Governance of challenges-oriented R&D programs: can small countries deliver?

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The puzzle

- How to coordinate and manage the challenge-oriented R&D has become a challenge on its own (Bozeman and Sarewitz 2011; Mazzucato 2017; Mowery et al 2010; Wallace and Rafols 2015)

- Which policy and administrative capacities (or lack of thereof) shape the implementation of the challenge-driven R&D programs in the context of small states?

Two central conceptual issues (I)

- **What are the administrative and policy capacities for challenge- and mission-oriented R&D policies (programs)?**
  - to marshal necessary (scarce) resources as well as effectively manage them to make intelligent collective choices to further public goals and values (Painter and Pierre 2005)

- Project > portfolio
- Bridging demand and supply
- Diversification vis-a-vis synergy
- Management of conflicting goals
- Choice between instruments
- Static vs dynamic evaluation

(Bozeman and Sarewitz 2011; Mazzucato 2017; Mowery et al 2010, Wallace and Rafols 2015, Bozeman and Rogers 2001, Bozeman and Youtie 2015, Sarewitz & Pielke 2007)

Two central conceptual issues (II)

- **What it takes to develop the challenge-based R&D policy (program) capacities?**

- Small vs large country context:
  - demand (industry/government) and supply (program beneficiaries) conditions
  - limited oportunities for tailor-made instruments and organizations
  - funding
  - qualified people (researchers, innovators),
  - international collaborations to coordinate cross-border initiatives and investments
  - nature of feedback: brain and technology drain and less pronounced policy impact

The case of Estonia

- Among the most successful Central and Eastern European (CEE) countries in terms of catching up the global scientific frontier
- Public R&D system very strongly driven by research excellence paradigm
- Six national technology programs 2007-2015: comprehensive attempt to introduce societal and economic relevance into public R&D system

Evidence

- In spite of clear attempts to strategically manage the programs:
  - the challenges mitigated, missions accomplished, technologies transferred, new productive linkages created remained limited,
  - clear outputs in terms of increased number of publications, patents and PhD defenses and new research infrastructure
  - all programs followed the “bait and switch” scenario (Bozeman and Sarewitz 2011)

Why?

- mismatch between the existing R&D supply and demand structures
- implementation uniform and overly static across the programs
- projects, not programs as focus; limited learning
- demand articulation and coordination for R&D remained weak
- evaporation of wider values happened through (a) articulation of very short-term demand, or (b) articulation of abstract challenges
- no “real” owners;
- logic of funding key

Implications (I)

- Understanding why it happened may also provide input for changing the governance structures

- Yet, can governments overcome the inherent limitations of policy-making in small states?

Implications (II)

- Small states face double governance challenge:
  - Inherently limited public sector and market capabilities often in context of profound mismatch between academic and market specializations

  that could potentially be mitigated through international collaboration (EU), but where

  - their infuence on decision-making remains limited and access to finance dominates in making policy choices

Thank you!

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