Test beds as an emerging instrument of STI policy-making

How they approach innovation – and reconfigure society

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Germany: sharp increase over the past 5 years



Some theoretical inroads from Innovation Studies

- Orientation of innovation policy towards societal needs and "grand challenges"
- Regionalization of innovation policy
- Open and collaborative forms of innovation
- RRI and (Upstream) Public Engagement
- Hybridization and projectization of research environments
- Transition studies and niches
- Role of the state in innovation

- Some specific work on living labs, real-world laboratories, test-beds...
- ... but focus on technology and its testing in society

Test beds mark a shift in the conceptualization of what innovation is, how it operates, and who ought to be involved

- How do test beds reconfigure and "test" societies against a new set of technologies and associated modes of governance based on particular visions of a desirable future?
- Make social order available for experimentation:
 - Deliberate interventions into social order and relationships
 - Test new ways of living under the assumption that certain technological changes will inevitably happen
 - Subject to spatial confinement and tied to local "test population"
 - May require the alteration of local laws and regulations
- Tacit assumption: Local "model version" of a new sociotechnical configuration to become a **template for broader transformation**.

Working definition

A test bed is a spatially confined, purposeful experimental setting aimed at testing and demonstrating the viability and scalability of new sociotechnical orders and associated forms of governance based on particular visions of desirable futures.

Two case studies represent the test bed phenomenon



1 Urban Campus





Case study 1: European Energy Forum (EUREF)

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- The spatial delineation allows for **regulatory and institutional flexibility** (controlled environment, fenced off from the neighborhood)
 - Houses a heterogeneous array of different stakeholders and technology projects in an explicit attempt to foster co-creative innovation activities
- > The diversity of inputs put limits on experimental control
- Mission: demonstrating feasibility of urban energy transitions / smartification

 a small-scale living "proof that the Energiewende is feasible;"
 Showcase character of the site: Skeleton of former Gas tank "Gasometer"
- Tension to open-endedness and riskiness of research/engineering: testing arrangements face pressure to give way to staged events
- Policy-makers equate testing on the campus with "testing in Berlin" or even *the* "sustainable miniature city of the future"
- Scenarios and best practice model to transfer and reproduce the campus in other cities; a similar site in Essen (Rhine area) has been developed
- Challenge to transferability: tangible technology barely developed, highly idiosyncratic site, political environment, alliance of actors (inst. entrepreneurs)

Case study 2: Energy Avant-Garde Saxony Anhalt

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- EAA interprets experimentation as something that includes more space and diverse, active publics in co-creation (3500 km², 380,000 inhabitants)
 - Diverging understandings about openness and acceptable unruliness (increasing dominance of experts of professionals who stress "concerted effort of management and coordination")
- Ambivalent mission: **lab-like testing of viability, feasibility, and** "acceptance;" failure = evidence that the Energiewende will not work
- Symbolic "vanguard" role and expectation to be a national beacon project; promise to experience a 100% (energy) sustainable life for thousands
- Envisioned effectively as a smaller-scale stand-in for Germany's transition challenges at large, esp. in rural German and European regions
- Yet, some actors dismiss the idea of transferability, justified by narrative of regional exceptionalism (cradle of the Reformation, a stronghold of the enlightenment, home of the modernist Bauhaus avant-garde)

Using test beds responsibly: New challenges for innovation governance

- Controlled experiment vs. open co-creation:
 Who is involved? Who should be involved and how?
 - Broader democratic legitimacy vs. new forms of exclusion
 - E.g. fencing-off of the EUREF campus,
 power asymmetries and diverging interests in EAA governance
- Experiments in/on society: Require new consent procedures?
 - Options for "opting out?"
 - E.g. fatal crashes in autonomous vehicles
- Tests vs. showcases: Are test beds "tests"?
- Solving unique local problems vs. scalability/transferability: Little explicit attention paid to regulatory, political, or social differences between the test-bed and other settings
 - (cf. Pfotenhauer & Jasanoff 2017).

Thank you for your attention! Questions?

- Test beds as emergent policy instrument to tie innovation to society
- Rather than testing technologies, more helpful to focus on how test beds reconfigure and "test" societies around technological paradigms with modes of governance.
- Three characteristic tensions related to social functions of test beds
- Governance challenges related to participation, consent, and "future making"

Collaborative research with Franziska Engels (PhD candidate), Prof. Sebastian Pfotenhauer



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