



Biodiversity and Ecosystem Services Indicators

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In-Stream



- I. Key policies** – Framework for indicator development at global and EU level – historic and recent developments
- II. Indicator candidates** – general overview, categorisation, InStream and others
- III. What role for indicators?**
- IV. Questions for discussion**

What role for biodiversity indicators?



- ❖ **Measure** and **synthesise** what is happening to biodiversity and why; where nature is going

- ❖ **Communicate** clear and simple messages about what is happening to biodiversity and why (to non-expert decision makers and the public at large).

History of key policies – Global and EU framework



2001 Gothenburg - EU Heads of State and Government undertook “to halt the decline of biodiversity in the EU by 2010”

2002 Johannesburg - Global goal “to significantly reduce the rate of biodiversity loss” leading to decision VI/26 CBD Strategic Plan 2002

2004 7th COP CBD – First set of indicators to be established

2004 Malahide Conference Recommendation “to develop, test and evaluate indicators [...] to deliver policy-relevant information on the status and trends in biodiversity, the drivers of biodiversity change and the success of policies [...]”

2006 EU Communication on halting the loss of biodiversity by 2010 and related Action Plan

2006 Establishment of the global 2010 Biodiversity Indicators Partnership

2007 Streamlining European 2010 Biodiversity Indicators (SEBI) Initiative

Key policies – recent developments



EU 2020 target and long-term vision for biodiversity

The vision

“By 2050 European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.”

The headline target

“Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”

The EU 2010 biodiversity baseline

Setting a clear baseline outlining the criteria against which achievements are to be assessed

Key policies – recent developments



The CBD Strategic Plan for the period 2011-2020 “Aichi Protocol”

Strategic goal A: Address the underlying causes of biodiversity loss by **mainstreaming** biodiversity across government and society

Strategic goal B: Reduce the **direct pressures** on biodiversity and promote **sustainable use**

Strategic goal C: To improve the **status of biodiversity** by safeguarding ecosystems, species and genetic diversity

Strategic goal D: **Enhance the benefits** to all from biodiversity and ecosystem services

Strategic goal E: Enhance implementation through **participatory planning, knowledge management** and **capacity building**

• • • What are the candidates?

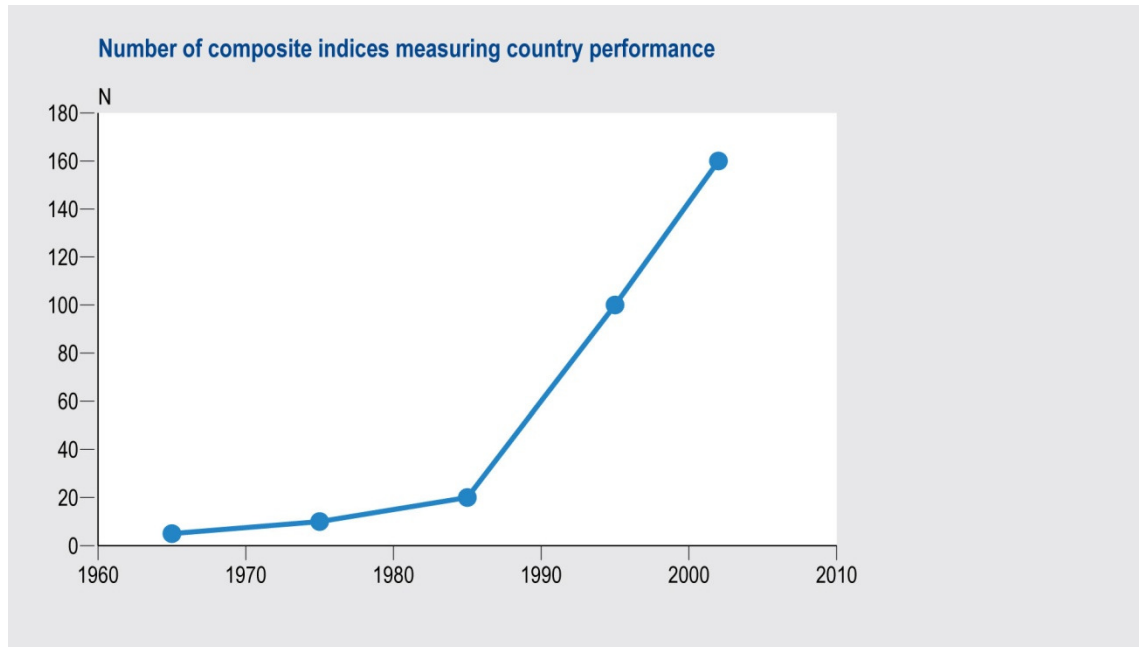


Figure 1: Growth in number of composite indices (UNDP Office of Development Studies, 2006). The indices cover a diverse set of issues including competitiveness, governance, social aspects, human rights, the environment, security and globalization.

Source: from MNP (2007)

• • • What are the candidates?

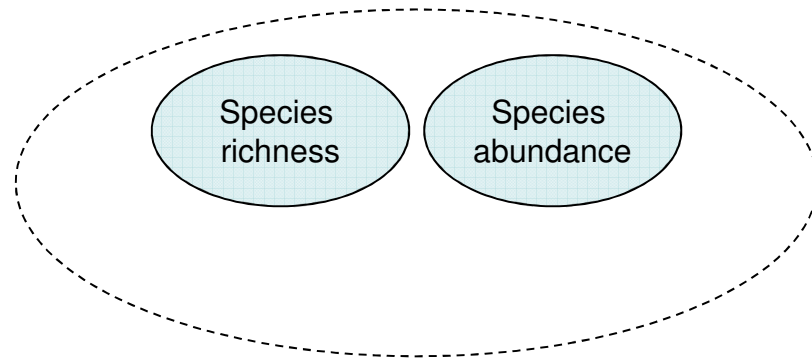


Common Bird Index
Favorable Conservation Status
Red List Index
Potentially Disappeared Fraction (PDF)
Marine Trophic Index (MTI)
Species richness
(Mean) Species Abundance (M)SA
Worst Invasive Alien Species
Ecological Footprints
Living Planet Index
Adjusted net savings (Genuine Savings)
Environmental Performance Index
Human Development Index (HDI)
....

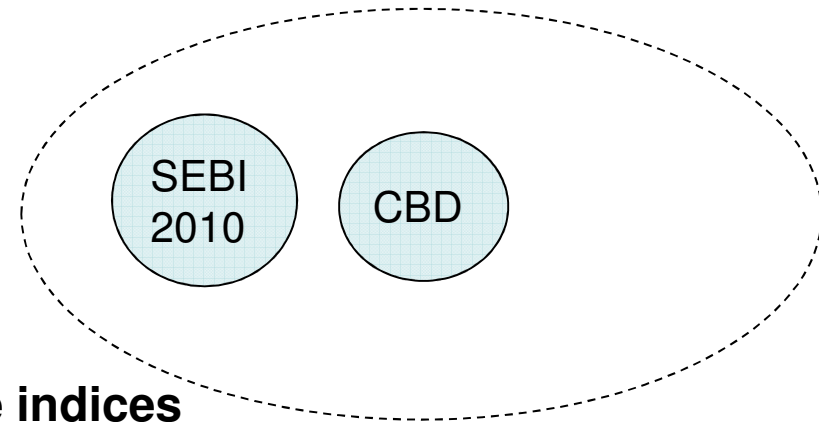
What are the candidates - categorisation



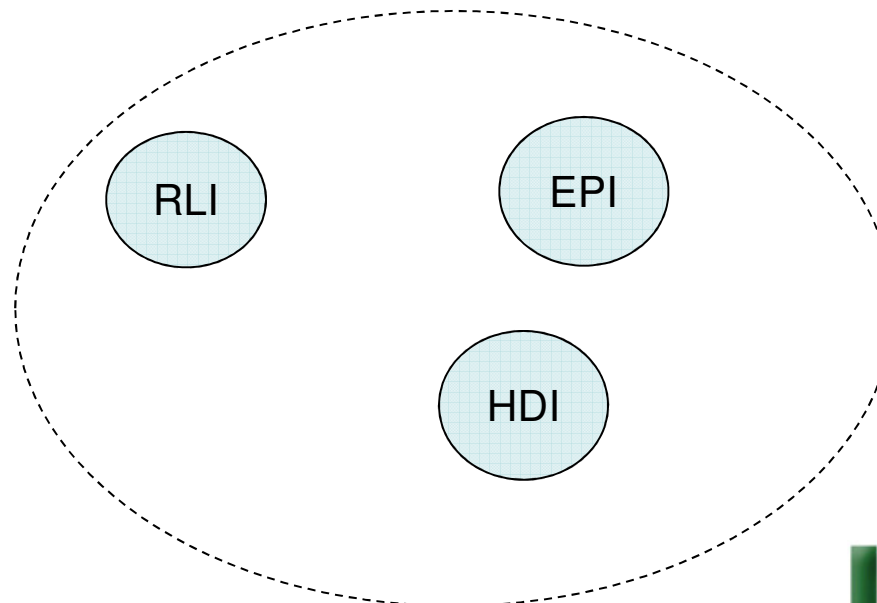
(Single) Parameter indicator



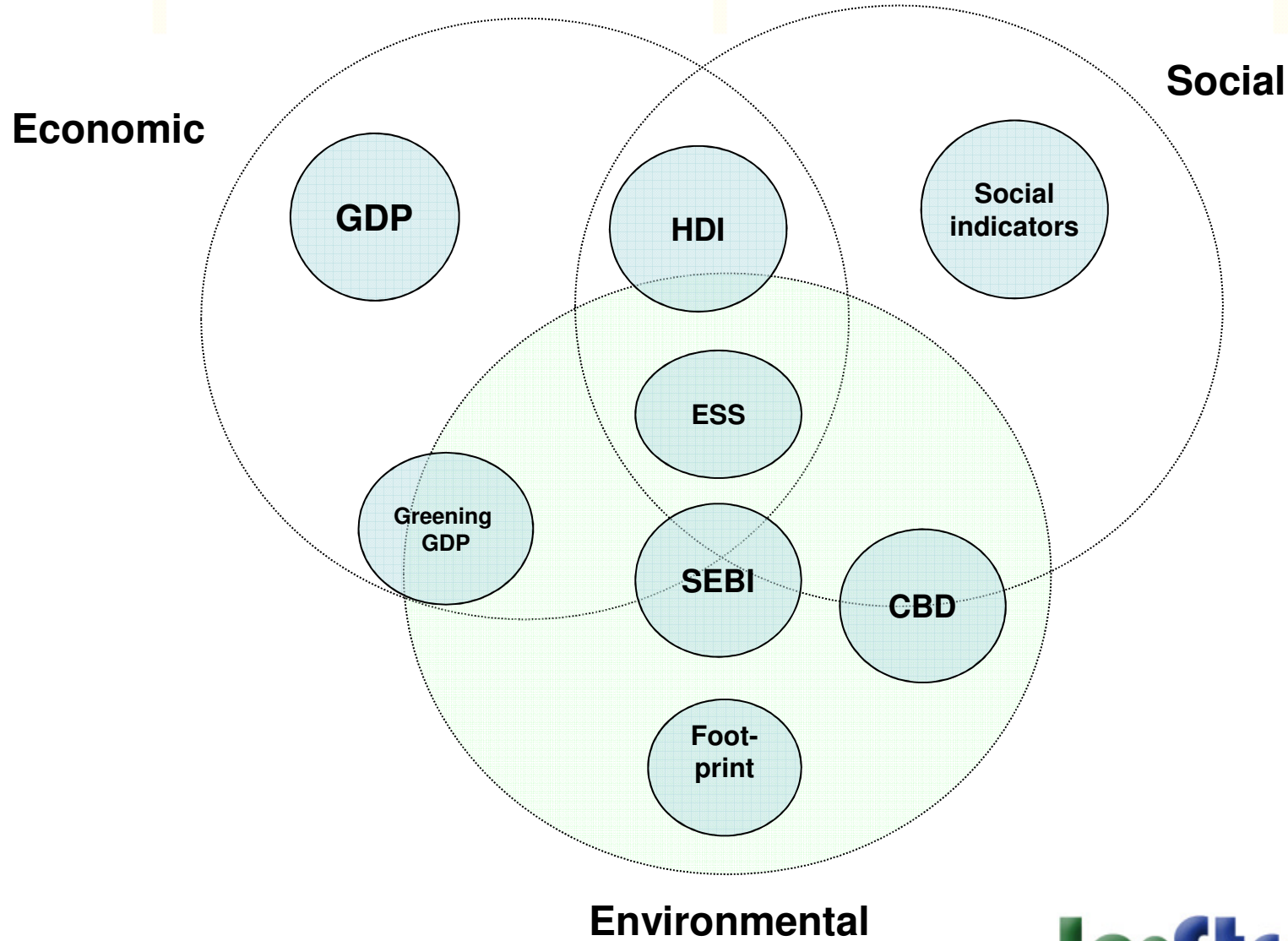
Baskets



Composite indices



What are the candidates - categorisation



What are the candidates - InStream



❖ **Potentially disappeared fraction (PDF) for evaluating ecosystem quality or damage**

$$\text{PDF} = (\text{species}_{\text{reference}} - \text{species}_{\text{use}}) / \text{species diversity}_{\text{reference}}$$

❖ **Red List Index (RLI)**

Ranges from 0 to 1 and indicates rate at which species move through IUCN Red List categories

❖ **Common Bird Index**

Changes in bird populations according to a (1990) baseline index of 100

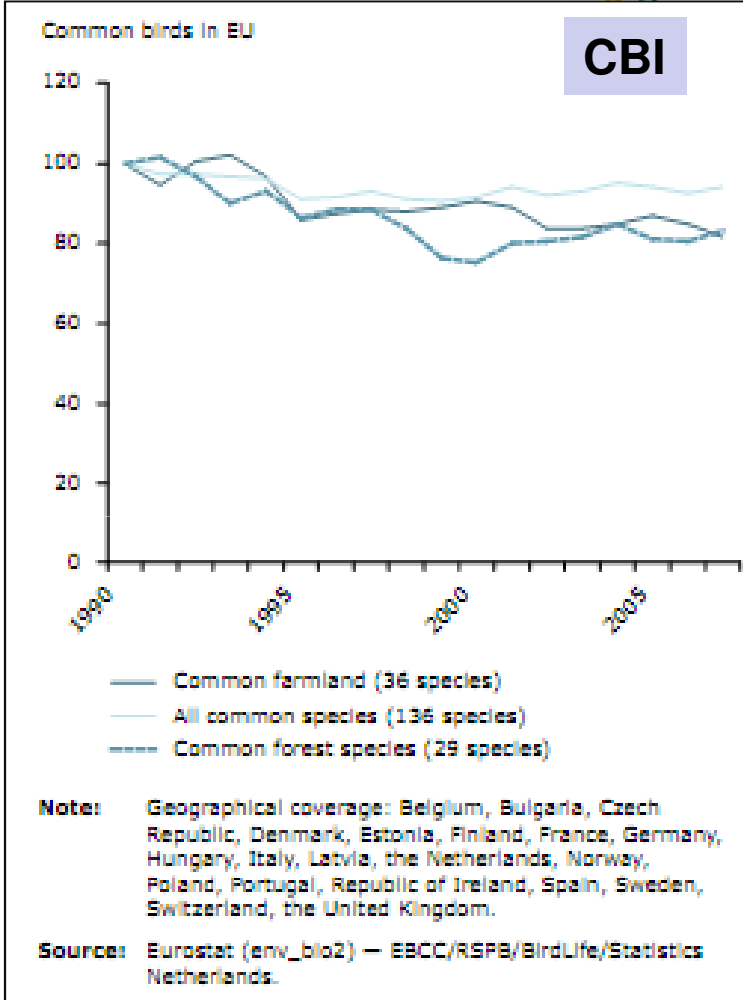
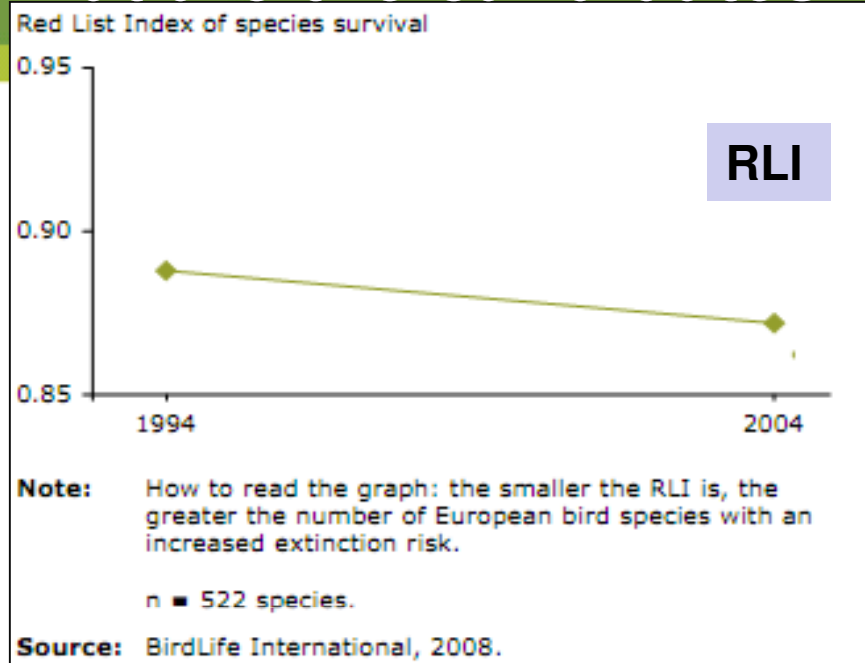
❖ **Favourable Conservation Status**

Relates to EU Habitats Directive (92/43/EEC), and its objective to maintain or achieve favourable conservation status (FCS) of species and natural habitats considered to be of Community interest

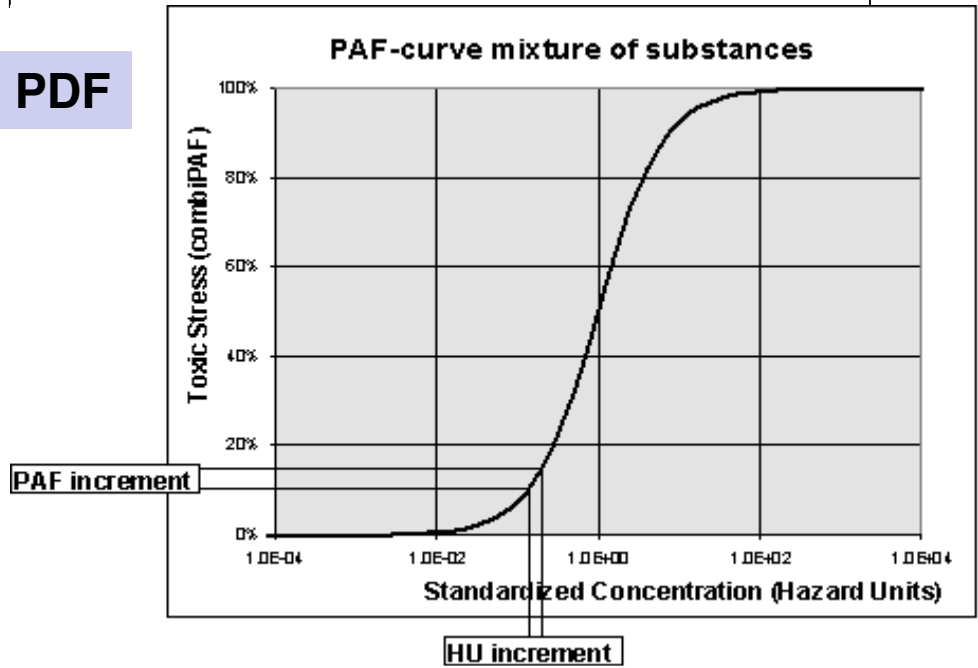
❖ **Marine Trophic Index**

Value between 2.0 and 5.0 indicates change in mean trophic level of fisheries landings by region and globally.

What are the candidates - InStream



PDF



Source: EEA 2010+ Eco-Indicator 99 (VROM)

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What are the candidates - SEBI Indicators



1. Abundance and distribution of selected species	14. Fragmentation of river systems
2. Red List Index for European species	15. Nutrients in transitional, coastal and marine waters
3. Species of European interest	16. Freshwater quality
4. Ecosystem coverage	17. Forest: Growing stock, increment and fellings
5. Habitats of European interest	18. Forest: Deadwood
6. Livestock genetic diversity	19. Agriculture: Nitrogen balance
7. Nationally designated protected areas	20. Agriculture: Area under management practices potentially supporting biodiversity
8. Sites designated under the EU Habitats and Birds Directives	21. Fisheries: European commercial fish stocks
9. Critical load exceedance for nitrogen	22. Aquaculture: Effluent water quality from finfish farms
10. Invasive alien species in Europe	23. Ecological Footprint of European countries
11. Impact of climate change on birds populations	24. Patent applications based on genetic resources
12. Marine Trophic Index of European seas	25. Financing biodiversity management
13. Fragmentation of natural and semi-natural areas	26. Public awareness

What are the candidates – ESS indicators



❖ Provisioning services

food, water, raw materials, genetic resources, medicinal resources

Examples:

- Crop production from sustainable [organic] sources in tonnes and/or hectares
- Fish production from sustainable [organic] sources in tonnes live weight (e.g., proportion of fish stocks caught within safe biological limits)

❖ Regulating services

Air quality, climate regulation, moderation extreme events, pollination, biological control

Examples:

- Atmospheric cleansing capacity in tonnes of pollutants removed per hectare
- Total amount of carbon sequestered / stored = sequestration / storage capacity per hectare x total area (Gt CO₂)

❖ Cultural services

Recreation and tourism, inspiration for culture, art, design

Examples:

- Number of visitors to protected sites per year
- Number of TV programmes, studies, books etc. featuring sites and the surrounding area

What are the candidates – ESS indicators



	Ecosystems	Agro ecosystems	Forests	Grasslands	Heath and scrubs	Wetlands	Lakes and rivers
Services							
Provisioning							
Crops/timber		↓	↑			↓	
Livestock		↓	=	=	=	↓	
Wild Foods		=	↓	↓		=	
Wood fuel			=		=		
Capture fisheries						=	=
Aquaculture						↓	↓
Genetic		=	↓	↓	=	=	
Fresh water			↓			↑	↑
Regulating							
Pollination		↑	↓	=			
Climate regulation			↑		=	=	=
Pest regulation		↑		=			
Erosion regulation			=	=	=		
Water regulation			=		↑	↑	=
Water purification						=	=
Hazard regulation						=	=
Cultural							
Recreation		↑	=	↓	↑	↑	=
Aesthetic		↑	=	=	=	↑	=

Status for period 1990–present: ■ Degraded ■ Mixed ■ Enhanced ■ Unknown Not applicable

Trend between periods: ↑ Positive change between the periods 1950–1990 and 1990 to present ↓ Negative change between the periods 1950–1990 and 1990 to present = No change between the two periods

Source: Adapted from Harrison et al., 2010.

Source: EEA 2010

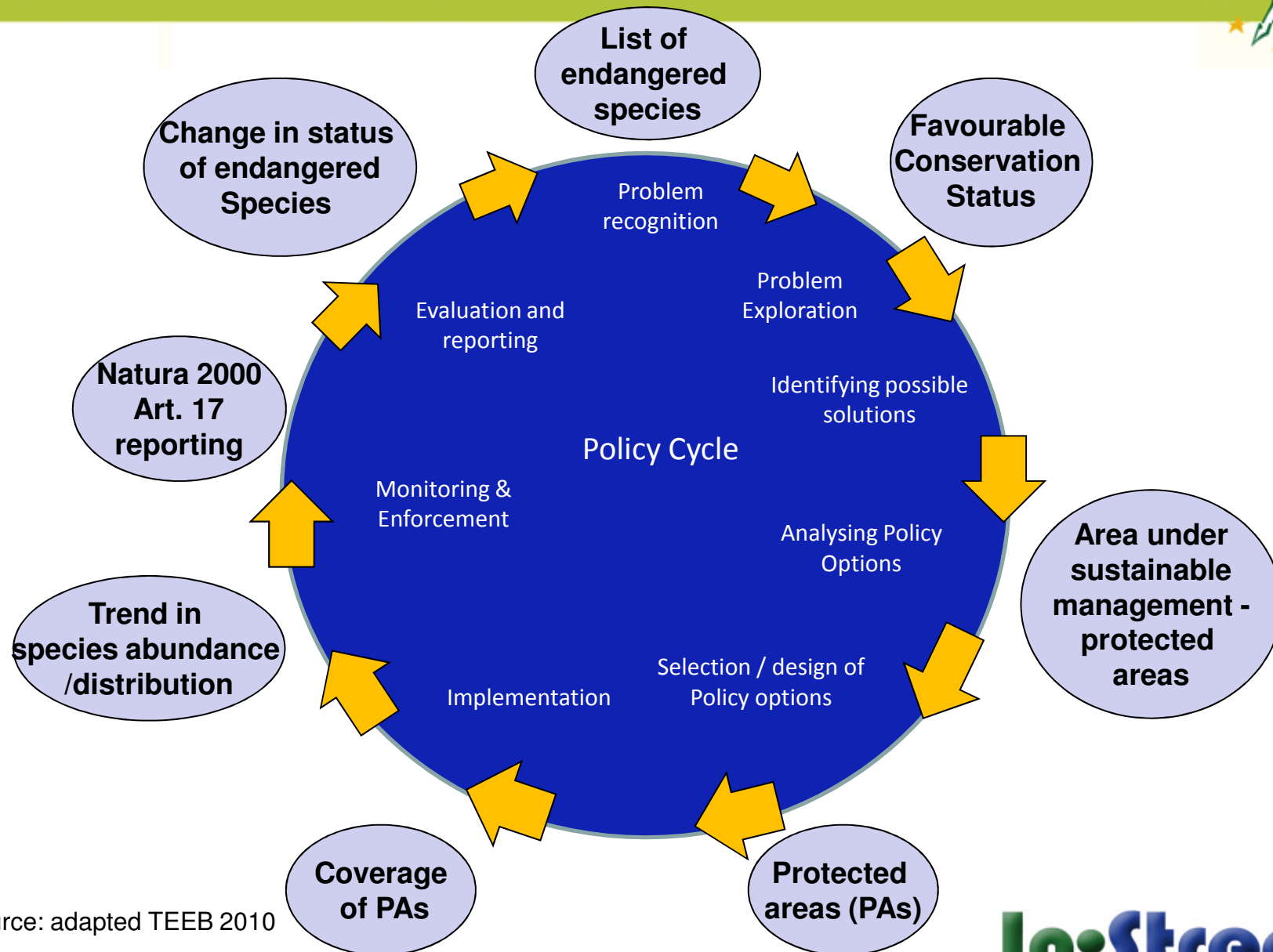
What role for biodiversity and ESS indicators?



Major role in

- ❖ identifying conditions and trends
filling related gaps in knowledge
- ❖ measuring progress and efficiency of measures taken
consequences of action or inaction
- ❖ benchmarking and monitoring performance in relation to targets set
whether - how - when
- ❖ enabling so policymakers to set new or change policy priorities

What role for indicators - policy cycle



Source: adapted TEEB 2010

Objectives of consultation and discussion



Objective: Better understanding which indicators are best suited for ensuring that sustainable development is reflected in the policy-area and at which stages of the policy-making processes are they best applied.

What should be their purpose & do they do the job? How can they be developed to do the job?

Where has which index/indicator been proven useful regarding the different key messages for different policy areas?

Where is a need for greater use?

How can biodiversity indicators help complement and counterbalance economic and social indicators?

What indicators are viable, useful complements to GDP?



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Thank you!

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