
Characteristics of TA institutions by Agent types

- In terms of Public Participation and Methodology -

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Yeonwha Kim

Seung Ryong Lee

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I Public Participation in S&T

Definition (Bucchi and Neresini, 2008)

- ✓ not only experts, policy analysts, and decision makers
- ✓ but also a wider range of social actors
- ✓ involves in the process of science and technology policy making

Necessity (Rowe and Frewer, 2000)

- ✓ Instrumental: Political Legitimacy
- ✓ Normative: Consolidation of Democracy
- ✓ Cognitive: Improvement of Quality of Knowledge and
Digging out an Undone Science

I Public Participation in S&T

Purpose (Beierle and Cayford, 2002)

- ✓ Combine a decision making with a public value
- ✓ Improve the quality of decision making
- ✓ Settle a conflict among stake-holders
- ✓ Form trust in institution
- ✓ Give an education and information to the public

II

Evaluations targeted at Technology

R&D Program Evaluation

- ✓ to evaluate government R&D programs based on surveys and analyses of R&D investments and their performance

Preliminary Technology Evaluation

- ✓ to evaluate to select appropriate programs qualified for the feasibility study focused on the technological aspects such as the necessity and urgency of developing the technology, etc.

Technology Level Evaluation

- ✓ to assess comprehensively the advancement level of technologies by analyzing the gap between different countries

II

Evaluations targeted at Technology

Technology Forecasting

- ✓ to reflect S&T development trends within current S&T policies and identify future technologies that may have high potentials

Technology Assessment

- ✓ a scientific, interactive, and communicative process that aims to contribute to the formation of public and political opinion on societal aspects of science and technology

III

Classification of TA

by methodology (Vig and Pascen, 2002)

- ✓ Instrumental Model: In USA, TA has conducted with an expert orientation for offering S&T agenda to assembly man by assembly-affiliated organization
ex) OTA(now GAO), POST, STOA
- ✓ Discursive Model: Northern Europe countries have started TA after late 1980's by independent organization. They put a high priority to public participation, and aims at promoting mass discussion and supporting political
ex) DBT, Rathenau

III

Classification of TA

by methodology

- ✓ Constructive Model: In the early stage of technology development, to decide the generation process of technology (participation of user and stake holders)
- ✓ Real-Time Model: Technology Assessment of the processing technology (participation of user and stake holders)
- ✘ according to the purpose of TA and the nature of culture, the methodologies and applications of TA are different from each countries

III

Classification of TA

by 3 generation (Robert B, 1998)

- ✓ early warning TA: '60, focused on social impact
- ✓ constructive TA: '80, participation of stakeholders
- ✓ Integrated TA: '90, scientist-centered

by 4 paradigm (Eijndhoven, 1997)

- ✓ classic TA: focused on early warning
- ✓ OTA: provide alternatives
- ✓ public TA: considering democratic control of technology
- ✓ constructive TA: participating from the beginning

III

Classification of TA

by history point (Jan Van D.E, 1998)

- ✓ awareness TA: forecasting
- ✓ strategic TA: information offering
- ✓ constructive TA: citizen participation
- ✓ back-casting: scenario

by function (Armstrong, 1990)

- ✓ technology projection, impact assessment, policy analysis

III

Classification of TA

by institutional perspectives (Jan Van D.E, 1998)

- ✓ academic TA: TA researcher-centered
- ✓ industrial TA: implement in industrial sector
- ✓ parliamentary TA: support a decision making of parliament
- ✓ executive power TA: support a decision making
of administration
- ✓ Laboratory TA: by researcher(ex: ELSI)

IV **Difference by Agent type**

classification of PTA (Crutz, 2005)

- ✓ political TA, technocratic TA, societal parliamentary TA

classification of PTA (Enzing, 2011)

- ✓ parliamentary committee (leading) model
- ✓ parliamentary office and (support) unit model
- ✓ independent institute model (but parliament is main client)

modelled by interplay (PACITA, 2012)

- ✓ interplay among parliament, government, S&T and society

IV Difference by Agent type

Classification by Agent(1)

Leading	Congress leading(US)	Parliament leading(Europe)	Independent	Administration leading
Form	Congress-affiliated ※ relatively large scale	Congress-affiliated, Parliamentary Office	Independent agent, Independent board ※ closely associated with parliament	Administration- affiliated
Agent	OTA(US, 1974~1995), GAO(US, 2002~) ※ the first launching	POST(England), TAB(Germany), OPECST(France)	Rathenau(Nederland), DBT(Denmark)	KISTEP(Korea)

IV Difference by Agent type

Classification by Agent(2)

Leading	Congress leading(US)	Parliament leading(Europe)	Independent	Administration leading
Main Purpose	Support legislative activity of congressman with detailed analysis	Information offering to congressman	Public debate, Democratic communication	reflect in related policy(not forced)
Method	Instrumental Model	Instrumental Model	Discursive Model	Two way mixed model
Participant	expert-centered	expert-centered	citizen-centered	expert and citizen

IV Difference by Agent type

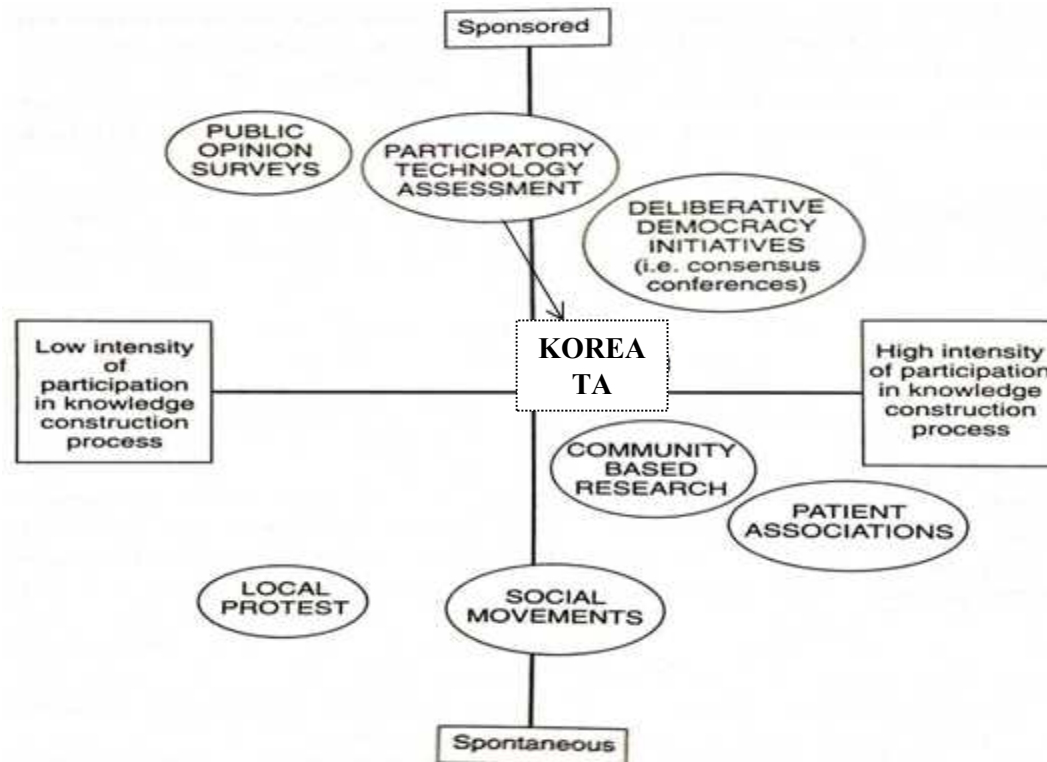
Method of Public Participation

Participati-on method	Nature of Participants	Time Scale/ Duration	Characteristics/ Mechanism	Representa-tiveness of participants	Independence of true participants	Influence on final policy	Cost effective-ness
Referenda	Potentially all members of national or local population; realistically, a significant proportion of these.	Vote cast at single point in time	Vote is usually choice of one of two potions. All participants have equal influence. Final outcome is binding.	High	High	High	Variable /low
Public hearings/ inquiries	Interested citizens, limited in number by size of venue. True participants are experts and politicians making presentation.	May last many weeks/ months, even years. Usually held during week-days/working hours.	Entails presentations by agencies regarding plans in open forum. Public may voice opinions but have no direct impact on recommendation.	Low	Generally low	Moderate	Low
Public opinion surveys	Large sample(100s or 1000s), usually representative of the population segments of interest.	Single event, usually lasting no more than several minutes.	Often enacted through written questionnaire or telephone survey. May involve variety of questions. Used for information gathering.	Generally high	High	Indirect and difficult to determine	Potentially high
Consensus conference	Generally ten to sixteen members of public selected by steering committee as representative of the general public.	Preparatory demonstrations and lectures to inform panelists about topic, then three-day conference.	Lay panel with independent facilitator questions expert witnesses chosen by stakeholder panel. Meetings open to wider public. Conclusions on key questions made via report or press conference.	Moderate (limited by small sample)	High	Variable but not guaranteed	Moderate to high
Citizens' jury/panel	Generally, twelve to twenty members of public selected by stakeholder panel to be roughly representative of the local population.	Not precise but generally involve meetings over a few days.	Lay panel with independent facilitator questions expert witnesses chosen by stakeholder panel. Meetings not generally open. Conclusions on key questions made via report or press conference	Moderate (limited by small sample)	High	Variable but not guaranteed	Moderate to high

IV Difference by Agent type

Pattern of public Participation (bucchi and Neresini, 2008)

- ✓ Intensity of participation
- ✓ Government lead / self-participation of public



V

TA in KOREA

Progress

- ✓ Korea started TA almost 20 years later than advanced countries
- ✓ 2001: Obligation of Technology Assessment by enactment of ‘FRAMEWORK ACT ON SCIENCE AND TECHNOLOGY’
- ✓ 2003 ~ : TA of selected technology

V

TA in KOREA

purpose

- ✓ To find the right direction for technological development by evaluating newly developed S&T's impact on economy, society, ethics and environment
- ✓ The Government shall assess the effects given by new S&T development to the economy, society, culture, ethics, environment, etc. and reflect the assessment results in formulating policies

(FRAMEWORK ACT ON SCIENCE AND TECHNOLOGY)

V

TA in KOREA

contents

- ✓ The technology impact assessment shall include matters falling under each of the following subparagraphs:
 - Effects to be brought about by a technology from the viewpoint of increasing benefits for people's lives and contributing to the development of related industries;
 - Effects to be brought about by new science and technology to the economy, society, culture, ethics and environment; and
 - In the cases where technology may possibly involve a negative side effect, plans to prevent such side effects

V TA in KOREA

characteristics

- ✓ Korea tried to mix with Discursive Model and Instrumental Model to pursue each merit
 - Technology Assessment in Korea have been conducted with increased participation of civilian experts, civic organizations, etc. through the collection of the opinions of general public
- ✓ TA in Korea has been institutionalized by administration.
 - TA in Korea has been continuously upgraded, but still in progress. So, it is important to settle TA system which is suitable for the purpose and environment of Korea
- ✓ TA is performed by Division of Foresight in KISTEP

V

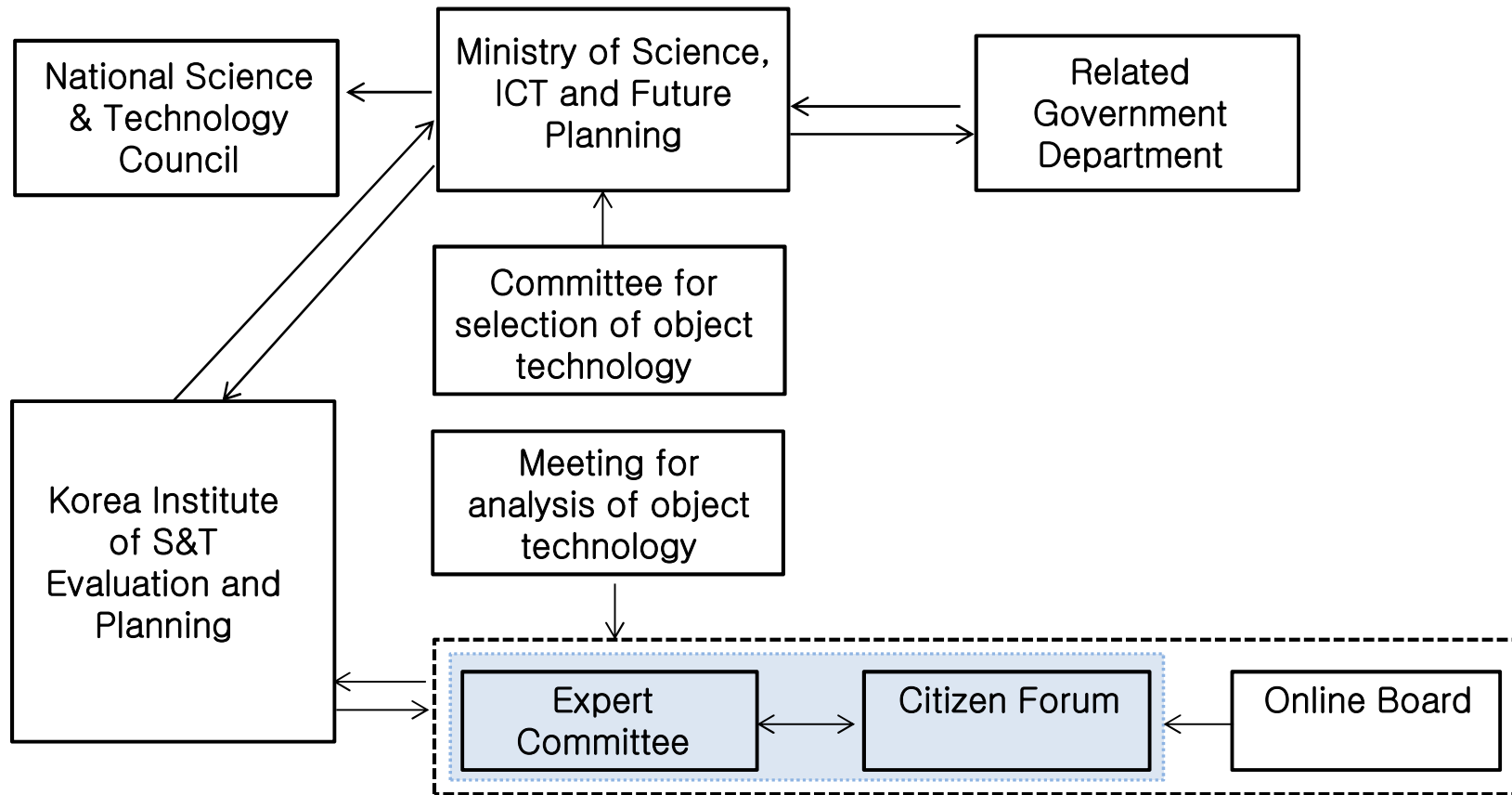
TA in KOREA

- ✓ 2003: NBIT(nano, bio, information) convergence technology
- ✓ 2005: RFID(radio frequency identification), USN(ubiquitous sensor network)
- ✓ 2006: Stem cell, Nano materials, UCT(ubiquitous computing technology)
- ✓ 2007: New Renewable Energy(solar, wind, hydrogen),
Adjustment Technology of Climate Change
- ✓ 2008: Confrontational technique of national disaster disease
 - AI(avian influenza), Anthrax, Malaria
- ✓ 2011: Brain-Machine Interface & Neurofeedback
- ✓ 2012: Big Data
- ✓ 2013: 3D Printing, Smart Network
- ✓ 2014: Unmanned Vehicles, Super Tall Building

V

TA in KOREA

Promotion System



V

TA in KOREA

Expert Committee

- ✓ Committee for selection of object technology
- ✓ Meeting for analysis of object technology
- ✓ Expert Committee of Technology Assessment

Public Participation

- ✓ Citizen Forum
- ✓ Public Presentation
- ✓ Online Board

V

TA in KOREA

procedure

1. Establishment of evaluation plan
2. Selection of targeted technology
3. TA by Expert committee (~10 experts)
4. TA by Citizen forum (~10 selected citizens)
5. Public presentation of the TA results
6. Report to NSTC
7. Notification to related government department

V

TA in KOREA

Result Application

- ✓ The Minister of MIFP shall report the result of technology assessment to the NSTC and notify the same to the heads of the central administrative agencies concerned.
- ✓ The heads of the central administrative agencies concerned shall reflect it in research planning for national R&D projects under their respective jurisdiction, and establish and execute the countermeasures to minimize the negative side effects of such technology

V

TA in KOREA

Strength

- ✓ Institutionalization of TA by law
- ✓ Acceptance of opinions from experts as well as citizens
- ✓ Composition of an external expert-oriented committee to ensure objectivity and fairness
- ✓ Communication between expert committee and citizen forum
- ✓ Clear statement about application of TA results by law to reflect on related policy

V

TA in KOREA

Weakness & Improvement

- ✓ Interference of government department in charge
- ✓ Limitation of time, budget and researcher
- ✓ Lack of interest of public and other government department
- ✓ Hard to force policy reflection and check the result
- ✓ Limitation of participation in terms of amount and diversity

[KISTEP]

- Establish systems for sharing and spreading R&D-related knowledge and information

KISTEP shapes the future of Korea and leads the way in national innovation in S&T by performing 'Technology Foresight', 'Technology Evaluation' and establishing national innovation strategies and policies.

- Directly support budget allocation and compilation for national R&D programs

KISTEP sets investment priorities that are most helpful for achieving national development goals and it is involved in every step of every budget allocation process in national R&D programs, pursuing the optimal allocation of R&D resources.

- Survey, analyze, evaluate national R&D programs and manage outcomes

KISTEP makes an effort to increase the productivity and efficiency of the Korean government's R&D investments based on the accurate analysis and evaluation of the national R&D project performances and the data from scientific survey and analysis possessed by KISTEP.

- Establish systems for sharing and spreading R&D-related knowledge and information

KISTEP has taken the initiative in knowledge spreading by establishing a S&T database for information and knowledge sharing, by utilizing its expertise in enhancing R&D-related education and consulting projects for developing countries, and by improving its international cooperation network.

Thank you!

Yeonwha Kim

Program in History and Philosophy of Science,

Seoul National University

E-mail: yeonwha@gmail.com

Seung-Ryong Lee

Technology Foresight Division, KISTEP

Tel: +82-2-589-2194,

E-mail: leesr7376@kistep.re.kr,

URL: www.kistep.re.kr