



## Chapter 1 Science and Technology with Society

Japan was hit by a disaster on an unprecedented scale and horrified by the fury of nature. It was reaffirmed that the vulnerability of S&T that has enriched our everyday lives and that S&T can very easily be transformed into something which threatens people's health. Now is the time we need to think deeply about way things should be between S&T with society.

The Council for Science and Technology Policy (CSTP) has positioned S&T policy as “one of the major policies for the society and the public” for its future course of direction, and it has pointed out the importance of obtaining public understanding of, confidence in and support to science, technology and innovation through deepened communication between S&T with society, and seeks to bring about innovation with society to solve important social issues after identifying them through dialog with society.

In Section 1, “The Expectations of Society and S&T,” public awareness of S&T is described. Then, it also presents the expectations toward S&T in relation to solving various domestic and international issues. These issues include global environmental problems, energy problems, food problems, etc.

In Section 2, “Promotion of S&T and Contributions to Society,” the current state of affairs and challenges were shown with regard to the promotion of green innovation and life innovation, cooperation between universities and the industrial sector that turns S&T outcome into economic value, and international contributions made by S&T. Moreover, this section showed the importance of the promotion of basic research that forms the basis in fostering an intellectual and rich society and the importance of training and securing human resources that bear the burden of the development of S&T which are the sources of innovation.

In Section 3, “Deepening the Relationship between S&T with Society,” trends were pointed out about how the development of S&T has had an impact on society in recent years. Furthermore, this section listed two sides of S&T. That is, the “light” side, which brings about new wisdom, convenient and affluent lifestyles for the people, and the “shadow” side, which is the menace of the generation and spread of toxic substances that ruin health and weapons of mass destruction as well as the sense of worry in people provoked by the advanced development in recent years in life sciences and information S&T. In relation to how these two sides can exist in harmony, this section shone a spotlight on Ethical, Legal and Social Issues (ELSI) and risk communication in relation to S&T and showed the current state of these efforts.

### Section 1 The Expectations of Society and S&T

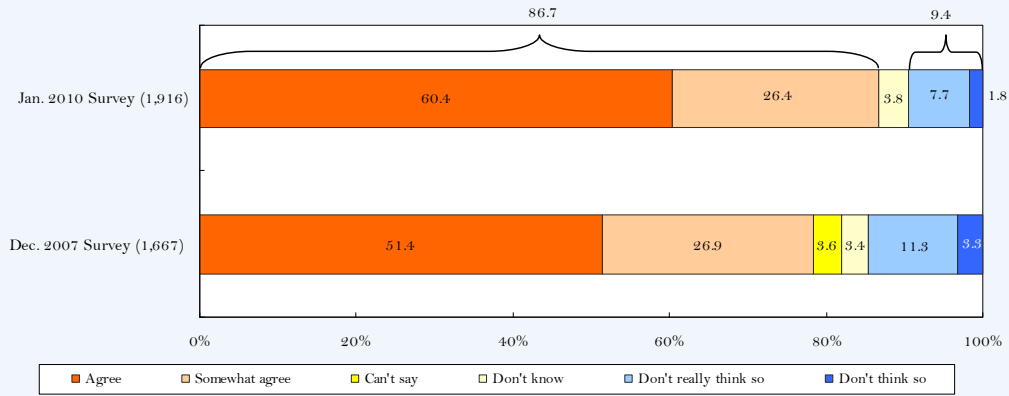
#### 1 Public Awareness of S&T

The Japanese public has expectations of S&T. In the “Public Opinion Poll on S&T and Society” (January 2010), with regard to the question “In order to increase international competitiveness, it is important to develop S&T,” the percentage of responses that were “I think so” and “If I have to say, yes” was 86.7%. As for “New social problems will be solved through further development of S&T,” the percentage of responses that were “I think so” and “If I have to say, yes” was 75.1% (Figure 1-1-1). Compared to the 2007 poll, these percentages for both questions increased in the 2010 survey.

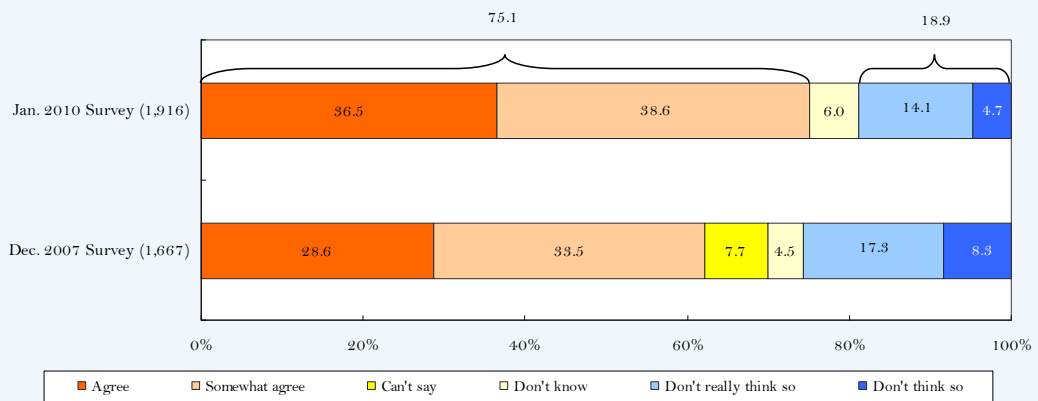


● Figure 1-1-1/ Public Expectations for the Development of S&T

Question: In order to increase international competitiveness, it is necessary to develop S&T.



Question: New social problems (e.g. natural resource and energy problems, environmental problems, water and food problems, and infectious disease problems) will be solved through further development of S&T.

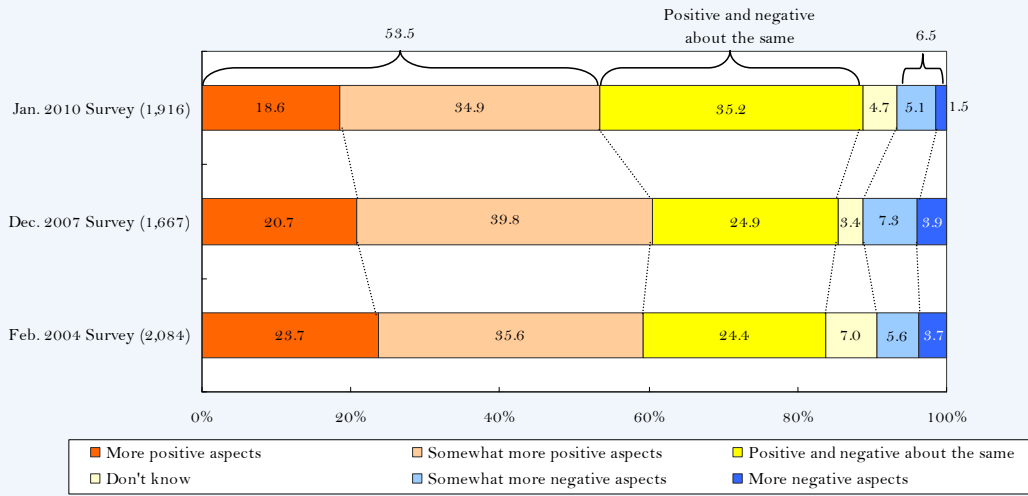


Note: In the January 2010 Survey, "Can't say" was not available.  
 Source: Cabinet Office, "Public Opinion Poll on S&T and Society (January 2010)"

On the other hand, there have also been concerns by the Japanese public about S&T. In the same opinion poll, people were asked "It is said that in the development of S&T there are positive and negative aspects, when looked as a whole, which do you think there are more of?" The percentage of respondents that said "In the development of S&T there are more positive aspects" and "There are somewhat more positive aspects" was 53.5%. This is around the half of the respondents (Figure 1-1-2), but this percentage has decreased when compared to the 2004 poll and 2007 poll. In total, the percentage of respondents that said "There are more negative aspects" and "There are somewhat more negative aspects" was 6.5%. The percentage of respondents (35.2%) that said "The positive and negative aspects are about the same" increased significantly from the 2007 poll.

● Figure 1-1-2/The Positive and Negative Aspects in the Development of S&T

Question: It is said that in the development of S&T there are positive and negative aspects, but when looked as a whole, which do you think there are more of?



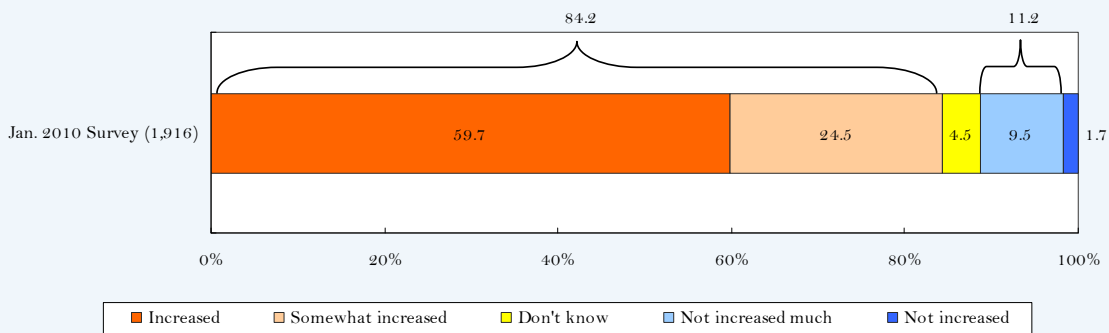
Source: Cabinet Office, "Public Opinion Poll on S&T and Society (January 2010)"

Looking at the responses of "Areas of unease in the development of S&T" that was asked in the same poll, many respondents were concerned about "Global environmental problems" (50.7%) and showed high percentage on "Safety of genetically modified food products and nuclear power generation" (50.2%). These were followed in order by "cyber crime, such as cyber-terrorism and unauthorized access" (43.8%) and then "Ethical problems related to human cloning and use of technology as weapons" (42.3 %). These areas were also cited in the same way in the 2007 poll.

On the other hand, 80% of people answered "Material wealth has increased because of the development of S&T" or "It has somewhat increased" (Figure 1-1-3).

● Figure 1-1-3/Material Wealth Has Increased because of the Development of S&T

Question: Do you think material wealth has increased because of the development of S&T?



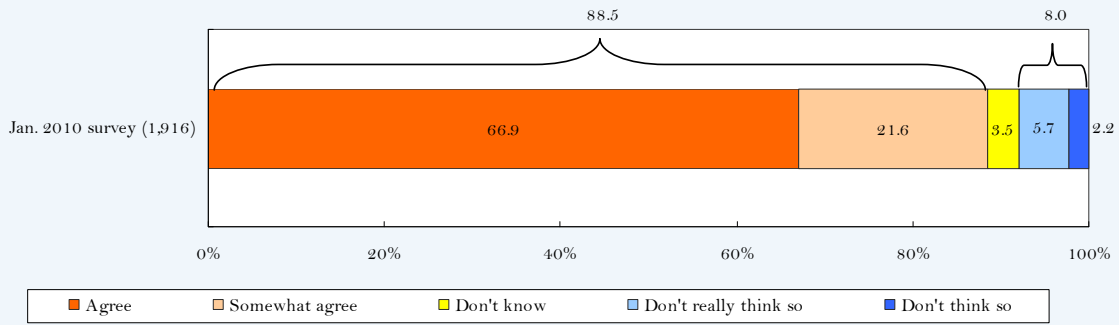
Source: Cabinet Office, "Public Opinion Poll on S&T and Society (January 2010)"

Furthermore, 66.9% of people responded that they agreed S&T "Should not just be about material wealth, it should also realize spiritual richness" and this figure reached 88.5% when those answering "If I have to say, yes" are included (Figure 1-1-4).



● Figure 1-1-4/S&T should not just be about Material Wealth, it should also Realize Spiritual Richness

Question The future development of S&T should not just be about material wealth, it should also realize spiritual richness.



Source: Cabinet Office, "Public Opinion Poll on S&T and Society (January 2010)"

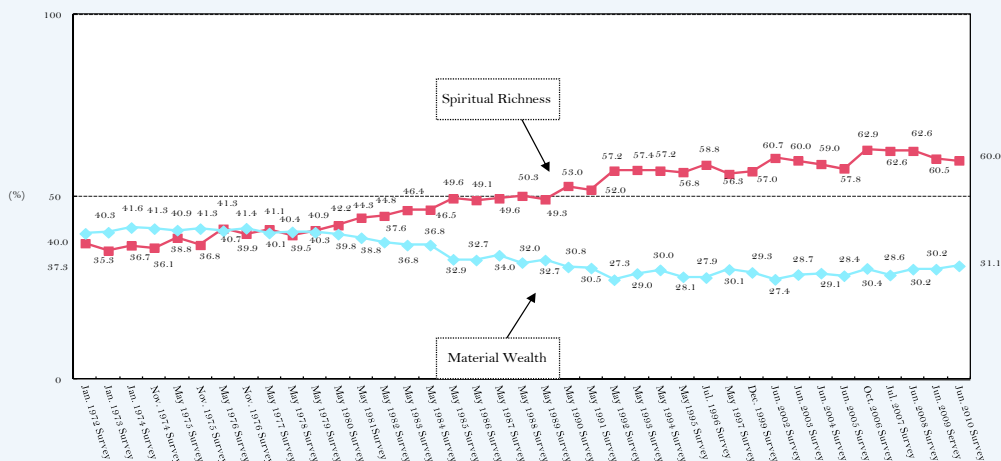
In this way, the fact that the Japanese public are seeking not only material wealth, but also spiritual richness in S&T, is also supported by the results of the question on "In the future, spiritual richness or still material wealth?" in the "Public Opinion Poll on National Life" (Cabinet Office). In 1972, the percentage of people choosing "I still place emphasis on enriching my life in material terms" exceeded the percentage of people who chose "I am satisfied with my material wealth, so from now on, I will place emphasis on a relaxed lifestyle that is spiritually fulfilling." However, since around 1979, the percentage choosing "spiritual fulfillment" exceeded that of the percentage choosing "material wealth", and in the 2010 poll this had reached 60% (Figure 1-1-5).

● Figure 1-1-5/In the Future, Spiritual Richness or still Material Wealth?

Question: In relation to material wealth or spiritual richness in your future lifestyle, please choose from the two statements below the one the most closely matches your way of thinking.

(Spiritual richness) I am satisfied with my material wealth and so in the future I will place emphasis on a relaxed lifestyle that is spiritually fulfilling.

(Material wealth) I still place emphasis on enriching my life in material terms.



Source: Cabinet Office, "Public Opinion Poll on National Life" (Survey June 2010)



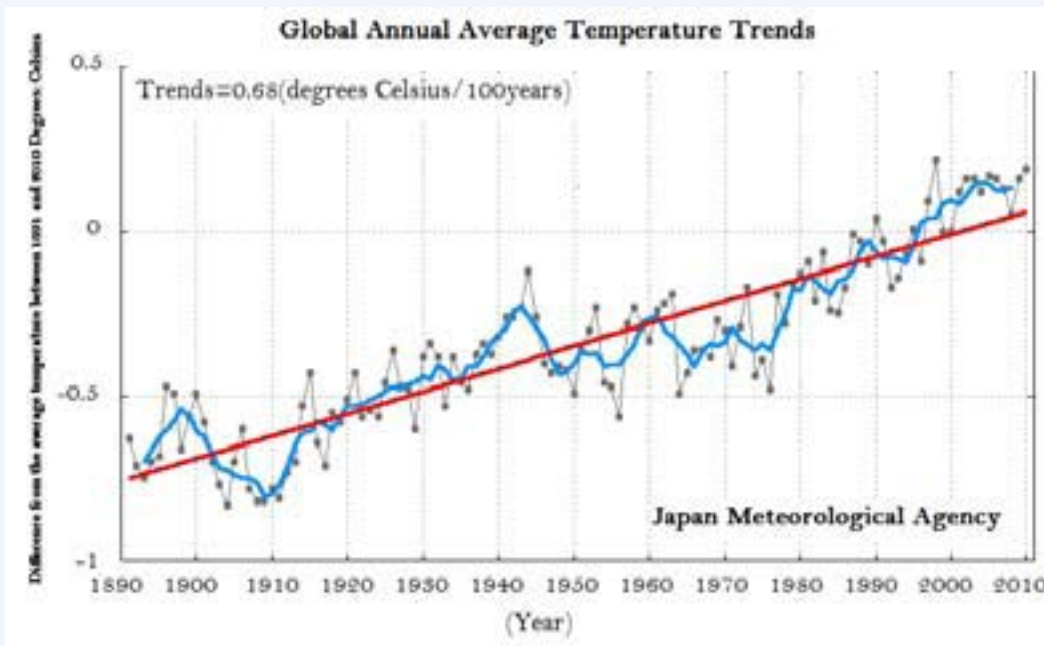
S&T that creates economic value and material wealth is relatively straightforward, but as to what type of S&T will realize spiritual richness demanded by the Japanese public, it is important for the public and the researchers to discover this through communication and construct it together.

## 2 Various Issues Facing Society

### (1) Various Issues in International Society

In international society, global scale issues, such as environmental problems, that should be tackled with cooperation and collaboration by countries throughout the world are becoming ever more serious. For example, looking at the annual average temperatures in the world (the average atmospheric temperature near the surface of landed areas and the sea surface temperature) since the mid-1990s, many years have had high temperatures. 2010 recorded the second highest temperature, after 1998, since records were compiled in 1891 (Figure 1-1-6). Furthermore, in Japan, the average temperature in the summer (June to August) of 2010 was the highest recorded in the 113 years since the start of statistical records in 1898.

● Figure 1-1-6/Global Annual Average Temperature Trends



Note: The thin line (black) = the difference from the average between 1981 and 2010 of the average temperature in each year. The thick line (blue): the five year moving average. The straight line (red) = long-term trends.  
Source: Created by the Japan Meteorological Agency

On the other hand, international competition is intensifying for the acquisition of resources, energy, food, water and more. This is causing a strain on mid and long-range economic growth in the world and there are fears it may bring about world economic and political instability. Furthermore, along with the economic rise of emerging countries, such as China and India, that possess enormous potential market strength, the global and regional distribution of wealth and power continues to change at a rapid pace (Figure 1-1-7).