

THE PRIME MINISTER

DECISION No. 14/2008/QĐ-TTg OF JANUARY 22, 2008, APPROVING THE MASTER PLAN ON BIOTECHNOLOGY DEVELOPMENT AND APPLICATION IN VIETNAM UP TO 2020

THE PRIME MINISTER

Pursuant to the December 25, 2001 Law on Organization of the Government;

Pursuant to the Prime Minister's Decision No. 188/2005/QĐ-TTg of July 22, 2005, promulgating the Government's program of action for implementation of Directive No. 50-CT/TW of March 4, 2005, of the Secretariat of the Party Central Committee, on stepping up biotechnology development and application for national industrialization and modernization;

At the proposal of the Minister of Science and Technology,

DECIDES:

Article 1.- To approve the master plan on biotechnology development and application in Vietnam up to 2020 (below referred to as the master plan for short) with the following principal contents:

I. GUIDING VIEWPOINTS

1. Biotechnology research, development and application must meet the requirement on developing a key scientific and technological orientation; biotechnology will be built and developed into an important spearhead economic-technical industry in Vietnam effectively serving national industrialization and modernization.

2. Biotechnology development and application will focus mainly on agriculture-forestry-fishery, food processing industry, food hygiene and safety, medicine-pharmacy, human healthcare and environmental protection, while promoting the formation, development and effective operation of biotechnological production, business and service enterprises.

3. Biotechnology will be developed on the basis of building and strongly promoting internal resources in combination with selectively receiving and rapidly acquiring and mastering the world's advanced scientific and biotechnological achievements, while modernizing traditional technologies.

4. Biotechnology development needs intensive investment and modern equipment and therefore, must be selected for proper, adequate and coordinated investment; key and essential products will be selected for development investment.

5. To train scientific and technological human resources for biotechnology which are adequate in quantity and high in quality constitutes one of the most important factors in the country's biotechnology development.

II. DEVELOPMENT OBJECTIVES

1. Overall objectives:

To research, develop, and apply biotechnology in a wide and effective manner to production and life; to build bio-industry into a hi-tech economic sector capable of producing key and essential products and greatly contributing to national economic growth; to concentrate resources on and diversify forms and the effectiveness of investment in biotechnology, form and develop a biotechnology market so that by 2020 the country's biotechnology will reach the regional advanced level and some important sectors will reach international levels and standards.

2. Specific objectives for each period:

a/ Up-to-2010 period:

- To receive, master, research and create a number of important technologies; to apply in a wide and effective manner these technologies to agriculture-forestry-fishery, medicine-pharmacy, processing industry, environmental protection, and defense and security.

- To research, create and intensively apply new products, including plant varieties, animal breeds, microorganisms, vaccines, industrially processed products, which are of high yield, quality, competitiveness and economic value, for consumption and export.

- To build and initially increase the potential of, biotechnology research and development agencies.

- To build biotechnological enterprises and form a favorable and open market for these enterprises to conduct production, business and service activities in the most effective way.

b/ During 2011-2015:

- To receive and master base technologies of the world's advanced and modern biotechnology and, on that basis, research and create valuable technologies serving production and life; to continue intensively applying biotechnology in different domains, practically serving socio-economic development and environmental protection.

- To build biotechnology research and development centers up to ASEAN standards.

- To build a developed bio-industry capable of producing key products of high quality and competitiveness to meet domestic and export demands.

c/ Vision through 2020:

- To train scientific and technological human resources in the biotechnology domain which are adequate in quantity, high in quality and creative at

work and can master technologies, effectively serving socio-economic development, protection of human health and the environment.

- To build advanced, modern and international-standard biotechnology research and development centers.

- To strongly develop the bio-industry capable of producing key and essential products for the national economy.

III. MAJOR TASKS

1. To research, develop and apply biotechnology in a wide and effective manner to production and life:

a/ Agriculture-forestry-fishery and rural development:

- Agricultural plants: To concentrate on scientific research, development and application of gene technology (gene transfer technology and molecular indication method) in order to create new plant varieties and genetically modified plants with superior agronomical properties meeting market needs; to apply micro-multiplication technology for creating high-quality and disease-free saplings; to widely apply high technologies to optimize the yield and quality of agricultural plants.

- Forest plants: To research, develop and widely apply cell technology and micro-multiplication technology for multiplying forest plant varieties with high growth speed and timber quality; to research, develop and apply gene technology in order to create forest plants capable of resisting pests and diseases.

- Animal breeds: To research and improve reproduction technologies, especially animal cell technology, in sperm and embryo freezing, zygote transplantation and in-vitro fertilization; to apply molecular indication method and gene transfer technology in selecting and creating new animal breeds of high productivity and quality; to apply

gene technology in determining the embryo gender of some important domestic animals; to research and improve the vaccine production capacity, ensuring sufficient animal vaccines, especially vaccines against avian influenza, foot-and-mouth disease and other dangerous diseases.

- Microorganisms: To research, develop and apply microorganism technology and enzyme and protein technology in producing on an industrial scale microorganic preparations used in plant protection, soil rehabilitation, processing and preservation of farm produce and foods, production of livestock feed, purification of daily-life water, and treatment of by-products and wastes from agricultural production and rural daily life.

- To effectively apply genetic technology in conserving, storing and rationally exploiting gene sources of plants, animals and microorganisms for variety/breed improvement.

- Aquaculture: To research, develop and apply biotechnology to sex control in order to produce on an industrial scale unisexual breeds; to create high-quality and disease-resistant aquatic animal breeds; to apply artificial reproduction methods to aquatic products of high economic value for export; to conserve and effectively exploit gene sources of special aquatic species for breeding purposes; to produce biologicals for raising aquaculture yield and treating the aquaculture environment; to produce kits for quick diagnosis of aquatic animal diseases; to research and apply molecular biology and immunization science and microorganism science to the prevention and treatment of dangerous aquatic animal diseases; to produce high-quality aquatic feed for use as import substitutes.

- Aquatic product processing: To research, develop and apply enzyme and protein technology for raising the quality of commodities and creating new commodities in the aquatic-product processing industry; to apply the molecular biology method in assuring hygiene and safety of aquatic products; to

apply biotechnology to treating wastes from aquatic product processing for environmental protection, and producing preparations for aquatic product preservation.

b/ Health sector and community healthcare:

To research, develop and intensively apply biotechnology to medicine and pharmacy in order to create new medical and pharmaceutical products of high curative effect and hi-tech healthcare services for effectively preventing and controlling dangerous epidemics, better meeting people's diversified healthcare needs.

- Health sector:

+ To research, develop and apply stem cell technology serving medical treatment; to expand the application of in-vitro fertilization technology to treat infertility problems; to develop cell monoclonal technology and apply it to disease diagnosis and treatment.

+ To research, develop and apply gene technology to disease diagnosis and treatment and raising of the quality of the Vietnamese race.

+ To research and produce new-generation vaccines (cellular vaccines, recombinant vaccines and ADN vaccines) to meet 80-90% of domestic demand and for export.

- Pharmaceuticals:

+ To research bio-active substances from animals, plants and microorganisms for the production of drugs, cosmetics and functional foods on an industrial scale.

+ To research and produce antibiotics, vitamins, amino acids and proteins with microorganism fermentation and recombinant microorganism technology.

+ To research and apply cell technology in conserving and developing rare and valuable pharmaceutical material sources.

c/ Environmental protection and sustainable

development:

- To research, develop and apply biotechnology for creating environmentally friendly technologies and products and producing bio-fuels (biogas, bio-petrol and bio-diesel, etc.) for cleaner production and energy security assurance.

- To research, develop and apply biotechnology for treating pollutant wastes, restoring and developing natural eco-systems and protecting the environment.

- To research, develop and apply biotechnology for preserving, conserving and rationally using biodiversity resources, land, water and air for national sustainable development.

d/ Processing industry:

- To research, develop and apply enzyme, protein and microorganism technologies for producing on an industrial scale amino acids, proteins, organic acids, organic solvents and microorganic preparations for the food processing industry, production of livestock feed, bio-fuels and medicines, and environmental pollution treatment.

- To research and create biotechnology chains and equipment for the food processing industry.

e/ Defense and security:

- To research, develop and apply methods to prevent and combat bio-weapons.

- To study and establish a human gene bank for those who need to be managed; to research, develop and apply biotechnology to preventing, combating and pursuing criminals and managing human resources for security and defense maintenance.

2. To build and develop biotechnological potential:

- a/ To build material and technical foundations and modernize machinery and equipment:

- To plan, and make concentrated, adequate and coordinated investment in, modernizing the

national network of biotechnology research institutes, universities and laboratories.

- To complete the construction of, and effectively operate, key national laboratories, and build and develop new biotechnological laboratories furnished with modern and synchronous machinery and equipment.

- To build advanced and modern regional, inter-regional, branch and inter-branch biotechnological centers for the performance of national, inter-regional, inter-branch and specific tasks.

- To build key national biotechnological laboratories up to international standards and other standardized laboratories under the Vietnam Laboratory Accreditation Scheme (VILAS).

b/ Human resources training:

- To formulate and implement a planning on training scientific human resources to meet quantitative and qualitative requirements of national biotechnology and bio-industry development. To attach importance to training highly qualified experts with post-doctoral, doctoral or master degrees, technological engineers and technicians, and training biotechnology research groups.

- To actively and regularly improve the quality of training of Vietnamese biotechnologists at all degrees. To encourage domestic and foreign organizations and individuals to participate in training Vietnam's biotechnology human resources. To continue sending trainees for overseas graduate and postgraduate training with state budget funds. To encourage self-financed graduate, postgraduate and doctoral training in biotechnology.

- To provide retraining in biotechnology for scientific and technical workers who are currently engaged in biotechnology but were previously not yet intensively trained in biotechnology, along with organizing training courses on transfer of technologies and scientific advances in biotechnology for production establishments and

localities.

- To combine postgraduate training with scientific research and technological development to ensure that ministerial- and state-level research subjects can contribute to training biotechnologists with high qualifications.

- In the 2006-2010 period: To train more than 8,000 scientific workers to obtain graduate and postgraduate degrees in biotechnology, including 200 doctors, 800 masters, around 100 turns of people to be trained overseas and 3,000 technicians to be trained at home.

- In the 2011-2015 period: To train more than 12,000 scientific workers in charge of biotechnology of graduate and postgraduate degrees, including 300 doctors, 1,200 masters, around 300 turns of people to be trained overseas and 4,500 technicians to be trained at home.

3. To build and develop bio-industry:

a/ To formulate a master plan on bio-industry development in Vietnam up to 2020, attaching importance to agricultural-forestry-fishery product processing and medicine-pharmacy, with viewpoints, objectives, tasks and solutions suitable to national conditions.

b/ To form and develop bio-industrial production, business and service enterprises engaged in processing of agricultural, forestry, fishery and aquatic products; production of liquor, beer, beverages and sauces; production of amino acids, organic acids, industrial enzymes and food additives; production of plant varieties, animal breeds, fisheries breeds, fertilizers, bio-insecticides, animal vaccines, vaccines for expanded vaccination of children, avian influenza vaccines, curative medicines, antibiotics and other pharmaceuticals; production of microorganic preparations for disposal of garbage, wastewater and exhaust gas, purifying daily-life water and responding to environmental incidents.

c/ To establish an open and favorable market, develop more support industries and encourage enterprises of all economic sectors to invest in bio-industry development.

4. To elaborate and improve legal documents, mechanisms and policies to promote biotechnology research and development and application in production and life:

a/ To develop and promulgate incentive mechanisms and policies to encourage biotechnology research and development, transfer and application to production and life, and investment in bio-industry development in Vietnam; incentive policies to encourage small- and medium-sized enterprises, especially agricultural-forestry-fishery product processing ones, to invest in biotechnology development; policies to attract and diversify investment sources for biotechnology development; policies to grant incentives to scientific and technical workers engaged in biotechnology and biotechnological talents.

b/ To formulate policies on biosafety management of genetically modified organisms, an important chapter of a Law on Biodiversity, and decrees detailing and guiding the implementation of this chapter.

c/ To formulate, promulgate and implement incentive policies on tax, land, loan, supporting the transfer and import of technologies and technological know-how, technology market development, human resources training, etc., for enterprises investing in bio-industry research and development.

5. International cooperation in biotechnology:

a/ To enter into bilateral and multilateral cooperation with countries that have advanced biotechnologies in order to learn experience, attract investment and seek assistance for rapid, strong and steady development of biotechnology.

b/ To formulate and implement cooperation schemes and projects on biotechnology research, development and application; to transfer biotechnological technologies, production chains, machinery and equipment between research institutes and universities of Vietnam and other countries with advanced biotechnologies.

6. Key programs, plannings, schemes and projects:

To achieve the objectives and effectively implement the contents of this master plan, to formulate, approve and implement the following 10 key programs, plannings, schemes and projects:

a/ A state-level key scientific and technological program on development and application of base technologies of biotechnology: The Ministry of Science and Technology is responsible for formulating, approving according to its competence, and organizing the implementation of, this program.

b/ A key program on biotechnology development and application in agriculture and rural development up to 2020: The Ministry of Agriculture and Rural Development is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this program (under the Prime Minister's Decision No. 11/2006/QĐ-TTg of January 12, 2006).

c/ A scheme on biotechnology development and application in the processing industry up to 2020: The Ministry of Industry (now the Ministry of Industry and Trade) is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this scheme (under the Prime Minister's Decision No. 14/2007/QĐ-TTg of January 25, 2007).

d/ A scheme on biotechnology development and application in the fisheries sector up to 2020: The Ministry of Fisheries (now the Ministry of

Agriculture and Rural Development) is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this scheme (under the Prime Minister's Decision No. 97/2007/QĐ-TTg of June 29, 2007).

e/ A scheme on biotechnology development and application in the healthcare sector up to 2020: The Ministry of Health is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this scheme.

f/ A scheme on biotechnology development and application in environmental protection up to 2020: The Ministry of Natural Resources and Environment is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this scheme.

g/ A planning on training human resources for biotechnology and bio-industry development up to 2020: The Ministry of Education and Training is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this planning.

h/ A planning on the network, and improving material and technical foundations, of biotechnological institutes, research centers and laboratories up to 2020: The Ministry of Science and Technology is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this planning.

i/ A master plan on bio-industry development in Vietnam up to 2020: The Ministry of Industry and Trade is responsible for formulating and submitting to the Prime Minister for approval, and organizing the implementation of this master plan.

j/ A draft Law on Biodiversity, including a chapter on biosafety management of genetically modified organisms, and decrees detailing and guiding the implementation of this chapter: The Ministry of Natural Resources and Environment

is responsible for drafting and submitting to the Government for comment for further submission to the National Assembly for passage, and organizing the implementation of this law.

IV. MAJOR SOLUTIONS

1. To increase regular leadership and direction by Party committees and administrations at all levels of biotechnology development and application to production and life. To form a unified system for directing biotechnology development and application from the central to local level. To step up, and diversify forms of, public information and dissemination of knowledge on biotechnology development and application; to continue widely disseminating the Directive of the Secretariat of the Party Central Committee, the Government's program of action and this master plan to all levels, branches, localities and communities for compliance.

2. To rapidly complete a legal framework, mechanisms and policies to create favorable, smooth and incentive conditions for biotechnology development and application and, at the same time, raise the capacity of state management of research and development, application and use of biotechnological products in Vietnam.

3. To step up human resource training, increase material and technical foundations, machinery and equipment for biotechnology. To make concentrated, targeted and systematic investment in priority and key localities under national and local plannings to ensure the efficient use of invested machinery, equipment and laboratories.

4. To increase and diversify investment resources for biotechnology development and application. To select for priority and concentrated investment in, efficiently implement and closely manage biotechnology development and

application programs, schemes and projects. To attach importance to raising investment capital from enterprises and producers for national biotechnology development.

The State shall prioritize the allocation of funds for biotechnology research and development in total annual state budget funds for science and technology. The allocation of funds for key programs, plannings, schemes and projects under this master plan complies with the State Budget Law.

5. To restore and develop indigenous experience and, at the same time, rapidly apply advanced technologies in order to step up biotechnology development and application in restoring and developing traditional trades and forming new ones for developing a strong bio-industry.

6. To enhance international cooperation in order to rapidly receive, decode and master important aspects of modern biotechnology. To procure foreign technologies and hire foreign experts in necessary biotechnology research and development cases.

V. ORGANIZATION OF IMPLEMENTATION

1. The Ministry of Science and Technology shall assume the prime responsibility for, and coordinate with concerned ministries, branches, localities and agencies in, organizing the effective and on-schedule implementation of the contents of this master plan, and annually report implementation results to the Prime Minister.

2. The Ministries of Science and Technology; Agriculture and Rural Development; Health; Industry and Trade; Education and Training; and Natural Resources and Environment shall, according to their assigned tasks under the master plan, expeditiously formulate, evaluate and approve

according to their competence or submit to competent authorities for approval, and organize the effective and on-schedule implementation of key programs, plannings, schemes and projects already assigned to them.

3. Provincial/municipal People's Committees shall, based on this master plan, formulate biotechnology development programs and plans up to 2020 as a priority part of their local five-year and annual socio-economic development plans.

4. The Ministry of Planning and Investment, the Ministry of Finance and the Ministry of Science and Technology shall apportion, allocate, and guide the use of capital for the effective and on-schedule implementation of approved contents, tasks, programs, plannings, schemes and projects under this master plan.

5. Organizations and individuals that wish to participate in implementing the contents, tasks, programs, plannings, schemes or projects under this master plan shall register with the aforesaid responsible ministries for consideration and settlement

Article 2.- This Decision takes effect 15 days after its publication in "CONG BAO."

The Minister of Science and Technology, ministers, heads of ministerial-level agencies, heads of government-attached agencies, presidents of provincial/municipal People's Committees, and concerned organizations and individuals shall implement this Decision.

For the Prime Minister
Deputy Prime Minister
NGUYEN THIEN NHAN