Tools and methods for devising research infrastructure policies:
The experience of Central and South-East European countries

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Motivation

The importance of research infrastructures (RIs)

- their role in addressing major challenges, and thus the socio-economic consequences of their operation;
- the financial implications of building and maintaining appropriate RIs; etc.

⇒ major stakeholders to be involved when making strategic decisions

Many RIs are exploited below the socially optimal level ⇒
More emphasis on better use and management of existing RIs

Knowledge generation ⇒ the role of RIs

- dialogues between the co-producers and users of knowledge

Escalating costs of building new RIs and modernising existing ones vs. budget constraints

Major features of foresight processes

The future

- is not pre-determined
- can evolve in different directions
- is shaped by actions taken today by various players

⇒ A degree of freedom to chose among multiple futures

⇒ A possibility to increase the likelihood of a preferred future

Value the multiplicity of perspectives, interests, and knowledge held across a dispersed landscape of actors

Seek to bring these together in processes of deliberation, analysis, and synthesis

Rely upon informed opinion and interpretation, as well as creative approaches in formulating conjectures on the future

Draw on data from trend analyses and forecasting, bibliometrics, and official statistics, among other sources

Seek to transcend traditional epistemic boundaries

- by bringing together different disciplines
- in processes of deliberation that
- result in improved understanding and new working relationships

Align actors around emergent agendas, resulting in a co-ordinated mobilisation of people and resources

Support actors in actively shaping the future

Should only be undertaken when it is possible to act upon the results

Issues for foresight on RI

Policy orchestration

- STI policies and RI policies (specific features of scientific domains)
- STI policies and other policy domains affecting RTDI activities
- STI policies and policies aimed at promoting socially, economically, and environmentally sustainable development

Use of existing RIs

- multiple governance, organisational and financial models to improve efficiency

Future needs vs. existing RIs

- more efficient exploitation of existing knowledge vs. generation of new knowledge
  - are there better ways to unlock a repository of knowledge?
  - is there a need to change the way in which knowledge is generated?
- the life cycle of the RIs
  - financial sustainability of existing and new RIs
  - decommissioning of RIs
- international co-operation and competition
  - new models of collaboration (strike a balance between co-operation and competition)
  - co-investment
  - IPR
  - ethical issues

People

- RI development strategies and education policy
  - operate and govern RIs
  - utilise RTDI results
  - life-long learning of researchers
  - mobility of skilled people among sectors and regions ⇒ diffusion and exploitation of knowledge

Benefits of foresight on RI

Underpins RI development strategies

- Would the selected future needs be better served by modifying the existing RIs or building new ones?

Encourages systemic and systematic thinking

Facilitates strategic deliberations on strategic issues

Compels developing multiple models of running and using RIs

Develops shared understanding of the context (where are we now?) and a shared vision (where do we want to go?)

Creates commitment among the participants

Reduces uncertainty

RI policy-setting processes in Central and South-East European countries

Main research questions

- The tools and methods applied to devise national RI development roadmaps, as well as for preparing proposals for the ESFRI (European Strategy Forum on Research Infrastructures) Roadmap
- The actors and stakeholders involved in these strategy-setting processes
- The types and extent of international (macro regional) co-operation in investing in and using RIs

Findings: the ESFRI Roadmap

- hardly any proposals by these countries for devising and revising it
  ⇒ no need to rely on any strategy-setting tools and processes

Findings: the national RI development roadmaps

- suggestions on RI projects by major universities, other publicly financed R&D performing organisations and influential researchers
- assessed by various committees
- no comprehensive strategic analyses have been conducted
- no participatory methods and processes have been applied
- Exception: the NEKIFUT [Take-off] project in Hungary
  Yet, this project had been disrupted several times, and eventually stopped in 2015 before it was completed

Foresight can be a useful tool to underpin RI policies …

Decisions on building new RIs and upgrading existing ones present a complex challenge

A wide range of stakeholders are to be involved, with different, and sometimes even conflicting interests

A lot is at stake

- future scientific capabilities
- repercussions on socially, environmentally, and economically sustainable development
- strategic choices
  - significant immediate financial repercussions
  - potentially huge long-term implications

Severe budget constraints

Significantly differing opinions

No evidence in a strict sense

Foresight can
reduce technological, economic or social uncertainties
  by identifying multiple futures and various policy options
propose better informed decisions
  by bringing together different communities of practice with their complementary knowledge and experience
obtain public support by improving transparency
⇒ improve overall efficiency of public spending

Foresight is neither a panacea, nor a decision

… but there are obstacles, tensions, and methodological dilemmas

The legacy of ESFRI: no use of foresight

Opaque, non-participatory decision-making culture

Organisational (in)stability of RI policy-making bodies

Idiosyncratic features of various S&T fields and their RIs

- variety vs. a comprehensive, overarching RI development strategy
- do we have appropriate foresight tools to address these issues, or do we need to develop new tools and approaches?
- can we derive future RI needs from the inner logic of S&T developments and trends or advanced RIs drive S&T developments and trends?

Multiple 'futures' for RIs: S&T or other aspects?

- 'pure science' [achieve scientific excellence, prestige]
- business needs [enhance competitiveness]
- societal challenges (grand challenges) [improve quality of life]

Embeddedness in decision-making structures vs. autonomy of foresight processes

A fully-fledged, highly visible foresight process vs. foresight-like activities 'assumed' in an RI strategy-setting process
example: the NEKIFUT [Take-off] project in Hungary

Policy proposals

Conduct foresight on RI at various levels

Consider RI issues in thematic foresight processes, besides conducting foresight on RI

Translate recommendations into policy measures

Update and revise strategies by regular foresight processes, as opposed to a one-off exercise