EXPERT GROUP MEETING ON THE REVISIONS OF THE FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES)

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Merging the ecosystem approach with the conventional PSR/DPSIR framework

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The interpretation of PSR/DPSIR

- Because they have been motivated by critical situations, early environmental policies have focused on Pressures and Responses more than environmental State

➔ turned rapidly to a linear, mechanical interpretation: P resulting in S (environmental degradation) resulting in turn in actions and policy measures (R)

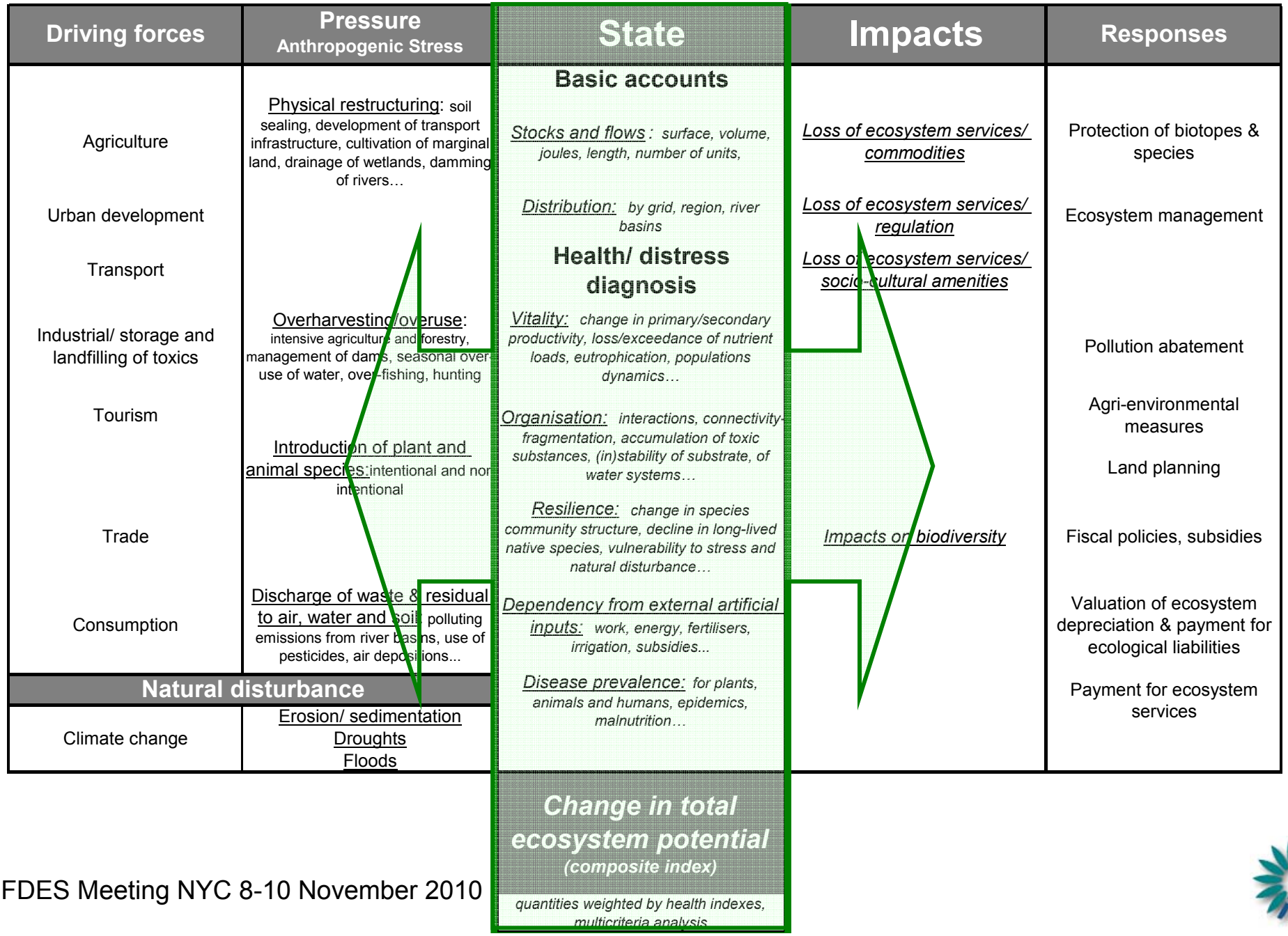
- Idem with DPSIR…
- Not justified when environmental issues result from the cumulative effect of multiple causes (P), none of them being “the” harmful alone…

➔ Approach by direct observation of the state of human and natural systems resulting from these pressures.

DPSIR revisited from an ecosystem perspective **(next slide)**

Preliminary remarks

- All ecosystems: inland systems, sea/oceans and atmosphere
- Inland ecosystems:
  - Socio-ecological systems (functional units)
  - include:
    - Urban systems
    - Agro-ecosystems
    - Forests (natural or managed)
    - Other terrestrial systems
    - Inland water systems (rivers, lakes, aquifers)
    - Soil
- Ecosystem state = quantity*health
- Ecosystem quantities: basic balances of surface, length, volume, weight, number of units, peta-joules
- Ecosystem health (or distress): diagnosis based on a limited set of symptoms


Driving forces
Pressure
Anthropogenic Stress
State
Impacts
Responses
Basic accounts
Stocks and flows : surface, volume, joules, length, number of units,
Distribution: by grid, region, river basins
Health/ distress diagnosis
Vitality: change in primary/secondary productivity, loss/exceedance of nutrient loads, eutrophication, populations dynamics…
Organisation: interactions, connectivity-fragmentation, accumulation of toxic substances, (in)stability of substrate, of water systems…
Resilience: change in species community structure, decline in long-lived native species, vulnerability to stress and natural disturbance…
Dependency from external artificial inputs: work, energy, fertilisers, irrigation, subsidies...
Disease prevalence: for plants, animals and humans, epidemics, malnutrition…
Change in total ecosystem potential
(composite index)
quantities weighted by health indexes, multicriteria analysis
Agriculture
Urban development
Transport
Industrial/ storage and landfilling of toxics
Tourism
Trade
Consumption
Physical restructuring: soil sealing, development of transport infrastructure, cultivation of marginal land, drainage of wetlands, damming of rivers…
Overharvesting/overuse: intensive agriculture and forestry, management of dams, seasonal over-use of water, over-fishing, hunting
Introduction of plant and animal species: intentional and non intentional
Discharge of waste & residual to air, water and soil: polluting emissions from river basins, use of pesticides, air depositions...
Natural disturbance
Climate change
Erosion/ sedimentation
Droughts
Floods
Loss of ecosystem services/ commodities
Loss of ecosystem services/ regulation
Loss of ecosystem services/ socio-cultural amenities
Impacts on biodiversity
Protection of biotopes & species
Ecosystem management
Pollution abatement
Agri-environmental measures
Land planning
Fiscal policies, subsidies
Valuation of ecosystem depreciation & payment for ecological liabilities
Payment for ecosystem services

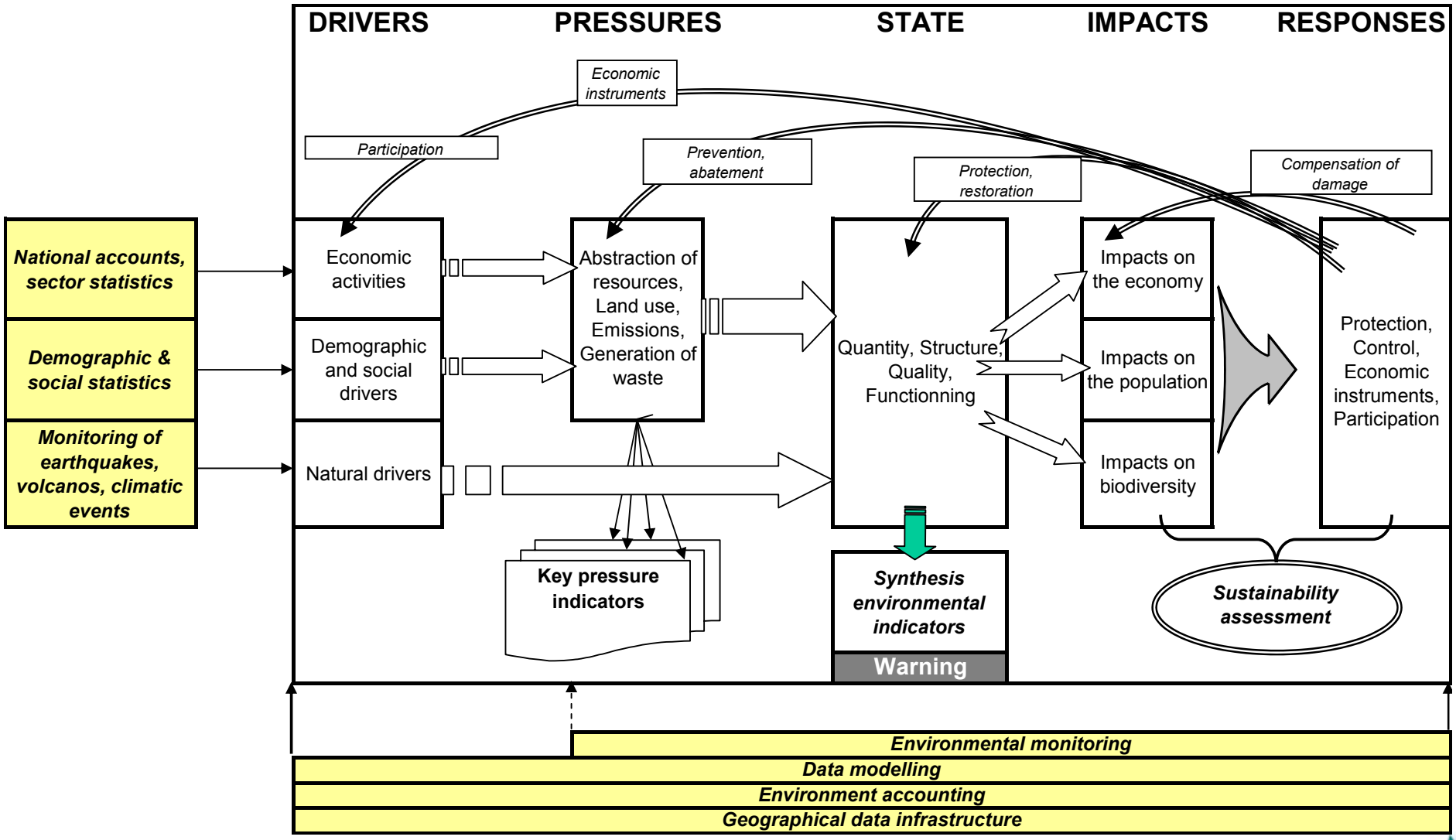
Advantages of approaching DPSIR via ecosystem state

- Clear bottom line for assessing trends: ecosystem change in state (degradation or improvement)
- Streamlined search for harmful pressures (instead of broad swath monitoring from an a priori list of potential pressures)

➔ Priority setting

➔ Savings

DPSIR in the broader information framework



Thank you!

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