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Draft report

Chapter II

Addendum

E. Spin-off benefits of space technology: review of current status

1. In accordance with paragraph 43 of General Assembly resolution 61/111 of 14 December 2006, the Committee resumed its consideration of the item entitled "Spin-off benefits of space technology: review of current status".

2. The representatives of Italy, Japan, Thailand, Ukraine and the United States of America made statements under this item.

3. The Committee heard a presentation entitled "Intersputnik as provider of state-of-the-art satellite communications services", by Victor Veshchunov (International Organization of Space Communications (Intersputnik)).

4. The publication *Spinoff 2006*, submitted by the National Aeronautics and Space Administration (NASA) of the United States, was made available to the Committee.

5. The Committee noted that the International Academy of Astronautics (IAA) and the National Space Agency of Ukraine, together with the Yuzhnoye State Design Office, the State Enterprise Production Association Yuzhny Machine-Building Plant and the National Youth Aerospace Education Center, all of Ukraine, had held a conference on advanced space technologies for the prosperity of humankind, dedicated to the fiftieth anniversary of the space age, in Dnipropetrovsk, Ukraine, from 18 to 20 April 2007. The conference had been attended by more than 300 participants from all over the world and addressed, among other issues, the contribution that space technologies could make to resolving the challenges facing

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humankind. The Committee also noted the intention of the co-organizers to hold a second, similar conference in 2009.

6. The Committee agreed that spin-offs of space technology should be promoted because they advanced economies through the production of innovative technologies, thereby contributing to improving the quality of life of human populations.

7. The Committee also agreed that spin-offs of space technology represented a powerful engine for technological innovation and growth in both the industrial and service sectors and could be beneficially applied to social and humanitarian ends.

8. The view was expressed that space technology and its spin-off benefits must be used for peaceful purposes in order to improve the quality of life of populations, meet the goals of the United Nations Millennium Declaration (General Assembly resolution 55/2),[1] manage limited natural resources, help solve environmental problems such as global warming, as well as prevent and mitigate natural disasters.

9. The Committee noted that, in the industrial sector, space technology was being used to create a variety of different commercial products, such as those used for the maintenance of ship bilges and cleaning and for containing areas contaminated by oil products.

10. In the area of water management, the Committee noted that a system had been designed to sustain the astronauts living on the International Space Station, which was being used to turn waste water from respiration, sweat and other sources into potable water. The Committee also noted that a water purification system for the desalination of seawater and the elimination of viruses had been developed.

F. Space and society

11. In accordance with paragraph 44 of General Assembly resolution 6/111, the Committee continued to consider, under the agenda item entitled "Space and society", the special theme for the focus of discussions for the period 2004-2006, entitled "Space and education", in accordance with the workplan adopted by the Committee at its forty-sixth session,[2] in 2003.

12. The Committee recalled that, in accordance with the workplan, it would take the following actions at its current session: (a) develop specific, concrete action plans for incorporating outer space into education, enhancing education in space, expanding space tools for education and ensuring that space-based services contribute to the achievement of the Millennium Development Goal on access to education; and (b) prepare a brief document on the role of space in education, as well as the link between space and education, for transmission to the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

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[1] See A/56/326, annex, and A/58/323, annex.

[2] *Official Records of the General Assembly, Fifty-eighth Session, Supplement No. 20* (A/58/20), para. 239; and ibid., *Sixty-first Session, Supplement No. 20* (A/61/20 and Corr.1), paras. 245 and 260.

13. The representatives of Canada, Chile, China, the Czech Republic, France, Greece, India, Indonesia, Japan, Malaysia, Nigeria, the Republic of Korea and the United States made statements under this item. The representative of Bolivia also made a statement. Statements were also made by the representatives of the International Telecommunication Union (ITU) and UNESCO.

14. The Committee heard the following presentations:

(a) "A new paradigm in geographic education: *The European Space Agency School Atlas: Geography from Space*", by L. Beckel (Austria);

(b) "Space education without borders", by M. Kukla and M. Rennhofer (Space Generation Advisory Council (SGAC));

(c) "Use of space-based systems for education in India", by D. Radhakrishnan (India);

(d) "Enhancing human development through space education: attempts by JAXA Space Education Center", by T. Chiku (Japan Aerospace Exploration Agency (JAXA));

(e) "Space image atlas of the Kingdom of Saudi Arabia: a new way of education for sustainable development", by A. AL AlShaikh (Saudi Arabia);

(f) "Civil society and outer space", by P. Lillie (on behalf of the European Space Policy Institute (ESPI));

(g) "Space in the twenty-first century: a challenge for international governance", by J. M. Logsdon (United States).

15. The Committee noted that the Space Education Programme of UNESCO was aimed at enhancing space subjects and disciplines in schools and universities, in particular in developing countries, and raising awareness among the general public of the benefits of space technology for social, economic and cultural development. The Committee noted that UNESCO was the lead United Nations agency for the United Nations Decade of Education for Sustainable Development (2005-2014).

16. The Committee noted that there were a number of national educational initiatives and activities aimed at using content, materials and applications unique to space activities for training students and teachers and for educating the general public on matters relating to outer space, including the initiatives and activities of the Malaysian Angkasawan and space awareness programmes and those of the Centre national d'etudes spatiales (CNES) of France, of the National Space Research and Development Agency (NASDRA) and the Centre for Space Science and Technology Education, both of Nigeria, and the NASA Educator Astronaut Program, Explorer Schools Program and Explorer Institutes initiative, as well as the education programmes implemented by the National Oceanic and Atmospheric Administration (NOAA) of the United States and by the Korea Aerospace Research Institute (KARI).

17. The Committee noted the educational opportunities being provided by some national universities, including hands-on training opportunities for university and graduate students in space science and engineering. In that regard, the Committee noted the activities undertaken through the International Space Education Board

(ISEB), a joint initiative of the Canadian Space Agency, ESA, JAXA and NASA launched in 2005, and the University Space Engineering Consortium (UNISEC).

18. The Committee noted that a number of national tele-education initiatives were providing educators and students at all levels, including those in remote areas, with high-quality education consisting of the latest teaching resources, vocational and teacher training and adult education.

19. The Committee noted the activities at the regional level for capacity-building through education and training in space science and technology application for sustainable development, including the achievements of the African Regional Centre for Space Science and Technology Education—in English Language (ARCSSTE-E), the Asia-Pacific Regional Space Agency Forum (APRSAF) and the pro tempore secretariat of the Fifth Space Conference of the Americas.

20. The Committee noted with satisfaction that, at the global level, a large number of educational and outreach activities and programmes for children, young people and the general public were being established by space agencies and international organizations to promote awareness of the benefits of space science and technology and to encourage children to consider careers in the fields of mathematics and science.

21. The Committee noted the role played by the International Space Station in education and in reaching out to education communities worldwide.

22. The Committee noted that World Space Week, observed from 4 to 10 October each year pursuant to General Assembly resolution 54/68 of 6 December 1999, contributed to the development of education and raised awareness about outer space, in particular among young people and the general public. The Committee noted that more than 50 countries had participated in World Space Week in 2006 and that the theme of the activities for 2006 had been “Space for saving lives”.

23. The Committee was of the view that sharing scientific and technical knowledge and achievements in the field of space activities would have a positive impact on future generations.

24. The view was expressed that illiteracy and a lack of adequate education continued to constitute major problems for developing countries and that the United Nations Programme on Space Applications should place more emphasis on supporting education and training for capacity-building in developing countries and on strengthening international cooperation.

25. The view was expressed that States should be encouraged to improve the dissemination of space-related educational materials in order to increase general awareness of the importance of the use of space technology for attaining sustainable development.

26. The Committee noted with interest the proposal that it could address specific issues related to the theme of space and education at its future sessions, either as special themes to be considered under the agenda item entitled “Space and society” or through its symposiums, and that, in order to meet the objective of the workplan for 2006 to develop specific, concrete action plans for incorporating space into education, it could consider compiling information on successful activities and

initiatives of member States and international entities in enhancing space education, to be published either online or as a brochure.

27. The Committee also noted the request that it support the proposal to proclaim 2009 International Year of Astronomy, which is to be considered by the General Assembly at its sixty-second session, and the proposal to consider, under the agenda item on "Space and society", the theme entitled "Astronomy for 2008-2009".

28. The Committee requested the Office for Outer Space Affairs to prepare an illustrative presentation on its initiatives to promote education in space applications, to be delivered to the Committee at its fifty-first session, in 2008.

29. The Committee agreed that, in view of the importance of space and education, it would continue to consider the special theme at its fifty-first session, in 2008.

G. Space and water

30. In accordance with paragraph 45 of General Assembly resolution 61/111, the Committee continued its consideration of the agenda item entitled "Space and water".

31. The representatives of Canada, Chile, China, India, Japan, Saudi Arabia and the United States made statements under the item.

32. The Committee heard the following technical presentations under the item:

(a) "Experience of the General Organization of Remote Sensing (GORS)", by Osama Ammar and Marwan Koudmari (Syrian Arab Republic);

(b) "Enhanced flood prediction based on a mobile GNSS application", by Holger Sdunnus (Germany).

33. The Committee welcomed the consideration of the item and agreed that it was timely in view of numerous discoveries and the prospect of future developments in the area of the use of space technology for water resources management. The Committee agreed that the current challenge in using space applications for addressing water-related issues was to ensure that the expanding body of valuable scientific data was made readily available and converted into practical information that could be used by decision makers and policymakers. In that context, the Committee noted with satisfaction that the symposium on the theme "Space and water", organized by the Office for Outer Space Affairs of the Secretariat in cooperation with the European Academy of Sciences and Arts and held during the fiftieth session of the Committee, had addressed the role of space technology applications in dealing with global challenges to global water resources and discussed the strategies and methods most likely to ensure wider access to safe, clean and sustainable water, with a view to providing decision makers with space-derived tools to achieve a sustainable use of water.

34. The Committee noted that acute water shortages and floods were serious barriers to the social and economic development of developing countries and were of major concern to various countries because they resulted in destruction of property and loss of life. The Committee agreed that access to sustainable drinking water had always been a basic need of humankind and that it continued to constitute

a daily challenge. The Committee also noted that water-related challenges could lead to social, economic and political tensions and that no comprehensive consideration of socio-economic or environmental development was possible without considering the issue of water resources.

35. The Committee noted a number of national and international projects related to water resources management that were aimed at, among other things, mapping wastelands; monitoring bodies of surface water, groundwater prospects, watershed and water quality; estimating crop production; developing aquaculture in coastal areas; managing water-related disasters; and assessing the impact of global warming on water resources. In that connection, the Committee noted with satisfaction the increasing cooperation among member States in the use of space-derived data for water resources management that involved, among others, international projects such as the Famine Early Warning Systems Network (FEWS NET), the Aqua mission, the Global Precipitation Measurement (GPM) mission, the Landsat land remote sensing satellites, Sentinel-Asia, the ESA Terrestrial Initiative of Global Environmental Research (TIGER) and the Tropical Rainfall Measuring Mission (TRMM).

36. The Committee noted that space applications could significantly contribute to cost-effective water resources management, as well as to the prediction and mitigation of water-related emergencies. The Committee also noted that it was difficult to fully understand the global water cycle only through in situ observation networks, which were non-existent in some countries, deteriorating in others, and extremely costly to augment. In that context, the Committee was of the view that satellites offered an alternative way to observe the Earth and were therefore essential for gathering information on water resources in remote places.

37. The Committee noted with satisfaction that space-based observations of oceans provided information for seasonal climate forecasting and, in relation to the El Niño and La Niña phenomena, the forecasting of hydrological extremes such as floods, droughts and intense thunderstorms. The Committee also noted that space-derived observations had been used in rapid response to the flood disasters that had taken place in Thailand in May 2006 and in Indonesia in February 2007.

38. The Committee noted that consideration of the item on space and water promoted capacity-building in the use of space applications for water resources management and that a number of research and capacity-building activities in that area were being carried out by various national and international entities. In that context, the Committee noted with satisfaction that the United Nations/International Astronautical Federation Workshop on the Use of Space Technology for Water Resources Management had been held in Valencia, Spain, on 29 and 30 September 2006.

39. The Committee noted with appreciation that the Crown Prince of Saudi Arabia had announced the third award of the Prince Sultan Bin Abdulaziz international prize for water for special achievements and scientific innovations in the area of water resources management for the period 2006-2008. The Committee noted the invitation of the Government of Saudi Arabia to nominate for the third award innovative projects carried out in the area of water resources management.

40. The Committee agreed to continue its consideration of the item at its fifty-first session, in 2008.