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Draft of the Science and Technology Basic Law

The sustained elevation of technological level and the enhancement of productivity and competitiveness are the major issues facing scientifically and technologically advanced nations. The Republic of China cannot afford to ignore them if it wants to join the club of advanced nations. We urgently need to tap and integrate our scientific and technological resources in order to maximize the wisdom for innovation of our scientific and technological manpower, to balance social development with natural environment in our life, to reconcile and develop the studies of basic and applied technologies, to ensure the effectiveness of the rewarding system, to improve the environment for scientific and technological innovations, to avoid industrial hollowing-out, to strengthen international cooperation in science and technology. We anticipate to promote our scientific and technological capability in lockstep with advanced nations. In addition to striving for superiority in cutthroat competition with newly industrializing nations, we should also make some contribution to the world progress of science and technology and to the development of humankind. This is the emphasis of foreign nations' statutes in their so-called founding the nation on the innovation of science and technology.

To carry out this concept of "founding the nation on the innovation of science and technology," the Diet of Japan passed on November 15, 1995, the Science and Technology Basic Law to deal with the problems of the shortage of natural resources and the rapid aging of population. It was also intended to cope with the phenomena of industrial hollowing-out, the loss of social vitality, and the lowering of living standard due to economic competition resulted from economic liberalization and internationalization, Hence, the enactment of the Science and Technology Basic Law for developing unique and advanced technologies, for creating new industries, for reviving science and technology, and for fashioning the direction and policy of scientific and technological development. Korea also enacted a law, titled "Special Law on Scientific and Technological Innovation," in 1996 for innovating its science and technology and increasing its investment, and other supports, in research and development. Although Korea did not use the name of basic law, the purpose of the enactment is the same as a basic law. The scientific and technological problems currently facing our country are much like those facing Japan and Korea, so their laws and their emphases in the laws are, in many respects, worthy of our reference.

Not a few of the current science and technology statutes of our country take the form of administrative decree. As a legal basis for scientific and technological policy and execution, we comparatively lack a system of basic criteria. True, the prevailing scientific and technological statutes and regulations have fulfilled their legal functions of the times, we should not continue to deal with the rapidly changing environment and development of science and technology in an expedient manner, for this will result in the lack of basic principles for scientific and technological development. Therefore, for codifying the formulation of science and technology plans, continuing the replenishment of the budget, protecting the personnel and use and ownership of the right of national intellectual properties and seeking parliamentarian debate and supervision for public understanding and support, it is better to enact a law. The people have recognized the shortcomings of our scientific and technological environment, so the proposal on the enactment of a science and technology basic law based on the Japanese and Korean precedents received heated discussion at the Filth National Science and Technology Conference held in 1996 and approval by participating technological and legal experts. The conference recommended to make the promotion of scientific and technological development, rather than the restriction on scientific and technological activities, as the purpose of the enactment. It also recommended the principles and key elements of the law and requested to draft the law within a prescribed time. This is to say the law has received legislative and popular support.

The significance and status of the science and technology basic law should be defined clearly in order to avoid controversy. First, this basic document should be defined as a law that is different from Germany's Grundgesetz, which is on the same rank of the German constitution. Next, the science and technology basic law should be made a fundamental law, which is different from a functional law

that involves the people's rights and duties. Finally, the science and technology law is a Mother Law of other science and technology statutes because it deals with the basic principles and directives of science and technology policy and laws.

Article 165 of our Constitution provides that the state shall safeguard the livelihood of those who work in the field of science, and shall, in accordance with the development of national economy, increase their remuneration from time to time. Paragraph 1 of Article 9 of the articles added to the Constitution in 1994 says that the state shall encourage development of and investment in science and technology. Paragraph 2 of the same article stipulates that economic and technological development shall be given equal consideration with environmental and ecological protection. The concept of these constitutional provisions must be abided by in the enactment of the science and technology law. To carry out this constitutional concept and to establish the goal of making our country strong through scientific and technological innovations, we urgently need to codify our future policy and tact for scientific and technological development. Therefore, we have drafted, by taking reference of pertinent foreign statutes, the science and technology basic law, which is composed of 27 articles. Following are the main features of the draft law:

1. Clearly describing the purpose of the enactment

It is clearly stated that the purpose of enacting the science and technology law is for establishing the government's basic policy and principles for scientific and technological development in order to raise the scientific and technological level, to promote economic development, to improve the people's livelihood and well-being, to boost the country's competitiveness, and to ensure continued and permanent national development. It sets forth clearly the orientation of this law to serve as the basic principle for interpreting the application of this law. (Article 1)

2. Setting forth clearly the application scope of this law and the principle of balanced scientific and technological development

This law interprets science and technology in a broad sense to include the science and technology of humanity sciences for promoting balanced development in related scientific and technological fields. While elevating the level of natural science, importance is also attached to the development of social sciences in order to create a harmonious environment for scientific and technological development. So, this law says clearly that it is applicable to the science and technology of humanities and sets forth the principle of balanced development. (Article 2)

3. Erecting the principle of sustained increase of scientific and technological budget

This law stipulates that the government shall, within its financial power, do its utmost to increase the budget for ensuring a steady growth of science and technology. (Article 3)

4. Establishing an information system on scientific and technological resources

A good information network and a data bank are required to facilitate the exchange and uses of scientific and technological manpower, facilities and other resources. Thus, this law clearly stipulates that the government shall take measures to establish a science and technology information system. (Article 4)

5. Imposing on the government the responsibility for assisting and supervising the use of research resources and products

Because scientific and technological research, the soul and heart of scientific development, is a high-risk investment, this law stipulates that the government shall be obligated to provide equipment, materials, technical service or take necessary measures to help research institutes in order to build up the research atmosphere and improve the research environment. Besides, the government shall supervise or assist the research institutes to promote their research products to facilitate the application of these products and stimulate innovation of science and technology. (Article 5)

6. Charging the government with enacting a special law to regulate government-financed research products

Because of the strict stipulations of the National Property Law, the uses of nationally owned products coming from government-financed scientific researches are apt not to benefit the government. Therefore, this law stipulates that a law shall be enacted to deal with this problem in keeping with the principle of pay-benefit justice and to free the restrictions of prevailing laws. (Article 6)

7. Supporting basic researches

To improve the environment for technological innovation, this law provides that the government shall increase its investment in basic research to meet its huge financial requirement and to solve the risk problem. (Article 7)

8. Defining the ethical obligations of the government, scientific and technological institutes and personnel

To raise the scientific and technological level, the government and research institutes and personnel shall take measures to prevent their research from adversely affecting the ecology, humans and animals. If necessary, they shall provide money for the study of involved technological, social, ethical and legal problems. Besides, this law demands the research institutes and personnel to sign self-disciplinary conventions before they launch a research project in order to fulfill their obligations for protecting the environment, ecology and lives. (Articles 8 and 9)

9. Stipulating the formulation of procedures and contents of state scientific and technological research projects

To establish the direction, policy and way of execution of our scientific and technological development, this law demands the National Science Council under the Executive Yuan to complete within the prescribed time the National Science and Technology Development Plan and submit it to the Executive Yuan for

approval after soliciting the opinions of science and technology research institutes, the industrial sector, and social organizations, and after discussion at the National Science and Technology Conference. Besides. This law also sets forth the items that shall be included in the plan. (Articles 10 to 12)

10. publishing, within the prescribed time, and supervising the Science and Technology Development White Paper

The National Science Council under the Executive Yuan shall provide the social public an opportunity for examining the national science and technology policy, its execution process and the results. So, this law stipulates that the Executive Yuan shall issue a white paper on science and technology development and shall be responsible for revising it every year. (Article 13)

11. Establishing the principle of openness for the national science and technology development fund with regard to the organization of its management committee and its financial sources

To raise the nation's capability for scientific and technological development, encourage outstanding personnel for scientific and technological development, replenish the research facilities and subsidize the application of the research products, this law stipulates that the National Science Council under the Executive Yuan shall establish a National Science and Technology Research and Development Fund. It also stipulates the establishment of a committee to manage the fund. The NSC is demanded to work out the regulations governing the organization of this committee, the collection and appropriation of the fund. Besides, this law stipulates the possible sources of the fund to ensure reliable supply. This law provides for using the fund in conformity with the principle of open scrutiny to meet the requirements of national scientific and technological development and of the research personnel. (Articles 14 to 16)

12. Perfecting the environment for scientific and technological development and protecting scientific and technological personnel by improving their training, remuneration and promotion

To cultivate scientific and technological personnel, the government shall strive to improve our country's environment and work conditions for scientific and technological development. This include improvement of the cultivation, recruitment, remuneration, promotion, rewarding of personnel, research facilities, research budget and the size of research staff. Therefore, this law sets forth the principles of appointing and protecting the research personnel and obligates the government with the responsibilities for actively enacting laws or taking administrative measures to ease the various restrictions imposed by the current system. (Articles 17, 18, 20)

13. Upholding the research freedom of scientific and technological personnel

Scientific and technological research calls for freedom and independence in the search of truth. Only so, researchers can maximize their innovativeness. Therefore, this law stipulates that the government shall safeguard the research freedom of scientific and technological personnel. (Article 19)

14. Promoting science and technology through reward and preferential treatment

To encourage people to join in scientific and technological research, this law stipulates that the government shall enact laws to reward persons and organizations that have made great contribution to scientific and technological development. (Articles 21 and 22)

15. Assisting the R&D of the private sector

Because scientific and technological research and development often involves huge investment and staggering risks, this law stipulates that the government shall provide the private sector with timely assistance to make the R&D effort more effective. (Article 23)

16. Erecting the principles for encouraging and pushing international scientific and technological cooperation

The elevation of scientific and technological level calls for, besides efforts by our own people, the government to seek international cooperation and to step up international exchange of personnel, technology and information. This law authorizes the concerned organizations to sign agreements, if necessary, with foreign nations on the exchange of technological personnel, technology, and information and to join international research and development. (Article 24)

17. Establishing the government's responsibility for promoting the formation of an information-dominated society

It is the responsibility of a modern government to follow the world wave of establishing an information-dominated society, to strengthen the domestic facilities required for building an information-dominated society, and to expedite information exchange and circulation. Therefore, this law provides that the government shall be responsible for strengthening the development of information and communication infrastructure and for taking measures to promote the formation of the information-dominated society. (Article 25)

18. Charging the government with the responsibility for developing scientific and technological education

For increasing the people's scientific and technological knowledge, the government shall persist in promoting scientific and technological education in schools and society by strengthening the people's scientific and technological training and replenishing the scientific and technological resources. (Article 26)

The Current State of Development at the Tainan Science-Based Industrial Park

The Tainan Science-Based Industrial Park is an key project in the R.O.C.'s "Asia-Pacific Regional Operations Center" economic stimulus program. In the two years since the site was selected in 1995, the concerted efforts of the government units involved have led to the completion of the project's environment impact assessment, development plan, and detailed plan review. Thirty-four investment applications have already been received from interested firms. Of these, 19 are from firms with plants in the Hsinchu Science-Based Industrial Park and 15 are from newly-established firms. The amount of planned investment is US$27.5 billion.

In order to provide the infrastructure needed by plants established in the park, various types of construction and development work have been carried out since July 1st 1996. The construction of standard plant buildings and employee living quarters began in January 1997. It is hoped that 20 firms will be established in the park by the spring of 1998, at which time there will be five or six thousand employees.

Already-underway construction work includes the following items:

I. Infrastructure development work

1. Construction of a main east-west road: to be completed by February 28th 1998.
2. Construction of a main north-south road (southern section): to be completed by March 31st 1998.
3. Construction of a main north-south road (northern section): to be completed by March 31st 1998.
4. Construction of bridge No. 1: to be completed by May 9th 1998
5. Construction of industrial area water tower and water distribution pond: the 3,000-ton water tower and 42,000-ton water distribution pond are to be completed by September 30th 1998.
6. Completion of the initial portion (90 hectares) of the first stage of land development: designs for development of a 90-hectare industrial and service area have already been completed. Bidding was conducted on June 19th 1997, and the work is to be completed by March 1999.
7. Construction of a first-stage waste water treatment facility: the design for a 45,000 CMD waste water treatment facility has already been completed. Bidding is scheduled for June 1997; emergency use portions are to be completed by January 1998, and the entire facility is to be finished by February 1999.

II. Building Construction

1. Construction of standard plant buildings: two four-story standard plant buildings containing a total of 32 units (530m^2 per unit) are to be completed by June 27th 1998.
2. Construction of employee living quarters (three-story residences): 25 three-story residences of 198m^2 each are to be completed by May 6th 1998.
3. Construction of employee living quarters (seven-story residential apartments): two seven-story buildings containing a total of 56 units (140m^2 per unit) are being built; 14 units are to be completed by October 1998 and 42 units by April 1999.
4. Construction of employee living quarters (dormitories for single employees): two seven-story dormitory buildings containing a total of 280 units (23m^2 per unit) are being built; 140 units are to be completed by October 1998 and the remaining 140 by April 1999.

III. Water, Power, and Communications Utilities

1. Water supply: bidding for construction of the Tanting main water line was completed on February 19th 1997; this project is to be completed by November 1997.
2. Power and telecommunications: in conjunction with the principal road construction projects, installation of power and telecommunications lines began in April 1997 and is expected to be completed in January 1998.

In order to satisfy the needs of investing firms and keep the Asia-Pacific Operations Center program on track, the Science-Based Industrial Park Administration will implement strict supervision and close liaison to insure that all construction and engineering work is finished on-time and meets quality requirements.

Several of Taiwan's largest semiconductor and integrated circuit firms are planning to begin moving into the Tainan Science-Based Industrial Park in July 1997. Road and building construction in the park is currently already adequate to support the interface requirements of firms wishing to open plants.

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