

Science of science and innovation policy

0. Meta Questions

0.1 What is modern science?
0.2 What is evidence?
0.3 What is "science of science and technology innovation policy"? What does it cover?

1. STI Dynamics

1.0 What is innovation?
1.0.1 How innovation occurs?
1.0.2 What resources lead to innovation?
1.0.3 What kind of knowledge and value are deployed?
1.0.4 What are the factors that inhibit innovation?
1.0.5 How does it spread and is accepted?

2. STI Governance and Policy Formation Process

2.0 What is STI policy?
2.0.1 Where is the legitimacy of STI policy?
2.0.2 What are the policy tools?
2.0.3 Who take actions and who are the stakeholders?
2.0.4 What process does the STI policy go through?

3. STI and Society

3.1 What society expects for science and technology?
3.2 How to nurture science technology and policy literacy?
3.3 Citizen participation in science and technology
3.4 Researchers are trusted?
3.5 How to cope with STI risks?

4. Socio-economic impact assessment

4.1 Effect of STI policy
4.2 Methodologies and data to be used
4.3 Effect of STI policy
4.4 STI Policy Evaluation issues

What is the impact of STI on society?
How to improve the IT acceptability?
How should ICT be accepted by society?
Is IT truly of use to society?
How to visualise STI and make it evidence?
How to evaluate the values behind expectations, concerns, and needs?
How can researchers respond to the social needs?
How can scientists respond to the social network?
What can society contribute to policy formation and R&D?
Contribution to the declining birth rate and aging society
When technologies emerge, who becomes happy and who will become unhappy?
Any Japan-specific view for science and technology?
Does the level of happiness have any relation with S&T development?
Can education make contribution to trigger innovation?
How to enhance science and technology literacy?
How to foster logically-thinking mind?
How can we lead people to participate in discussions about science and technology?
STI policy literacy
How to foster graduate students to participate in S&T communications?
Conversion of the concept of scientific communication

Why are the citizens required to participate?
How can universities and citizens work together?
How to find the leading citizen and encourage them to participate?
What are the merits of working together with stakeholders?
What are the incentives for stakeholders to participate in STI policy?
Possibility of citizen science
Level of citizen's distrust in S&T?
What is trust between STI and social? How to measure it?
How to build trusts between STI and society?
What is the relationship between bioethics and intellectual property rights?
Ethics
Is research pure in the first place? Does it have some intention?
Is no-bias research unrealistic?

What is the social responsibility of researchers?
How to detect ELSI and safety in the early stages of technology development?
Can researchers cope with regulatory science as "another science"?
How to deal with conflicts between personal information and research?
Responsible science and technology innovation
Can the risks be reduced?
What are the S&T risks?
Who judges the S&T benefits to society?
How to prioritize safety assessment and structuring?
Can a society solve S&T-associated risks?

How to strengthen the communication between policy and research?
Researchers understand policy needs?
How to share common concepts/common language?
How to cultivate STI literacy for politicians and policy makers?
Capacity building of politicians and policy-making officers
How to visualize the support for making decisions?
Who makes good use of S&T indicators for what purpose?
What is consensus-building evidence?
How to judge contradictory values?
Which is more important: social values/agreements or scientific rationale/evidence?
2.2.0 Value judgment and legitimacy
STI policy that is based on the specifics for Japan?
2.2.1 Scientific and experts' advice
Role, function and code of conduct for Science Adviser
Secretariat's function

Who should be responsible for ensuring the safety of new technologies?
Dual use
How to discover the risks associated with emerging technologies at an early stage? Borderline between politics, government and science?
2.1 What are the risk management and governance of STI?
How to incorporate citizens' participation?
How to incorporate industrial strategies into government STI policies?
How to realize Transition Management?

Output
Input
Outcome
Process
Possibility of open source and open data
Possibility of Big Data
Data and indicators
Linkage
Industry-academia collaboration
Science Linkage
Notes on indicators
What is the methodology for preliminary evaluations?
Examples in Japan
Theoretical framework
Policy evaluation system
How do you connect pre-evaluation with ex-post evaluation?
PDCA cycle activation
4.4 STI Policy Evaluation issues

Qualitative
Historical analysis
Case study
Foresight
Other
Quantitative
Economic analysis tool (micro, macro)
Bibliometric studies
Patent analysis
Economic effect
Increase productivity and expand GDP
International Competitiveness
Innovation ability
Research capability
Research level
Social (non-economic) effect
Human resource development
Researcher's performance and productivity
Basic science level
Contribution to social issues
Contribution to social capital and services
Indicators and measurement that are the base for investment
Appropriate ratio of investment in basic, development and application sciences
Fields for public R&D investment
What is it like?
Indicators government refers to when investing in risky research like DARPA's
Preliminary and post evaluations
Policy evaluation system
What are selected as evaluation axes?
Time lag between STI policies and results
Comparison with higher education investments
To be viewed from "fallacy of composition"
Evaluation on success or failure

Intention
Is innovation intended, or just coincidence?
What makes the direction to and the timing of innovation?
Technology-driven innovation
Organization-driven innovation
Society-driven innovation
Design-driven innovation
Non-technology-driven innovation
Is Innovation necessary?
Scientific knowledge
Scientific research is useful at companies?
Sufficient contribution to innovation?
S&T human resources
What is the bottleneck for S&T career?
What is the distribution of Ph.D. holders? How do they develop the careers?
Is the research performance sufficient?
What hampers research performance?
Support staff ability makes difference in research performance?
Possible to design incentives that are optimal for knowledge creation?
What kind of policies attract excellent personnel?
Any criteria to evaluate researchers?
What are researcher's incentives?
Citizen as carriers
Creativity can be nurtured? How?
Infrastructure
System
Tax system
Procurement
Finance
Public funds
Corporate internal funds
External funds (venture capital, angel investment, donation)
How to build innovation-related information?
Information
+Possible to predict emerging technologies?
Optimal allocation of resources
Evaluation
Who evaluates technology?
Entrepreneurship
How to foster entrepreneurial mind?
Mobility of human resources?
Human resources mobility promotes innovation?
Integration of various fields?
What increases the mobility between sectors?
Technological knowledge diffusion
How to connect experts from different fields?
How to accumulate and spread technological knowledge?
What makes team science successful?
Technology transfer
How to accumulate and spread technological knowledge?
Can policy make tech transfer?
Management
The type of management that maximizes the chances of innovation?
Companies can allocate their profits to R&D human resources?
Pull out of resources
How to detect "destructive" innovation and find value in it?
Value creation
Does regulation control or promote innovation?
Who is responsible for the safety of new technologies?
1.0.4 What are the factors that inhibit innovation?
Technologies should spread without regulations?
1.0.5 How does it spread and is accepted?
What works to accept innovation?

National innovation system
Government role?
How to strengthen the industrial-academic-public interaction?
How to establish internationally competitive STI system?
Why is the Japanese STI system becoming weakened?
Framework condition
Innovation model
Local government-level STI policies
Local area innovation model
How to activate local areas through innovation?
How to nurture social capital through university-local area collaboration?

Internationalization of R&D activities
SDG and STI
S&T diplomacy
1.2 STI in global environment
How the organizational creativity is born?
How to improve excessive fear for risks?
How to improve citizen's mind set that heavily relies upon the government for any issues
Why diversity is needed? How to build diversity?
1.3 Any social and cultural base to cause innovation?