



Technology Foresight in China : The theory and practice

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Technology Foresight in the World

Technology foresight is treated as an essential method to help decision makers make industrial policies.



Technology foresight has attracted increasing attention from government and academia as well as industry since the 1990s. However, the impact of technology foresight on national strategic decision-making varies from country to country.

Technology Foresight in the World

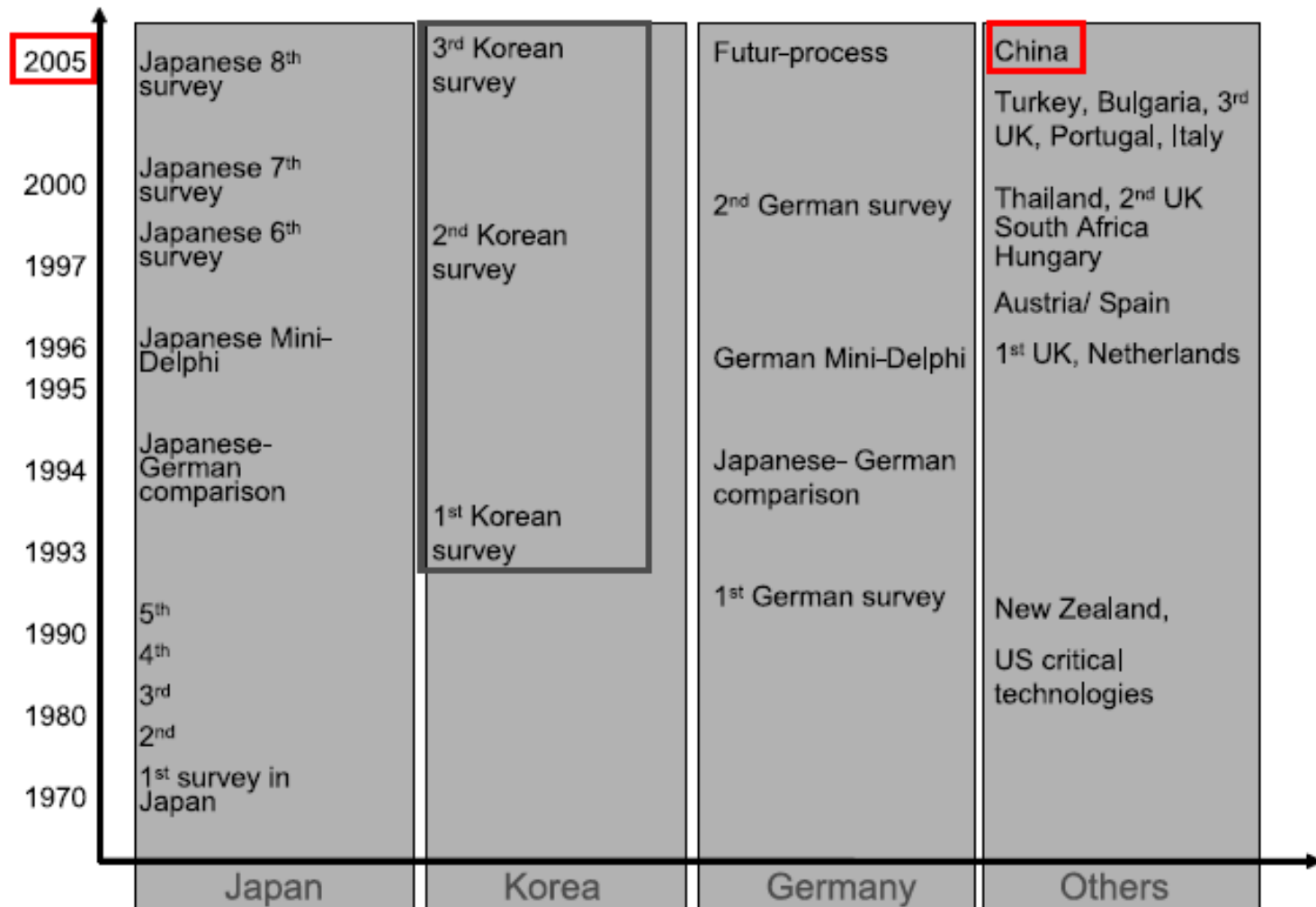
Dimensions	Japan	Britain	American
Target	Meet the demands of Society and Economy	Improve industrial competence	Explorer Newly and Emerging Technology
Driving Power	Demand-pull	Both	Supply-push
Time horizon	30years	10~15Years	5~10Years
Methods	Delphi survey	Delphi survey and interview	Expert Group (Investigation and interview)
Performing organization	Research Institutes on behalf of JST	Research Institutes on behalf of BIS	Consulting Firms (eg. Rand) on behalf of U.S. Congress

Technology Foresight in China

As a developing country, China's technology foresight research has progressed in learning and applying methods to help manage R&D. Currently, various kinds of innovative technology foresight methods have been designed to apply in specified industrial domains of China. Of special note, the current 5-year Plan relies expressly on technology foresight contributions.



Technology Foresight in China



Source: Grupp and Linstone (1999)

Technology Foresight in China

In China, National Technology Foresight and the Selection of National Critical Technology began in 1992. Two research projects which done in the past few years should be mentioned.

- ❑ The research project “Selection of National Critical Technology” was started in 1992 and completed in 1995. Four technological fields including information, biology, manufacturing and materials were studied by 600 experts. At last, 24 critical technologies and 124 critical technology topics were selected from the four areas.
- ❑ In 1999, another technology foresight project “Technology Foresight of Priority Industries in China” was carried out in the fields of agriculture, information, and advanced manufacturing.

Technology Foresight in China

Other technology foresight projects in China.

Project Title	Time	Sponsor
Technology Foresight Initiative of Beijing	2001-2002	Beijing Municipal Science & Technology Commission; Institute of Policy and Management, CAS
Technology Foresight in Prior Technology Fields for Shanghai	2001-2003	Shanghai Municipal Science & Technology Commission; Shanghai Institute for Science of Science
The Technology Forecast and Critical Technology Selection in High-Tech Fields of China	2002-2003	Ministry of Science and Technology
Technology Foresight towards 2020 in China	2003-2006	Institute of Policy and Management, CAS

CAS: Chinese Academy of Sciences

Technology Foresight in China

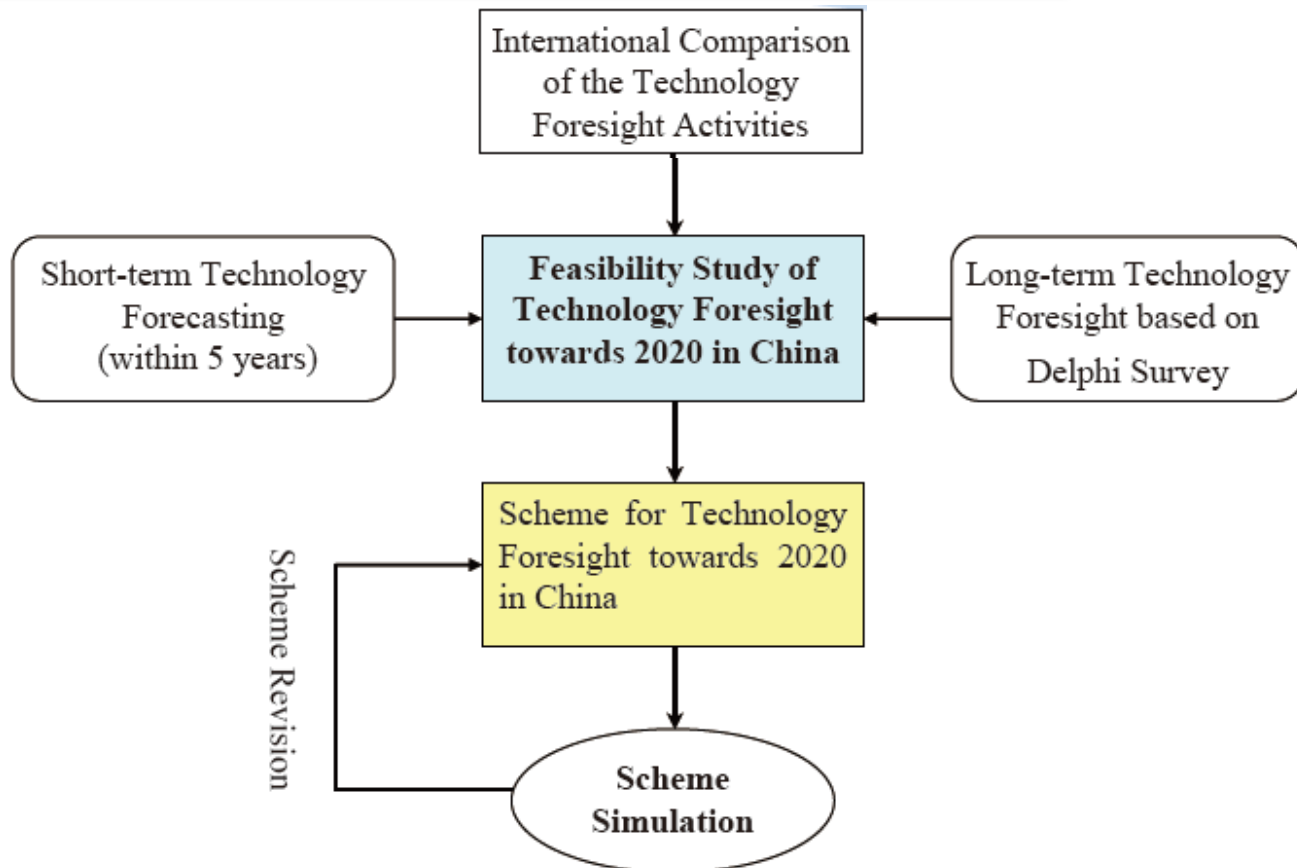
Technology Foresight towards 2020 in China

Purposes

- ◆ To explore a set of systematical methods for technology foresight;
- ◆ To build the scenarios for China development in 2020-- identify the technology demands;
- ◆ To conduct the Delphi Survey--setting the priority of technologies;
- ◆ To construct the interactive platform for government-industry-university-academia;
- ◆ To foster the foresight culture in China.

Technology Foresight in China

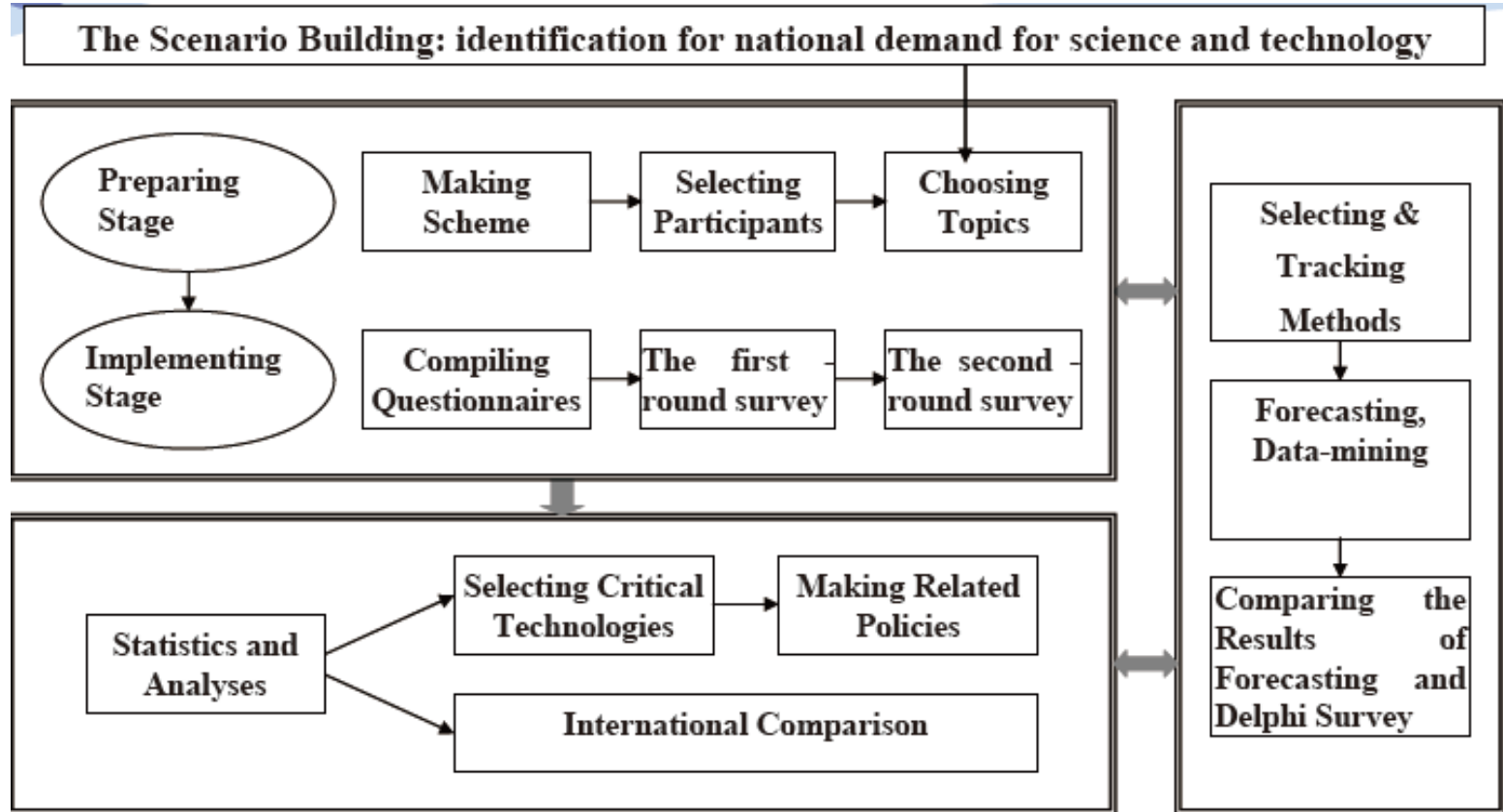
Technology Foresight towards 2020 in China



The scheme of technology foresight towards 2020 in China

Technology Foresight in China

Technology Foresight towards 2020 in China

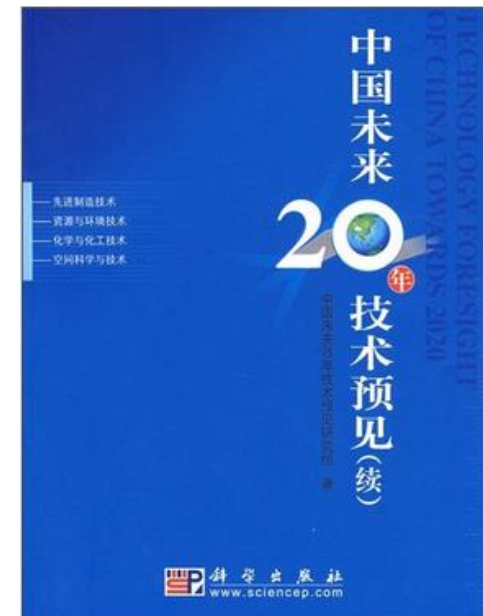


The flow chart of technology foresight

Technology Foresight in China

Technology Foresight towards 2020 in China

At last, this project published some important results, including: “Technology Foresight 2005”, “Technology Foresight 2008”, and “Technology Foresight towards 2020 in China”.



Technology Foresight in China

In 2006, Ministry of Science and Technology issued “**National medium and long-term science and technology planning (2006-2020)**”.

The 11 priority development fields

- ◆ Energy Resources
- ◆ Water and Mineral Resources
- ◆ Environment
- ◆ Agriculture
- ◆ Manufacturing Industry
- ◆ Transportation Industry
- ◆ Information and Modern Service Industry
- ◆ Population and Health
- ◆ Urbanization and City Development
- ◆ Public Security
- ◆ National Defense

Technology Foresight in China

On May 14th, 2013, Ministry of Science and Technology began a new project, which was by far the **most important** project in Technology Foresight area.

Organizer	Ministry of Science and Technology(MOST)
Focus	Twelve technological areas: advanced manufacturing, information technology, modern transportation, geophysical, agriculture, energy resources, new materials, urbanization and city development, public security, population and health, resources and environment, biology.
Duration	2013-2015
Number of experts	More than 600
Objective	Identifying critical technologies in twelve areas which are of great significance to China's development
Characters	Huge investment; Strong government up-take; High-level experts

Technology Foresight in China

The indicator system in selection of national critical technologies

Dimensions	Indicators
Economical Development	1. Market need 2. Economical efficiency 3. Industry competitiveness
Technological Progress	4. Importance 5. In common use 6. Promotion
Social Progress	7. Environment Protection 8. Natural resources and energy use 9. Quality of life
Feasibilities	10. Funding availability 11. Times required for technology to master

Conclusion Remarks

Although China is still a developing country in many fields, it is possible in the future for China to make a significant contribution to world science and technology in some fields, such as biology and Chinese medicine, nano-technology, space science & technology, energy technology.

China is expected to play increasingly important, active role in the global innovation system, especially when innovation capacity of Chinese enterprises have been highly strengthened.

Conclusion Remarks

The foresight activity will play increasingly important role in the process of policy-making of science, technology and innovation, especially in the transition from reform policy to development policy.



Future Research

- ◆ Review of the main foresight exercises in China, including the approaches used and the standing of these exercises in the world;
- ◆ The impacts of technology foresight in formulating science & technology planning and policies in China, in conjunction with the current 5-year Plan;
- ◆ New trends in China's Technology Foresight, in theory and practice.

THANKS !

Thanks for your attention!

