EO Science Strategy Review Workshop 2024

Splinter 3 : Connecting EO Science Priorities to Policy and Societal Benefits

Splinter 3 – building 15

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The ESA-developed Earth observing infrastructure, together with national and international partner missions, and a rapidly growing commercial fleet, enables more timely, more detailed, more frequent, and more widespread coverage than ever before with information products which span the needs of public, governmental and private users, supporting scientific enquiry, ***important public policy objectives*** *and commercial endeavours.*

Foreword by Simonetta Cheli, Director of ESA Earth Observation Programmes

The renewed EO science strategy *responds directly to the urgent need to ensure* ***benefits from investment in EO science translated into societal and policy benefits.***

4 areas of action:

- A1 Frontier Science and Discovery: a strong foundation
- **A2 From Science to Benefits: meeting society's needs**
- A3 Reducing critical knowledge gaps: taking immediate action
- A4 Filling critical observation gaps: preparing for tomorrow starts today

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A2 From Science to Benefits: meeting society's needs:

Ever growing need to ensure investments in EO science are transferred into benefits to society,

EO science has the capacity to:

1. **Informs policy debates** through provision of knowledge, understanding and evidence.
2. **Assists and supports society in addressing current and future challenges** in areas such as responding to environmental issues and reducing the loss of life.
3. Provides the **basis for the future definition and enforcement of policy outcomes/ legislation**.
4. Supports **assessment of the outcomes of policy decisions**.

Strategic Objective 2: *To develop scientific knowledge and capacity to deliver high-quality validated, trusted, actionable information products relevant to national, international and global policy frameworks.*

Strategic Objective 3: *To advance interdisciplinary science, fostering the integration of socio-economic data and EO in interdisciplinary research.*

A2 From Science to Benefits: meeting society's needs

CSQ	Policy				
	Paris Agreement	Convention on Biodiversity	Sustainable Development Goals	EU Green Deal	Sendai Framework
CSQ-01	26	4	8	8	0
CSQ-02	24	14	10	7	0
CSQ-03	11	5	6	3	0
CSQ-05	15	3	17	5	10
CSQ-07	9	0	1	0	0
CSQ-08	6	2	1	1	0
CSQ-20	19	3	9	1	1
CSQ-21	7	0	0	1	0
CSQ-24	6	0	2	2	0
CSQ-25	6	19	3	3	0
CSQ-33	0	0	6	0	18
CSQ-35	0	0	2	0	8
CSQ-36	0	0	6	0	16
CSQ-38	0	0	4	0	18
CSQ-43	13	0	0	2	0
CSQ-44	16	5	16	4	20
CSQ-45	12	0	0	1	0
CSQ-46	10	0	0	2	0
CSQ-48	14	0	0	2	0
CSQ-51	0	0	0	0	4
CSQ-55	11	36	12	7	0
CSQ-56	12	35	12	7	0

SQ1 CSQ1	Global carbon cycle
SQ2 CSQ2	Land biosphere responses

SQ21 CSQ55	State of land ecosystems
SQ22 CSQ56	Ecosystems transition

Figure 5. *Relative strength of the contribution of each CSQ to major international policies and agreements. The numerical scores for each CSQ and policy area provide a quantitative measure of the directness and are computed based on a methodology developed by the EO Science Strategy Foundation Study.*

Connecting EO Science Priorities to Policy & Societal Benefits

Seeds questions

- Which **policies** should be pursued as a **priority** and why (e.g. UN, International body level, EU level or National)?
- To what extent should **policy be a criterion for prioritizing EO science activities** and missions, and how strong should the focus be on this topic in relation to other science themes?
- How **robust is the methodology** for tracing the relevance of the science questions to policy/benefits, and where might it be improved?
- How **best to accompany the evolving policy environment** in the future? **What are the mechanisms** of input and feedback?
- How can the **EO specifications and limitations be aligned/taken up for policy decisions** for monitoring and verification purposes?

Main points

- Opportunity of space for policies based on potential high-impact
- Link between scientists and policy makers
  - Need of a ‘third man’, e.g. specific terminology or level of detail
  - Science information to decision frameworks
  - Different types of science (fundamental, applied, translational)
- Education of both scientists and policy makers
  - Type of policies, aspects within policies
  - Need of succesful examples
- Timescale of research linked to policy
  - Short (applications) and long timescale (future missions)
- Role of data within policy
  - Uncertainty of measurements within policy
  - Certification of data, benchmark needed (e.g. elimination of deep fake)
- Complementarity of Copernicus & ESA programmes (from research to operation)

Suggestions for the Science Strategy

- Edit the strategy around where should ESA focus around the three types of science:
  - blue sky,
  - applied science
  - translational science.
- Confusion around the role of timeframe. Distinguish between long term timelines for fundamental development. Short for operationalisation and applications. Pathway of science: Research - operations - applications - policy
- Add an annex of case studies where ESA has worked / had a dialogue with policymakers, e.g.UNFCCC forestry, EU and the Common Agricultural Policy (CAP), Austria study.
- Consult and include policymakers in the process (e.g. identifying science questions)