REGIONAL COOPERATION ON SPACE APPLICATIONS FOR SUSTAINABLE DEVELOPMENT IN ASIA AND THE PACIFIC

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ABSTRACT

Since the inception of the Regional Space Applications Programme for Sustainable Development (RESAP) in 1994, significant progress had been achieved in the applications of space technology in the Asia-Pacific region. The Second Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, held in New Delhi in November 1999, launched Phase II of the regional programme. RESAP II views the overall development process in the light of the concept of sustainability and facilitates equitable sharing of the benefits of space technology applications among countries of the region. It is being designed with a cohesive Minimum Common Programme to contain a minimum number of prioritized projects which address problems of most countries in the region in the fields of environment and natural resources management, food security and agriculture systems, capacity-building, human resources development and education, poverty alleviation, natural disaster reduction, health care and hygiene, and sustainable development planning.

1. INTRODUCTION

Regional activities on applications of space technology in Asia and the Pacific have been initiated in the 1980s by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) with the ESCAP/UNDP Regional Remote Sensing Programme, under which remote sensing and GIS techniques have been widely introduced and applied among countries of the region. The potential that space technology, together with other information technology, had for providing appropriate solutions to sustainable development problems had been widely recognized. As sustainable development strategy requires appropriate integration of scientific and technological inputs into development processes, the remote sensing and GIS programme was expanded to include satellite communication and meteorological satellite applications as well as space sciences and technology applications.

2. REGIONAL COOPERATION IN SPACE TECHNOLOGY APPLICATIONS

2.1 Regional Space Applications Programme

The Regional Space Applications Programme for Sustainable Development (RESAP) was initiated at the First Ministerial Conference on Space Applications for Development in Asia and the Pacific, held in Beijing in September 1994. RESAP aims at assisting developing countries of the Asia and the Pacific to address environmental and development problems affecting the region and to integrate space technology into development planning for achieving sustainable development.

Since the inception of RESAP, encouraging development had contributed to greater awareness and use of space technology among both developed and developing countries of the region. A major successful activity was human resources development and the raising of the awareness of the use and potential of space-related technologies for sustainable development planning. With the expanding use of remote sensing and GIS activities, the countries made efforts to establish national coordination committees to coordinate activities of relevant government bodies. There was a move from research and education oriented activities towards the operational aspects of space technology applications, with increased efforts to improve the preparedness and mitigation systems on natural disasters using space and related information technologies. Joint government and private sector activities were initiated in the fields of satellite telecommunication, satellite meteorology and geoinformatics.

2.2 Regional cooperative network

ESCAP played a catalytic role in establishing and maintaining the framework of cooperation on space technology applications among countries in the Asia-Pacific region by pooling resources and bringing about self-reliance in this field. The regional cooperative network, embodied in the Intergovernmental Consultative Committee, the four Regional Working Groups and the Regional Information Service and Education and Training Network, provided a solid foundation upon which regional cooperative projects and activities could be built.

The Intergovernmental Consultative Committee on Regional Space Applications Programme for Sustainable Development (ICC on RESAP) is considered as the nucleus of the regional cooperative network. It has the major function to provide policy and technical advice for the most effective use of space technology and applications for achieving sustainable development of the region.

Four Regional Working Groups were established to promote regional cooperation in different themes of space technology applications for sustainable development in the region, one each on remote sensing, GIS and satellite-based positioning; satellite communication applications; meteorological satellite applications and natural hazards monitoring; and space sciences and technology applications. The Regional Working Groups provided a forum for promoting technology transfer and exchange of information and experience among participating countries, through the sharing of information, conducting of cooperative projects, undertaking related studies and participating in training programmes.

Cooperative projects and human resources development activities were undertaken respectively by the Regional Working Groups and the Regional Information Service and Education and Training Network through the Technical Cooperation among Developing Countries (TCDC) arrangements scheme.

2.3 Defining a new strategy and action plan

The Second Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, organized by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), was held at New Delhi in November 1999. The Conference provided a unique forum for high-level policy planners and decision-makers to exchange perspectives and information and to develop new policy scenarios for regional space development. The organization of the Ministerial Conference, being an immediate follow-up of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) held in Vienna in July 1999, took into account the recommendations of UNISPACE III and translated this universal goal into the regional context, developing a strategy suitable for regional conditions.

The Second Ministerial Conference carefully reviewed the progress of implementation of the Regional Space Applications Programme for Sustainable Development since its inception, as well as the arising issues, vision, challenges and opportunities of space technology applications for sustainable development in Asia and the Pacific. The Conference defined a new vision for the region, set appropriate goals in line with emerging technologies and increasing demands on limited resources and decided upon a result-driven and action-oriented programme under a new phase of implementation of the Regional Space Applications Programme. Two important milestones to enhance collaboration for regional space applications and development were issued, namely the Delhi Declaration on Space Technology Applications in Asia and the Pacific for Improved Quality of Life in the New Millennium; and the Strategy and Action Plan on Space Technology and Applications for Sustainable Development in Asia and the Pacific.

The Delhi Declaration launched the second phase of the Regional Space Applications Programme for Sustainable Development or RESAP II. Under this new phase, further cooperation would be encouraged under a strengthened and expanded three-tier network with partnership among government, industry and academia. Regional cooperative mechanisms would be institutionalized to facilitate equitable sharing of the benefits of space technology development and applications to all countries in the region to address societal and environmental problems. The least developed countries would be encouraged and be provided with the opportunities to share these benefits.

2.4 Issues for operationalization

In order to continue promoting operationalization of space applications in the region, the issues that need to be addressed include: human resource development; the involvement of the private sector, industry and academia in the RESAP activities; the strengthening of institutional frameworks and the improvement of national coordination mechanisms; the establishment of appropriate regional cooperative mechanisms; and further raising of the awareness of policy makers concerning the many beneficial uses of space technology applications.

Considering the shifting paradigms in development process, the Regional Working Groups would adopt a programme-oriented and multi-disciplinary approach for implementing its projects and activities under RESAP II. In seeking new partnership arrangement in the implementation of RESAP II, the Regional Working Groups would enhance participation with and derive benefits from other on-going cooperative programmes on space technology applications at the regional and global levels.

2.5 The Minimum Common Programme

To sustain the momentum of RESAP and to build on the foundation established during its implementation, RESAP II aims to promote further regional cooperation in space technology applications and to establish meaningful, cooperative, self-sustaining mechanisms for action-oriented, results-driven programme for optimizing human and financial resources in the region. This action-oriented programme, to be known as the Minimum Common Programme (MCP), would address common concerns of countries in the region.

The Minimum Common Programme, constituting the core element of RESAP II, is designed to contain a minimum number of prioritized areas of space technology applications to cover a greater number of countries and address issues that cut across national and sub-regional boundaries. It is aimed at synergizing efforts for the realization of the following goals:

- Environment and natural resource management;
- Food security and agriculture systems;
- Capacity-building;
- Human resource development and education;
- Poverty alleviation;
- Natural disaster reduction;
- Health care and hygiene; and
- Sustainable development planning.

The Minimum Common Programme outlined draft common denominator projects (CDPs) taking into consideration the recommendations laid out in the Strategy and Action Plan, which is designed for the period 2000-2005, the national interests and regional concerns as well as the donor strategies. The common denominator projects are intended to support the pursuit of economic growth that improves the welfare of people as ultimate beneficiaries without causing depletion of the resources that underpin development. The concept of sustainable development clearly incorporate the eight goals mentioned earlier and unify them into a cohesive interrelated set of common denominator projects that are to be carried out to support the implementation of the Minimum Common Programme.

Environment and natural resource management and sustainable development planning

Renewable natural resources of many countries in Asia and the Pacific have come under severe strain over the past decades. The rate of degradation and depletion of these resources has been accelerated in proportion to the increasing population pressure, consequently threatening food security and economic development of many countries in the region. The creation of a coherent regional database and the development of appropriate decision support tools have become pre-requisites for sustainable development of countries in the region.

Proposed common denominator projects to address the goals of environment and natural resources management and sustainable development planning would include the development and applications of a multi-purpose environmental and natural resources information base for food security and sustainable development, integrated coastal zone management, and integrated land and water resources management.

Food security and poverty alleviation

In the Asian-Pacific region, an estimated 526 million people, which account for almost two-thirds of the global estimate, are undernourished. It is imperative that food security is seen as a larger regional problem with the goal of sustaining food requirements and improving nutritional conditions of the population of the region. Poverty mapping and food insecurity vulnerability assessment would assist in the identification of basic patterns of food production and productivity for various countries in the region over time and to analyze the mechanisms that contribute to food insecurity conditions. The estimation of crop yield by integrating crop yield models with satellite remote sensing technology can be an effective tool in agricultural management and help in food insecurity mapping. The information generated will be used to help decision-makers formulate knowledgeable, timely decisions on possible interventions and the types of action required to protect or improve the food security situation of the population.

Proposed common denominator projects to address the goals of food security and agricultural systems and poverty alleviation would include poverty mapping and food insecurity vulnerability assessment, crop monitoring and agricultural production forecasting, the delineation of potential off-shore fishery area and inland aquaculture development, the mapping for groundwater potential and the identification of recharge zones, and research studies on precision farming and cropping system analysis. These projects would also address environmental and natural resources issues and contribute to the goal of sustainable development planning.

Capacity-building, human resources development and education

The majority of the world's poor are found in the Asia-Pacific region and it is estimated that three-quarters of them live in the rural areas. The rural population needs to be given greater access to resources as well as the many basic human services such as education and health care. The region comprises also more than half of the world's mega-cities, which will further grow in the first quarter of the twenty-first century. The lack of adequate urban and rural planning and management would result in the deterioration of the rural environment and generate further social and economic inequity. Space technology can contribute to enhancing satellite data and information exchange for establishing an operational system for tele-education services, which would as well support health care and disaster management in rural areas.

Proposed common denominator projects to address the goals of capacity-building, human resources development and education would include enhancing capacities for urban and rural development planning, integrated rural capacity building through satellite-based data and information exchange infrastructure, and the development of multi-media materials for interactive tele-education.

Natural disaster reduction

Owing to its geographic characteristics, the Asia-Pacific region experiences frequent occurrences of natural disasters. In recognition of the impact of natural disasters in the economic and social milieu of countries around the world, the UN General Assembly proclaimed the 1990s as the International Decade for Natural Disaster Reduction (IDNDR). Disaster reduction is essentially a medium-term to long-term activity. The International Strategy for Disaster Reduction (ISDR) now succeeds the IDNDR.

Proposed common denominator projects to address the goal of natural disaster reduction would include capacity building for disaster management, the development of inexpensive ground receiving and processing stations for meteorological satellite data, and the monitoring of the Asian monsoon and its impacts using satellite data, which would also contribute to the goal of capacity-building of the Minimum Common Programme.

Health care and hygiene

Poor health is often caused by a lack of a healthy environment, the absence of information, awareness and inadequate health services. The World Health Organization has launched its HealthMap Programme, which is aimed to promote and implement the use of mapping and GIS as operational tools for planning, monitoring, and managing public health programmes. Since 1997, the HealthMap Programme has used both GIS and global positioning satellites and, to a lesser extent, remote sensing to support the technical requirements of several tropical diseases programmes. The roles of space technology in providing health care and hygiene are diverse which include, among others, telemedicine and telehealth, as well as disease prediction. A seminar on global health at UNISPACE III recommended the use of remote sensing and GIS to improve human health and prevent infectious diseases, in particular in developing countries.

Proposed common denominator projects to address the goal of health care and hygiene under the Minimum Common Programme would include environmental monitoring and analysis for health care and hygiene, and telemedicine for rural population.

3. CONCLUDING REMARKS

By its nature, space technology applications for sustainable development is global and thus requires close cooperation between countries in the region. The Second Ministerial Conference had refocused the collective attention of countries in Asia and the Pacific to jointly face the many challenges for sustainable development and for improved quality of life of the people in the region.

Fundamental to the Minimum Common Programme are the regional cooperative mechanisms and support structures that will be established, including the creation of an environment conducive to partnership between government, R and D organizations, educational institutions and industry. At the regional level, ESCAP would to continue to play its instrumental role in coordinating projects of the Minimum Common Programme. Regional cooperation among countries in the region and collaboration with regional and international initiatives and partners are essential to the successful implementation of the recommendations of Ministerial Conference and to achieve the goals set for Phase II of the Regional Space Applications Programme.