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Statement by the Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space

Background Paper No. 4

**Statement by the
Scientific and Technical Subcommittee of the United Nations Committee
on the Peaceful Uses of Outer Space to
The Fourth Session of the Preparatory Committee for the
World Summit on Sustainable Development**

The Scientific and Technical Subcommittee believes that space science and technology can play an important role in achieving the objectives of the World Summit on Sustainable Development. Space technologies and their applications contribute to the efforts of humankind to promote sustainable development in all countries and regions of the world. With the use of space applications, we can meet the challenges of improving people's lives and conserving natural resources in a world with a growing population that places an increasing strain on all ecosystems and natural resources. Advances in space science and technology would help us respond to the increasing demand for food, water, shelter, sanitation, energy, education, health services and economic security. These are some of the challenges that must be met to achieve sustainable development. However, the potential of space science and technology to assist us in meeting these challenges is not well acknowledged. The Subcommittee, therefore, agreed at this year's session held in February to address the Preparatory Committee, to bring to the attention of delegations the numerous and diverse benefits of the use of space science and technology. The Subcommittee encourages delegations to take this into account in developing a political document during this fourth session.

The Third United Nations Conference on the Exploration and Peaceful Uses Of Outer Space, known as UNISPACE III, which was held in 1999, identified numerous ways in which space applications could help to improve the well being of humankind. At UNISPACE III, the participating States developed a global strategy to turn into reality the potential of space applications to help to create conditions for sustainable development. That strategy is contained in "The Space Millennium: Vienna Declaration on Space and Human Development", which was subsequently endorsed by the General Assembly in its resolution 54/68. The Committee on the Peaceful Uses of Outer Space is taking steps to implement the recommendation of UNISPACE III through action teams consisting of Member States, entities of the United Nations system and intergovernmental and non-governmental organizations that are willing to carry the work necessary to obtain tangible results in the next few years.

Advancing knowledge of the Earth and its environment

In monitoring the Earth and its environment, satellites can provide the synoptic, continuous and long-term global observation needed to understand the Earth's system more comprehensively, in conjunction with the use of modelling technology, to address issues such as: (a) the influence of the Sun on the Earth's environment; (b) global climate change; and (c) the

impact of human activities and changes in the ozone layer on the environment and human health. Satellites can thus be used for permanent surveillance and as part of the space-based system in monitoring changes in the various components of the global environment. The Committee on Earth Observation Satellites, which includes 22 major satellite operators in the world, coordinates the acquisition of satellite data. Observing systems that monitor land, ocean and atmospheric changes are the complementary in-situ component needed to establish an Integrated Global Observing Strategy (IGOS). I am pleased to note that the major satellite operators and the international organizations responsible for terrestrial observations have formed a Partnership, known as IGOS-P that is providing the integrated information needed to understand changes in the environment at the global level. COPUOS and in particular its Scientific and Technical Subcommittee supports the work conducted by IGOS-P.

Satellites also enable systematic observations of the Earth's system, which are essential for the monitoring of the results of the implementation of existing environmental conventions, such as the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity and the United Nations Convention to Combat Desertification.

Monitoring the environment and natural resources

While the value of the Earth observation images in the preparation of risk assessment maps and mitigation of the effects of disasters has been recognized to some extent, satellites are increasingly providing important information for early warning and management of natural or industrial disasters when they occur. The International Charter on Space and Major Disaster, an initiative of space agencies that followed UNISPACE III, can put satellite images of major disaster areas in the hands of rescue teams almost immediately. This response time, heretofore not possible, saves lives and reduces material losses. The United Nations Office for Outer Space Affairs is currently working on becoming a cooperating body of the Charter. Once this accession is concluded, it could give the competent United Nations bodies more rapid access to space data when major disasters occur.

Space technologies offer valuable decision-making tools for weather forecasting, climate predictions, monitoring of natural resources and various activities relating to agriculture, and management of land, ocean and coastal resources, water, forest, fisheries and minerals. For example, increased use of satellite data would improve the prediction of rainfall using well-developed rainfall estimation techniques. The information derived from such prediction would be very useful for crop and flood forecasting. Especially in Africa, the increased use of satellite images would greatly assist in the detection of armyworm and locust breeding areas as well as drought prediction and desertification monitoring.

Facilitating communications and reducing the information gap

Information infrastructure is an essential element of the development in any country, and space technology is a potent tool for gathering information and for communicating it rapidly and efficiently over wide and remote areas. Newly proposed or enhanced satellite

telecommunications services include mobile telephony, data and image transmission, videoconferencing, digital audio, multimedia and global Internet access. Wide-ranging applications include distance learning and telemedicine, providing essential health and medical services and assisting in enhancing education opportunities, in particular in rural and remote areas.

Satellite communications can provide an irreplaceable communications tool in disaster mitigation and relief operations. Their use is vital in situations where ground-based infrastructures are unusable. To make these valuable tools available in emergency areas in time, it is important that more States ratify or adhere to the 1998 Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.

The use of satellite communication should be underscored as the backbone of international telecommunication services and as an essential tool in international and regional trade. It assists in marketing national products and is also used in all other international economic activities as a means of information exchange.

Using position and location capabilities to enhance human security and development

Global navigation satellite systems (GNSS) offer public services that have numerous applications. The signals from GNSS are being used to enhance the safety and effectiveness of transportation by land, sea and air. With their extremely high accuracy, global coverage, all-weather capability and usefulness at high velocity, GNSS applications also support and improve a wide range of activities, such as telecommunications, power systems, mapping and surveying, agriculture, crime prevention and law enforcement, as well as emergency response and disaster reduction.

Commercial benefits and Spin-offs from space activities

The private sector is providing products and services based on space technologies that improve the quality of life all over the world and create employment opportunities. This commercial activity is essential, particularly in Earth observation applications that serve the social interest.

Space research and development promotes and incorporates innovations in many high-technology areas, such as computer software and hardware, advanced electronics and materials, telecommunications and health sciences. The use of these innovations and their spin-offs, e.g. in establishing reliable communication networks or providing health services in remote areas, can build the basis for the world wide economic and social development.

Furthering knowledge and building capacity

While space applications can contribute to the promotion of sustainable development in various ways, they would not be fully utilized without adequate human resources. COPUOS fully recognizes the importance of furthering knowledge and building capacity in the use of space science and technology. Concerted efforts are being made by its Member States, together with the Office for Outer Space Affairs, to transfer appropriate knowledge and skills, including training projects, in particular in developing countries, to use and benefit from space science and technology.

A key element to build such capacities in developing countries is the establishment of regional centres for space science and technology education in developing countries, under the auspices of the United Nations Programme on Space Applications. These centres have been established in India for Asia and the Pacific, and in Nigeria and Morocco for Africa. Other Centres are being established in Brazil and Mexico for Latin America and the Caribbean and in Jordan for Western Asia. Countries with economies in transition have established the Network of Space Science and Technology Education and Research Institutions of Central Eastern and South-Eastern Europe. These efforts are complemented by fellowship programmes and the organization of seminars and training courses that are offered to a large degree by the industrialized countries.

Recommendations

In concluding the statement, I wish to offer the following recommendations for the Preparatory Committee to consider as it develops a political document for the World Summit. The delegations to the summit preparatory committees and to the World Summit are invited to:

- a. Recognize the high importance of space activities for the provision of operational services, information and decision-making aids in support of sustainable development;
- b. Bear in mind the progress made in the capability of space activities to serve as useful tools for realizing sustainable development since the United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, in 1992;
- c. Call upon the space-related organizations, through the Member States, intergovernmental and non-governmental organizations and other relevant entities and the private sector to carry out space activities that can support sustainable development;
- d. Bring to the attention of regional and world development and environmental organizations the wide scope of opportunities which space technology offers for the work of these institutions;
- e. Recognize that the Committee on Peaceful Uses of Outer Space is a most suitable body for coordinating and achieving international cooperation in space activities and that the Committee is an appropriate intergovernmental forum to initiate action utilizing space

technologies to implement the recommendation of the World Summit for Sustainable Development and follow-up to them;

f. Call for close dialogue and coordination between decision makers involved in the follow-up of the outcome of the World Summit for Sustainable Development and the Committee on the Peaceful Uses of Outer Space in order to ensure that space activities contribute effectively to the achievement of the goals of the World Summit;

g. Invite the Committee on the Peaceful Uses of Outer Space to examine the final outcome of the World Summit on Sustainable Development and to identify ways through which space activities can help to implement follow-up actions emanating from the World Summit and to monitor and evaluate their implementation.