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Committee on the Peaceful Uses of Outer Space

International cooperation in the peaceful uses of outer space: activities of Member States

Note by the Secretariat

Contents

	<i>Page</i>
I. Introduction	2
II. Replies received from Member States	2
Czech Republic	2
Germany	5
Japan	5
Latvia	6
Thailand	8
Turkey	8
Viet Nam	9



I. Introduction

1. In the report on its forty-fifth session, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space recommended that the Secretariat continue to invite Member States to submit annual reports on their space activities (A/AC.105/911, para. 17).
2. In a note verbale dated 5 August 2008, the Secretary-General invited Governments to submit their reports by 31 October 2008. The present note was prepared on the basis of reports received from Member States in response to that invitation.

II. Replies received from Member States

Czech Republic

[Original: English]

1. On 8 July 2008, the Prime Minister of the Czech Republic and the Director General of the European Space Agency (ESA) signed the agreement on the Czech Republic's accession to the Convention for the establishment of a European Space Agency.¹ Subsequently, the accession agreement was ratified in both chambers of the Czech Parliament, on 18 and 25 September 2008. According to the Constitution of the Czech Republic, the agreement had to be approved by at least three fifths of all members of the Chamber of Deputies and by at least three fifths of members present in the Senate.
2. Once the agreement has been approved and signed by the President of the Czech Republic, the ratification process will continue with the deposit of the signed accession agreement and accompanying ratification documents with the Ministry of Foreign Affairs of France, in Paris (with a copy forwarded to ESA). At that point, the accession agreement will enter into force and, not later than 1 January 2009, the Czech Republic will become the eighteenth member State of ESA.
3. Full membership in ESA is expected to bring the Czech Republic significant economic benefits and expertise through the exploitation of space applications in the spheres of services and education. The Czech Republic will also have the right to participate directly in the preparation and planning of new European space missions and in the strategic orientation of Europe in outer space affairs.
4. With the signature of the accession agreement, Czech cooperation with ESA reached the highest level possible. That cooperation dates back to 1996, when the Czech Republic signed a formal framework cooperation agreement with ESA. In 2000, cooperation was extended when the Czech Republic joined the Scientific Experiment Development Programme (PRODEX) of ESA, under which cooperation took on a more concrete shape and the first Czech scientific projects were started. In November 2003, the Czech Republic acquired the status of ESA European Cooperating State upon signing the Plan for European Cooperating States (PECS) Agreement, which consequently superseded its membership in PRODEX.

¹ United Nations, *Treaty Series*, vol. 1297, No. 21524.

5. At the end of 2008, the Czech Republic will have completed its fourth year of membership in the PECS programme. The programme purpose of preparing all the national capacities needed for successful and fruitful ESA membership has been fulfilled. The programme involved 29 projects and total spending of about 12 million euros; 54 per cent of the budget was allocated to industrial contracts. The project areas were space science (50 per cent), space technology (25 per cent), Earth observation (22 per cent) and navigation (3 per cent). With the accession of the Czech Republic to full membership in ESA, current projects involving the country will be finished, but further activities will be fully integrated into obligatory and voluntary ESA projects.
6. The results achieved by Czech industry and research, as well as existing administrative and coordination infrastructure, were positively evaluated during the ESA industrial audit conducted in October 2007. The audit findings are the key indicator of the capacity of a particular country to cope with the high demand for the advanced technologies and high-quality products and services required for space applications and for the use of space applications in the national economy.
7. The audit was organized by the Ministry of Education, Youth and Sports with substantial support from the Czech Space Office (CSO). The audit was performed by a five-member ESA task force team.
8. The audit process consisted of presentations on and visits to industrial companies and research institutes selected from the internal CSO database and organizations proposed by relevant ministerial and scientific bodies. Pursuant to the selection process, 26 companies (19 industrial companies and 7 service providers) and 3 research institutes were presented to the ESA task force team over a three-day period. The second day was devoted to site visits of four major industrial companies specializing in aerospace technology. The positive findings of the industrial audit undoubtedly played an important role in the unanimous vote of the ESA Council in June 2008 to accept the Czech Republic as a new ESA member.
9. The Czech Republic, as a member State of the European Union, participates in space-related activities of the European Commission. The most important of the joint initiatives undertaken by the European Commission and ESA is the Galileo satellite navigation system. Recently, the Government of the Czech Republic formally offered to host the proposed European Galileo Supervisory Authority in Prague. The practical application of space navigation and positioning technology is the responsibility of the Ministry of Transportation.
10. Since May 2006, the Czech Republic has participated in the second major space-related activity of the European Commission: Global Monitoring for Environment and Security (recently renamed from GMES to Kopernikus). Two purposes are pursued. One is to raise general awareness of the many benefits of Kopernikus for institutions, academia and industry. The second is to help interested organizations to become involved in specific Kopernikus projects. In this connection, CSO cooperates closely with the Technological Centre of the Academy of Science, which is responsible at the national level for Kopernikus under the Seventh Framework Programme funding scheme of the European Commission. There is also close cooperation with relevant ministries to integrate Kopernikus fully into their standard agenda. For example, an information day to present

opportunities under the second Space Call of the Seventh Framework Programme was organized in September 2008.

11. CSO, in cooperation with the ESA Telecom Department and the Ministry of Education, Youth and Sports of the Czech Republic, organized a seminar on ESA and opportunities for Czech companies and institutions in the field of telecommunications. The seminar, which was held at the Ministry on 11 December 2007, was intended for companies and institutions interested in cooperating with ESA and whose research and development activities were similar to some of the activities in the extensive ESA Telecom programme.

12. The NavAge 2008 conference was held at the Prague Congress Centre from 26 to 28 March 2008 under the auspices of the Government of the Czech Republic, the Czech Parliament and Czech Technical University in Prague (Faculty of Transportation Sciences). The main topics of that international conference were navigation and positioning of people and the movement of vehicles and goods in States of the European Union. A session of the Tenth European Interparliamentary Space Conference dealing with the synergy between Galileo and GMES projects was held in conjunction with NavAge 2008; the Conference itself was held in Prague on 13 and 14 October 2008 at the Senate of the Czech Republic.

13. At the fifty-eighth International Astronautical Congress, held in Hyderabad, India, the proposal of the Czech Republic to hold the regular congress in Prague in 2010 was accepted. The event will be a special opportunity to bring together more than 2,000 leading experts from around the world and to present Czech scientific and industrial activities. As in the past, the programme will include exhibits by many large and small exhibitors. The preliminary agreement containing organizational details was signed on 29 September 2008 during the fifty-ninth International Astronautical Congress in Glasgow, United Kingdom of Great Britain and Northern Ireland.

14. The Ministry of Foreign Affairs of the Czech Republic is responsible for representing the country on the Committee on the Peaceful Uses of Outer Space. The Czech delegation participates actively in the deliberations of the Committee and its two subcommittees, in particular in the areas of space debris, the physical nature and technical attributes of geostationary orbits, applications of remote sensing of the Earth and other applications of space technology, as well as on many legal questions. In this connection, Professor Vladimír Kopal of the Czech Republic was elected Chairman of the Legal Subcommittee for the period 2008-2009.

15. Among the most important outcomes of the recent deliberations of the Committee were the endorsement by the General Assembly of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) workplan for 2007 and the request that the Secretary-General implement the platform activities contained in the workplan for the period 2008-2009. In support of the activities of the programme, the Czech Republic has contributed 200,000 koruny (equivalent to about 8,000 euros) and is prepared to continue making such contributions in the future.

16. As part of its public awareness activities, the Czech Republic participates in World Space Week each October. The country's long tradition of public astronomical observatories and planetariums creates extremely favourable conditions for promoting public awareness of not only astronomy but also space

science and technology applications. The first time that the Czech Republic participated in World Space Week was in 2002, organized by CSO; more than 25 entities from around the country worked to encourage broad participation, in particular by young people. More recently, the focus has been on media presentations, lectures and exhibits, as reflected in the respective reports of the Spaceweek International Association. Further details can be found on the World Space Week web page (<http://www.worldspaceweek.org/>).

17. Similarly, the Czech Republic was an active participant in the International Heliophysical Year 2007 programme. Altogether, eight scientific and educational institutions cooperated informally in the coordination and promotion of that international endeavour. Further details can be found on the web page of the International Heliophysical Year (<http://ihy2007.org/>).

Germany

[Original: English]

At the beginning of each calendar year, an annual financial and research report of the German Aerospace Centre (DLR) is published (an English version of the report is also made available). The 2008 report will be adopted by the DLR Senate in November 2008. In each of the past three years, the DLR annual report was distributed during the annual session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space. Distribution of the 2008 report is again planned to coincide with the annual session of the Subcommittee, in 2009.

Japan

[Original: English]

Participation in the International Space Station programme

1. The International Space Station (ISS) programme is the largest international cooperative science and technology programme that humankind has ever attempted in the new frontier of space. The ISS programme will contribute to the further utilization of outer space and will improve the quality of human life.

2. Japan has been active in promoting the ISS programme in cooperation with all the countries involved in the programme. Japan's contributions to the ISS programme are the development of the Japanese Experiment Module ("Kibo") and the H-II Transfer Vehicle (HTV) to support ISS operation. The first and second modules of Kibo, carried by the space shuttle, were attached to ISS in March and June 2008, and operation and utilization of the Japanese manned space system were started with international cooperation. Two Japanese astronauts worked aboard ISS to assemble those elements. The year 2009 will see the first long-duration stay of a Japanese astronaut on ISS. The first Japanese astronaut to stay for a longer period on ISS will conduct many utilization activities and the preparation and activation of the Kibo Exposed Facility that will be launched in 2009. The first HTV flight is planned for 2009, with launching from the Tanegashima Space Center in Japan.

Remote sensing

3. Japan has also been promoting international cooperation in a number of other fields. For example, in the field of Earth observation, Japan cooperates closely with space-related organizations through the Committee on Earth Observation Satellites. As a member of the Executive Committee and a co-chair of the Architecture and Data Committee of the Group on Earth Observations, Japan has been promoting the establishment of the Global Earth Observation System of Systems (GEOSS) and continues to take a lead role in the efforts towards that establishment in line with the GEOSS 10-Year Implementation Plan.

Asia-Pacific Regional Space Agency Forum

4. The Asia-Pacific Regional Space Agency Forum is a yearly meeting held under the auspices of the Government of Japan with cooperation from international partners. The fourteenth session of the Forum (APRSAF-14) was convened in Bangalore, India, from 21 to 23 November 2007 under the main theme of “Space for human empowerment” and with the aim of strengthening and enabling the countries of the Asia-Pacific region to improve the quality of life of their people through enhancement of the use of space-based systems, activities and services.

5. Jointly organized by the Indian Space Research Organisation (ISRO), the Ministry of Education, Culture, Sports, Science and Technology of Japan and the Japan Aerospace Exploration Agency (JAXA), APRSAF-14 gathered more than 130 participants from 19 countries and 5 regional and international organizations.

6. Presentations and discussions took place at the four working group sessions on Earth observations, communications satellite applications, space education and awareness and space environment utilization, and at the plenary session, including the special session on the Sentinel Asia project and the special presentation by ISRO on space for human empowerment. Participants unanimously adopted the recommendations of APRSAF-14 and agreed that the fifteenth session would be held in Viet Nam from 9 to 12 December 2008, in cooperation with the Ministry of Science and Technology of Viet Nam and the Vietnamese Academy of Science and Technology. The theme of the session would be “Space for sustainable development”.

Latvia

[Original: English]

1. Latvia is preparing a national space research programme and in 2009 will sign a cooperation agreement with ESA.

2. Three Latvian universities, the University of Latvia, Riga Technical University and Ventspils University College, carry out space research.

3. The most important areas of research at the Institute of Astronomy of the University of Latvia are global coordinated high-precision satellite laser ranging for satellite navigation services and for use at various international Earth science centres, determination of the coordinates of the minor planets and spectral

photometrical observation of late-type stars using a charge-coupled device camera and analyses of parameters of their atmospheres.

4. The Institute of Astronomy is a member of the ASTRONET and EUROLAS consortiums and of the International Laser Ranging Service (ILRS); and it is a participant in the International Earth Rotation and Reference Systems Service, the Permanent Network of the International Association of Geodesy Reference Frame Sub-commission for Europe (EUREF) and the International GNSS Service (IGS). Latvia (University of Latvia) is a national member of the International Astronomical Union (IAU), and several scientists of the Institute of Astronomy are individual members of IAU and of the European Astronomical Society.

5. The Fundamental Geodynamic Observatory of the University of Latvia is a member of two space technology networks: the global ILRS networks and the EUREF global positioning system network. It also intends to become a member of the international GPS Service. Latvia's geodetic coordinate system regularly receives all the Earth rotation and time parameters needed by Latvia.

6. The Institute of Materials and Structures of Riga Technical University is participating in five projects within the European Union Sixth Framework Programme for Research and Technological Development, namely Integration of Technologies in Support of a Passenger and Environmentally Friendly Helicopter (Friendcopter), Advanced Low-Cost Aircraft Structures (ALCAST), Improved Material Exploitation of a Safe Design of Composite Airframe Structures by Accurate Simulation of Collapse (COCOMAT), Aircraft Integrated Structural Health Assessment (AISHA) and Stimulating Aerospace Research Technology in Associate Candidate Countries. Under the Seventh Framework Programme, the Institute is participating in the Cooperation of Space National Contact Points as a Means to Optimize Services (COSMOS) project by organizing the national workshop of the Space Transportation Assets Valorisation in Europe (STAVE) project.

7. The International Radioastronomical Centre of Ventspils University College is participating in two projects within the Seventh Framework Programme: the RadioNet European radio astronomy programme and the Express Production Real-Time Electronic Very-Long Baseline Interferometry Service. The Centre is also participating in a project on the first Latvian minisatellite, Venta-1, which might be sent into space at the end of 2009. The satellite will be approximately the size of a portable computer. The building of the minisatellite is just one part of the project, scheduled to take place over the next six years.

8. Since 2005, the Polymer Laboratory of the Latvian State Institute of Wood Chemistry has been implementing bilateral cooperation agreements with EADS Astrium in the development of internal/external cryogenic insulation materials and technologies. The short-term goal is to take part in the development of a cryogenic upper stage for the Ariane 5 rocket.

9. Other related activities include those involving the Institute of Geodesy and Geoinformation of the University of Latvia, satellite laser ranging systems development, membership in the European Position Determination System, geographic information service (GIS) database development and membership in the EuroTeleServ initiative.

Thailand

[Original: English]

1. Thailand engages in international cooperation, especially on Earth observation, with numerous States, such as China, France, India, Japan, the Lao People's Democratic Republic, the United States of America and Viet Nam.
2. Thailand is an active member of the Committee on the Peaceful Uses of Outer Space, the Committee on Earth Observation Satellites, the Group on Earth Observations, the Asian Association on Remote Sensing, the Asia-Pacific Regional Space Agency Forum, the Asia-Pacific Space Cooperation Organization, the Centre for Space Science and Technology Education in Asia and the Pacific, the Economic and Social Commission for Asia and the Pacific and the Asia-Pacific Advanced Network Consortium.
3. On 1 October 2008, the first Earth observation satellite of Thailand (Thailand Earth Observation System, THEOS) was launched.

Turkey

[Original: English]

1. Negotiations with international vendors continue with regard to the launching of the RASAT satellite in 2009. RASAT will be the first satellite designed, developed and built by the Space Department of the Scientific and Technical Research Council of Turkey (TUBITAK).
2. Based on the National Space Research Programme (2005-2009), in 2008 TUBITAK initiated a scholarship programme for master's and doctoral students in specific fields of space studies in order to meet the country's expert and researcher needs.
3. In the field of space technology and implementation, Turkey became a founding member of the Asia-Pacific Space Cooperation Organization in June 2006. The bill relating to that membership has been placed on the agenda of the Turkish Parliament.
4. On behalf of the Republic of Turkey, TUBITAK recently became a member of the Group on Earth Observations, as announced on the official website of the Group.
5. As a result of suggestions by the Dutch Space Agency (NVIR), bilateral negotiations for cooperation have started between TUBITAK and NVIR.
6. Negotiations, including on the issue of full membership, have started between TUBITAK and the International Astronautical Federation.
7. TUBITAK has become a member of Eurisy, an independent Europe institution working with ESA to organize and support activities to increase public awareness about space.
8. Within the framework of the national space studies plan announced at meetings of the Science and Technology High Council, space technology projects

have been presented with international partners (such as the European Union Sixth and Seventh Framework Programmes, the Research and Technology Organisation of the North Atlantic Treaty Organization and European Cooperation in the field of Scientific and Technical Research (COST)) and project studies begun in the period 2006-2008 (such as those by TUBITAK, the State Planning Organization and the Undersecretariat for the Defence Industries) will be realized.

9. The Space Systems Design and Testing Laboratory has been completed and made operational at the Istanbul Technical University Aeronautic and Astronautics Engineering Department.

10. The Turkish State Meteorological Service operates the Meteorological Satellite Ground Receiving System (MUYAS) in its Weather Forecasting Department. Satellite data are processed and distributed to various users.

11. The studies started in 2007 to upgrade the hardware and software of MUYAS systems have been completed. In that connection, a dual X/L-band receiving system was put to bid and the ground station system subsequently purchased became operational in 2008. Data are received and processed from the NOAA, MetOp, Terra and Aqua satellites currently. The system will be compatible in future with the satellites of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) and the NPOESS Preparatory Project (NPP) of the United States.

12. Faculty members of the astronautics engineering departments of various Turkish universities continued their research on space and presented their studies at national and international meetings, including:

(a) An international workshop on small satellites, new missions and new technologies organized by the Aeronautics and Space Technologies Institute of the Turkish Air Force Academy, held in Istanbul from 5 to 7 June 2008;

(b) An international workshop on energy from space for a sustainable environment organized by the Aeronautics and Space Technologies Institute of the Turkish Air Force Academy, the Technical University and other universities, held in Istanbul from 6 to 8 November 2008;

(c) A seminar on micro-, nano- and pico-satellites, mission technology and design issues organized by the Aeronautics and Space Technologies Institute of the Turkish Air Force Academy, held in Istanbul from 17 to 20 November 2008;

(d) The Izmir Global Aerospace Conference organized by the Aegean Free Zone Development and Operating Company, held in Izmir on 13 and 14 November 2008.

Viet Nam

[Original: English]

Introduction

1. On 14 June 2006, the Government of Viet Nam approved a strategy for space technology research and applications until 2020, in accordance with which, on 20 November 2006, it established the Space Technology Institute under the

Vietnamese Academy of Science and Technology and would establish the Vietnamese Commission for Space Research and Application in 2008 to manage and supervise the national programmes as well as international cooperation on space technology development and applications.

2. According to the strategy, in the period 2006-2010 Viet Nam would accomplish the following important tasks:

(a) Formation and completion of a legal framework for space technology research and applications by:

- (i) Studying the international laws and regulations on the use of outer space and investigation in accordance with national sovereignty;
- (ii) Drafting and updating general regulations for Government agencies and branches in the area of space technology research and applications;
- (iii) Drafting regulations for the storage, management, development and use of satellite images and derivative information, such as maps, databases and so forth;
- (iv) Drafting and promulgating security regulations for the National Independent Programme for Space Technology Research and Applications;
- (v) Drafting and promulgating formatting standards and criteria for space technology research and applications to ensure domestic and international compatibility;

(b) Building up of the national space technology infrastructure by:

- (i) Building the ground receiving station and the centre for the satellite image database and processing, obtaining the technology of Earth observation small satellites and launching such a small satellite, and building a satellite global positioning system;
- (ii) Deploying the communications satellite VINASAT project;
- (iii) Establishing a key national laboratory for space technology;

(c) Promotion of research in space science and technology, in the framework of which the Vietnamese Academy of Science and Technology will preside over the deployment of the National Independent Programme for Space Technology Research and Applications, to start in 2008, with the aim of implementing the following main tasks:

- (i) Researching and building ground receiving stations;
- (ii) Learning from and obtaining small satellite technology;
- (iii) Employing high-tech applications such as optical observing technology, satellite radar technology and technology for the transfer of satellite information at a high transfer rate;
- (iv) Conducting basic research to develop space technology;
- (v) Studying and making ground devices and software;
- (vi) Aiming at achieving the average level of space technology by 2010;

(d) Promotion of space technology applications; from 2006 to 2010, space technology applications need to be strengthened in the four main fields of communication, hydrometeorology, remote sensing and satellite positioning; by 2010, those fields must be using space technology applications in professional processes to high effect, namely in the following areas:

(i) *Post and Telecommunications, Broadcasting and Television.* Viet Nam will expand communications services in order to take full advantage of the VINASAT satellite and to develop remote learning, medical examinations and meetings and direct-to-home television;

(ii) *Hydrometeorology, Resources and the Environment.* It is necessary to improve the accuracy of forecasts of typhoons, flash floods, landslides and other natural disasters, evaluate the impact of global climatic change on Viet Nam, access information on the fluctuation in land areas in periodic use and build the database for digital maps to be shared with both central and local governments;

(iii) *Agriculture, Aquaculture and Resources Investigation.* In order to assist forecasting of national rice production, floods, forest fires and drought, Viet Nam will further develop remote sensing applications and will expand aquaculture planning, offshore fishing, and research on detection of oil and underground water etc.;

(iv) *Transportation, National Defence and Security.* Viet Nam not only takes advantage of the VINASAT satellite capabilities and uses positioning technology broadly for road, air and sea navigation, but also encourages economic organizations to invest in applications and services using positioning and navigating technology.

Activities and achievements

3. In November 2007, the Vietnamese ground receiving station was completed and put into operation. It will provide satellite images from the Satellite pour l'observation de la Terre (SPOT) and the Environmental Satellite (Envisat) for natural resource and environmental management. This is a cooperative project between the European Aeronautic Defence and Space Company (EADS) and the Ministry of Natural Resources and the Environment of Viet Nam.

4. The first Vietnamese communications satellite, VINASAT, was successfully launched on 12 April 2008. This is a cooperative project between Lockheed Martin Corporation and the Ministry of Post and Telecommunications of Viet Nam. The satellite will provide mobile telephony, television broadcasting and telemetry services in Viet Nam. The Ministry plans to launch a second satellite in 2011.

5. Viet Nam plans to cooperate with EADS on a small Earth observation satellite weighing about 150 kilograms, VNRED-Sat, for an environmental research and disaster management project. The project will begin once financing is available.

6. The National Independent Programme for Space Technology Research and Applications for the period 2008-2012 is under way.

7. Viet Nam is preparing the Hoa Lac Space Centre project in cooperation with Japan. The main project objectives are space science and technology research, space

technology applications, basic space science research, research on high-technology applications for space technology development, space technology transfer centre for socio-economic development and the promotion of international cooperation projects in space science and technology.

8. In October 2008, the Deputy Prime Minister of Viet Nam signed a project to monitor the ocean and water resources of Viet Nam (MOVIMAR) with Collecte Localisation Satellites, a centre that belongs to the French Space Agency (CNES) and the French Research Institute for Ocean Exploration (IFREMER).

9. The fifteenth session of the Asia-Pacific Regional Space Agency Forum will be held in Hanoi and in Ha Long, Viet Nam, from 9 to 12 December 2008. The main goal of the Forum is to increase the awareness of related bodies, ministries and branches with regard to space technology in the region, especially in Japan (JAXA and the Ministry of Education, Culture, Sports, Science and Technology of Japan) and in Viet Nam (the Ministry of Science and Technology, the Vietnamese Academy of Science and Technology and the Space Technology Institute).

10. The Forum is important as it creates greater opportunities for managers and scientists to learn from and exchange experiences with international colleagues in the area of space technology. During the Forum, international and Vietnamese experts in space technology will share experiences and discuss issues in four working groups (on Earth observation, space environment utilization, communications satellite applications and space education and awareness). During the Forum, a water-boasted rocket competition for pupils of secondary schools will be held in a variety of interesting categories, such as trajectories, parachutes and most beautiful water rocket with parachute.

11. Viet Nam plans to continue strengthening cooperation in the area of space technology and its applications with countries and organizations in the region as well as at the global level, including with Australia, Belgium, CNES, EADS, ESA, JAXA and the Committee on the Peaceful Uses of Outer Space. The Vietnamese Academy of Science and Technology has signed with JAXA an agreement for cooperation on space technology and development that includes satellite technology, remote sensing applications (the Sentinel Asia project) and capacity-building in various areas.

Summary, evaluation and perspective

12. Although space technology is only beginning its development in Viet Nam, with the support of the Government and responsible agencies as well as through international cooperation, Viet Nam is determined to build a solid foundation for the development of space technology in the country.

13. Already, initial steps in the development of space technology in Vietnam have been taken in domains such as hydrometeorology (geostationary meteorological satellite (GMS)/National Oceanic and Atmospheric Administration (NOAA) of the United States satellite data are used to forecast weather, typhoons and other disasters with greater accuracy), information and communications (many ground stations have been constructed to serve television broadcasting and telecommunications, the most outstanding event being the deployment of the VINASAT project), remote sensing (Landsat and SPOT satellite images of the entire territory of Viet Nam have been obtained) and satellite navigation.

14. The future goals of Viet Nam are to complete the national policy and legal framework for space technology research and applications; increase public awareness and professional training in this field; construct and improve space technology infrastructure; expand its international cooperation; mobilize budgetary and other funds; and encourage investment from different resources, including private companies in this field.

15. Viet Nam also devotes great attention to creating more opportunities and encouraging young people to study space science and technology.

16. It is hoped that in the future Vietnamese space technology will continue to be promoted and will reach the overall regional level of development, effectively serving the socio-economic development of the country and improving quality of life, environmental and resources management, as well as national defence and security.
