulder Aa'?



“Communication difficulties originate from the ‘jargon’ used in the different communities”

Source: Brils & Harris, 2009



How to move forward with ES?

RISKBASE recommends to:



- Compare and analyse experiences and insights from ES oriented, or supporting, activities
- Then target experiences and insights from pilot, place-based ES case studies and focus on the relation between ES and sustainable use and management of our natural resources, especially in the context of spatial planning and river basin management

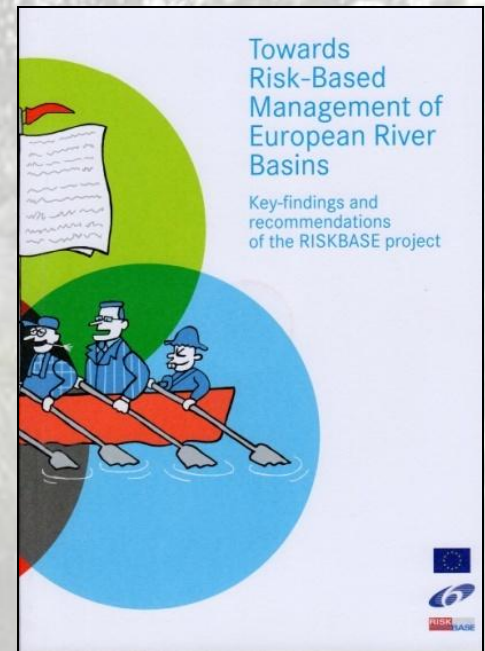
Results could be:

- overview of best practices
- guidance, tools and recommendations for ES implementation

Read more?

- Ecosystem Services in river basin management – Background information and discussion document (Van der Meulen & Brils, 2008)
- Towards Risk-Based Management of European River Basins – Key-findings and recommendations of the RISKBASE project (Brils & Harris, 2009)

Both available at: www.riskbase.info



Thank you for your attention