

I. Basic Concept

1. The unprecedented crisis in Japan and changes in the world

Considering the Great East Japan Earthquake as a global issue, the government must work to deal with the earthquake and tsunami disaster by fully mobilizing every possible policy measure. Furthermore, Japan and the world have been in the midst of upheaval politically, socially and economically, and the expected roles of science and technology (S&T) are also changing considerably in those circumstances.

<The unprecedented crisis in Japan >

- Direct and indirect damage caused by the Great East Japan Earthquake, including the Fukushima Daiichi Nuclear Power Station accident
- An aging and decreasing population as well as a declining birthrate, plus a loss of social and economic vitality
- Long, downward trend of industrial competitiveness

<Changes in the world >

- Surfacing of global-scale problems, and heating up of competition for natural resources, energy and food, etc.
- Economic rise of emerging nations, and the advance of economic globalization
- Changing innovation systems, and the evolution of brain circulation

2. Positioning of the Basic Plan

The 4th Basic Plan is positioned as a basic policy for systematically and comprehensively promoting Japan's S&T policies, as a national strategy for the next five years, while giving greater depth and concrete form to the New Growth Strategy from a wide range of viewpoints and seeking greater coordination with other important policies.

3. Achievements and issues from the 3rd Basic Plan

There have been numerous successes since the 1st Basic Plan, such as an increase in research and development (R&D) investment and S&T system reforms. On the other hand, a number of issues have also surfaced.

- Individual achievements have fallen short of attaining social challenges
- Decrease in share of scientific papers of Japan, and remaining low in international ranking of the frequency of scientific paper citations
- Slack government investment growth in recent years notwithstanding its upward trend
- Decrease in posts for young researchers in university. Obstacles to maintenance and management of facilities
- S&T has not always been fully understood and supported by the public

4. Principles for the 4th Basic Plan

(1) Target picture of Japan

- (i) A nation achieving sustainable growth and societal development into the future, while accomplishing reconstruction and rebirth from the disaster
- (ii) A nation realizing a safe, full and high-quality life for citizens
- (iii) A nation leading in the resolution of global problems such as large-scale natural disasters
- (iv) A nation maintaining S&T which forms the basis of its existence
- (v) A nation continuing to create intellectual property and nurturing a culture of S&T

(2) Basic principles for future S&T policies

- (i) Integrated promotion of "science, technology and innovation (STI) policies"
- (ii) Greater priority to "roles of human resources and their supporting organizations"
- (iii) Implementation of the "STI policy created together with society"

The 4th Science and Technology Basic Plan of Japan (2/3)

Tentative translation

II. Realization of Sustainable Growth and Societal Development into the Future

1. Basic principle

STI will be strategically promoted aiming at reconstruction and revival from the disaster and realizing sustainable growth and societal development into the future

2. Reconstruction and revival from the disaster

- i) Rebuilding and revival of industries in affected areas
- ii) Restoration and renewal of social infrastructure
- iii) Realization of safe living environments in affected areas

3. Promoting green innovation

- i) Realization of a stable energy supply and lower-carbon energy sources usage
- ii) Improvement of energy use in efficiency and smartness
- iii) Development of lower-carbon technologies for social infrastructure

4. Promoting life innovation

- i) Development of revolutionary disease prevention methods
- ii) Development of new early diagnosis methods
- iii) Realization of safe and highly effective medical treatment
- iv) Improvement of Quality of life (QOL) for the sick, elderly and disabled

5. System reforms directed at promoting STI

- (1) Enhancement of strategic systems for promotion STI
 - (i) Establishment of "STI Strategy Councils (tentative name)"
 - (ii) Enhancement of knowledge networks among industrial sector, academic sector and government
 - (iii) Creation of new places to promote collaborations among industrial sector, academic sector and government (Formation of centers of open innovation, etc.)
- (2) Building new systems for STI
 - (i) Improvement of circumstances for strengthening of supports of commercialization
 - (ii) Utilization of regulations and institutions to promote innovations
 - (iii) Building of regional innovation systems
 - (iv) Promotion of intellectual property strategies and international standardization strategies

III. Key challenges to the Priority Issues Facing Japan

1. Basic principle

Priority issues to be addressed as a nation will be set, and the promoting measures aimed at achieving these issues will be focused on

2. Promoting measures for achieving the priority issues

- (1) Realization of a safe, affluent and high-quality life
 - i) Improvement of safety and convenience of citizens' life
 - ii) Stable procurement of food, water, natural resources and energy
 - iii) Improvements in affluence of citizens' life
- (2) Enhancement of industrial competitiveness of Japan
 - i) Reinforcement of technical foundations aimed at strengthening industrial competitiveness
 - ii) Creation of new industrial infrastructure capitalizing on Japan's strengths
- (3) Contribution to the resolution of global problems
 - i) Acceleration of challenges to global-scale issues
- (4) Promoting fundamental R&D of the nation's existence
 - i) Strengthening national security and key technology
 - ii) Building S&T bases for pioneering new frontiers
- (5) Enrichment and enhancement of common bases for S&T
 - i) Strengthening interdisciplinary S&T
 - ii) Advancement and networking of common and basic S&T infrastructures

3. System reforms directed at achieving the priority issues

(Promoting activities based on the promotion measures listed in II. 5.)

4. Strategic development of international activities

- (1) Promotion of R&D aimed at resolving common issues across Asia ("East Asian Science and Innovation Area (e-ASIA) Initiative", etc.)
- (2) New developments in S&T diplomacy
 - (i) Development of international activities capitalizing on Japan's strengths
 - (ii) Promotion of international activities for advanced S&T
 - (iii) Promotion of coordination and cooperation with developing countries for global-scale issues
 - (iv) Reinforcement of foundations for developing international S&T activities

The 4th Science and Technology Basic Plan of Japan (3/3)

Tentative translation

IV. Enhancing Basic Research and Human Resource Development

1. Basic principle

In addition to addressing the priority issues, initiatives also need to be enhanced for promoting basic research and human resource development.

2. Drastic enhancement of basic research

- (1) Strengthening creative and diverse basic research
(Further expansion of Grants-in-Aid for Scientific Research, etc.)
- (2) Enhancement of world-class basic research
(Formation of research-focused university groups, formation of world-class research centers, etc.)

3. Development of S&T-related human resources

- (1) Development of human resources that can be actively involved in a variety of places
 - (i) Drastic enhancement of graduate school education
(Creation of new places to dialogue between industrial sector and academic sector, establishment of the "Guideline for Promotion of Graduate School Education", etc.)

- (ii) Support for doctoral course students, and diversification of career paths
 - (iii) Development and vocational training of engineers

(2) Development of creative and outstanding researchers

- (i) Creating fair and highly transparent evaluation systems
- (ii) Improving the career paths of researchers
- (iii) Promoting the active involvement of female researchers

(3) Developing the new generation for future S&T activities

4. Formation of an international-standard research environment and foundations

(1) Improvement of R&D circumstances at universities and public research institutions

- (i) Improving university facilities and equipment
- (ii) Promoting development and shared use of advanced research facilities and equipment

(2) Improving the intellectual infrastructure

(3) Improving the research information infrastructure

V. Development of Policy Created together with Society

1. Basic principle

In order to achieve "policy for society and the public", initiatives need to be developed for gaining public understanding, trust and support.

2. Deepening relationship between society and STI

- (1) Promotion of STI policy based on the viewpoints of ordinary citizens
 - (i) Encouraging public participation in policy planning and promotion
 - (ii) Addressing ethical, legal and social issues (ELSI)
 - (iii) Developing and securing human resources that link STI policy to society
- (2) Promotion of S&T communication activities

3. Promotion of effective STI policy

- (1) Strengthening the policy planning and promotion function
(establishment of the "STI Strategy Headquarters (tentative name)", etc.)
- (2) Enhancing the screening and allocation functions in research funding programs

- (i) Structural reform of research funds for the effective and efficient screening and allocation
 - (ii) Improvement and enrichment of competitive fund systems

(3) Enhancement of the R&D implementing system

- (i) Reform of R&D corporations
(Establishment of new system for national R&D institutions)
- (ii) Improvements of systems for promoting research activities effectively

(4) Establishing the PDCA (plan-do-check-act) cycle in STI policy

- (i) Ensuring the effectiveness of the PDCA cycle
- (ii) Improvement and expansion of R&D evaluation systems

4. Expansion of R&D investment

Increasing the combined public-sector and private-sector R&D investment to over 4% of GDP, increasing the governmental R&D investment to 1% of GDP which will bring the total amount of the governmental R&D investment to about 25 trillion yen.