The Finnish research and funding reform – an international perspective

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S&T advice...

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With acknowledgements to:
Wilsdon, J., Allen, K. and Paulavets, K. 2014
A changing world?

- National priorities/national concerns – society, health, environment, technology, transport, etc.
- Global issues – climate change, natural disasters, ozone hole, conflict, migration, environmental degradation, diminishing resources, epidemics/zoonoses, etc.
- Innovation and industrial competitiveness

Require:
- Long-term information/understanding and rapid/emergency response
- Multi- and inter-disciplinary capabilities
- Dealing with funding constraints and consideration of potential business models
(typical) Government responsibility

- Various (governance) approaches:
  - Advisory councils: high-level council for science (or science and innovation) policy (Japan, US PCAST, Australia)
  - Advisory committees: array of specialized scientific and expert committees (US, Japan, UK)
  - National academies, learned societies and networks: (Canada, China, Germany, Netherlands, South Africa, US, UK)
  - Chief scientific advisors: (US, UK, Australia, Cuba, Czech Rep., India, Ireland, Malaysia, New Zealand, EC) plus departmental CSAs (UK, NZ)

- Mission-oriented approach
  - Sector/disciplinary focus
  - Reactive
  - Pro-active – horizon scanning

- Increasingly cooperative – HE/private sector engagement
- New governance models (full/partial privatization, Government-owned/contractor operated (UK PSREs, NZ CRIs))
- New networks
- Engaging stakeholders
- Coping with complexity and ‘wicked’ problems

Note: Broad range of activities often covered by umbrella term of ‘scientific (and technological) advice’
S&T advice: Canada: The Roles of Government in S&T

STEPS Report, CSTA, 2001
(Australia, France, Germany, New Zealand, Sweden, UK, US)

Identified needs:
• Support for decision making, policy development, and regulations
• Development and management of standards
• Support for public health, safety, environmental, and/or defence needs
• Enabling economic and social development

• Research is characterised by:
  – **Originality**: creation of new knowledge (quality)
  – **Independence**: third party assessment
  – **Consistency**: on-going data provision
  – **Clients**: addresses variety of needs - government decision makers, internal and external stakeholders, and the public
  – **Scope**: from leading edge, fundamental research, applied research, strategic research, technological development and Related Scientific Activities (disease surveillance, monitoring, testing, S&T information services, archiving, and museum & media services)
  – **Time frames**: from short-term goals to very long-term data sets
S&T advice: How to ensure excellence through the research continuum (Canada)

1. Definition of scientific priorities and programmes:
   – reflect needs of diverse base of clients and stakeholders

2. Proposal and project selection:
   – scientific merit, demonstrate independence, alignment with government and departmental mandates, stakeholder needs, transparency, openness, and ethics.

3. Scientific inquiry:
   – originality, objectivity, rigorous methodology, repeatability, research integrity, and ethical behaviour (plus needs for RSA).

4. Immediate results (outputs):
   – account for all potential applications/uses

5. Ultimate impacts (outcomes):
   – account for all potential applications/uses

6. Communications:
   – to entire set of stakeholders
**S&T advice: Framework for Excellence in Government S&T (Canada)**

- **Foundation of Excellence**
  - Leadership
  - Management
  - Capacity to address current and emerging needs
    - Human Resources
    - Infrastructure and Equipment
    - Financial resources
  - Science/policy interface

- **Pillars of Excellence in Government S&T**
  - Quality
  - Relevance
  - Transparency and openness
  - Ethics

- **Mechanisms**
  - Review
  - Quantitative metrics and indicators
  - Benchmarking
  - Satisfaction and impact analyses
  - Balanced Approach
  - Communications
S&T advice: The Public Value of Public Sector Research Establishments: Towards a set of principles and guidelines

- PSREs:
  - diverse collection of public bodies carrying out research in support of a wide range of Government objectives (inc. informing Government policy making, statutory and regulatory functions and providing a national strategic resource in key areas of scientific research).

- PSREs are part of/directly sponsored by Government departments; or part of/directly sponsored by UK Research Councils.

- Over 140 PSREs falling broadly into four categories:
  - Cultural Institutions (DCMS) - art galleries, museums, arts and heritage organisations.
  - NHS ‘innovation hubs’ (DoH).
  - Departmental Research Bodies funded by other Govt. Departments.
  - Research Council institutes (centres and units): perform intramural research on behalf of the parent Councils. Various funding models.
**S&T advice: UK PSREs: MIoIR guidelines for review process**

- Political pressure for partial or full privatization
- Remit: to undertake a study of the landscape of PSREs and help develop a set of principles to help inform their review in the future
- Key issues:
  - **Science capability**: how to assess the requirements or capabilities that Government needs and whether there are any constraints in terms of how and by whom these are delivered
  - **Impact**: How to assess a body’s contribution to economic growth, along with a definition of the approaches to and scope of commercialisation that might be achieved, and wider impact e.g. on policy and society.
  - **System level considerations**: How to account for the aggregate effect on national science capacity and the innovation ecosystem of changes to a number of institutions when considering an individual proposal.
  - **Location**: how to assess the role of the body in its local economy.
S&T advice: UK PSREs - findings

- No one size fits all approach to reform
- Identifying the roles thought to be most crucial will inevitably involve trade-offs: no business model will be likely to work equally well across all roles and all dimensions.
- Essential that departments and Government as a whole regularly review their policy and regulatory support needs and how they might best be met.
- Identified eight basic principles to be observed in any single institutional review

• To enable institutions to develop research capabilities on the basis of appropriate, long term, strategic planning; to promote excellent research by both individuals and teams leading to high quality graduate output; and to encourage collaboration within and between institutions
  – required institutions to demonstrate planning structures and research strategy appropriate to their circumstances;
  – concentrated on excellent research, not necessarily (or immediately) commercially exploitable
  – emphasised contribution research activities to quality of teaching
  – covered entire range of disciplines from humanities to natural sciences
  – funding heavily weighted towards capital expenditure to provide necessary research facilities
  – required assurances of matching funding (from private sector)

• Reviewed 2004
  – Investment in PRTLI fully justified, should be continued
  – PRTLI research funding strategically and effectively deployed on a priority basis
  – Institutions adopting more professional approach to research organisation, planning and management.
  – Research quality, scale of operations, and critical mass being achieved.
  – Strong evidence of an emerging collaborative culture
  – Impressive diversity of scientific disciplines, across all institutions, focused on common goals
  – Producing very highly skilled personnel for the national economy, and radically new scientific insights
  – Teaching and learning environments enhanced
  – Impressive general trends in PRTLI publications, output and impact,
  – Promoting world-class research across all disciplines
  – Irish publication output increasing steadily
  – Bibliometric assessment showed impact of papers by PRTLI researchers as higher than the national average.
  – Results achieved were remarkable, considering that PRTLI still at relatively early stage of development
Review: Typifying scientific advisory structures and scientific advice production methodologies” - TSAS, EC. 2001

“Systematically mapped and characterised most significant scientific advisory bodies in 20 European states, plus overviews of US, Japan and Canada and transnational advisory bodies.

- Restricted to: Agriculture; Fisheries; Energy; Transport; Environment; Health & the consumer; Research

- Issue of scientific advice in government policy making gaining importance.
- High level of variation: cultural and national contexts play major determining role.
- Number of countries have undertaken some recent restructuring of their S&T advisory systems.
- Despite variation, still high degree of similarity in structure, many countries have hierarchical system.
- Major differences in terms of the level of formality or institutionalisation.
- Role of the national Parliament varies considerably.
- Shape and operation often determined by underlying national culture for openness, debate and social engagement.
- Most advisory bodies tend to engage in the provision of policy recommendations vs undertaking purely risk assessment type activities.
- Type of advisory system highly influenced by national S&T system and by topic under consideration.
- Different approaches to transparency and openness – with a trend to increasing these factors.
- Increasing engagement of stakeholder groups and general public in advisory process.

- Elements of Good Practice:
  - Openness and transparency;
  - The issue of independence;
  - Co-operation between advisory bodies;
  - Courses of action.
Other approaches and reviews

- **Crown Research Institutes (New Zealand):**
  - “Crown-owned companies that carry out scientific research for the benefit of New Zealand - each is aligned with a productive sector of the economy or a grouping of natural resources”: Four Year Rolling Reviews.

- **Cooperative Research Centres (Australia):**
  - link researchers with industry and government with a focus towards research application. Several economic impact studies.

- **Network of Centres of Excellence (Canada):**
  - focus research resources on social and economic challenges, commercialize and apply research breakthroughs, increase private-sector R&D, and train highly qualified people. Range of evaluation reports available.

- **Danish ERAC Review:**
  - Restructuring in response to an international peer panel review: advised merger of funding institutions along the innovation pathway – funding simplification.
  - Led to “Denmark - a Nation of Solutions”, followed by initiation of new public-private partnerships on innovation, and creation of The Innovation Fund Denmark replacing a number of previous funding bodies.
Key references

- 32 Gluckman, P. 'The art of science advice to government'

Annex – supplementary info

Principles of Science Advice to Government (from UK GO-Science)

• Preamble
  - ‘rules of engagement’ between Government and those who provide independent S&E advice. Provide foundation on which independent scientific advisers and government departments should base their operations and interactions…

• Clear roles and responsibilities
  - Respect and value academic freedom, professional status and expertise of independent scientific advisers.
  - Respect the democratic mandate of Government to take decisions based on a wide range of factors…
  - Government & its scientific advisers should not act to undermine mutual trust.
  - Chairs of Scientific Advisory Committees and Councils have responsibility to maintain open lines of communication with their sponsor department and its Ministers.

• Independence
  - SAs should be free from political interference with their work.
  - SAs are free to publish and present their research.
  - SAs are free to communicate publicly their advice to Government, subject to normal confidentiality restrictions, including when inconsistent with Government policy.
  - SAs have right to engage with the media and public independently…
  - SAs should make clear in what capacity they are communicating.

• Transparency and openness
  - Scientific advice to Government should be made publicly available unless there are over-riding reasons…or not doing so.
  - Requirement for independent advisers to sign non-disclosure agreements…should be publicly acknowledged and regularly reviewed.
New Zealand restructuring

- 1989-92, effectively disestablished Department of Scientific and Industrial Research (DSIR)
- created 10 Crown Research Institutes, with productive sector or natural resource focus.
- Simultaneously restructured govt. research arms (Meteorological Service, Forest Research Institute + some research activities of Ministry of Agriculture - incorporated within new CRIs.
- CRIs are government owned, but required to operate on commercial basis.
- Government established new Ministry of Research, Science and Technology (MoRST) (policy advisory department) and Foundation for Research and Technology (FRST) (statutory Crown agency to purchase S&T).
S&T advice: UK PSREs: Key issues

1. Roles in national or international policy systems
   - Ongoing input to policy making
   - Ongoing regulatory or statutory roles (underpinning regulatory decisions or policies)
   - Maintaining expertise, capabilities or facilities which might be needed in the future
   - Maintaining expertise, capabilities or facilities which are required for emergency response
   - Provision of other services to Government
   - Contribution to Government capacity to act as ‘intelligent customer’ for evidence and research
   - Contribution to organisational/corporate memory of Government in this policy area
   - Cross-government capabilities
   - International policy roles (e.g. participation in intergovernmental/treaty bodies, other contributions to international law/policy)
   - Direct development of technology in support of the missions of the State

2. Roles in the national or global science system
   - Expertise in particular basic research fields/applied topics or problems, roles in major research networks/collaborations/communities
   - Expertise in particular techniques, methods
   - Holder of special resources: facilities, collections, datasets, etc.
   - Role in advanced scientific training and education

3. Roles in local, national, sectoral or global innovation systems
   - Knowledge transfer and commercialisation activity
   - Important sectoral roles
   - Important roles in a local economic cluster/zone, etc.
   - Provision of advisory services, extension etc.
   - Provision of other support services to economic actors
   - Role in national standards, accreditation etc.
   - International roles (e.g. participation in international standards setting activities)
S&T advice: UK PSREs mapping

S&T capability profiles

S&T activity profiles

Finnish research and funding reform – 19 Sept 2017