Responsible Science and Research Policy for Finland -New orientation for the future

Politics of co-creation

2.2.2018

Markku Mattila, Professor

Pasteur's quadrant (Stokes 1997)

Applied and Basic Research

Quest for Fundamental Understanding	Consideration of use? No	Consideration of use? Yes
Yes	Pure Basic Research (Bohr)	Use-inspired Basic research (Pasteur)
No		Pure Applied Research (Edison)

Pure Basic Research at public management and organizations, example

- Basic research questions at PE2020 project (Rask et al, 2018)
  - Innovativeness: What are the characteristics of innovative PE ?
  - Participatory performance; What are the performative functions of PE? How they can be measured?
  - Successfulness: How can the success of PE be evaluated?

The role of knowledge growing

- Knowledge society, post-modern society
- Knowledge is production factor
- Knowledge as an indicator of competence core of nations
- Complexity of societies increasing
- Grand challences reguire specialists and deep understanding

Trends of change affecting science as an institution (Rask et al, 2018)

- Diffusion of cooperative practices in knowledge production (coordination, costly infrastucture)
- Contextualisation (Problem focused)
- Socially diffused research (university no longer the unique environment)
- Transdisciplinarity (relatonships between universities, governments and industries
- Quality control enlargement
- Accountability
- Utilitarinism (economic impacts)
- Scientists as experts (support political processes)
- Political steering (governments to steer research priorities)
- Bureaucratisation (administrative regulations)

Science strategy
(Hautamäki& Ståhle, 2012)

- A part of national strategy presenting the view on the future of science and its role in national and international framework
- Presenting the basic values as well as lines of development and methods to achieve the goals

Science policy

(Hautamäki & Ståhle, 2012)

- A part of general policy
- Presents the will committed by political actors
- Guidelines to manage and to finance scientific research and research organizations
- Background for decision making and performance
- Defines the responsibilities, relations and rigths of actors

Responsible Research and Innovation

(EU Horizon 2020)

- RRI keys
  - Public engagement. Intended as a tool for involving the societal actors in research an innovation.
  - Gender equality Scientific edication
  - Open access
  - Ethics
  - Governance, as a factor necessary to integrate the previous keys

Science policy challenges 2017

(G7 Science Ministers Communique'28.9.2017)

- Research has never been as important and relevant, as it is now
- Public investments in research has a key role, with many breaktroughs from basic science with applications that were not initially foreseen
- Science, research and innovation must be at the center of the common political agenda
- Priorities to provide the general framework for science policy:
  - human capital formation,
  - financing policies and mechnisms, and
  - global research infrastructure
  - Open science, researchers training and ability

Human Capital Formation (G7)

- Researchers provide a crucial contribution to the socio-economic growth of societies
- Human capital formation, increasing the number of individuals is a crucial action
- Incorporating digital education into all levels of education of researchers
- Researchers have access to training beyond and across disciplinary domains, insitutions enable to foster trans-disciplinary and multi-disciplinary approach
- To create 'hybrid spaces' where industries, services, administrations and researchers can interact with each others
- Researchers should carry out dialogue with society on permanent basis, to involve them from the very start of the development pipeline , and taking account of discussions with the public as research and policy develops
- Expanding women's participation

The levels of governmental decision making for research in Finland

- Government programme for 4 years
- Research and Innovation Council ,RIC, chaired by prime minister
- Budget of the state accepted by the parlamet
- Result negotions between ministries and research organisations and universities

Tutkimus- ja innovaationeuvoston arviointi (OKM 2014:6)

- Tärkeää yhdistää poliitikkoja ja asiantuntijoita
- Näkyy hallitusohjelmassa, rahoituksessa, politiikan agendalla
- Asema on heikentynyt
- Erottaa liikaa koulutuksen, tutkimuksen ja innovaatiotoiminnan
- Horisontaalisessa politiikassa heikko
- Rooli reaktiivinen

Tutkimus- ja innovaationeuvoston arviointi, suosituksia (OKM 2014:6)

- Strategisempaa, ennakointia ja arviointia hyödyntävää
- Valmisteluun ulkopuolista asiantuntemusta ja sidosryhmiä
- Horisontaalisen koordinaation parantaminen,
- Vuorovaikutusta, viestintää parannettava
- Temaattisia valmisteluelimiä, työryhmiä
- Sihteeristö valtioneuvoston kansliaan

Rahoituksen kehittäminen

- T&k –rahoituksen lisäämisellä vahvistetaan osaamispohjaa ja uuden kasvun edellytyksiä
- SHOKin rahoituspohjaa on laajennettava
- Yksityisen rahoituksen osuuden noustava 40% -sta yli puoleen
- Aineeton arvonluonti:
  - T&k –investoinnit, inhimillinen pääoma, organisaatiot, ohjelmistot, brändit, liiketoimintamallit, muotoilu

Tutkimus- ja innovaatiopoliittinen linjaus 2015 - 2020

T&I -politiikan kehittämiskokonaisuudet:

-korkeakoulujärjestelmän radikaali uudistaminen

-t&k -toiminnan tulosten hyödyntäminen ja vaikuttavuuden edistäminen

-uusien kasvulähteiden, aineettoman pääoman ja yritystoiminnan vahvistaminen

Muu kehittäminen kohdistuu:

-osaamistason laajamittainen nostaminen

-julkisen sektorin uudistaminen ja poikkihallinnollinen yhteistyö

-T&k –rahoituksen riittävyys ja kohdentaminen

Change of paradigm in 2015

(Mattila, 2017)

- Change of paradigm of research policy in 2015
- Growth of R&D investments was not considered as same type of priority for national development as before
- Essential cuts in science and research funding
- Tekes funding for innovations was cut by 30% in 2016
  - Networks between companies and researchers decreased 25%
  - Joint MSc theses with companies reduced almost 50%

Yliopistojen budjettirahoitus 2018

- 2016 1 828 000 000 e
- 2017 1 795 700 000 e
- 2018 1 767 000 000 e

Valtion talousarvio 2017

T&K menot BKT:sta ,%

- 2011 3,64
- 2012 3,42
- 2013 3,30
- 2014 3,17
- 2015 3,14
- 2016 3,10
- 2017 2,87

OECD Review of Innovation Policy Finland (TEM 2017)

- T&K vetoinen kasvun paradigma on asetettu kyseenalaiseksi
- Kasvun ja nousun kannalta tärkeiden instituutioiden merkitys on vähentynyt, TIN, TEKES, VTT
- Budjettileikkaukset tutkimus- ja innovaatiotoiminnassa vaikuttavat vuosia heikennyksinä innovaatioaktiivisuuteen ja tuottavuuden kasvuun

Three generations of innovation systems governance (OECD review 2017)

- Post-WW2 `blind delegation` to the scientific community
- `Science policy` and `innovation systems`
  - Innovation policy as industry policy
- `Societal challenges`whose resolution requires various degrees of transition between socio-technical systems
  - Engagement of more stakeholders (many from outside the innovation policy sphere) to create consensus about directions of travel and enable implementation

Changes needed in current research policy
(OECD review 2017)

- Reactive ---- Proactive
- Retrenchment ---- Supporting R&I-driven growth
- Fragmented ---- Systemic
  - Involving all relevant actors
  - No important gaps, eg strategic research
- Siloèd ---- Co-ordinated
- R&I actor focused ---- Societal, platforms,networks
- Incremental ---- Radical

Changes **not** needed, (OECD)

- Ignoring existing assets and comparative advantages
- Abandoning aspects of policy from earlier governance generations that provide the foundations for growth
- Abandoning systemic policy in favour of simple ”either/or” solutions

A vision that coordinates and prioritises (OECD review 2017)

- A high-visibility national visioning exercise with whole-of-government commitment
  - Defining and addressing the societal challenges that provide innovation and growth opportunities for Finland
  - Building on Finland's strong record in foresigth and governance
- Broad engagement across sectors and parts of sociaty
- A wide-ranging public process, guided by foresighters, road mappers and government
- Generating wide commitment to a set of priorities
- Link global societal challenges to industrial renewal and business opportunities

Use PPPs to guide the trajectory and implementation for each challenge

- Trigger PPPs involving many stakeholder groups through competitive processes, not top down
- Develop Strategic Research and Implementation Agendas in the context of the wider societal changes needed
- Build on experience to evolve a functioning model
  - National experience in bio-economy health care and SHOKs,
  - Experiment in mainstream policy formation
  - Take great care with governance

Research and Innovation council Vision and roadmap 2030, (10/2017)

- Finland will be the most attractive and competent Innovation and experimentation environment
- R&D investments 4% of GDP
- ” Science” not mentioned at all!
- 3 development areas
  - To ensure the competence basis
  - Development of competence platforms
  - Internationalisation as prerequisite for quality and impact

To ensure the competence basis
(RIC vision 10/2017)

- The level of competence increases
- The impact of R&D Investments
- Cross-boarding R&D activities and education
- Civilisation, involvement and importance as strengths of Finland

The impact of R&D investments
(RIC vision 10/2017)

- Internationally competative centers of competence
- ’Flagship’ insitutes
- Drivers for growth actions

The vision 2030 for Higher education and Science by Ministry of Education and Culture (25.10.2017)

- Higher education degree for more than 50% of young people
- R&D investments 4% of NCP
- Road-map will be developed with HEI's and scientists

Challenge based approach to organize research (Horizon 2020)

- Brings together resources and knowledge across different fields, technologies and disciplines,
- Including social sciences and humanities

Grand societal challenges (Horizon 2020)

EU's Funds will focus on the following challenges

1. Health, demographic change and wellbeing
2. Food security, sustainable agriculture and forestry, water research, bioeconomy
3. Secure, clean and efficient energy
4. Sustainable, green and efficient transport
5. Climate action, environment, resource efficiency and raw materials
6. Europe in changing world- inclusive, innovative and reflecting societies
7. Secure societies- protecting freedom, and secirity of Europe

The importance of grand challenges
(Hautamäki&Ståhle 2012)

1. Demanding scientific problems, the solutions require as well basic research as multidiciplinary cooperation
2. Urgent practical challenges having impact on wellbeing of peoples and environment
3. Connected with hudge business opportunities

Grand challenges and funding

(Hautamäki&Ståhle 2012)

- The cooperation with public decisionmakers responsible to solve grand challenges necessary to science to receive public funding
- Grand callenges are not possible to solve without great involvement and effort by universities and their research

Academy of Finland

- Funds cutting-edge an innovative scientific research aiming at significant breakthroughs
  - Open competition
  - Independent peer review
  - Develop framework conditions
  - Science policy expertise
  - Promote scientific research and its applications
  - Develope scientific international cooperation

Academy of Finland

- Evaluation criteria for applications
  - High quality
  - International outlook and cooperation
  - Impact
  - Responsibility
  - Contribution to scientific renewal

Academy of Finland

- Stucture:
  - Board: Chair plus 5-7- members for 3 years

  Research councils:
  - Biosciences and environment
  - Culture and society
  - Natural sciences and engineering
  - Health
- Infrastructure committee FIRI
- Strategic research council SRC
- Funding 437 million euros in 2017 , employing 2 700 researchers

Strategic Research Council SRC

- Support policy making
- High quality research with great social impact
- To find concrete solutions to grand challenges requiering multidisciplinary approach
- Active collaboration between new knowledge producers and those who use it

Strategic research council, funding criteria

- Funding for consortia
- Consists at least three three research teams
- Teams must be from at least two differnt organisations
- Researchers must represent at least three different scientific disciplines
- Covers all costs under full cost model
- Run for 3 – 6 years
- Main review criteria
  - Societal relevance and impact
  - Scientific quality

SRC review process

- The review of the applications in two stages
- 1. stage: 6 page letter of intend
- Panel review
  - for societal relevance and impact as well as
  - for scientific quality
  - How well the applications match the programme objectives
- 2. stage: SRC decides which applications can submit full applications
- Interaction with society will be of key importance due the course of the funded projects
- Must include an interaction plan

Societal interaction plan

- Represents the goals, means and realistic stakeholders,
- Implementation of interaction
  - Key actors and knowledge needs with regards to research utilisation
  - Means, channels and optimal timing for interaction from perspective of end users and beneficiaries at various stages of the project
  - Interaction with media including social media
- Competence as regards the promotion of societal impact

How to create an effective interaction plan?

(Pulkkinen,2016)

- Who are needed to create knowledge with me? Interaction is more than communication.
- Who are stakeholders?
  - Who are needed to define and to achieve the sosietal target?
  - Who should understand the content and importance of the research?
- How do I get contact with stakeholders?
  - In which events they participate?
  - Regular meetings and seminars from the very beginning?
- Is the time spent usuful?
  - Make sure what use the cooperation brings to the stakeholders
  - How the cooperation supports your research?
- Are professionals needed?
  - Communication and publications as part of interaction

SRC Programmes (2015-2018)

- Adaptation and Resilience for Sustainable Growth
- Keys for sustainable growth
- Changing society and active citizenship
- Skilled employees, successful labour market
- Health, wellfare and lifestyle
- Security in networking world
- Urbanising society
- Disruptive technologies and changing institutions
- A climate-neutral and resource-scarce Finland
- Equality in society

Changing Sociaty and active citizenship programme (SRC)

- Participation in long term decision making process
  - WP's where public management and administration involved:
  - WP2 Problems in existing governance practices
  - WP3+WP4 Novel mechanisms to engage citizens and stakeholders at different levels of governance
  - Includes e.g. political scientists, environmental social scientists, psychologists, behavioral economists, philosophers

Adaptation and resilience for sustainable growth (SRC)

- Improving the information base and optimizing sevice solutions to support social wellfare and health care reform (IMPRO)
  - To create prototypes to further analyse the social wellfare and heath care structures , cost-effectiveness ect..

’Flagship programme’, 2018-2019

- To pool together expertise from different fields to form high-level research and high-impact clusters
- Mix of cutting-edge research and impact in supporting of economic growth or society, with close connection to business sector, or society at large
- Universitys or govermental research institutions to get the funding have a strong commitment and significant investments in the programme
- Have to have essential national or international funding
- Can be supported by funds from companies, public sector or non-profit organisations
- 25 million euros in 2018 and 2019

Research projects to support governments decision making (11/2017)

- Employment and competativeness
- Know-how and education
- Wellfare and health
- Bioeconomy and clean-tech
- Digitalization, piloting
- Reforms
- The basic projects of the government

Public Participation, Science and Sociaty: Tools for Dynamic and responsible Governance of Research and innovation (Rask et al. 2018)

- Public Engagement refers to a range of participatory processes, through which there is a distinct role for citizens and stakeholder groups to contribute to research and innovation activities.
- The contribution of public participation towards better governance of research and innovation, to help in the planning of research programmes and definition of research projects
- Providing knowledge on societally relevant research topics , new participatory approaches and access to financial and cultural resources

Responsible Research and Innovation

(Rask, 2018)

- The targets and outcomes:
- To better align the outcomes of R&I with the values, needs and expectations of society.
- To anticipate impacts and risks of the research
- To favour citizens' participation in research and research policy.
- To promote closer relations between science and industry for accelerating innovation.

Structure of a scientific article

1. Introduction ,
    1. Objectives of the study, one by one
2. Theoretical framework and literature review
3. Materials and methods
4. Results
5. Discussion
6. Referencis

Literature references

- Hautamäki A. & Ståhle P., Ristiriitainen tiedepolitiikkamme, Suuntana innovaatiot vai sivistys? Helsinki 2012
- Rask M. et al, Public Participation, Science and Society: Tools for Dynamic and Responsible Governance of Research and Innovation. Routledge- Earthscan London , 2018
- Alaja A., Yrittäjähenkinen valtio, uusi avaus innovaatiopolitiikkaan. Helsinki 2016
- Mattila, M., Yrittäjähenkinen valtio luo markkinoita ja ohjaa kehitystä. Kanava 6/2017
- OECD Review of Finlands Innovation Policy 2017
- TIN, Tutkimus- ja innovaationeuvoston visio- ja tiekartta, 10/2017
- G7 Science ministers' communique, Turin , 27-28 September 2018
- Mustajoki A., Tutkimuksen yhteiskunnallisen vaikuttavuuden eettisiä kysymyksiä. Tieteessä tapahtuu 5/ 2017