

PRELIMINARY LIST OF POLICY QUESTIONS OF HIGH RELEVANCE FOR STI POLICY IN THE CLIMATE DOMAIN

This list represents a selection of policy questions under the policy cycle stages **Agenda Setting** and **Evaluation** which have been rated as highly relevant by STI policy makers in the climate domain.

These are the policy questions on agenda setting, hence group A.

POLICY CYCLE STAGE: AGENDA SETTING-INTELLIGENCE GATHERING & PROBLEM IDENTIFICATION

Innovation system function: Entrepreneurial activity

Key question **Where should resources be invested (individual companies, sectors, value chains) to support the national innovation system to successfully undertake R&D and compete internationally?**

Rationale	A: Understand which companies are active in emerging fields (emerging field defined under Knowledge Creation) and likely to excel in the future, this is where you want to invest B: Understand where local companies have an R&D&I specialization (the answer to these questions will be prepared during the monitoring and evaluation part of the cycle)
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List of sub-questions

- Are companies adapting to technological transformation trends in their respective sectors? How do they compare with major (international) competitors?
- Which companies emerge with specific disruptive technologies in the country/macregion/region/city?
- Are companies emerging with specific disruptive technologies scaling up?
- Are scale ups leaving the country/region/city?
- Does the country/region/city attract entrepreneurial talent?
- Who are the persistent innovators in the country/macregion/region/city?
- In which R&D fields do the persistent innovators invest?
- In which R&D fields is the highest share of all company R&D investments?
- In which R&D fields is the country/region/city improving its revealed comparative advantage?

Innovation system function: Knowledge creation

Key question **In which fields is new knowledge coming up?**

Rationale	Does it make sense to support national research in the new fields of knowledge likely to make breakthroughs?
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List of sub-questions

- Which scientific fields demonstrate the highest growth in terms of publications/citations globally? Distinction to be made between basic and applied research (distinction between interdisciplinary publications, basic research and applied research) (using journal classification?/calls for proposals)
- Which are the emerging interdisciplinary fields globally?
- Which are the research teams in the country undertaking research in these fields?
- Which are the research teams in the country that might be successful if guided towards these research areas?

Innovation system function: Knowledge diffusion through networks

Key question Does the diffusion function work well in the country?

Rationale Understand the mechanisms of knowledge diffusion

List of sub-questions

- Which knowledge diffusion channels work best in good practices per discipline at national level?
- Which diffusion channels work best per discipline internationally?
- Which networks e.g., clusters, hubs, intermediaries operate nationally per discipline?
- What are themes in common between the actors of the ecosystem? What are observed concentration patterns?
- Are actors of the ecosystem collaborating? What are forms of collaboration?
- What are the cross sectoral or cross technological collaborations occurring and among which actors?

Innovation system function: Guidance

Key question Which are the current societal priorities expecting research to provide results?

Rationale Understand global and own priorities, capture momentum in terms of EU financing priorities

Sub-question

- To which global, EU societal challenges (i.e. living lab specific) are research groups contributing to?
- Are there specific national/macroregional societal challenges?

Innovation system function: Market formation

Key question What are the appropriate tools to form new markets?

Rationale Find the most appropriate tools to help form lead markets

Sub-question

- What is the content of policy papers for new markets for emerging technologies?
- What is the regulation globally for these technologies?
- What is the role of public procurement for these technologies (theoretically/practically)?

Innovation system function: Resources mobilization

Key question **What are the resources needed and how can they be obtained?**

Rationale **Find out what is needed and how national resources can be mobilized**

List of sub-questions

- What are the national/regional financial resources available in the country? Are they used to leverage EU funding through synergies?
- Which financial resources were most effectively used in the previous cycle (evidence from the evaluation part of the cycle)?
- What is the size of resources needed to become competitive in each emerging technology?
- What type of resources can be mobilised outside the national public funding (EU, foundations)?
- For which technologies are companies successfully attracting private funding?
- Is there sufficient tech talent supply?
- Is there sufficient tech talent demand?
- Is there a gap between supply and demand?

Innovation system function: Creation of legitimacy/counteract resistance to change

Key question **What is the opinion of stakeholders on new technologies?**

Rationale **Find out potential problems and corresponding perceptions**

List of sub-questions

- Are there any foresight studies conducted and what are the outcomes?
- What is the public opinion on specific topics (old and new ones)?
- What is the role of the press?
- Is resistance expected? Where? Why? How?
- What are the reasons justifying the political choices made?

These are the policy questions on evaluation, hence group B.

POLICY CYCLE STAGE: EVALUATION

Innovation system function: Entrepreneurial activity, Knowledge creation, Knowledge diffusion through networks, and Guidance

Key question What are the results, outcomes and impact of projects and programmes?

Rationale Find out potential problems and corresponding perceptions

List of sub-questions

Unit of analysis: projects

- How many scientific publications were published? In top 1% or top 10% of scientific journals? (distinction between interdisciplinary publications, basic research and applied research) (using journal classification?/calls for proposals)
- How were citations in publications associated to projects compared to scientific discipline average?
- How many presentations in top scientific conferences? (distinction between specialization, basic and applied research)
- How many people were trained as researchers? As technicians?
- How many new jobs were created for researchers during the project?
- How many new jobs were created after the project (research and beyond) within the country?
- How many patents were produced (applications/grants) in the European Patent Office and in the US PTO? How many were used inhouse? How many were licenced? What royalties did they produce?
- What new products have been developed? How many were launched in the market? What was their contribution to turnover, profits, exports, taxes?
- How many new production processes have been developed? How many were launched in the shopfloor? What was their impact on productivity?
- How many new algorithms, software....were developed? Used?
- What has been the leverage of national support measures for EU competitive funding?

Unit of analysis: programmes

- What has been the leverage of national support measures for EU competitive funding?
- Are currently available strategies/policies coherent?
- What was the cost per publication? At scientific discipline level?
- What was the cost per patent? At scientific discipline level?
- What was the research employment created?
- What was total employment created?
- What is the cost benefit analysis of each programme?
- What were the private returns on investment?
- What were the social returns on investments? Taxes generated?
- What are the multiplication effects of each programme?
- Has the sectoral specialization of the research system changed towards higher value added activities?

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- Has the sectoral specialization of the productive system changed towards higher value added activities?
 - Which societal challenges have been addressed (living lab specific/delineated)?
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Innovation system function: Market formation

Key question **Have the regulation and public procurement been adequate?**

Rationale **Find out regulatory and procurement outcomes**

List of sub-questions

- Has the regulation adopted facilitated the creation/access to new markets?
 - Has public procurement of innovation produced effective results? Has it created lead markets?
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