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THIRD UNITED NATIONS CONFERENCE ON THE EXPLORATION AND PEACEFUL USES OF OUTER SPACE

Report on the Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for Africa and the Middle East

(Rabat, 26-30 October 1998)

Contents

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I. Introduction

A. Background and objective

1. The United Nations Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) for Africa and the Middle East was organized by the United Nations Programme on Space Applications with the specific objective of assisting Member States within those regions to formulate recommendations and action plans related to, *inter alia*, (a) enhancing Member States' understanding of the role and use of space technology in social and economic development; (b) problems associated with implementing space technology and space application programmes; and (c) improving and facilitating regional and international collaboration efforts. In that connection, the programme of the Preparatory Conference took into account the provisional agenda for UNISPACE III. The outcome of the Conference, which reflects the aspirations and concerns of the regions of Africa and the Middle East, is expected to serve as one of four regional contributions to UNISPACE III, at which the framework for future international cooperation in space-related activities will be defined. The Conference was co-sponsored by the European Space Agency (ESA) and hosted by the Government of Morocco.

2. The present report describes the organization of the Preparatory Conference and presents the recommendations made at it. It has been prepared for the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee.

B. Organization of the Preparatory Conference

3. The initial announcement of and call for participation in the Preparatory Conference were distributed by a note verbale dated 23 June 1998 to the Permanent Missions to the United Nations (Vienna) of all African and Middle Eastern countries. In order to assist Governments to nominate appropriate individuals to represent them and contribute to the deliberations of the Conference, the note verbale contained, in addition to an outline of the programme of the Conference, a summary of the organization and provisional agenda of UNISPACE III. A second note verbale, which served as a reminder, was sent out on 20 August 1998. On 28 September 1998 the Office for Outer Space Affairs requested the assistance of resident representatives of the United Nations Development Programme (UNDP) in countries in Africa that had not responded to the invitation by that date in sensitizing national Governments to the importance of sending high-ranking government officials to participate in the Preparatory Conference.

4. The Government of Morocco defrayed the costs of boarding and lodging of 16 participants from other African countries, as well as all other local costs associated with the organization of the Preparatory Conference. Funds for the international travel and subsistence allowance of those 16 participants, as well as travel and subsistence costs for 15 speakers, were provided from the fellowship budget of the United Nations Programme on Space Applications and the financial support provided by ESA.

5. A total of 195 persons attended the Preparatory Conference, 108 of them from Morocco. Participants at the Conference were nationals of the following 26 countries: Algeria, Angola, Benin, Côte d'Ivoire, Egypt, Ethiopia, Ghana, Iraq, Jordan, Kenya, Lebanon, Libyan Arab Jamahiriya, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Saudi Arabia, Senegal, South Africa, Sudan, Syrian Arab Republic, Tunisia, Uganda, Zambia and Zimbabwe. Representatives from the following international and regional organizations also attended: the Economic Commission for Africa (ECA), the Economic and Social Commission for Western Asia (ESCWA), the Food and Agriculture Organization of the United Nations, the United Nations Educational and Scientific Organization, the American Institute of Aeronautics and Astronautics, the Centre régional de formation et d'application en agrométéorologie et hydrologie (AGRHYMET), the Organization of the Islamic Conference, ESA, the Regional African Satellite Communication Organization (RASCOM) and the International Space University.

C. Working procedure at the Preparatory Conference

6. The programme of the Conference focused on the following themes: (a) the Earth environment; (b) communication and navigation systems; (c) small satellites, spin-off benefits and information; and (d) education and cooperation. Programme activities consisted mainly of invited presentations followed by discussion sessions, during which recommendations, observations and specific proposals were made by the various delegations. The titles of the various papers presented under each theme appear in the programme of the Conference (see annex). Following the

discussion sessions, small working groups, consisting in each case of the chairperson and rapporteurs of the discussion session along with a small number of interested persons, were set up to consolidate the observations and recommendations arising from the deliberations. Those observations and recommendations were subsequently reviewed and adopted at the plenary session devoted to the preparation of the draft report for UNISPACE III. The outcome of those deliberations is presented in the section below, where the issues under each theme are presented, followed by the related recommendations.

II. Regional recommendations to the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space

7. The United Nations Regional Preparatory Conference adopted the following recommendations to UNISPACE III:

Preamble

The representatives of the countries of Africa and the Middle East, meeting in Rabat from 26 to 30 October 1998 within the framework of the United Nations Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for the Regions of Africa and the Middle East,

1. *Take into account* the place of space technologies and their applications for their countries' development;

2. *Recognize the importance*, for the countries of these regions, of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, to be held in Vienna from 19 to 30 July 1999;

3. *Underline the importance* of General Assembly resolution 51/122 of 13 December 1996 concerning international cooperation in the exploration and use of outer space for the benefit and in the interest of all States, taking into particular account the needs of developing countries, within the framework of their cultural, social and economic development;

4. *Call on* the countries of the region to participate actively in the activities of specialized international organizations and in particular in the United Nations Committee on the Peaceful Uses of Outer Space;

5. *Reiterate* the Principles Relating to Remote Sensing of the Earth from Outer Space, adopted by the General Assembly in its resolution 41/65 of 3 December 1986, in particular:

(a) Principle II. Remote sensing activities shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic, social or scientific and technological development, and taking into particular consideration the needs of the developing countries;

(b) Principles X and XI. Remote sensing shall promote the protection of the Earth's natural environment and the protection of mankind against natural disasters;

6. *Recognize* the efforts exerted by space agencies, countries with receiving stations and distribution companies and centres in making available satellite data to users;

7. *Express the hope* that the suppliers of space services and users will further coordinate their efforts in order to ensure the best compromise between the means offered and the needs expressed;

8. *Request* Governments, international organizations, space agencies, distribution companies, national and regional centres, the private sector and non-governmental organizations to combine their efforts so as to ensure the execution of the following recommendations under the best conditions;

9. *Express their gratitude and appreciation* to the Government of Morocco and the Royal Centre for Remote Sensing for their efforts to ensure the success of the Regional Preparatory Conference;

10. *Express their acknowledgements* to the Office for Outer Space Affairs of the United Nations Secretariat and the European Space Agency for their support in organizing the Regional Preparatory Conference;

11. *Express their gratitude* to all the resource persons and international organizations invited to the Regional Preparatory Conference for their input into its deliberations.

Issues and Recommendations

I. The Earth environment

Issues

1. The inability to explore and exploit the environmental resources in the regions of Africa and the Middle East in a sustainable manner because of:

(a) Lack of an inventory of natural resources;

(b) Inadequate weather forecasting facilities;

(c) Lack of early warning systems for natural and man-made disasters;

(d) Non-integration of social and economic aspects;

(e) Inadequate promotion of regional and international cooperation in space science and technology.

2. Insufficient involvement in global change studies and especially in:

(a) Understanding solar-terrestrial relationships;

(b) Understanding the Earth's atmosphere, magnetosphere, biosphere and hydrosphere;

(c) Understanding the influence of technology-induced changes on the global environment.

3. Inadequate knowledge of space technology, its applications and its intra- and interregional transfer, arising from:

(a) Inadequate training facilities;

(b) The high cost of training because it has to be undertaken outside the regions;

(c) Curricula incompatible with regional priorities, goals and objectives;

(d) Underutilization, misuse and mismatch of available human resources;

(e) Lack of promotional activities, career guidance and awareness as regards space science and technology;

(f) Absence of a regional space science and technology-based strategy.

4. Inadequate regional cooperation, arising from:

(a) Weak horizontal (South-South) cooperation;

(b) Lack of exchange of information about local capacity from one country to another;

(c) Lack of a regional audit of available expertise in space science and technology;

(d) Lack of cooperation and coordination in dealing with common problems;

(e) International programmes of financial assistance that do not well reflect regional needs;

(f) An insufficient number of regional projects and programmes;

(g) Inadequate reflection of regional priorities in internationally funded projects.

5. Insufficient transformation of projects and programmes for the application of space technology from the pilot stage to its operational stage, arising from:

(a) Lack of regional coordination in designing and implementing programmes and projects in space applications, resulting in duplication of activities;

(b) Resistance to change in adopting and applying new and appropriate technologies;

(c) Insufficient identification of needs and priorities;

(d) Overdependence on international donors for funding support for projects;

(e) Limited lifespan of externally funded projects;

(f) Projects that do not respond adequately to user needs and are therefore not viable;

(g) Lack of movement of projects from research to applications;

(h) Minimal involvement of the private sector in space technology and applications.

6. Problems of data management, arising from:

(a) Inaccessibility of data;

(b) Lack of a regional policy on data exchange formats and standards;

(c) High cost of data in terms of acquisition, archiving and processing;

(d) Incompatible infrastructure resulting from diverse sources of funding.

Recommendations

1. In order to give adequate consideration to environmental and resource management issues in the regions of Africa and the Middle East, there should be direct participation and active involvement of those regions in international activities and programmes related to Earth observation.

2. The appropriate scientific and technical committees of the Economic Commission for Africa (ECA) and the Economic and Social Commission for Western Asia (ESCWA) should cooperate closely to enhance capacity-building in remote sensing and mapping centres already in existence in the regions in the areas of human resources,

infrastructure development, acquisition of equipment and policy regulations.

3. The regions of Africa and the Middle East are not totally covered by Earth observation ground receiving stations. The regional commissions of the Economic and Social Council that are responsible for the two regions (ECA and ESCWA) should work with affected countries to ensure that the coverage gap is closed.

4. At present, there are four Earth observation ground receiving stations, located in Italy, Saudi Arabia, South Africa and Spain, that are able to receive data on several African and Middle Eastern countries. The owners of those stations and the countries that are within their footprints should study the feasibility and desirability of operating the stations on a regional basis. (South Africa is proposing to make its station available for such a regional operation.)

5. Member States are encouraged to put in place prospective, proactive and participatory science and technology policies and to implement space strategies, including the necessary annual budget allocations, in order to derive maximum benefit and to contribute towards enhancing the standard of living of their people.

6. Member States should facilitate and encourage the participation of the private sector in all aspects of space industry development and related applications.

7. Scientific and research institutions in both Africa and the Middle East should foster scientific collaboration with Earth observation satellite operators in order to ensure that future Earth observation remote sensing systems meet the specific and unique needs of the two regions.

8. There are numerous space technology-related application projects, both in the operational phase and in the planning phase, that are funded by donor countries and international organizations, including United Nations entities. In order to maximize the beneficial impact of those projects, it is critical that the concerned donors, organizations and the countries benefiting from the projects coordinate and harmonize such development projects and programmes. The United Nations, as well as ECA and ESCWA, should play a leading role in coordinating and harmonizing development projects.

9. ECA and ESCWA should work with Member States in the two regions to determine the ability of the Member States to participate effectively in Earth observation projects.

10. The United Nations, in conformity with the Principles Relating to Remote Sensing of the Earth from Outer Space (General Assembly resolution 41/65, annex) and other legal instruments governing space activities, should ensure that all countries enjoy equal access to data and other information from Earth observation satellites.

II. Communication and navigation systems

Issues

1. Lack of an integrated telecommunication infrastructure for Africa, especially in the rural areas.

2. Absence of affordable satellite telecommunication systems in Africa.

3. Inadequate telecommunication infrastructure for telemedicine, education and so on.

4. Inadequate and unreliable data and statistics on the telecommunication profiles of most African and Middle Eastern countries.

5. Lack of regional coordination and support to formulate policies and define needs in satellite communications.

Recommendations

1. ECA and ESCWA should set up an interregional committee (for Africa and the Middle East) to coordinate and promote workshops and expert group discussions aimed at the formulation of regional policies and of coordinated positions at international forums and to increase public awareness of issues relating to satellite communications.

2. Member States should ensure that global telecommunications designers and operators take into consideration the interests and priorities of the local communities and the telecommunication authorities and relevant bodies of the countries where they operate.

3. In conformity with the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI), annex) and other related legal instruments, the United Nations and the International Telecommunication Union (ITU) should guarantee the equal rights of all countries in access to and use of space. Geosynchronous orbital slots for countries and regions that do not yet have the capacity to use those slots should be reserved as a matter of right.

4. ITU should facilitate the coordination of orbital slots between countries in Africa and the Middle East and international organizations.

5. The United Nations should ensure that there are no restrictions on the accuracy of data, information and technology of global positioning systems and other satellite

navigation systems, or on the availability of such systems, in particular for use in civil aviation.

6. Member States of the two regions are hereby encouraged to support fully and to participate actively in the activities of the regional centres for space science and technology education that are being established under the auspices of the United Nations in Morocco, Nigeria and the Middle East, with a view to building indigenous capability in space science and technology in all countries in the regions concerned.

7. The United Nations should ensure that no unnecessary restrictions are placed on Member States that are developing their own launch facilities, in particular when such facilities are in conformity with the criteria for the peaceful use of outer space.

8. ITU should ensure that experimental frequencies are reserved specifically for the purposes for which they are used at present. The specific frequencies to be reserved include, but are not limited to, the following: 18.6 and 18.8 GHz, used for the measurement of soil, moisture and vegetation; and the frequency band 174.8 and 191.8 GHz, centred on 183.3 GHz, used for vertical sounding of atmospheric properties, such as humidity.

9. African Member States should support and encourage regional communication establishments such as RASCOM in their efforts to provide and operate regional satellite communication programmes.

10. African Member States should support the development of an inter-African connection for, among others, telephony, data, tele-education, telemedicine and the Internet. In that connection, African countries, the United Nations and other members of the international community are called upon to support fully and to contribute to the realization of the project on the cooperative information network linking scientists, educators, professionals and decision makers in Africa (COPINE), an initiative of the Office for Outer Space Affairs of the Secretariat.[1]

III. Small satellites, spin-off benefits and information

Issues

1. Formulation of space science policy, accompanied by an implementation programme, in each country.

2. Capacity-building:

(a) Human;

(b) Infrastructure;

(c) Physical.

3. Establishment of collaboration and joint ventures for:

(a) Transfer of technology;

(b) Commercialization;

(c) Training: high-tech design, construction and development;

(d) Satellite manufacturing;

(e) Remote sensing and geographic information systems;

(f) Telecommunication in low- and medium-Earth orbit;

(g) Navigation systems;

(h) Ground stations.

4. Development of indigenous capacity through participation in the development, design and production of small satellites.

5. Lack of commitment of Member States with respect to space science and technology.

Recommendations

1. States in the regions of Africa and the Middle East are urged to formulate clear policies on science and technology, including space-related aspects, and to endow such policies with inalienable political will and an implementation programme so that African and Middle Eastern societies may reap the attendant dividends upon active participation in appropriate science and technology programmes.

2. In spite of the tremendous advances that have been achieved in the applications of space technology in the last 20 years, socio-economic development in Africa is yet to be as much affected by this technology as in other parts of the world. One major reason for this undesirable situation is lack of commitment. In order to redress the situation, it is thus recommended that a joint African/Middle Eastern leadership conference, at the level of either heads of State or ministers, should be organized by the Office for Outer Space Affairs, with a view to increasing the awareness of space technology development and its impact on social and economic development, preferably before UNISPACE III.

3. Member States should make effective use of their indigenous scientific personnel and give them every support, so that they can forge tangible research and development linkages and enter into joint ventures with institutions and industries that have acknowledged capabilities in space science and technology, as well as encourage the private sector to invest in such joint ventures.

4. Member States should invest in the development of the necessary knowledge and skills in their citizens in different aspects of space science and technology, in particular through their participation in the development, design and production of small satellites, with a view to gaining an understanding of the technology and the subsequent use of such satellites for various socio-economic applications, bearing in mind the relatively low cost of designing, constructing, launching and operating small satellites. Programmes on small satellites could be carried out through regional collaboration.

5. Member States should at all times take advantage of the opportunities available through a variety of international programmes, such as the United Nations Programme on Space Applications, and should respond promptly to requests of the Office for Outer Space Affairs, especially with regard to participation in meetings, conferences and training courses organized by the Office, so that they can keep abreast of the latest developments in space science and technology.

6. Member States should request advanced countries to eliminate discriminatory measures in the licensing of space technology to the regions of Africa and the Middle East.

IV. Education and cooperation

Issues

1. The absence of space policies.

2. The lack of science and technology awareness, including space science and technology and its applications, on the part of national policy makers.

3. The very limited participation in space-related activities in the two regions, although the potential is great.

4. Lack of appropriate infrastructure to optimize available indigenous expertise and skills.

5. Lack of qualified trainers and educators.

6. Lack of appropriate materials and tools in established education and training institutions.

7. Inadequate funding to promote the understanding and utilization of space applications.

8. The need to develop the next generation of leaders in the field of space.

9. A lack of regional collaboration and coordination in all aspects of science and technology.

Recommendations

1. Member States in the regions of Africa and the Middle East should mobilize efforts to formulate or strengthen national space policy within the context of their science and technology programmes. Such policies should integrate optimal use of space technology tools with a view to socio-economic development.

2. The importance of sensitizing national policy makers to the applications of space technology cannot be overstressed. Multimedia tools should be used at the national level to make such campaigns attractive.

3. In utilizing space applications for educational purposes, emphasis should be placed on the development of educators and trainers, who would then be in a better position to prepare appropriate curricula for distance education, flexible learning and continuing education.

4. A virtual university allows flexibility to evolve in accordance with the changing needs of a region. It prevents duplication of effort and facilitates uniformity in training. It also provides expertise that may not exist in one particular region and can be shared with other regions. Recognizing that there are many providers of content for distance education, priority should be placed on creating the relevant infrastructure in order to gain access to the immense amount of pre-existing resources for education and training.

5. Member States should take advantage of existing projects and experiences in the field of tele-education and virtual universities, so that African and Middle Eastern countries can be prepared for the information age.

6. Member States should take advantage of the Space Generation Forum at UNISPACE III. The Forum, to be organized by the alumni of the International Space University, will provide the opportunity for aspiring, emerging and established space-faring nations to develop the necessary skills, knowledge and contacts among their young and promising space professionals for future advancement.

7. With the aid of new information technologies, Member States should participate actively in the exchange of space-related experiences and knowledge by creating networks of specialists within regions or countries.

8. The United Nations should establish, as a matter of urgency, a special fund within the Office for Outer Space Affairs to assist in the implementation of the recommendations of UNISPACE III.

Notes

[1] The COPINE project proposal to establish an efficient communications network among African professionals and scientists at the national and regional levels resulted from the recommendations of the Conference on Space Technology for Sustainable Development in Africa, held in Dakar in October 1993.

Annex

Programme of the United Nations Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for the Regions of Africa and the Middle East

Date/time	Subject	Speaker
Monday, 26 October 1998		
0800-0900	Registration	
0900-0950	Opening ceremony	Adigun A. Abiodun (Office for Outer Space Affairs of the United Nations Secretariat) B. S. Diouf (United Nations Development Programme, Morocco) Giuseppe Giampalmo (European Space Agency) Omar El Fassi (Government of Morocco)
0950-1030	Press conference Visit to the commercial exhibition	
1030-1040	Review of Conference procedures	Adigun A. Abiodun (Office for Outer Space Affairs of the United Nations Secretariat)
	Session I **The Earth environment** Co-chairperson: Mamadou M. Sall (Senegal) Co-chairperson: Hussein Ibrahim (Syrian Arab Republic)	
1040-1120	Management of Earth resources I	Hammad Benchekroun (Morocco)
1120-1200	Management of Earth resources II	Adel Yehia (Egypt)
1200-1240	Understanding the Earth and its environment	Ekundayo Balogun (Nigeria)
1400-1440	Disaster prediction, warning and mitigation	Andre Nonguierma (Centre régional de formation et d'application en agrométéorologie et hydrologie (AGRHYMET))
1440-1500	CEOS and the IGOS [Integrated Global Observing Strategy] partnership	Harald Arend (Committee on Earth Observation Satellites)

Date/time	Subject	Speaker
1500-1520	Exhibitions at UNISPACE III	Mireille Gerard (American Institute of Aeronautics and Astronautics)
1540-1800	Consideration by the Conference of issues relevant to the theme of session I	
	Chairperson: Peter Adeniyi (Nigeria)	
	Rapporteur: Mohamed Aït Belaïd (Morocco)	

Tuesday, 27 October 1998

Session II

Communications and navigation systems

	Co-chairperson: Chokri Turki (Tunisia)	
	Co-chairperson: Mohamed Tarabzouni (Saudi Arabia)	
0900-0940	Space communications and applications	Ahmed Toumi (Morocco)
0940-1020	Integration of African communication systems	Désiré Adadja (Regional African Satellite Communication Organization)
1040-1115	Preparing for future communication technologies	Andile Ngcaba (South Africa)
1115-1150	Preparing for future communication technologies	Abdullah Dewachi (Economic and Social Commission for Western Asia)
1150-1230	Satellite navigation and location systems	Agostino de Agostini (European Space Agency)
1400-1530	Consideration by the Conference of issues relevant to the theme of session II	
	Chairperson: Andile Ngcaba (South Africa)	
	Rapporteur: Hammad Benchekroun (Morocco)	
1550-1800	Consideration by the Conference of issues relevant to the theme of session II (continued)	

Wednesday, 28 October 1998

Session III

Small satellites, spin-off benefits and information

Chairperson: Driss El Hadani (Morocco)

Date/time	Subject	Speaker
0900-0940	Micro-satellites I	Martin N. Sweeting (United Kingdom of Great Britain and Northern Ireland)
0940-1020	Micro-satellites II	Sias Mostert (South Africa)
1040-1115	Spin-off benefits and space commercialization	J. O. Malo (Kenya)
1115-1155	Information systems for research and application	Orlando Nino-Fluck (Economic Commission for Africa)
1155-1230	Space application programmes: challenges of implementation	Adigun A. Abiodun (Office for Outer Space Affairs of the United Nations Secretariat)
1400-1530	Consideration by the Conference of issues relevant to the theme of session III	
	Chairperson: Federick Onyango (Kenya)	
	Rapporteur: Mohamed Aït Belaïd (Morocco)	
1550-1800	Consideration by the Conference of issues relevant to the theme of session III (continued)	

Thursday, 29 October 1998

Session IV

Education and cooperation

	Chairperson: Mamadou Fofana (Côte d'Ivire)	
	Chairperson: Saliem M. Khalifa (Jordan)	
0900-0930	The youth at UNISPACE III	Lance Bush (International Space University)
0930-1000	Education and training in space science and technology	Amal Layachi (Morocco)
1000-1030	Tele-education	Ron Beyers (South Africa)
1050-1110	International space cooperation: which approach for developing countries?	Michel Laiffaiteur (France)
1110-1240	Consideration by the Conference of issues relevant to the theme of session IV	
	Chairperson: Indurall Fagoonee (Mauritius)	
	Rapporteur 1: Amal Layachi (Morocco)	

Date/time	Subject	Speaker
	Draft report for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space	
	Co-chairperson: Driss El Hadani (Morocco)	
	Co-chairperson: Indurall Fagoonee (Mauritius)	
1400-1530	Preparation of the draft report formulating recommendations and action programmes for consideration at UNISPACE III	
1550-1800	Discussion and adoption of the draft report	
	Co-chairperson: Driss El Hadani (Morocco)	
	Co-chairperson: Indurall Fagoonee (Mauritius)	
1800-1820	Closing ceremony	Adigun A. Abiodun (Office for Outer Space Affairs of the United Nations Secretariat)
		Driss El Hadani (Morocco)
Friday, 30 October 1998		
0900-1500	Technical visit(s)	