



## Strategic Environmental Assessment:

Putting biodiversity and  
stakeholders interests  
on the decision maker's agenda.

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# To start with: Environmental Impact Assessment (EIA)

Group:

- What can EIA contribute to biodiversity?

# Environmental Impact Assessment (EIA)

## Reminder:

- Environmental Impact Assessment is the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

## or in short:

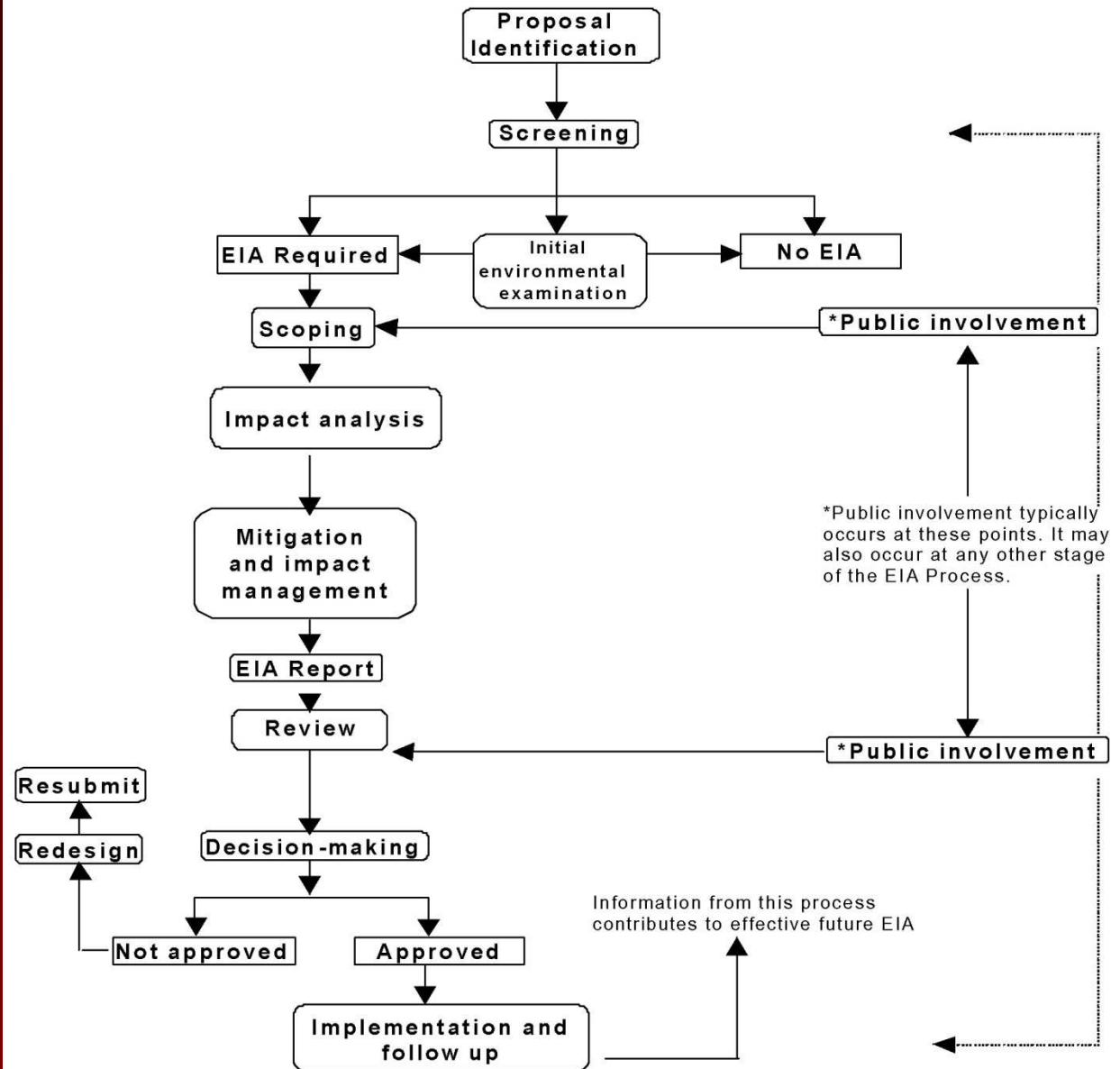
- Analysing, monitoring and managing the consequences of development

Source: IAIA principles ([www.iaia.org](http://www.iaia.org))

# What is good Environmental Assessment?

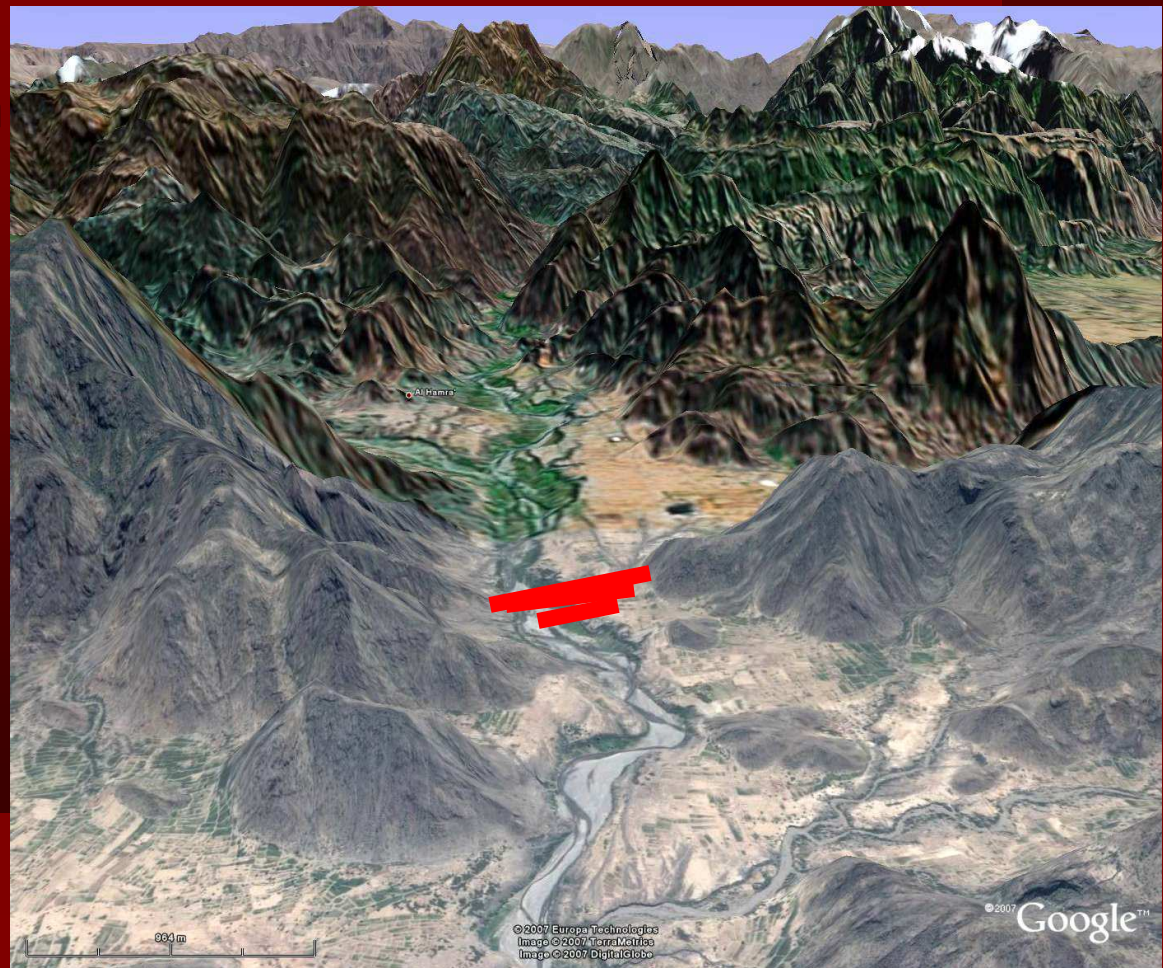
- Describes activities likely to cause impacts
- Documents and analyses the setting
- Identifies affected and/or interested peoples
- Facilitates the process of participation
- Describes possible impacts on identified groups
- Presents project alternatives (including a no development option)
- Recommends mitigation measures
- Implements environmental monitoring and management

# EIA: a legally embedded highly structured process



# Starting from EIA: why Strategic Environmental Assessment (SEA)?

- Proposed dam in Wadi Surdud, Yemen
- US \$ 150 million
- EIA review mission





# Wadi Surdud reservoir & dams site



# Comments

1. Relevant boundaries of the study area?
2. Overarching reference policy/document?
3. Main expected impact from dam & reservoir?
4. Given the negative findings, how to proceed? (IA is not created to stop development !!)

Our recommendation: start SEA at river basin level, before creating major interventions, focussed on ongoing processes at basin level, and opportunities and constraints for development.



# What is / does SEA?

SEA is a tool to:

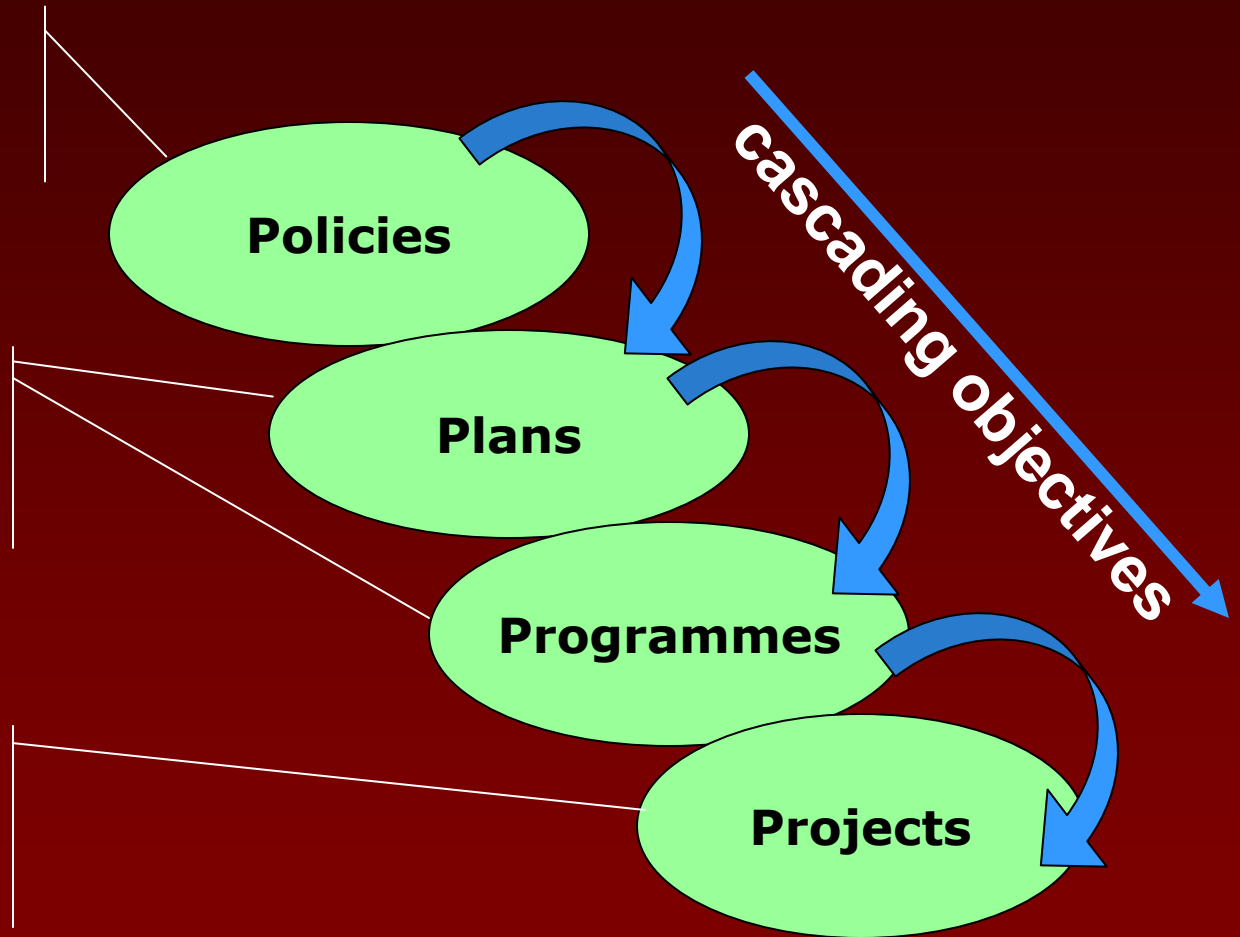
- Structure the public and government debate in the preparation of policies, plans & programmes;
- Feed this debate through a robust assessment of the environmental consequences and their interrelationships with social and economic aspects;
- Ensure that the results of assessment and debate are taken into account during decisions making and implementation.

# Tiering of SEA and EIA

Sustainability assessment, or integrated policy appraisal, or SEA

Strategic Environmental Assessment  
(EU SEA directive, 2004)

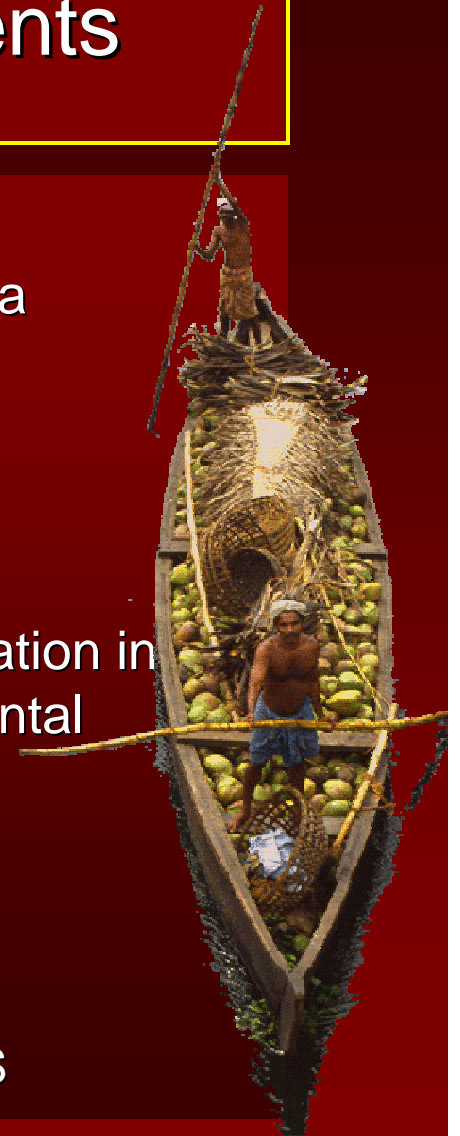
Environmental Impact Assessment  
(EU EIA directive 1999)



# Relevant international agreements

UN Economic Commission for Europe (UNECE):

- Convention on Environmental Impact Assessment in a Transboundary Context  
or: 'Espoo EIA Convention' (1991)
  - Kiev SEA Protocol (2003)
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters  
or 'Aarhus Convention' (1998)
- Convention on Biological Diversity:
  - SEA Guidelines (2006) – followed by Ramsar and CMS

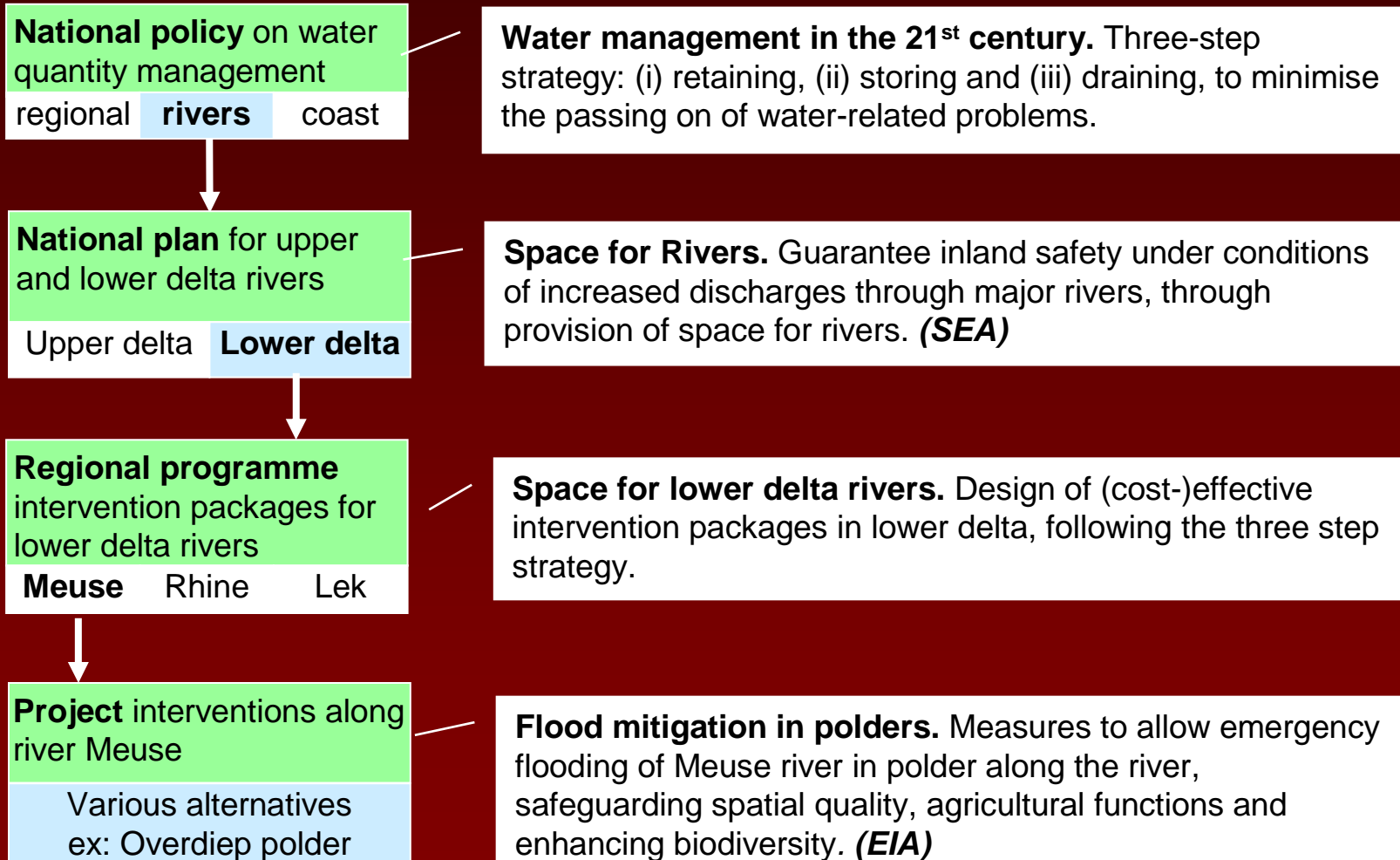


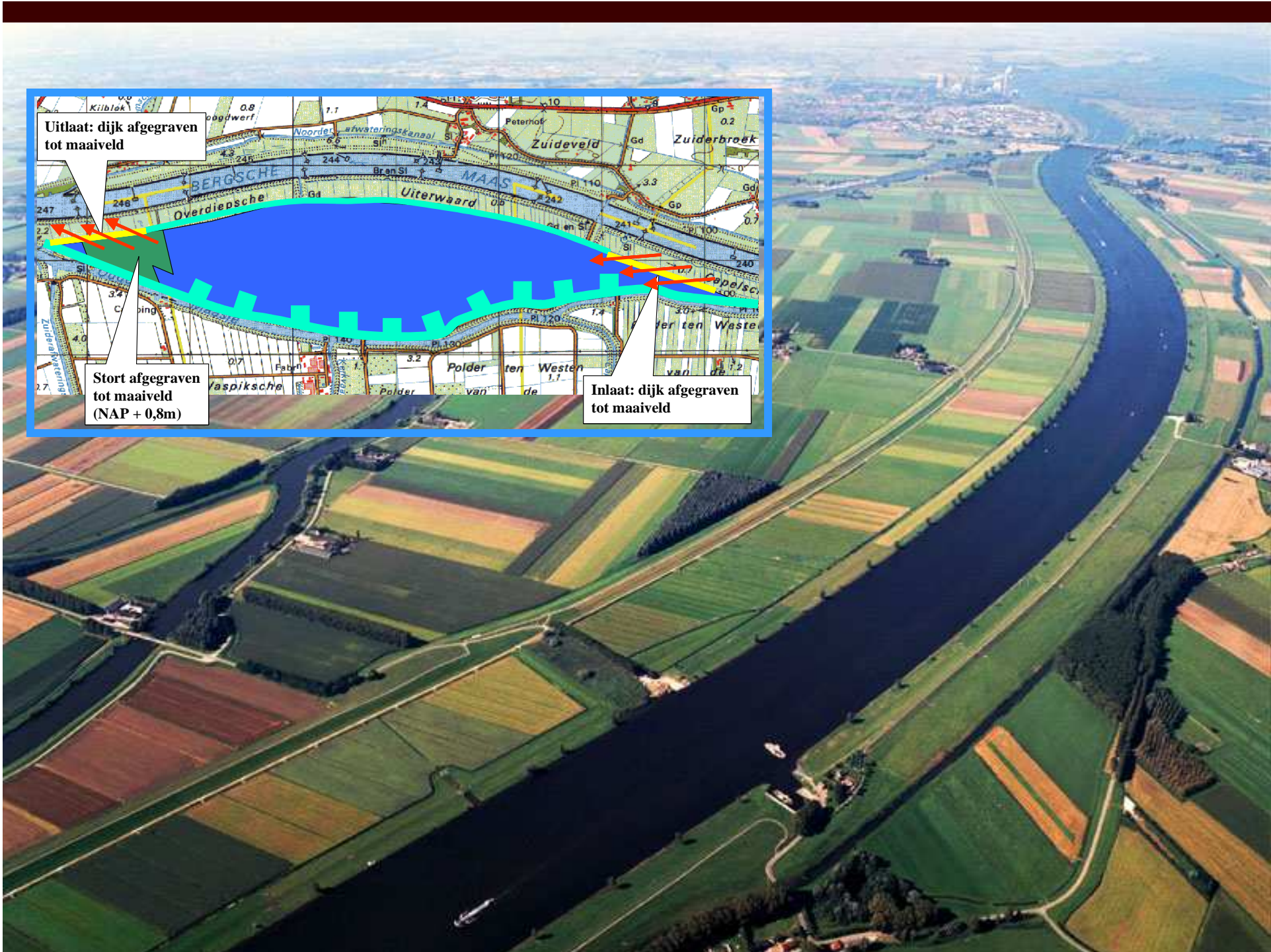
## How do SEA and EIA differ?

Early in decision cycle	At the end of the cycle
Pro-active – development of plans	Reactive to existing plans
Broad range of alternatives	Alternatives very limited
Can deal with cumulative effects	Limited view on cumulative impacts
Broad perspective, little detail, vision	Narrow perspective, high level of detail
No clear proces – linked to planning cycle	Well-defined process
Focus on sustainability agenda	Focus on symptoms of environmental degradation



# Hierarchy of policies, plans and programmes: water quantity management in NL





Uitlaat: dijk afgegraven tot maaiveld

Stort afgegraven tot maaiveld (NAP + 0,8m)

Inlaat: dijk afgegraven tot maaiveld

# Two dominant SEA approaches

## Technical assessment versus Facilitator of decision-making

SEA derived from EIA methodology:

- Formalized methodology;
  - Assessment of impacts of specific proposals;
  - Structured opportunity for feedback to decision makers.
- “*Re-active*” approach; often forced by law (EU SEA directive) upon the “unwilling”.

Policy / planning approach:

- Timing and form of input depends on the planning process;
  - Interventions are made before proposals are finalized;
  - Tries to influence the overall process.
- “*Pro-active*” approach; considered as contribution to good planning by the “converted”.





# WHY special attention to biodiversity?

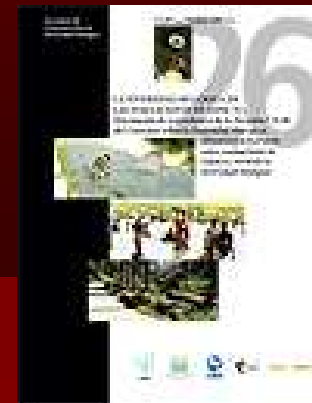
- Legal and international obligations:
  - protected species / areas, protected ecosystem services, indigenous areas, treaties, etc.
- Safeguarding livelihoods:
  - people depending on biodiversity
- Sound economic decision making:
  - ecosystems services make economic sense
- Identification of stakeholder
  - services represent people's interests
- Future opportunities for development:
  - unknown potential hidden in (genetic) diversity





# Convention on Biological Diversity(CBD) and impact assessment

- Article 14: Impact assessment and minimizing adverse impacts
- Memorandum of Cooperation with the International Association for Impact Assessment (IAIA)
- 2002 EIA Guidelines adopted
- 2006 Voluntary guidance on SEA adopted



# 3 levels of diversity 3 management objectives

ecosystems

species diversity

genetic diversity

conservation



sustainable  
use



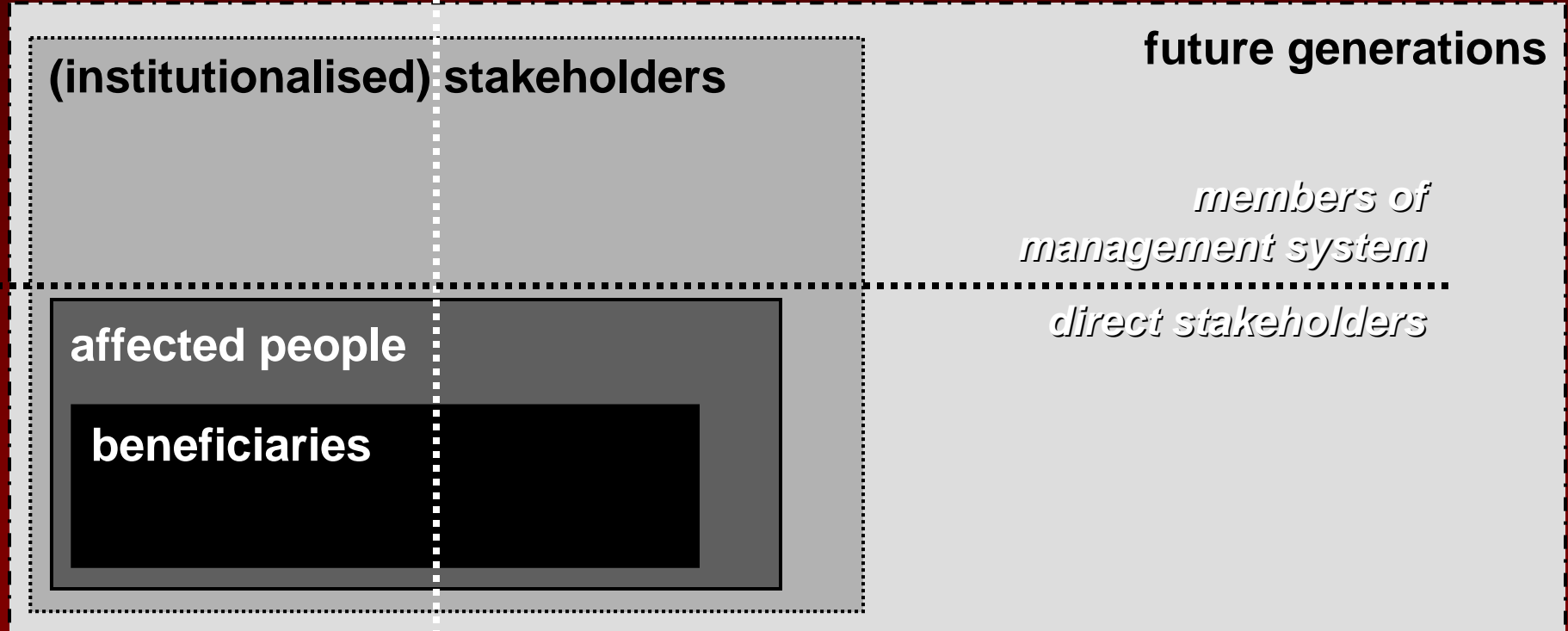
**BIODIVERSITY IS ABOUT PEOPLE !**

equitable  
sharing



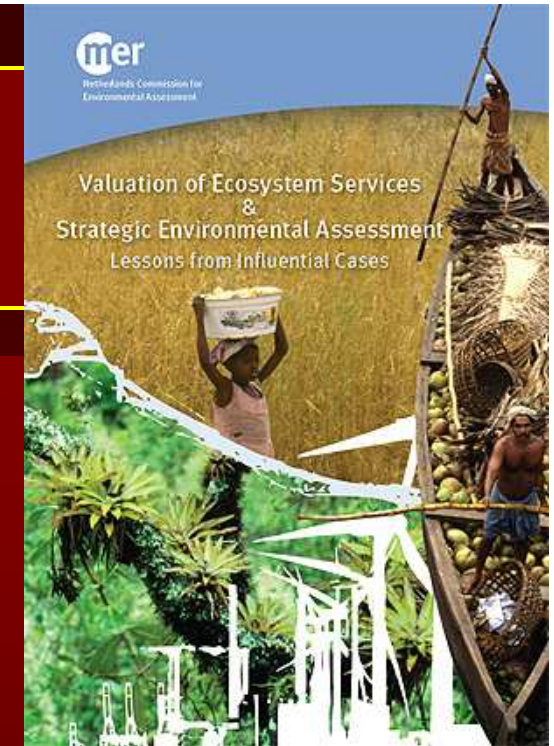
# Who are stakeholders?

*on site* | *distant (off site)*



# Ecosystem services represent values for society

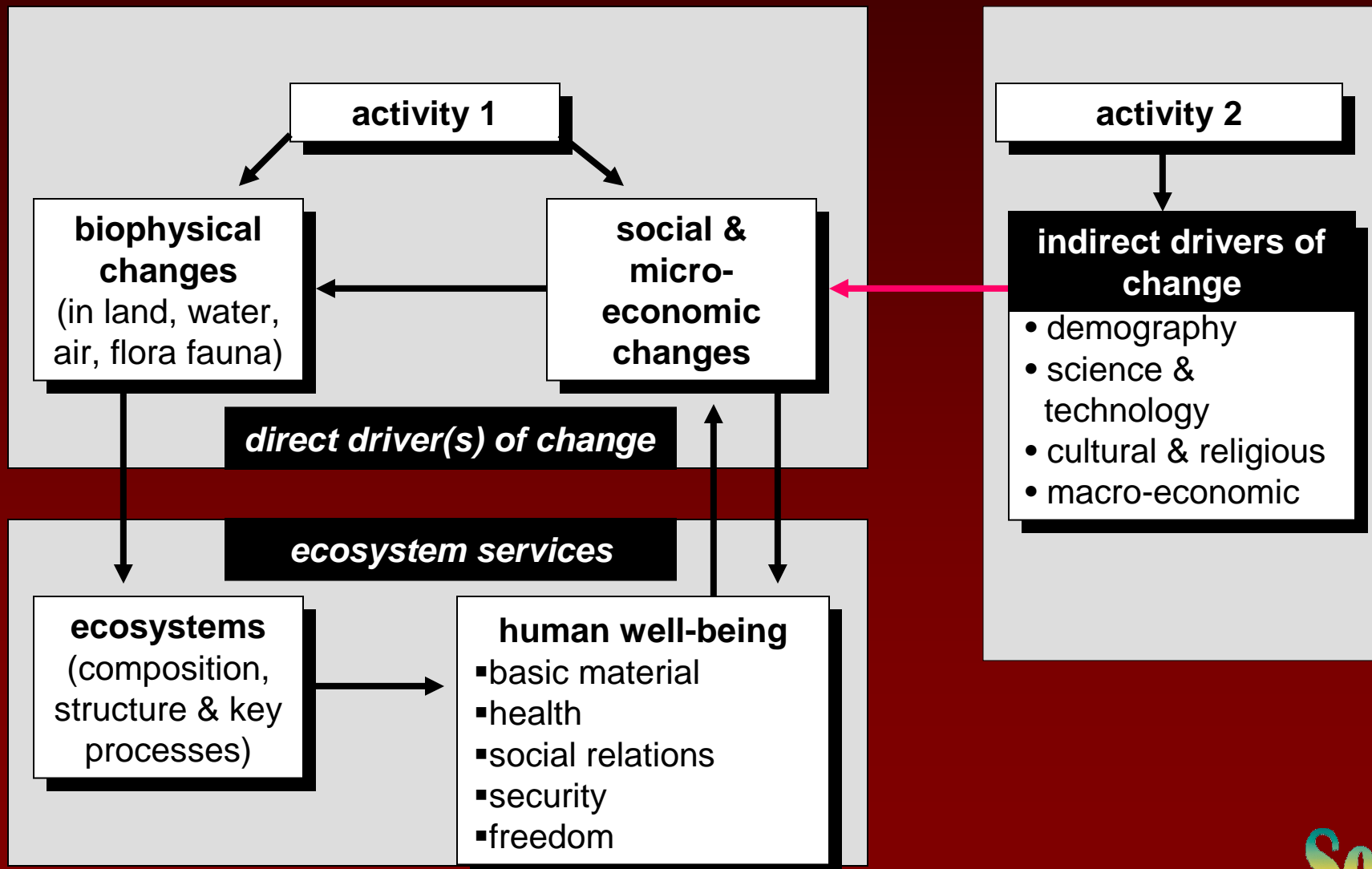
- Social
  - employment, safety, health, etc. (quality of life)
- Economic
  - direct monetary (selling of products)
  - inputs (raw materials for processing)
  - indirect (protection of infrastructure by mangroves)
- Ecological
  - future value (saving opportunities for our children)
  - spatial value (guarantee functioning of systems elsewhere)





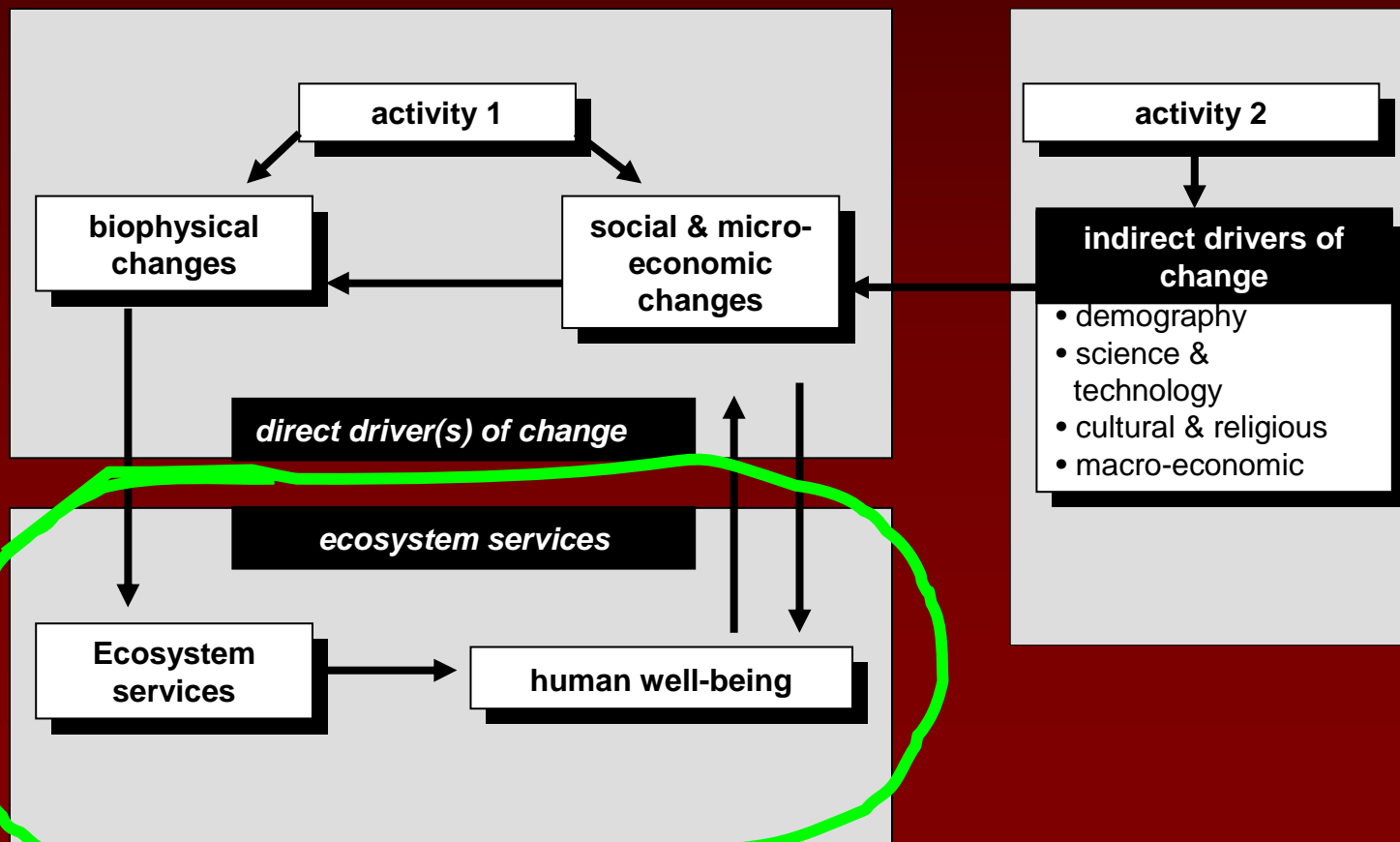
# How to address biodiversity in EIA/SEA?

## The assessment framework



# What to do if knowledge is lacking? (Remind: in SEA knowledge is always lacking!)

Starting point: plan area is known, activities not (yet)















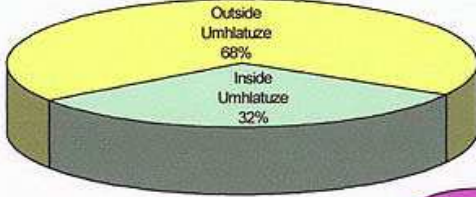
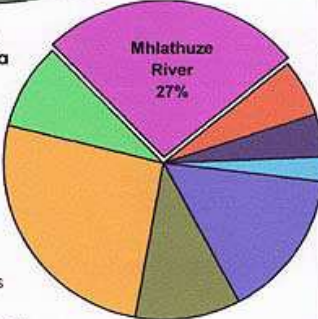
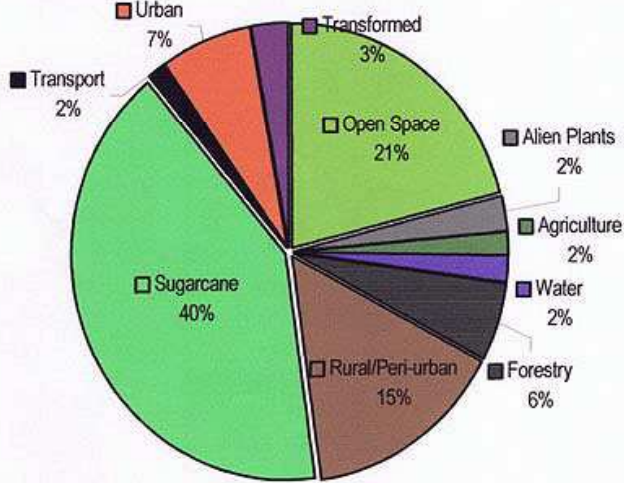
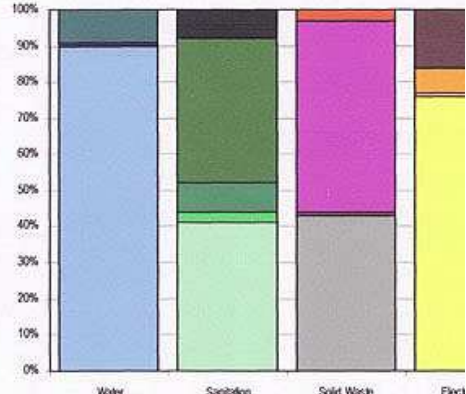
## Example: SEA for land use planning in South Africa


- SEA identifies and quantifies ecosystem services
- Defines limits of acceptable change
- Useful to set boundaries for human activities

# Mhlatuze River Catchment



Rating	Status Quo Statement: Mhlatuze River Catchment	Summary of Catchment Condition
<p style="text-align: center; font-size: 24px; color: white; background-color: red; padding: 10px;">RED</p> 	<p>The Mhlatuze River catchment is predominantly agricultural, containing both commercial &amp; traditional agriculture. Mining is a key industry in this area. Only 32% of the catchment lies inside the Municipal Area, with a number of land uses lying outside the Municipal Area that currently have a significant impact on environmental quality inside the Municipal Area. The Mhlatuze River flows into the Estuary Catchment. The catchment contains most of Empangeni, the Zululand University, Ngwelezane &amp; Felixton. Levels of servicing are moderate to high, but concentrated in the more urban portions of the catchment. The natural asset has been largely transformed, but significant pockets of natural open space still remain. The Mhlatuze River is one of the two most pressured in the country for supply of water, as such the flows &amp; water quality have been significantly affected.</p> <p><b>Positive environmental aspects of the catchment:</b></p> <ul style="list-style-type: none"> <li>• Patches of high quality natural asset remain with a high biodiversity value &amp; functionality with respect to water quality protection</li> <li>• Catchment borders on the Ngoye Forest, which combined with certain more natural areas of the upper catchment have a high recreation, culture &amp; tourism development potential</li> <li>• Good agricultural productivity in the catchment</li> </ul> <p><b>Negative environmental aspects of the catchment:</b></p> <ul style="list-style-type: none"> <li>• Poor / compromised water quality &amp; quantity in the Mhlatuze River limits its value as a water supply &amp; recreational resource</li> <li>• High sediment loads &amp; poor water quality in the Mhlatuze River threaten the sensitive estuarine receiving environment</li> <li>• Air quality in portions of the catchment has been compromised by industrial emissions generated inside &amp; outside the catchment</li> <li>• Mining for minerals reduces the aesthetic, recreational &amp; biodiversity amenity</li> <li>• Major transport routes pose an environmental risk with respect to possible spillages</li> </ul>	<p><b>Water Quality</b> </p> <p><b>Water Quantity</b> </p> <p><b>Flood Risk</b> </p> <p><b>Soil Erosion Control</b> </p> <p><b>Air Quality</b> </p> <p><b>Pest &amp; Disease Control</b> </p> <p><b>Biodiversity</b> </p> <p><b>Recreation &amp; Culture</b> </p> <p><b>Climate</b> </p> <p><b>Agricultural Productivity</b> </p> <p><b>Natural Products</b> </p>

Catchment Size & Description	Land Use	Service Levels																				
 <p><b>Mhlatuze River Catchment: 20 966Ha</b> <b>uMhlatuze Municipal Area: 79 670Ha</b></p> <ul style="list-style-type: none"> <li>• Flat coastal plain rising to rugged hills inland with granite outcrops</li> <li>• Borders on the Ngoye Forest</li> <li>• Contains the town of Empangeni &amp; industry at Felixton</li> <li>• N2 north coast corridor &amp; John Ross Highway</li> <li>• Nseleni River joins Mhlatuze near Richards Bay</li> <li>• Feeds into the Estuary Catchment</li> <li>• Formerly fed into the Harbour but has now been diverted</li> <li>• Population in catchment: 68 176 people</li> </ul> 		 <table border="1" style="font-size: 8px; width: 100%; text-align: center;"> <tr> <td>Water</td> <td>Sanitation</td> <td>Solid Waste</td> <td>Elect</td> </tr> <tr> <td><input type="checkbox"/> Piped</td> <td><input type="checkbox"/> Borehole</td> <td><input type="checkbox"/> Streams / Rivers</td> <td><input type="checkbox"/> Sewer</td> </tr> <tr> <td><input type="checkbox"/> Septic Tank</td> <td><input type="checkbox"/> Chemical Toilet</td> <td><input type="checkbox"/> Pit Latrine</td> <td><input type="checkbox"/> None</td> </tr> <tr> <td><input type="checkbox"/> Municipal Removal</td> <td><input type="checkbox"/> Communal Dump</td> <td><input type="checkbox"/> Own Dump</td> <td><input type="checkbox"/> No Re</td> </tr> <tr> <td><input type="checkbox"/> Electrified</td> <td><input type="checkbox"/> Gas</td> <td><input type="checkbox"/> Paraffin</td> <td><input type="checkbox"/> Wood</td> </tr> </table>	Water	Sanitation	Solid Waste	Elect	<input type="checkbox"/> Piped	<input type="checkbox"/> Borehole	<input type="checkbox"/> Streams / Rivers	<input type="checkbox"/> Sewer	<input type="checkbox"/> Septic Tank	<input type="checkbox"/> Chemical Toilet	<input type="checkbox"/> Pit Latrine	<input type="checkbox"/> None	<input type="checkbox"/> Municipal Removal	<input type="checkbox"/> Communal Dump	<input type="checkbox"/> Own Dump	<input type="checkbox"/> No Re	<input type="checkbox"/> Electrified	<input type="checkbox"/> Gas	<input type="checkbox"/> Paraffin	<input type="checkbox"/> Wood
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Key Environmental Service Assets	Environmental Services Supplied
 <p>Natural Open Space % in Catchment</p> <ul style="list-style-type: none"> <li>• 5 freshwater lakes &amp; associated wetlands in the mid-catchment</li> <li>• Grassland, savanna, wetland, valley bushveld &amp; thicket patches in upper &amp; mid-catchment</li> <li>• Riverine corridors offering connectivity between open spaces at the coast and in the interior</li> <li>• Significant cyperus swamps, swampforest, reedbeds &amp; wetlands in the lower catchment</li> </ul>	<ul style="list-style-type: none"> <li>• Freshwater lakes in the mid-catchment harbour red-data fish species &amp; are thus of national biodiversity importance.</li> <li>• Freshwater lakes are aesthetically pleasing &amp; offer recreational development use opportunities.</li> <li>• Natural areas, especially wetlands, swampforest &amp; swamps perform significant role in improving water quality, capturing &amp; regulating sediment flows in &amp; attenuating floods.</li> <li>• Lakes also perform important water quality improvement function, &amp; capture eroded sediment. Also a key source of fish protein.</li> <li>• Remaining floodplain areas regulate sediment flows in catchment, &amp; attenuate floods to some extent.</li> <li>• Mhlatuze River is an important supplier of water locally &amp; regionally.</li> <li>• River also performs waste assimilation &amp; dilution service from urban &amp; industrial outputs.</li> <li>• Natural areas are an important source of natural products.</li> <li>• Agricultural production service significant.</li> </ul>



## Geographically defined area provides information on associated ecosystem services

### Characteristics of PPP:

- Area well defined, interventions not

### Approach to SEA:

- Map ecosystem services
- Identify stakeholders of these services to participate in SEA process (valuation)
- Define opportunities (underexploited services) and constraints (conflicting use)

# Group: What input can NBSAPs provide for such SEA?

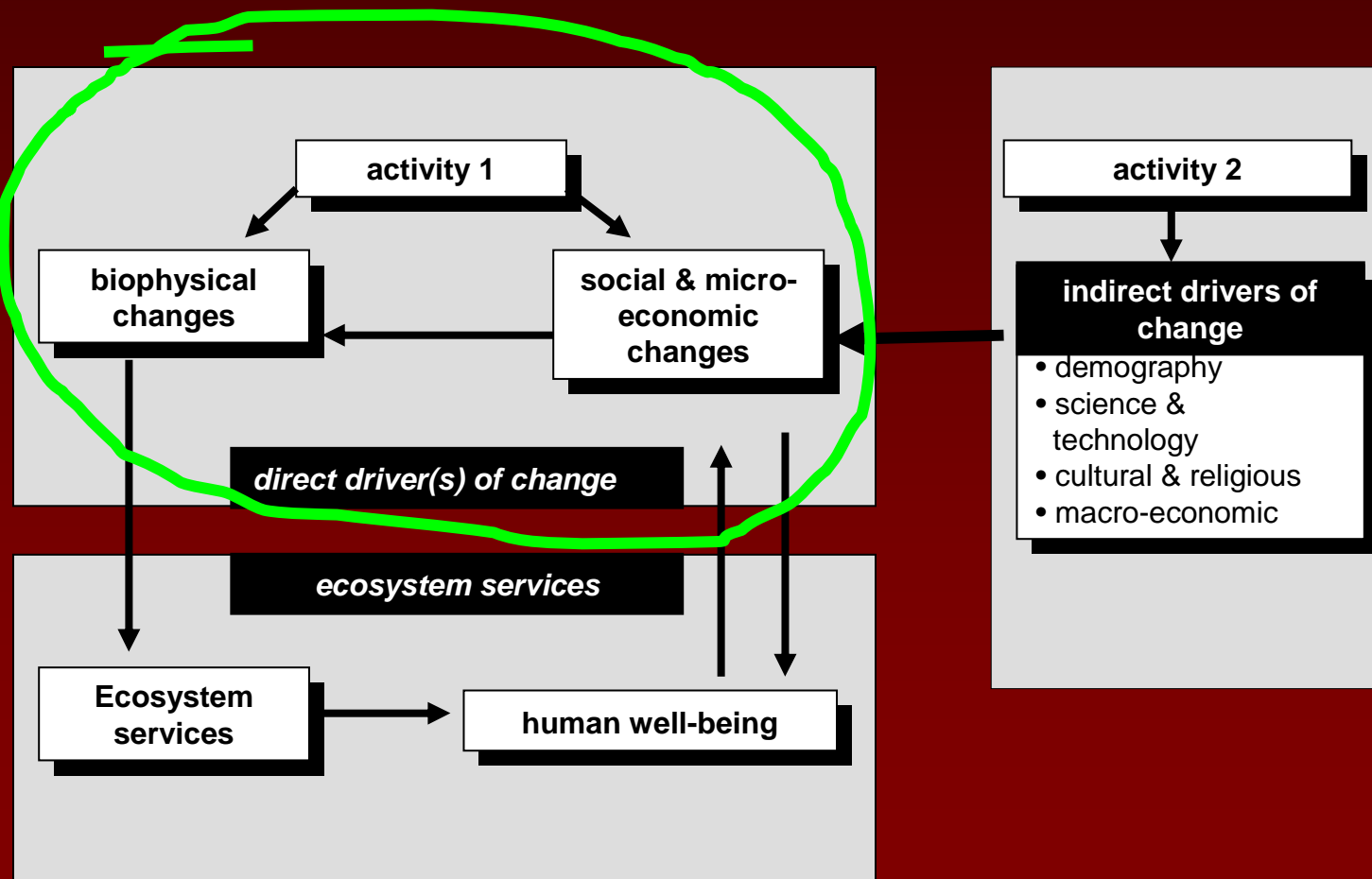
Examples of ecosystem services linked to formal regulations:

- *Ecosystem service: preservation of biodiversity*
  - protected areas/habitats, protected species;
  - International status: Ramsar convention, UNESCO Man and Biosphere, World Heritage Sites
  - Subject to national policies: Biodiversity Action Plans (BAP), the Netherlands Ecological Network (NEN), Natura 2000 Network.
  - Marine Areas (sensitive areas prone to oil pollution from shipping).
  - Sites designated under international agreements, eg OSPAR Marine Protected Areas
  - Sites hosting species under the Bonn Convention (migratory sp.)
  - Sites hosting species under the Bern Convention (Annex 1 and 2 of the Convention on the Conservation of European Wildlife and Natural Habitats, 1979)
- *Ecosystem service: provision of livelihood to people*
  - Extractive reserves (forests, marine)
  - Areas of indigenous interest
  - Touristic (underwater) parks

- *Ecosystem service*: preservation of human cultural history / religious sites
  - Landscape parks
  - Sacred sites, groves
  - Archaeological parks
- *Other ecosystem services*, in some countries formally recognised
  - Flood storage areas (service: flood protection or water storage)
  - Water infiltration areas (service: public water supply)
  - Areas sensitive to erosion (service: vegetation preventing erosion)
  - Coastal defences (dunes, mangroves) (service: protecting coastal hinterlands)
- Urban or peri-urban parks (service: recreational facilities to urban inhabitants)

# What to do if knowledge is lacking? (2)

Starting point: activities are known, but locations are not (yet)



# What to do if knowledge is lacking? (2)

**Activities are known, locations not (yet)**

Example: water supply policy Netherlands

- Water extraction is major driver of change
- Wetlands suffer from dessication
- Study at national scale:
  - quantify drivers of change (computer model)
  - focus on simple indicators (vegetation).
- Modelling data and national vegetation maps provided computational model identifying sensitive areas that require special attention.





# In general: interventions lead to known direct drivers of change in biodiversity

## Characteristics of PPP:

- intervention known, location not defined

## Procedure:

- Identify drivers of change
- Draw administrative boundaries of the PPP
- Identify ecosystems (or related ecosystem services) sensitive to the expected drivers of change.
- Make sensitivity map

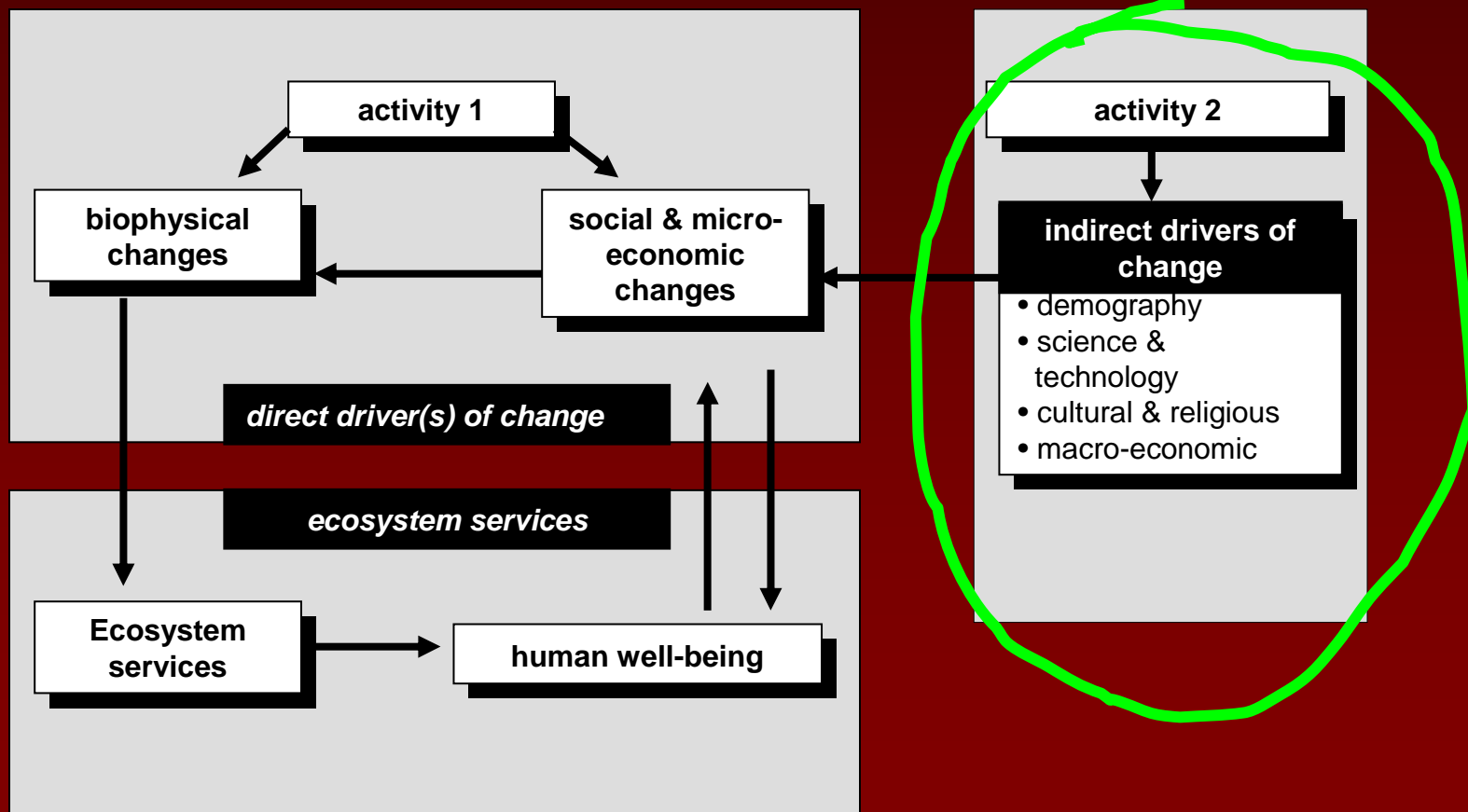
# Group: What input can NBSAPs provide for EIA / SEA?

## CBD EIA Guidelines:

- Define activities for which IA may be required from a biodiversity perspective, characterised by direct drivers of change:
  - Change of land-use or land cover, and underground extraction (thresholds for level of assessment relates to surface area).
  - Fragmentation, usually related to linear infrastructure (thresholds for level of assessment relate to length of the proposed works).
  - Emissions, effluents or other chemical, thermal, radiation or noise input - (relate level of assessment to the ecosystem services map).
  - Introduction or removal of species, changes to ecosystem composition, ecosystem structure, or key ecosystem processes responsible for the maintenance of ecosystems and ecosystem services - relate level of assessment to ecosystem services map.
- **Determining norms or threshold values for screening**

# What to do if knowledge is lacking? (3)

only known effect is on indirect drivers of change.



# Focus: indirect drivers of change

## Characteristics of PPP:

- only known effect is on indirect drivers of change.

Biodiversity attention needed when PPP is expected to affect the way in which society:

- consumes products derived from living organisms,
- consumes products that depend on ecosystem services for their production;
- occupies area of land and water;
- exploits its natural resources and ecosystem services.

Example: trade agreements (WTO, NAFTA, etc.)

## Group: What input can NBSAPs provide for EIA / SEA?

- Ecological footprint - What commodities are imported for own consumption; what is the consequence of their production elsewhere (safeguards / certification / etc)
- What commodities are exported: making money at the cost of ecosystem quality / functioning
- Beneficial or perverse incentives from tax measures (e.g. agricultural policy; ).



# Last question

- What can SEA (and EIA) contribute to NBSAPs ?