

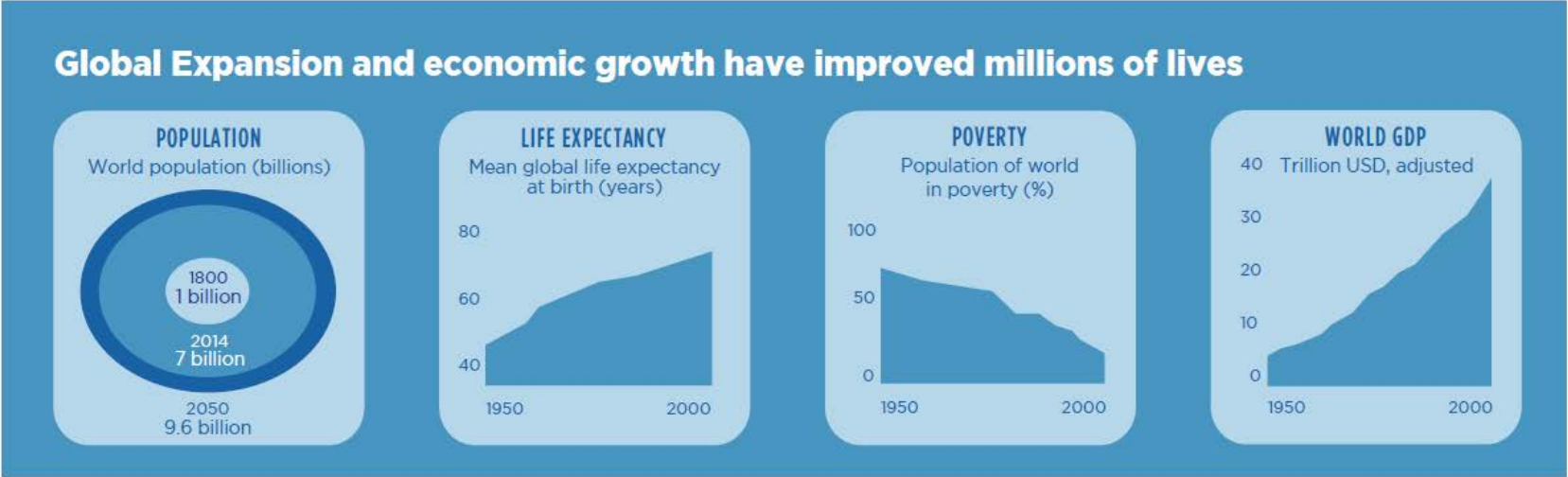
Space based applications for quality of life

Alexandru Badea, Florian Bodescu, Cristian Moise

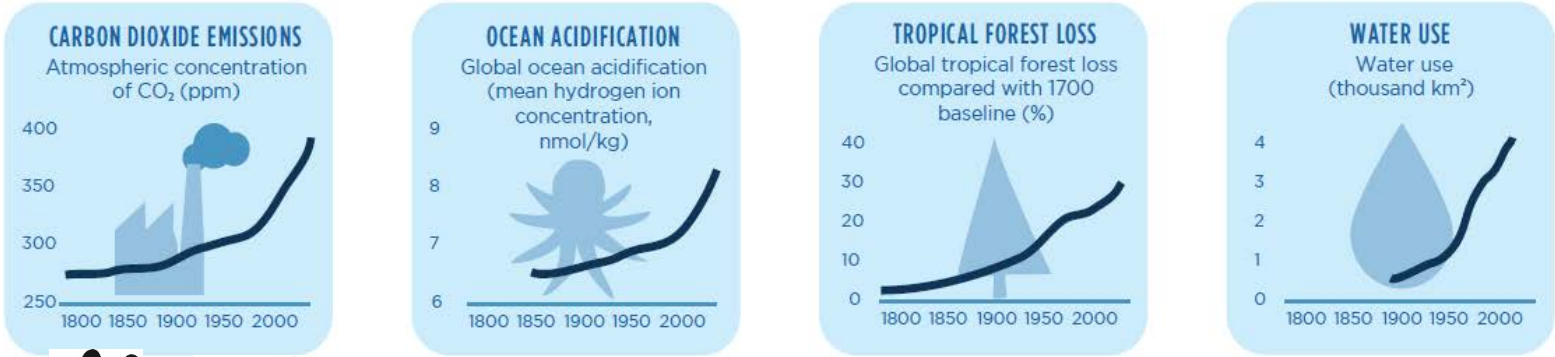
Romanian Space Agency - ROSA



Market economy

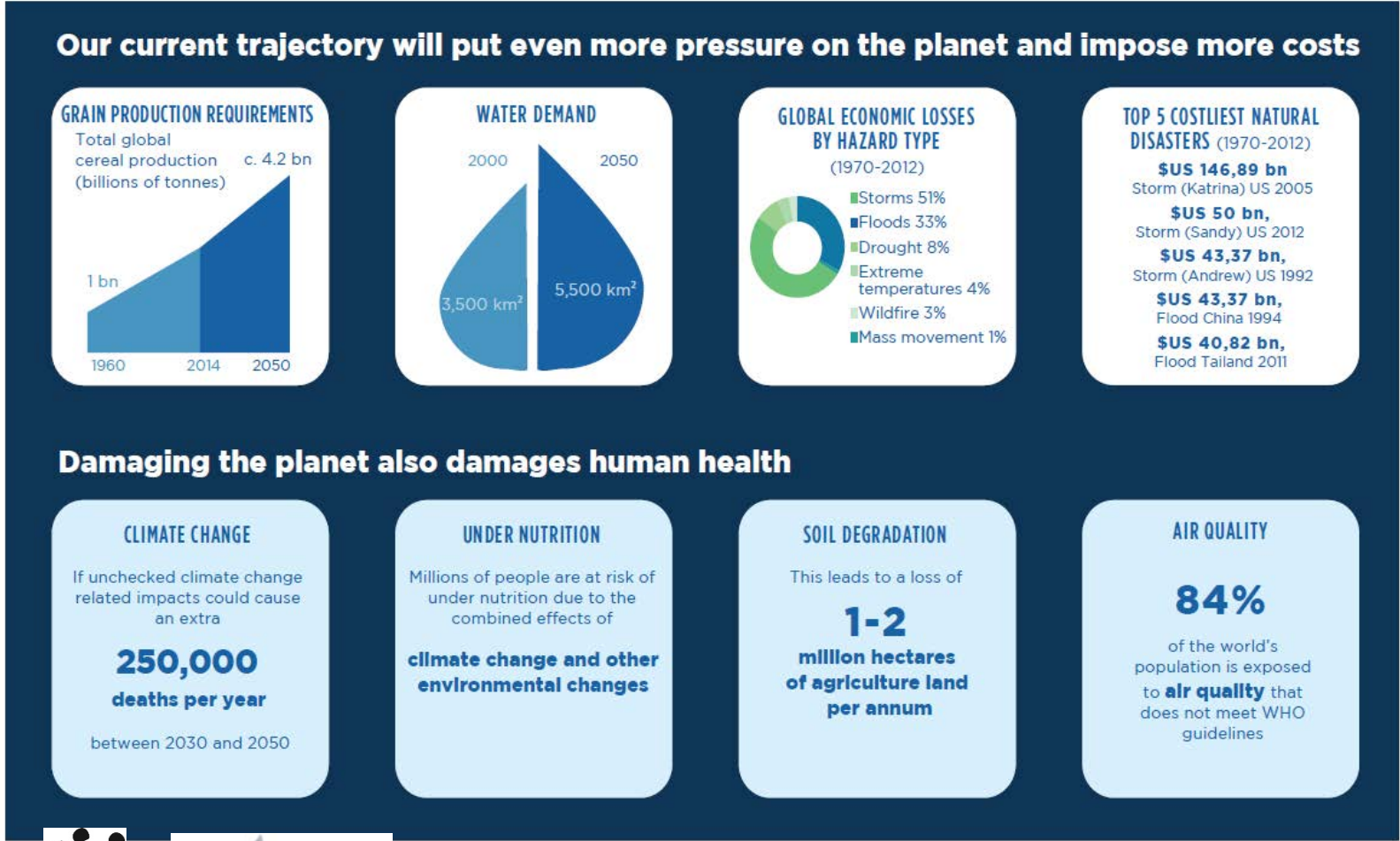


But to achieve this we've exploited the planet at an unprecedented rate

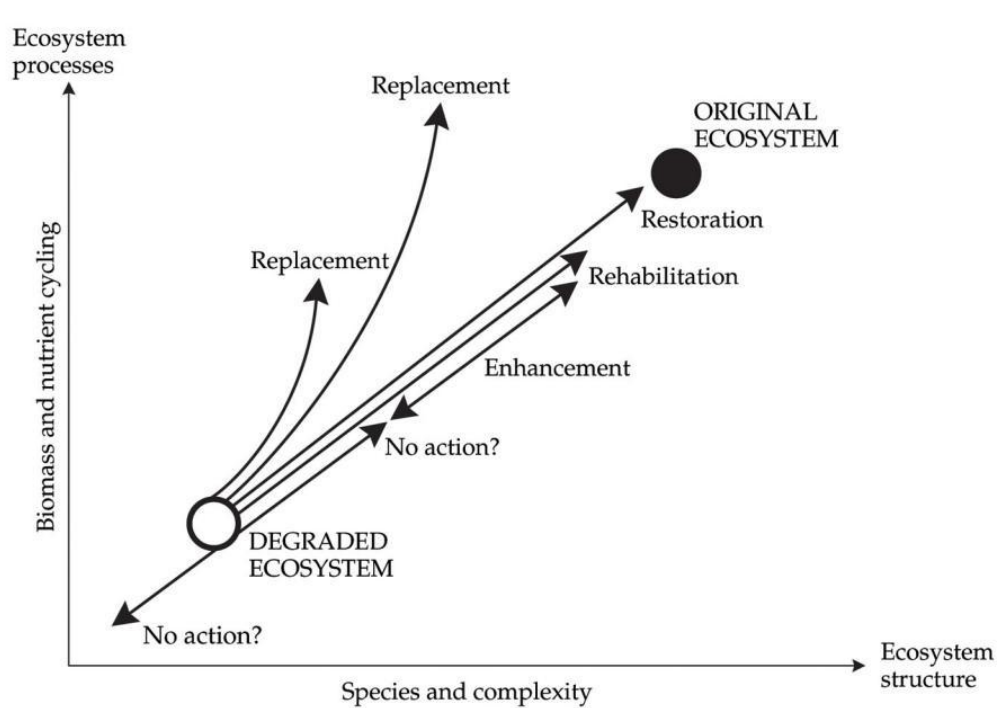


UNEP report

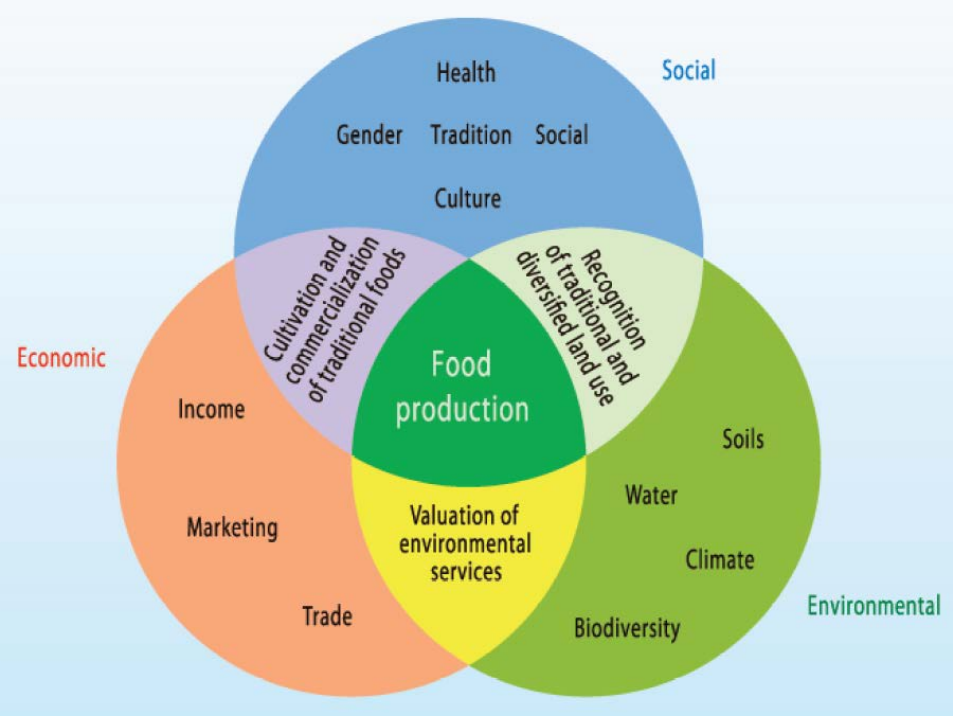
Our trajectory



Degraded ecosystems increase

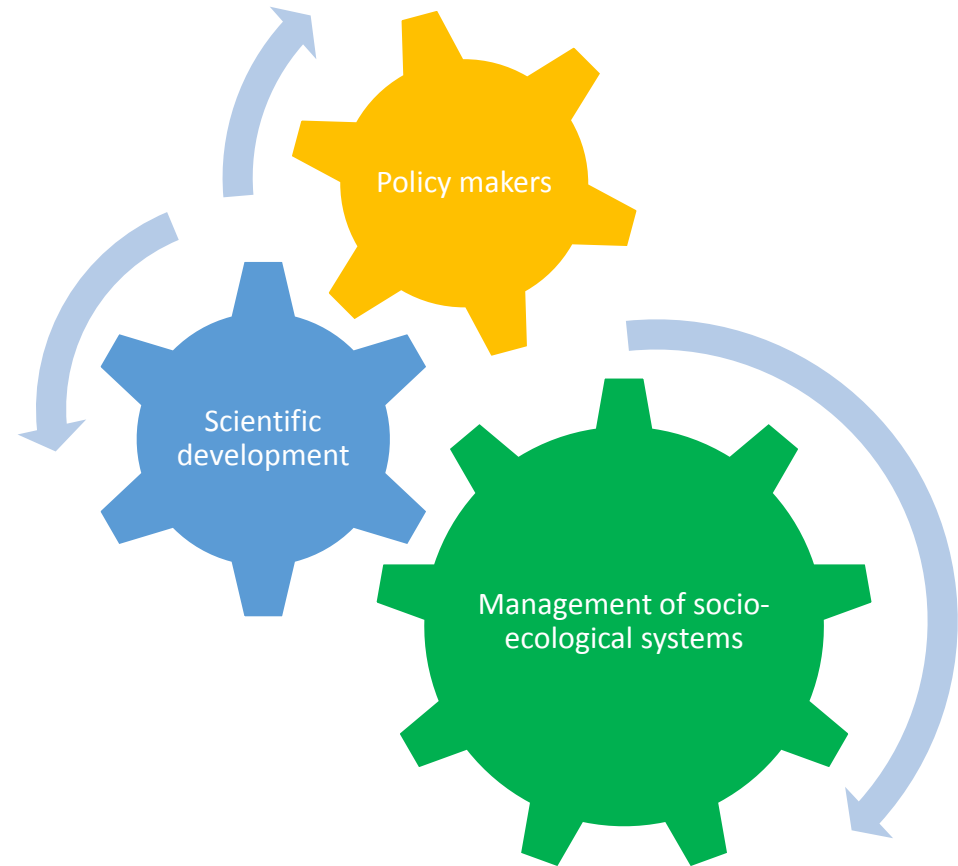


PRINCIPLES OF CONSERVATION BIOLOGY, Third Edition, Figure 15.1 © 2005 Sinauer Associates, Inc.



European conceptual approach

- ***Unitary legislative frameworks:***
 - **Environment**
 - EU strategy for conservation biodiversity 2014 – 2020
 - Habitat directive
 - Birds directive
 - Water directives
 - **Administration**
 - INSPIRE directive
 - **Earth observing programs**
 - Living Planet
 - Copernicus



EU Biodiversity Strategy

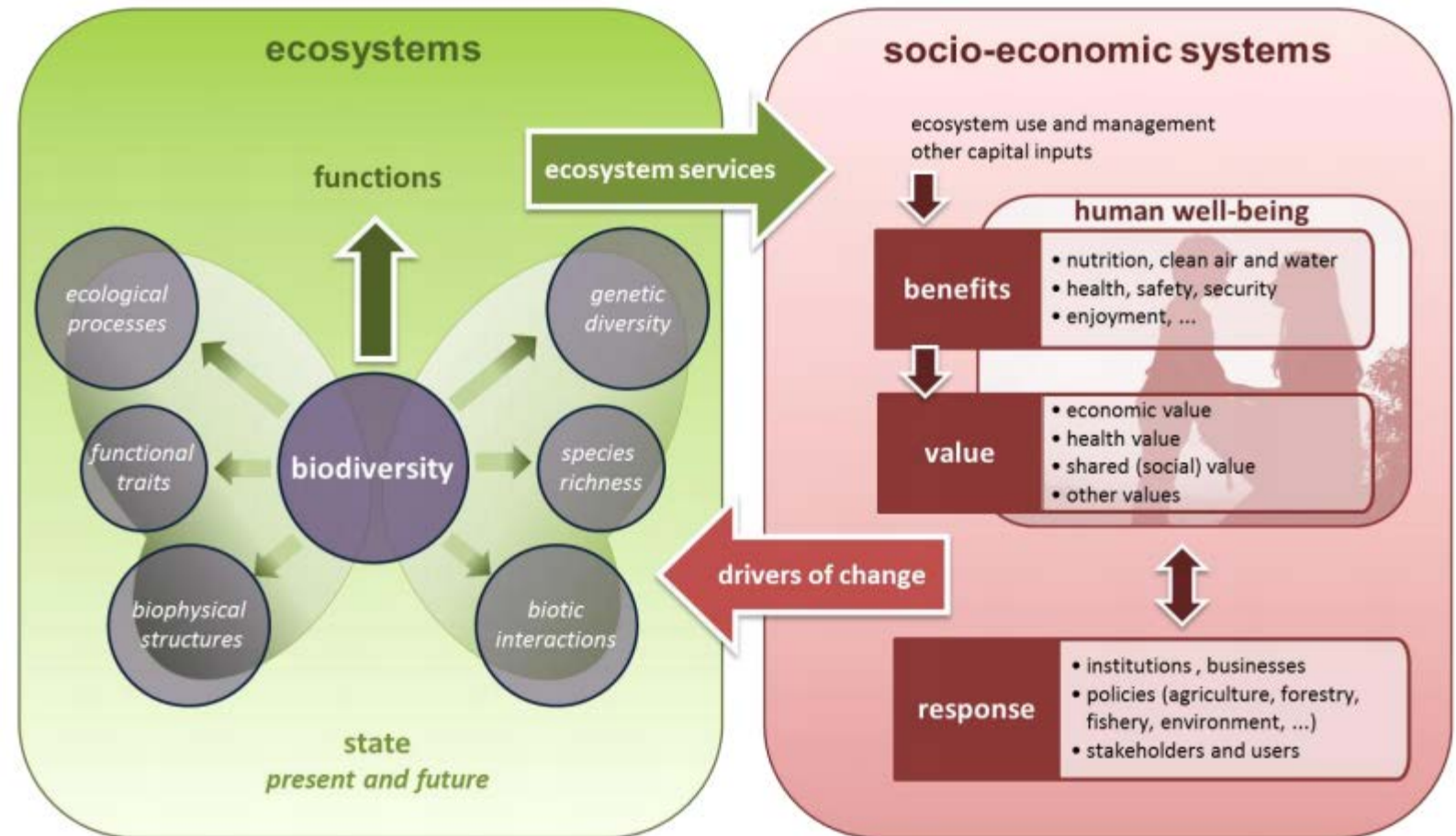
Action 5 of the EU Biodiversity Strategy to 2020 foresees that Member States will, with the assistance of the Commission, map and assess the state of ecosystems and their services in their national territory by 2014*.

The mapping and assessment of ecosystems and their services is an essential part of the EU Biodiversity Strategy to 2020 and a necessary condition to make ecosystems and their services key parameters informing planning and development processes and decisions.

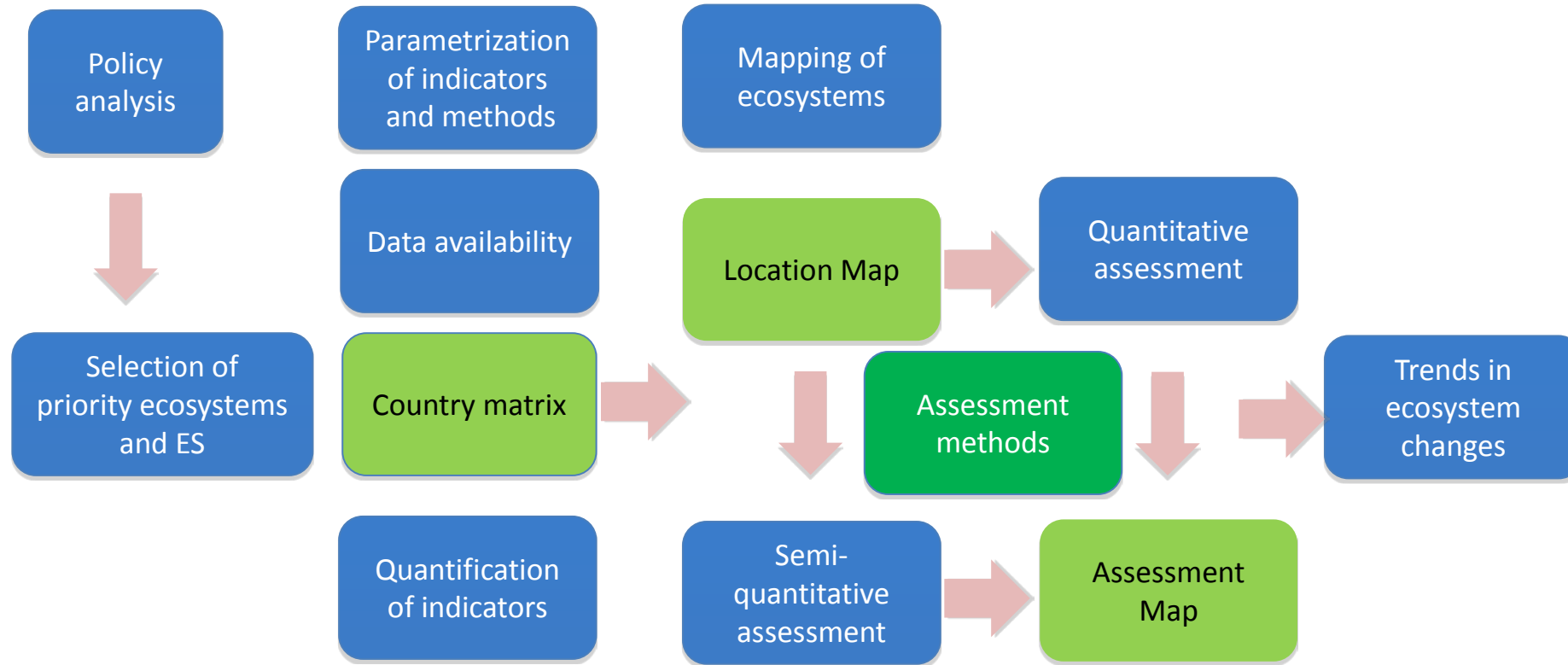
***Indicators for ecosystem assessments under Action 5 of the EU Biodiversity Strategy to 2020 - 2nd Report – Final, February 2014 -© European Union, 2014**

Conceptual framework for EU wide ecosystem assessment

- Action 5 of the Biodiversity Strategy requires **Member States, with the assistance of the Commission, to map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020**"
- Mapping and assessment of ecosystems and their services (MAES)



N4D application of MAES process in Romania



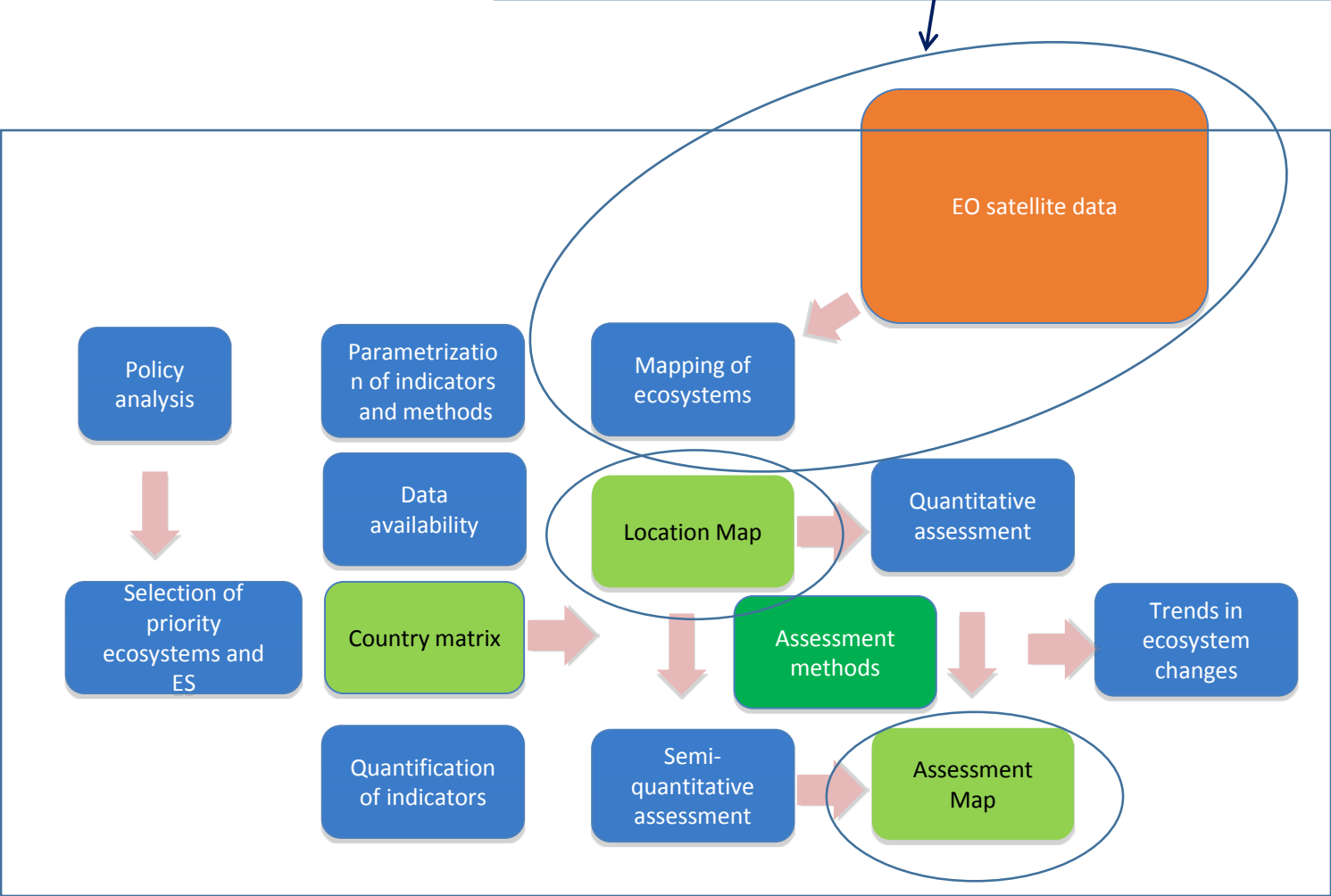
Monitoring the biodiversity variability represents a challenge for the authorities.

Earth Observation data facilitates the acquisition of climate and land cover information as essential support for creating a monitoring system.

Remote Sensing offers the possibility to produce directly (by photointerpretation of land use/cover) or indirectly (eg. NDVI, LAI...) information for the ecosystems evaluation.

EO satellite data

SPOT 6/7 VHR images for covering 20% of Romania
SENTINEL 2A HR images full national coverage



In-situ data for nature conservation

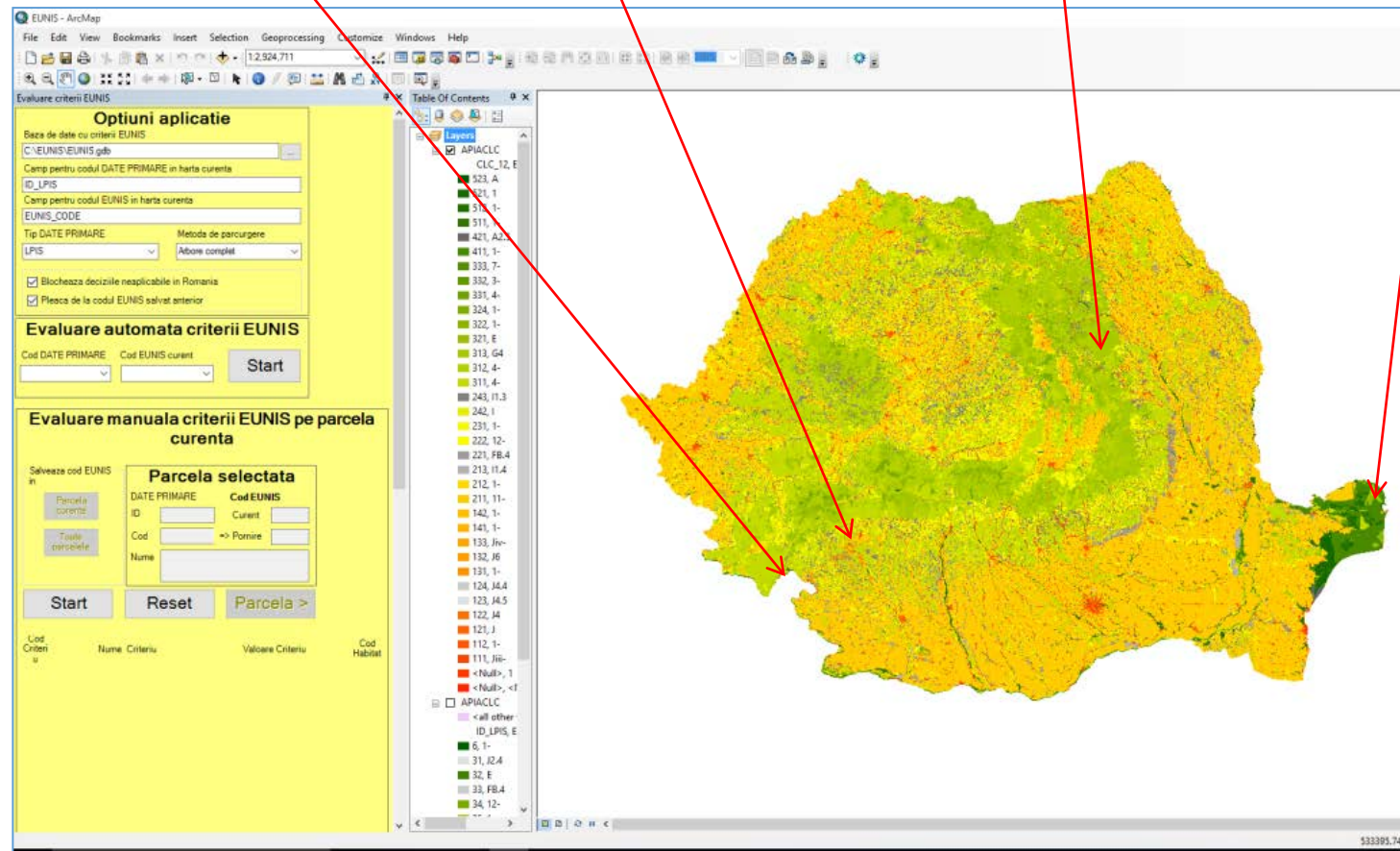
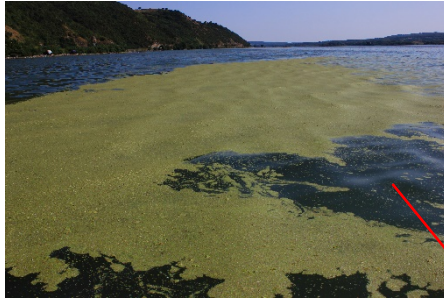
EUNIS ecosystems classification

- Using of EO satellite data for mapping
- Using field in-situ data for validation

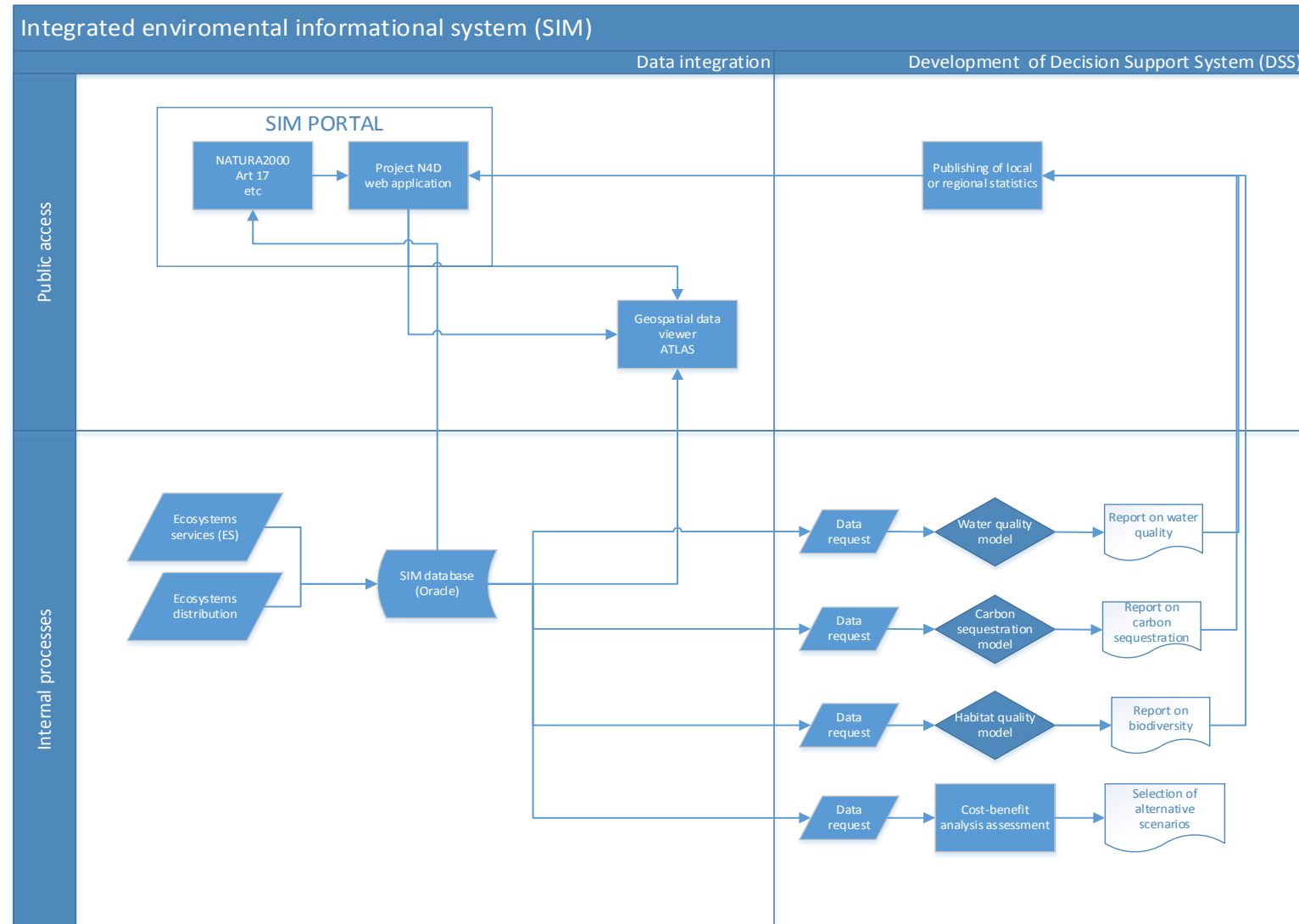


EUNIS F.2.4. Conifer scrub close to the tree limit

Development of a Decision Support System (DSS)

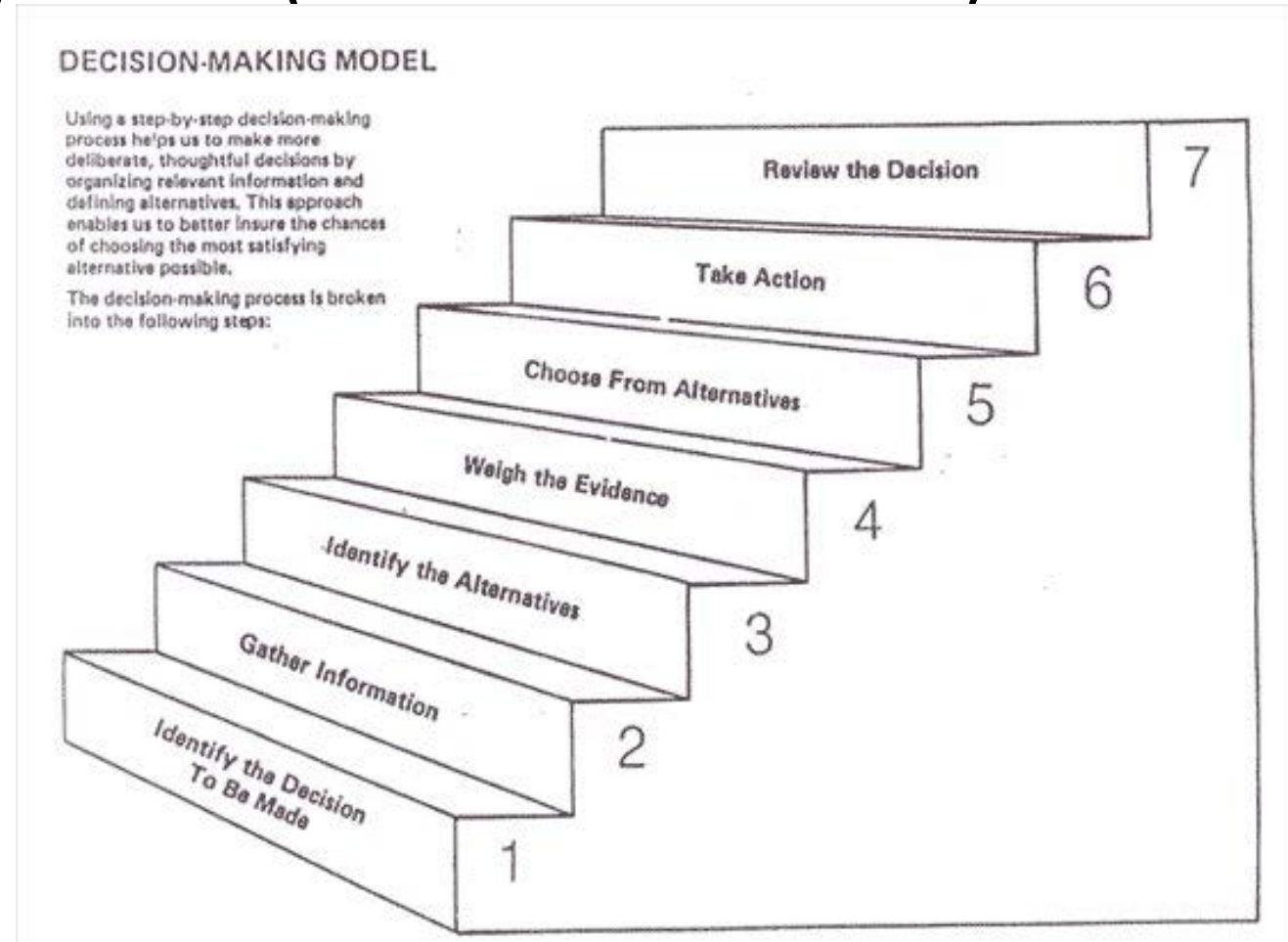


Development of a Decision Support System (DSS)



Decision support system (RO-DSS-MAES)

- Monitoring structure and functioning of ecosystems
- Maintain and develop mathematical models to assess the biophysical state of ecosystems
- Reports on goods and services for human development
- Environmental impact assessment



European Space Agency

- Earth Observation programmes

- Living Planet
- Copernicus

- Monitoring structure and functioning of ecosystems



- ESA's Earth Observing missions
- [Envisat](#)
- [ERS overview](#)
- [Earth Explorers](#)
- [Sentinels overview](#)
- [Proba-V](#)
- [Proba-1 overview](#)
- Third Party Missions
- [Meteosat Second Generation](#)
- [MetOp overview](#)

- In general, the link between science and policy should be strengthened and more support provided to policy-relevant research.
- Data sharing capabilities need to be enhanced in Europe and in particular, data coming from long-term ecological research sites and research.
- Several conceptual issues remain unresolved and require dedicated action : the typology of marine and some freshwater ecosystems (such as floodplains), the role of agro-ecosystems in delivering provisioning ecosystem services in relation to energy inputs that are required to harvest agricultural products.
- There is a need for capacity-building in all Member States in order to create a community of practice in Europe that will contribute to improve the knowledge and evidence for EU environment policy.

Thanks for your attention !