THE PRIME MINISTER DECISION No 137/2006/QD-TTg OF JUNE 14, 2006

APPROVING

THE "STRATEGY ON RESEARCH AND APPLICATIONS OF SPACE TECHNOLOGY OF VIETNAM UP TO 2020"

THE PRIME MINISTER

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

Pursuant to the June 22, 2010 Law on Science and Technology;

Pursuant to the strategy on Vietnam's scientific and technological development till 2010;

At the proposal of the President of the Vietnam Academy of Science and Technology;

DECIDES:

Article 1. – To approve the strategy on research into, and application of, space technology in Vietnam up to 2020, which is enclosed with this Decision.

Article 2. – Organization of implementation of the strategy:

Ministries, Ministerial–level Agencies, Government- attached Agencies and People's Committees of the provinces and centrally-run cities shall have to assume the prime responsibility for and coordinate with concerned ministries, branches and localities in, performing specific tasks assigned to them in this strategy, and annually report to the Prime Minister thereon.

Article 3. – This Decision takes effect 15 days after its publication in "CONG BAO".

Article 4.- Ministers, heads of ministerial-level agencies, heads of Government – attached agencies and presidents of provincial/municipal People's Committees shall have to implement this Decision.

For the Prime Minister
Deputy Prime Minister
PHAM GIA KHIEM

STRATEGY OF VIETNAM ON RESEARCH AND APPLICATIONS OF SPACE TECHNOLOGY UP TO 2020.

(Promulgated together with the Prime Minister Decision
No 137/2006/QD-TTg of June 14, 2006)

FOREWORD

Space technology is a hi-tech domain shaped through the integration of different technologies in order to create such facilities as satellites, spacecrafts, launchers, ground stations etc., for the exploration, conquest and use of the outer space for humankind's benefits.

In October 1957, the Soviet Union successfully launched the first man-made satellite of the world into the space. Fours years later, in April 1961, the first spacecraft orbited Russian astronaut Y.Gagarin around the earth. In July 1969, American astronaut Neil Armstrong became the first man to walk on the Moon. These historical events have ushered in a new area in the humankind's conquest of the space.

Over almost 50 years of development, space science and space technology have been widely applied and brought about practical efficiency in the development of economy, culture, education and healthcare as well as the maintenance of security and defense of almost all developed, and even developing countries. In this 21st century, some countries have set higher objectives, i.e., building bases on the Moon for exploitation and transit of humans to the Mars.

The State of Vietnam has early been aware of the importance of space science and space technology. On December 27, 1979, the Prime Minister issued Decision No 454/CP, setting up Vietnam Space Research Committee and assigned the Committee the task of preparing scientific contents for the Soviet Union - Vietnam joint space flight. The flight took place successfully from July 23 to 31, 1980, orbiting Vietnam's first astronaut Pham Tuan and Russian astronaut B.V. Gorbatko to conduct some scientific tests in the space.

Over the past years, some achievements of space science and space technology have been applied in Vietnam especially in the domains of communications, hydro-meteorology, remote sensing and satellite positioning, etc. However, due to various subjective and objective reasons, the scope and efficiency of space research and

application in Vietnam remain limited, failing to meet the current and future requirements of socio-economic development of the country.

With the view to boosting space technology research and application to practically and efficiently serve the national industrialization and modernization as well as sustainable socio-economic development, in mid-2002, the Prime Minister assigned the Vietnam Academy of Science and Technology to assume the prime responsibility for, and coordinated with the Ministry of Science and Technology and the concerned ministries and agencies in elaborating a scheme titled the "Strategy on Research and Application of Space Technology up to 2020". On December 31, 2003, with his Decision No 272/2003/QD-TTg, the Prime Minister approved the strategy on Vietnam's scientific and technological development till 2010, which affirms that space technology is a key technology.

The strategy on research and application of space technology up to 2020 aims to identify objectives and contents of, as well as solutions to, space technology research and application up to 2020 in service of the country's socio-economic development, and to assign tasks of implementing the strategy to ministries , branches and localities.

The strategy is composed of 6 parts:

I. The world's situation of space technology development and application.

II. Vietnam's situation and demand of research into, and application of, space technology.

III. Viewpoints and objectives of the strategy.

IV. Tasks.

V. Solutions

VI. Organization of implementation

I. THE WORLD'S SITUATION OF SPACE TECHNOLOGY DEVELOPMENT AND APPLICATION.

1. Major R&D trends of space technology.

a/ Satellite technology has more and more strongly developed and applied widely and efficiently. Thanks to satellites, billions of people from different continents can now communicate with each other or simultaneously and immediately follow up the world's ongoing important events on TV or radio, etc. Satellites also give people in deep-lying and remote areas opportunities to study, get medical treatment and communicate with one another conveniently.

In telecommunications, there will emerge high performance communication satellites with many new services, especially in relation to communication between objects flying in the outer space.

Images provided by remote sensing satellites are getting perfect with higher spatial and spectral resolution and less repetition time, High- and super high resolution (of under 1 m) satellite images, which had been earlier used for military purposes, have now been commercialized and used widely for different purposes.

Scientific satellites have become indispensable instruments in astrophysics, meteoric physics and geophysics. The system of satellites for observation of gravitational field of the earth and meteorological parameters have more and more developed, creating a new instrument for research of the earth science and global climate change.

Satellite positioning technology has achieved a high precision with compact equipment and been applied in different domains such as building of the grid board on the ground, maritime navigation, aviation, land transport, guided weapons and observation of changes in the earth's crust, etc. In some developed countries, satellite-positioning equipment has been widely applied to personal means of transport.

Particularly, many countries are now interested in small satellites because of their low costs and ability between to ensure necessary utilities. The trend of cooperation between countries in sharing information for exploitation of small satellite constellation has become increasing common. To master small technology, which is feasible and suitable to developing countries. In recent years, many developing countries have selected to

approach this technology, including Republic of Korea, Malaysia, Thailand, Indonesia, Algeria, Turkey, Nigeria, etc.

b/ The integration of remote sensing technology, geological information technology and satellite positioning technology has enabled the digitalization of topographical measurement for the building of environmental observation systems, early warning of natural disasters and effective management of natural resources.

c/ The exploration of planets in the solar system has achieved numerous important achievements thanks to the rovers which have landed and operated for months on the Mars to take photos and samples of soil and rocks, as well as the exploration flights to the Saturn and the Mercury. Some countries are implementing plans on the moon exploration and taking people to the Mars.

d/ Space technology for military purpose with different kind of satellites such as meteorological satellites, image reconnaissance satellites, signal reconnaissance satellites, navigation positioning satellites and defense-aid satellites etc., has become an indispensable important element to win contemporary wars.

2. Lessons learned about space technology development of some countries

Following Russia and the US, other countries like China, the UK, France, Canada, Japan and India have early developed space technology and made remarkable achievements. Today, many developing countries have also succeeded in approaching, mastering and efficiently applying advances of space technology to meet the requirements of economic and cultural development as well as maintenance of national defense and security. The following useful lessons for Vietnam may be drawn from experiences of other countries:

a/ First, the key to success in space technology research and application is the high determination of the country's leaders to promote internal strengths, combining with experiences learnt from other countries for space technology research and development (R& D).

b/ Second, to promote international cooperation for acquiring experiences and technologies for efficient, fast and sustainable development. International cooperation in the space technology may be organized in different forms: bilateral, multilateral,

regional and international. Member countries of the European Space Agency (ESA) are jointly executing the Galileo GNSS cooperation project which will provide services of global positioning and navigation – a strong competitor of the existing GPS of US. The project on cooperation in the construction and exploitation of the international space station (ISS) which has been so far considered the most complex and ever biggest project in the history of space technology development, is being underway.

c/ Third, the succeeding and developing countries must select proper directions and appropriate steps in space technology research and application. Not every country has enough conditions to get immediately into such complicated and costly aspects of space technology as launchers, manned spacecrafts or space stations, etc.

The steps of space technology development in the Republic of Korea, Malaysia, Thailand, Indonesia, etc., constitute valuable experience for development and application of space technology in Vietnam. The key here is to make investment in infrastructure of space technology and appropriate investment in research and international cooperation so as to receive advanced technologies and to concentrate on the construction of strong space technology centers, including research institutes and universities.

II. VIETNAM'S SITUATION OF SPACE TECHNOLOGY RESEARCH AND APPLICATION

1. Situation of research in space science and space technology

Over the past 30 years, Vietnam has conducted initial research activities in a number of aspects of the space science and space technology. These include some research projects on space physics and space technology under the scientific program of the Soviet-Vietnam joint space flight, implemented in 1981 and 1982, and the state –level research program 48.07 entitled "Application of research achievements and use of the outer space" implemented in the 1981-1985 period. In addition to experimental results, some scientific research works have been published in domestic and foreign scientific and technical journals or reported at international scientific symposiums.

In recent years, the State has invested in many laboratories of Vietnam Academy of Science and Technology, Military Scientific, Technical and Technological Center; Hanoi University of Technology and Hanoi National University. etc., for scientific and technological experiments in such domains related to space technology as electronics-

telecommunications, information technology, automation, materials technology and solar energy. These laboratories will serve as subsequent premises for building laboratories of space technology research and application in the coming period.

2. Situation of application of space technology in Vietnam

Vietnam has applied since long time achievements of space technology in such domains like hydrometeorology, communications, remote sensing and satellite positioning.

a/ Hydrometeorology

Meteorology is the first branch that has approached space technology and applied its achievements in practice. During the seventieth of the twentieth century, the General Department of Hydrometeorology installed APT Station of Ural label, produced by the Soviet Union, in order to receive cloud images from the satellites of polar orbits as METEOR, TIROS, NOAA…. Every day, this station provided black and white photos to serve the monitoring of clouds fields and movements of hurricane eyes. In the 1986-1988 period, thanks to the UN-funded project VIE 80/051, the General Department of Hydrometeorology was equipped with 3 geostationary meteorological satellite (GMS) stations to receive cloud images, which were based in Hanoi, Da Nang and Ho Chi Minh City. However, by that time the analysis of satellite images was conducted mainly through eyes. In 1997, the General Department of Hydrometeorology was equipped with a high-definition image-receiving station, which was capable of receiving multi–spectrographic images from GMS and NOAA satellites. These images, which had much higher precision compared to the old ones, had contributed to raising the quality of detection, monitoring and forecast of hurricanes and dangerous climatic phenomena. Today, satellite information is being as indispensable materials in daily hydro-meteorological forecast and is particularly important in case of bad or dangerous weather circumstances when conventional information and communication systems are often interrupted and observatory data given by normal methods can not be promptly transmitted to forecasting centers. Recently, numerical value- forecasting methods based on satellite information as well as parallel processing and calculation models have been applied, contributing to shortening the forecasting time and increasing the precision of forecasts.. The Vietnam Academy of Science and Technology has also manufactured and

supplied meteorological satellite image-receiving stations, which are cheaper than the imported ones.

Though being promoted with the initial results, the application of space technology in hydrometeorology in Vietnam have created good premises for the use of the performance of tasks of the domestic hydro meteorological branch, and created conditions for Vietnam to join international efforts in solving the problems of global meteorology of the world's particular concern such as the depletion of ozone layer and the building of a system for early warning of such natural disaster as earthquakes, tsunami, floods, storms, etc.

b/ Communications

Since 1980, the post and telecommunications radio and television broadcasting and maritime sectors have installed and put into operation many ground stations such as Hoe Seen station (via Intersputnik system), VISTA station (via Intelsat system) VSAT station network, station for transmission of digitalized programs via satellites and TVRO network, and coastal Inmarsat station.

In 1996, the Government assigned the General Department of Post ad Telematics to make a pre-feasibility study report for VINASAT project- a project on hiring the manufacture and orbiting Vietnam's own telecommunications satellite. In 1998, this report was approved. The General Department of Post and Telematics filled in the procedures of registration with ITU and started negotiations on the position of the orbit. The Corporation of Post and Telecommunications completed the pre-feasibility study report, which has been approved by the Government and is being implemented to enable Vietnam to orbit its satellite by 2008. Besides the VINASAT project , over the past years, the post and telecommunication industry has also organized training in various forms so that the contingent of technicians will be capable of undertaking professional jobs, which, in many developing countries, must generally be undertaken by foreign consultants.

c/Remote sensing

Observation of the earth from the space (called remote sensing for short) is a specialized application branch of space technology, based mainly on the reception, processing and

use of images of the earth taken from satellites. Remote sensing was introduced in Vietnam in the seventies of the last century, with the use of satellite images of different parts of the Vietnamese territory, first in forestry and geology, then in other branches as agriculture, monitoring of the environment and natural calamities, territorial planning, scientific research, etc., The application of remote sensing has been extended with higher quality through the 1981-1985 state-level research program on "Application of achievements of research into, and application outer space" coded 48-07.

To date, remote sensing- specialized agencies at ministries, branches, localities, research institutes and universities have numbered several dozens with hundreds of cadres who have gone through full-time training at home and abroad. Remote sensing has become an instrument used rather commonly in Vietnam in scientific research and a number of management and production domains of such as topography, agriculture, fisheries, natural resources and environment...Funded by the State, many units of the Ministry of Natural Resources and Environment such as the Remote Sensing Center, the Cadastral Research Institute, the Geological and Mineral Research Institute have conducted many subjects on remote sensing, aimed at raising the quality and efficiency of basic surveys. Many scientific research works on remote sensing application have been conducted at the Vietnam Academy of Science and Technology and some universities in such domain as oceanography, ecology, earth science, research into natural resources and development planning, etc.

For many years, Vietnam has collected many remote-sensing satellite images from different sources at different time points. However, so far we have only two sets of images covering the whole Vietnamese territory (mainly the continent part) collected at different time points over a long period. Concretely: Project VIE 78/011(1978-1982) and project VIE 83/004 (1984-1986) collected a set of LANDSAT images covering the whole Vietnamese territory in the seventies of the last century. In the years 1995, 1997, and 2000, the topographical remote -sensing project of the General Land Administration has also collected a set of SPOT images on the whole Vietnamese territory. The lack of remote sensing materials and the incompleteness of materials of different times have much restricted the effect of application of remote sensing in reality.

To put an end to this situation and promote the application of remote sensing in the management of natural resources and environment, in 2004, the Prime Minister

permitted the Ministry of Natural Resources and Environment to build a satellite images receiving station and a center for satellite images processing with a total ODA loan fund of around 20 million euros. When completed, the project will provide a source of remote sensing material images, in a more active manner.

d/ Satellite positioning

Satellite positioning is an important domain of application of space technology and will strongly develop, possibly be applied more and more widely, especially in the domains of geodetics, determination of coordinates, traffic control and management.... In Vietnam, land administration bodies have applied satellite-positioning technology to set up the national grid board since the nineties of the twentieth century. The technology has actually been accepted in the production practice. The national grid boards have been built in the most difficulty-hit regions of the Central Highlands, Song Be and Minh Hai as well as for Laos. From 1995 to 2000, the General Land Administration built a GPS grid board of level "0", the VN-2000 national reference frame and coordinate system. Since 2000, the system of 6 fixed positioning stations has been built in Hai Phong, Vung Tau, Dien Bien, Ha Giang, Cao Bang and Da Nang to ensure high precision of positioning and navigation throughout the Vietnam territory and the country's sea areas. To date, 5 stations have been put into operation in service of marine and topographical measurement, demarcation and plantation of Vietnam-China and Vietnam-Laos border marker-posts. Satellite positioning technology has also been applied to observation of changes in the earth's crust and management of offshore fishing, etc.

3. Necessity and urgency of acceleration of space technology research and application

Over the past 30 years, the space technology research and application have practically contributed to the cause of socio -economic development towards modernization and maintenance of defense and security.

Today, the trend of globalization and strong integration of such relevant scientific and technological domains as information technology, mechanical engineering electronics, material technology.... have been creating very favorable conditions for acceleration of space technology research and application in our country.

However, because of the low level of the country's socio-economic development and inadequate awareness of authorities and branches about the role of space technology, the research ~~into,~~ and application of space technology remain scattered, lacking orientations and inter-branch coordination. At the moment, Vietnam has no national policy on space technology research and application. The state investment in this domain remains modest, lacks concentration and thereby yield little results. At present, the infrastructure of space technology is almost none, with a very small and scattered contingent of personnel. Organizationally, Vietnam has no national agency officially tasked to coordinate space technology application and R&D, thus failing to meet the practical demand. The said situation, if not soon redressed, will lead to the danger that Vietnam will lag far behind even the regional countries, will not be able to take advantages of development potentials and opportunities as well as tremendous achievements which may be brought about by space technology, thereby contributing to acceleration of industrialization and modernization, strengthening national defense and boosting international integration.

To enable space technology to contribute most effectively to the cause of development and protection of the country, especially in the current domestic and world situation, thus attaining the objective of turning our country into an industrialized one by 2020, the elaboration and efficient implementation of the strategy on research ~~into,~~ and application of space technology up to 2020 is really necessary and urgent.

III. VIEWPOINTS AND OBJECTIVES OF THE STRATEGY

1.Viewpoints

The space technology research and application in Vietnam should be developed in line with the following viewpoints:

a/ To practically and effectively serve the performance of the tasks of socio-economic development, management of natural resources, monitoring of the environment and natural calamities as well as protection of the Fatherland by combining socio-economic development with security and defense tasks, contributing to raising the country's international position, scientific and technological potentials and strengths.

b/ To directly approach modern technologies, based on the practical demand and suitable to the country's socio-economic conditions, making full use of the Vietnamese people's intellectual potentials; to start with the reception of transferred technologies, proceed to modify and master technologies.

c/ To expand, diversify and selectively multilateralize international relations so as to attract investment, build the contingent of personnel and receive modern technologies, thereby speeding up the application and development of space technology in Vietnam.

d/ The Government shall manage, control and further coordinate branches and mobilize social resources of the application of space technology, striving to accomplish the plan on schedule, ensuring the quality of each specific task as well as the whole strategy.

2.Objectives

By 2010:

a/ To formulate a national policy and legal framework for research, application and international cooperation in the domain of space technology, policies to ensure human resources and investment capital for space technology research and investment capital for space technology research and application; step to step consolidate the organization, material foundations and improve professional capabilities of the system of space technology research, training and application units in our country, building a new research institute specialized in space technology.

b/To build the initial infrastructure of space technology, including the satellite images receiving station, and processing center, the system of satellite positioning stations; to orbit and put into operation and exploitation the VINASAT geostationary telecommunication satellite; to receive the small satellite technology by technology transfer; to complete the designing and manufacture of a small satellite of earth and orbit it; to complete the building and put into operation corresponding ground control stations.

c/ To elaborate and organize the implementation of a national research program on space science and technology. To organize domestic training of space technology engineers; cooperate in research and training with countries which have developed industries of space technology in order to train high -skilled experts, manufacture some hardware products (equipment of reception stations) and software products (image processing

software, software for information encryption and confidentiality, satellite computer-aided design softwares, etc.).

d/To attain the region's average level in terms of space technology infrastructure, research and application.

By 2020:

a/ To master the technologies of manufacturing ground stations, to manufacture ground stations at competitive prices; to master small satellite technology, design and manufacture small satellites for observation of the earth; to master launcher technologies and techniques; to train a contingent of high -qualified personnel, meeting the demand for application and development of space technology in Vietnam; to upgrade and efficiently use material foundations which were invested in the preceding periods.

b/ To upgrade the initial infrastructures by preparing a scheme and plan to orbit the second communications satellite, thus meeting all requirements of exploitation of domestic telecommunications, radio and television broadcasting services. To manufacture and orbit some small satellites of earth observation, partly satisfy the demand to purchase satellite images from foreign countries; to complete the system of satellite positioning stations.

c/ To put space technology applications in wide-ranging and regular use to meet the production, service, education and healthcare demands. To diversify and commercialize space technology products.

d/To achieve the region's relatively advanced average level of space technology research and application.

IV. TASKS

1. To formulate and perfect a legal framework for space technology research and application.

This task must be basically accomplished in the 2006-2010 period with following contents:

a/ To study international laws and regulations on the use of the outer space to protect national sovereignty.

b/ To elaborate and improve the State's and branches' legal and normative documents related to space technology research and application.

c/ To elaborate and improve legal and normative documents on archive, management, exploitation and use of satellite images as well as conductive information such as maps and databases.

d/ To elaborate and promulgate regulations on confidentiality related to Vietnam's program on space technology research and application.

e/ To set and promulgate domestic criteria on formation and standardization in the application and development of space technology, ensuring their compatibility with international ones.

2.To build space technology infrastructures

In the 2006-2010 period, to perform the following tasks:

a/ To build a satellite images receiving station and processing center and put them in common service to national economic branches and scientific research; specific-use receiving stations; to receive transferred technologies for designing and manufacturing small satellites of earth observation; to orbit one satellite of earth observation;.

b/ To execute the VINASAT project.

c/ To build a national key laboratory on space technology.

In the 2011-2020 period: to perform the following tasks:

a/ To build some more laboratories at universities. The list of these laboratories shall be added on the basis of activities results of the 2006-2010 period.

b/ To manufacture and hire the orbiting of two small satellites for observation of the earth.

3. Research in space science and space technology

In the 2006-2010 period: To elaborate and implement an independent scientific and technological national program on space technology in 2006-2010 period for which the Vietnam Academy of Science and Technology will assume the prime responsibility, aiming at mobilizing and coordinating the contingent of Vietnamese scientists, in home country and abroad as well, to perform major tasks of the strategy, including:

a/ Research and manufacture of ground stations.

b/ Research and reception of small satellite technology.

c/ Research to approach such high technologies as the technology for high –definition optical observation, radar satellite technology and hi-speed communications satellite technology.

d/ Selective basic research related to development of space technology.

e/ Research on the use of air balloons in the stratosphere in service of communications and television broadcasting.

f/ Research into the manufacture of a number of ground equipment and software.

In the 2006-2010 period, the independent scientific and technological program on space technology will focus on the following issues:

a/ Modification and proceeding to mastery of the manufacture of ground stations at competitive prices.

b/ Modification and proceeding to mastery of small satellite technology.

c/ Selection of technologies for manufacture of facilities to launch small satellites into low orbits.

d/ Manufacture of a number of space equipment.

4.Application of space technology

To widely apply space technology so that it may bring about practical results, concerned ministries and branches shall, based on their demands and conditions and the following

major orientations, formulate and concretize their respective tasks of application of space technology.

In the 2006-2010 period, the application of space technology in Vietnam should be accelerated both intensively and extensively in four major domain, namely communications, hydro - meteorology, remote sensing and satellite positioning. By 2010, the application of space technology must become a high - performance professional process of every branch. Specifically:

- Post and telecommunications, radio and television broadcasting: to strongly develop services so as to fully tap VINASAT satellites, develop distance learning and medical examination, distance conference and DTH television.

- Hydro-meteorology. Natural resources and environment: To raise the quality of early forecasts of rains, floods, flash floods, landslides and other natural calamities. To assess impacts of global climate change on Vietnam. To periodically assess changes in the use of land, establish digitalized topical topographical database for common use by central and local agencies.

- Agriculture, fisheries, survey of natural resources: To expand the application of remote sensing in formulation of a rice output - forecasting process in the key rice-growing regions, as well as in the forecast of floods, droughts and forest fires; in aquaculture planning and offshore fishing ; in research into, and detection of, oil and gas resources and underground water, etc.

- Transport, defense and security: Apart from the exploitation of VINASAT satellites, to speed up the application of satellite positioning technology in service of navigation in land transport, aviation and maritime. To encourage economic organizations to invest in the provision of services and application of positioning and navigation technologies.

In the 2011-2020 period: To apply in new properties of the second-generation Internet satellites, super high-definition satellites for observation of the earth, positioning satellites of high precision, and multi –functional compact ground equipment.

V.SOLUTIONS

1. Raising public awareness and developing human resources

To widely popularize knowledge about space technology on the mass media, especially among pupils and students. To organize the compilation of programs and textbooks for graduate and post graduate subjects on space technology. To formulate and apply on a trial basis a mechanism for recruitment, training and use of talents at home and abroad in association with research and market ; to early send the talented people to developed countries for training in space technology with the state budget fund so as to meet the immediate urgent demands and achieve the strategy's objectives; to adopt a plan for updating achievements and retraining, nomination of Vietnamese specialists to participate in programs on cooperation with foreign countries in the domain of space technology.

2.International cooperation

To continue participating in space technology activities organized by the United Nations (UN) agencies such as OOSA (Office for Outer Space Affairs), UN-ESCAP, UNESCO, etc., or by the ASEAN; to consider and conclude projects on space technology R&D with some countries which have favorable conditions.

To build partnership relations with countries which have common demands and benefits, especially those in Southeast Asia and the Asia-Pacific. To research into the formulation of the forms of bilateral and multilateral cooperation in the building and exploitation of infrastructures (such as ground stations, communications and remote sensing satellites) and share remote sensing databases, especially in the warning of calamities and management of the environment.

To create conditions for overseas Vietnamese involved in space technology to participate in research work and training of domestic professional personnel.

3. Mechanism for mobilization and use of capital

It is necessary to mobilize all economic sectors to invest in the implementation of the strategy on space technology research and application. Budget and ODA loan capital shall be invested in the performance of the tasks of research and testing, construction of key laboratories, overseas personnel training and other necessary tasks. The State shall

create favorable conditions to promote investment, turn the results of space technology research and application into commodities and introduce them on market.

VI. ORGANIZATION OF IMPLEMENTATION

1. To set up the VietNam Committee for Space technology research and application, called the Vietnam space Committee for short, which shall assist the Prime Minister in organizing and directing the implementation of the strategy on research into, and application of, space technology up to 2020.

2. Assignment of implementation responsibilities

a/ The Ministry of Science and Technology, which is the agency in charge of state management of space technology research and application, shall assume the prime responsible for implementation of the strategy on research into, and application of, space technology up to 2020, having the following tasks:

- To assume the prime responsibility for elaboration and direct the implementation of legal documents on space technology research and application, of the regulation on coordination in exploitation of space technology foundations shared between ministries and branches.

- To direct the elaboration of, and approve, the independent scientific and technological program on space technology and the project on key space technology laboratories.

-To direct the formulation of, and approved, projects on application technology in socio-economic development.

- To coordinate with the Ministry of Planning and Investment in technologically appraising investment projects in the domain of space technology.

-To submit the Prime Minister changes in the sponsoring agencies in case of failure to achieve the set objectives and task-performance schedule.

- To submit to the prime Minister issues related to space science and space technology.

b/ The Vietnam Academy of Science and Technology :

- To selectively research into basic issues related to space science and space technology.

-To assume the prime responsibility for elaborating, submitting for approval and organizing the implementation of the independent scientific and technological program on space technology, and that of the project on key space technology laboratories.

- To build an space technology institute under the Vietnam Academy of Science and Technology.

-To act as the standing office of the Vietnam Space Committee.

c/ The Ministry of Culture and Information

To assume the prime responsibility for information and propaganda work, including foreign -service information work to propagate the strategy on research into, and application of, space technology.

d/ The Ministry of Education and Training

- To assume the prime responsibility for, and coordinate with the ministries and branches in, elaborating a framework program, compiling textbooks and defining discipline codes for space technology training; elaborating and implementing a plan on training of human resources in space science and space technology suitable to the requirements of implementation of the strategy.

-To formulate and organize the implementation of a mechanism on combination of education and training with research and application and a mechanism on coordination between universities and research institutes for implementation of the strategy.

e/ The Ministry and Planning and Investment:

- To assume the prime responsibility for, and coordinate with concerned agencies in balancing capital and include into the state plan the five-year and annual plans for implementation of the strategy on research into, and application of, space technology.

- To mobilize ODA capital from donor countries for projects on space technology research and application.

f/ The Ministry of Finance

To assume the prime responsibility for, and coordinate with concerned agencies in, formulating a state credit support mechanism and a mechanism for management of capital of projects on implementation of the strategy in accordance with the State Budget Law.

g/ The Ministry of Post and Telematics

- To perform the state management of telecommunications satellite projects, first of all the VINASAT project.

- To take responsibility for registering the positions of orbits and frequencies to meet the requirements of development of telecommunications satellites and observation satellites, and to act as the major agency in international cooperation on positions of satellite orbits and coordination of international frequencies.

- To take part in research into, and manufacture of, telecommunication, electronic and informatics equipment used for space technology.

h/ The Ministry of Natural Resources and Environment

-To assume the prime responsibility for efficient exploitation of information collected from meteorological satellites in service of hydro- meteorological fore casts.

- To assume the prime responsibility for building and exploiting satellite image-receiving stations and -processing centers in service of branches in the civil sector under the regulation on coordination in exploitation of space technology foundations shared between ministries and branches, which have been approved by competent authorities.

-To assume the prime responsibility for application of remote sensing technology in the monitoring of changes in land, water and mineral resources.

- To coordinate with other units, apply remote sensing technology in the monitoring and management of natural resources and environment in Vietnam..

i/ The Ministry of Defense and Ministry of Public Security

To assume the prime responsibility for elaborating, submitting for approval and organizing the implementation of the tasks of space technology research and application in defense and security domains.

j/ The Ministry of Industry

To research into and apply space technology in Vietnam's industry.

k/ The Ministry of Agriculture and Rural Development

- To apply remote sensing to the monitoring of floods and droughts.

- To assume the prime responsibility for application of remote sensing to the monitoring of changes in crops.

- To assume the prime responsibility for application of remote sensing to the monitoring of changes in forest resources and forest fires.

l/ The Ministry of Fisheries

To research into and apply remote sensing in service of aquaculture planning and fishing.

m/ The Ministry of Transport

- To assume the prime responsibility for the use of satellite information to navigate ships in and out of ports.

-To assume the prime responsibility for application of space technology in civil aviation.

- To use remote sensing, satellite positioning technology and GIS in the planning of traffic network.

n/ the Ministry of Foreign Affairs

- To coordinate with concerned ministries and branches in developing international cooperation on space technology, including accession to, and implementation of, treaties on space technology.

- To encourage overseas Vietnamese intellects to take part in activities related to space science and space technology in Vietnam

Ministries, Ministerial-level Agencies, Government-attached Agencies and provincial/ municipal People's Committees shall, according to their functions and tasks assigned by the Prime Minister, coordinate with the Vietnam Committee of Space Technology Research and Application and concerned ministries and agencies in organizing and directing the implementation of the Strategy on research and application of space technology up to 2020.

For the Prime Minister

Deputy Prime Minister

PHAM GIA KHIEM