

**Executive Summary**  
**Draft Report of "Special Committee on ITER Project"**

**(Energy and Fusion)**

The energy issue is, as well as the global environment issue, a basic, common subject for all humankind, and worldwide intensive efforts are inevitably requested to share the understanding of this issue and to explore its solution in a collaborative manner.

Fusion energy is one of the major potential options for future energy sources, because it has the following features:

- \_ Resources for fusion energy are widely distributed in the world and have a sufficient reserve;
- \_ Safety measures for a fusion plant can be easily adopted in comparison with those for a fission plant;
- \_ Low-level radioactive wastes are yielded from a fusion plant, while there are no high-level radioactive wastes and its disposal issue;
- \_ Fusion energy never causes international tensions and furthermore prevents a tight energy supply.

Toward realization of fusion energy, a variety of researches and developments have been extensively conducted by a number of countries in the world including Japan. Among the issues to be tackled in a near future, high priority should be placed in establishing the technology of controlling burning plasmas sustained by fusion reaction. This leads to a program to construct the "International Thermonuclear Experimental Reactor (ITER)" under an international collaboration by sharing contributions among the partners.

The Committee has recognized that it is of substantial importance for our country to promote further the fusion research activities in a way that scientific progresses being made voluntarily by scientists could coincide, fortunately, with the scientific and technological contributions to the humankind. In addition, the Committee addresses that our country should take a main role in the ITER project under an international relationship.

## **(Japanese Approach to the ITER Project)**

In reviewing the approach of our country to the ITER project, it is necessary to recognize the current situation of our country and to take an outlook on the prospected vision of its future.

- (1) From a viewpoint of an international role, Japan should have facilities, as the scientific infrastructure, we can be proud of in the world and should open them to the world scientists for their use. And in this context, Japan should seek to ensure mutual benefits in the world, while enhancing the status of our country.
- (2) From a viewpoint of scientific and technological capabilities in the field of fusion energy development, our country is highly appreciated in the international community because of the personnel resources with high capabilities and of the industrial power. It implies that our country has a sufficient potential to advance the ITER project. It should be noted that fusion research has required more efforts, longer period and larger investments than those anticipated in the beginning of the development so as to understand and control plasmas. If our country takes the initiative to construct the ITER, the only facility in the world, it will be possible to maintain for a long period a highest level of the scientific and technological potential and industrial technologies in the relevant fields.
- (3) From an ethical viewpoint of Japanese society, the ITER program could provide an opportunity to manifest the public morality for the future of humankind, apart from private profits. In addition, the Constitution of our country declares in principle that any activities never cause international tensions. In this sense, national ethics of our country is highly appreciated because of the process of promotion of peaceful use of atomic energy. This implies that conditions can be satisfied to receive an international acceptance in that our country exercises leadership in the fusion energy development.
- (4) With regard to safety, waste treatment and disposals including radioactive metals should be properly conducted during the ITER operation and decommissioning phases. Hence, it is necessary to take appropriate measures for the radioactive wastes, with a particular attention to public understanding and acceptance.
- (5) From a viewpoint of investment, the activities regarding the national security, in a broad sense, for the whole nation and those regarding an international function executed in a national scale should be considered to have higher priority in allocating the financial resources among the research programs. The ITER project is categorized in such a domain. At present, it is difficult to accurately estimate the overall cost for the realization

of fusion energy. Moreover, it is almost impossible to estimate the profit from the realization of fusion energy. It can be understood that the investment in developing fusion energy is regarded as a sort of insurance premium for securing wider degree of freedom of humankind in the future.

From the viewpoints discussed above, the Committee has concluded that hosting the ITER in our country is of great significance for our country as well as taking a main role in the ITER project.

To make a decision in the promotion of large-scaled scientific and technological projects, judgement should be duly made by respective competency at each step: (1) Scientific and technological proposal made by scientific community; (2) advice by knowledgeable people from wider viewpoints; (3) judgement on the priority in terms of science and technology policy; and (4) final judgement in terms of the national policy.

In this Committee, knowledgeable people from various communities have made discussions and thorough review from wider viewpoints. Through the discussions, a number of issues have been pointed out, which need due consideration in promoting the ITER project. Among them, it is essential to minimize the project cost, by keeping a balance among the technical objectives, the risk in development and the cost. Furthermore, it is the most important to incorporate in the project the possibility to maximize the significance and benefits independent of the project results.

The Committee calls for steady efforts and implementation by the Government Administration of our country in:

- acquiring public understanding on the ITER project by providing sufficient and correct information including safety;
- fostering human resources who can take a leading role in promoting the project;
- preparing safety regulation on the ITER project.

The Committee considers that, in order to make a final decision by the Government, it is necessary to further assess candidate sites in terms of compliance to the ITER site requirements and how to secure financial resources.

**Note:** The draft Report was tentatively concluded in the Committee meeting, 30 March 2001, and was approved by the Atomic Energy Commission, 3 April 2001, to make it open to request public comments. The Committee will convene a final (hopefully) meeting in early May, conclude the Report based on the public comments, and submit it to the Atomic Energy Commission for its final approval. This process is expected to finish within May 2001.