

STI policies for societal challenge and missions

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- 1) What is a mission and what are the governance mechanisms?
- 2) How do we implement these mission-oriented policies, what are the instruments, the policy mixes?
- 3) Which type of innovations ? Which actors?



Governance mechanism

- Different types of challenges/missions need appropriate governance :
 - Challenges and the related governance were framed in a problem-solution space: from broadly framed challenges to stable & legitimized problems and solutions. Concept of policy pathways to move from a « wicked » situation to a «more stable one »: take account of challenge types, diverse constellation of actors and their evolution during the pathway, sectoral policies, orchestration of stakeholders
 - Transformations might be characterized by different levels of speed (fast vs slow), scope and uncertainty. Two broad governance approaches : responsive vs co-creation governance => typology of governance
 - Modes of governance depend on who (state or non state) performs governance and the types of process (hierarchical vs heterarchical). Each mode of governance is related to a specific role of the State (agents & opportunity structures, instrumentation and legitimacy)



Governance mechanisms

- Role of Forward Looking Activities (anticipation, foresight):
 - To assist policy governance
 - Foresight exercice to assist the design of Mission-Oriented R&I programmes: intra and inter-organizational foresight networks and processes are suitable instruments: overcome cognitive, organizational and institutional barriers
 - Foresight helps to create shared vision, shared ambition between various stackeholders, a way of integrating different perspectives, having long term vision, increase diversity of points of view, open discussions needed for transformative policies. (It is not about solution!)
 - Plays a role in policy performance. Photovoltaic case in Japan about the misalignement between sociotechnical believes of policymakers and expectation of experts to avoid policy failures.



- Implementation should take account of specificities of Innovation System, of legacies, organisational structures and needs political commitment
- Change will emerge from new cooperations, new coalitions
- Main instruments analysed are local experimentation activities



Experimentation activities that lead to transformative changes:

- Test beds, living labs, real-life laboratories: innovation eco-systems for users, to co-create new products, services, policy tools, regulation, open innovation tools, to test ST arrangements in real life, local (smart cities) experiments. Diversity of situations, configurations of actors, of setting up, definitions, interesting taxonomy, conceptualization, understanding tensions, no evidence about their impacts
- Pilot projects (« entrepreneurship lab »): can serve as a proof of concept for a future programme, if failed easier to stop, if success easy to scale up, a learning opportunity; BUT policy fragmentation, spatial & sectoral disparities
- Policy labs allow for co-creation, iteration and agile innovation: process of experimentation, prototyping, pilot ideas, iteration and scale up. Often multidisciplinary teams, co-design (policy and citizens), agility. A bridge between slow and risk-adverse policy making (regulation) and fast and risk-taking innovators.
- **Demonstration projects**: questionning the role of users in the innovation projects
- Experimental spaces: new forms of inter-organization cooperation that cross boundaries and explore widespread futures should be fostered: different actors & industries, long time frame, industries exploring new S&T opportunities, no implementation required
- **PPP**: local partnerships, global initiatives



- Experimentation as a means to open up new opportunities, implemented outside the existing system
- Experimentations are local initiatives:
 - how can we learn from these experimentations and draw lessons,
 - how to diffuse more widely theses experimentations, viability and scalability
 - role of new actors and of incumbents, tensions between actors
 - How to build a common understanding of possible futures
 - role of policy-makers
 - The right to fail and used as a policy instrument
- Experimentation and change of regulation:
 - Self-regulated experiments (hospital distributed innovation) and distributed responsibilities
 - Evolution of the regulation (co-creation vs. defensive approach)
 - Learning how to define new regulations



- Role of policy mix (Maas) in disruptive innovation: coupling multiple policy initiatives by different actors fostered market creation and systems barriers + coupling top-down and bottom-up initiatives + iterative process with temporary informal leads
 - \Rightarrow Institutional change : reorganization of administration, changes in framework regulation
 - \Rightarrow Evolution of innovative concept: from infrastructure to service
 - \Rightarrow Reflexive/flexible innovation policy
 - ⇒ Question of wider diffusion, of coordination of related initiatives (EV, biofuels...) to enable system transformation on a broader scale.
- Existence of contradiction between coordination (top-down or between ministries) and experimentation (disruptive, bottom up)
- Inserting MOP in existing policy boxes will not work avoid linking MOP with existing policy mixes => not doing more of the same but change socio-technological paradigm and rethink the political system, the policy mix



- The need of organizational capabilities to tackle GC:
 - Integrated organizational capacities:
 - for experimenting,
 - for engaging mechanisms : enough resources (human, financial...)
 - for evaluating impacts and not only outputs and outcomes evaluation framework for policy learning
 - Example of Estonia (small country) with limited capacities to change policy arena, in demand articulation, bridging demand and supply, managing conflicting goals, in funding, in strategic thinking of program
- Need for dynamic evaluation and assessment: to build real time assessment approaches, new types of evaluation that allow to learn, to adapt, to be flexible => understand societal impacts of complex and uncertain processes, understand underlying impact generating mechanisms



Elements to consider to build a dynamic evaluation approach

- Thinking in terms of impact pathway with different steps, as an iterative process, driven by impa generating mechanisms, and leading to a variety of impacts
- The complexity of impact generation is generally due to a set of activities and not just one project or programme.
- Network of actors evolve along the impact pathway, particular role played by intermediaries in the diffusion, scaling-up phases
- The context might have facilitating or hampering effects, open up or close windows of opportunities
- Four typical impact pathways caracterized by different degrees of system transformation, coproduction of knowledge, intensities of impacts, impact generating mechanisms
- Identification of critical points, potential lock-ins over the pathway
- Impacts take a long time to be generated



Some implications in terms of dynamic evaluation

- Building forward looking impact pathways
- Evaluation should be a participatory approach, involving users
- Sequential and iterative approach: analyzing step by step
- Taking into account uncertainty, gaining knowledge, learning, priviledging flexibility, adaptation
- Need to anticipate transformations (even if it is a rational myth: we believe to the aim but know that it is subject to modifications, revisions), scope of transformation in terms of impacts, potential users, how they will be interested or affected



What type of innovations, innovators?

- In nature cross-disciplinary, cross sectoral, cross boundary and cross-actors
- Distributed, local innovation, production and consumption as alternatives to existing systems
- Public organisations: adapt regulation, foster new mixes, foster experimentations, new coalitions, new conditions
- Complex and various network/coalitions of actors, evolving along the pathways Experimentations are often pushed by policy entrepreneur
- Role of users, citizens
- Role of intermediary actors to support the diffusion, scaling up





Conceptual foundation related to challenge-oriented policies :

- Types of challenges and related governance
- Policy rationales
- Policy processes: learning, experimentation, trade-offs and tension in policy mixes, policy interaction, negotiation processes, orchestration of activities...
- Effective strategies to adress GC
- Policy learning, strategic intelligence, dynamic evaluation of Mission-oriented policies Innovation up-scaling/diffusion: which mechanisms?





THANK YOU FOR YOUR ATTENTION





- Synergies or contradictions between coordination, coordinated policy mixes and experimentation?
- Role of policy orchestration, policy coordination ?
- Role of policy entrepreneurs as drivers of transformational changes



- Lessons learnt from the space industry:
 - creation of space markets through PPP,
 - creation of an innovation ecosystem by outsourcing activities, creating brokering agents, and inducing entrepreneurial behaviours,
 - guiding the ecosystem towards broad GC by creating a set of horizontal and vertical instruments at the different stages of innovation, capture serendipity through bottom-up experimentation, creating new forms of partnerships and relationships, emergence of intermediaries, sharing risks and benefits
- Careful design of demonstration projects or user-oriented innovation project: role of citizens in projects; unpack the notion of citizen, end-users, active users, hackers...
- Social implication of technical transformation: might lead to a social control instead of a technological transformation (smart grids)
- Experimentation (no mission) vs. Mission could be in tension
- Experimentation as a means to go towards the « good direction »



Governance mechanisms

Role of the state in various governance situations in different ST systems.

- Clear time frame and conducive governance structure (transparency, accountability...)
- Open innovation culture, crossing boundaries within and beyond existing socio-technical system to foster creative thinking and socio-technical change

