



# INTERNATIONAL TELECOMMUNICATION UNION TELECOMMUNICATION DEVELOPMENT BUREAU

**WORLD TELECOMMUNICATION DEVELOPMENT  
CONFERENCE (WTDC-98)**

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**PLENARY MEETING**

## VALLETTA ACTION PLAN

### CHAPTER 1

#### **PROGRAMME OF COOPERATION AMONG THE MEMBERS OF THE TELECOMMUNICATION DEVELOPMENT SECTOR**

##### **I.1 Introduction**

This programme is intended to incorporate all decisions of meetings of world and regional development conferences, study groups, associated working parties and those of the Telecommunication Development Advisory Board (TDAB).

##### **I.2 World telecommunication development conferences**

It is assumed that in accordance with the Convention, the Council will convene a World Telecommunication Development Conference in 2002.

##### **I.3 Regional telecommunication development conferences**

Taking into account the programme of meetings in the period 1998-2002 and considering the need to plan the meetings of the study groups set up by this Conference, the Director of the BDT in consultation with the Secretary-General shall propose to the Council the regions for which such conferences should be convened.

##### **I.4 Study groups**

In accordance with Resolution ..., this Conference sets up two study groups as well as the Questions to be studied by them and their working methods. Each of the two study groups shall normally have two meetings within the study period. Study groups may set up working parties and decide on their meetings within their budgetary limits.

The following Questions were adopted by the Conference for study by Study Groups 1 and 2 during the period 1998-2002. Council (1998) may consider the order of priority.

### **Study Group 1**

- Question 1/1 Interconnection
- Question 2/1 Universal access/service
- Question 3/1 Establishment of an independent regulatory body
- Question 4/1 Impact of the introduction and utilization of new technologies on the regulatory environment of telecommunications
- Question 5/1 Regulatory impact of the phenomenon of convergence within the telecommunications, broadcasting, information technology and content sectors
- Question 6/1 Factors to create a climate favourable to investment
- Question 7/1 Tariff policies, tariff models and methods of determining the cost of national telecommunication services
- Question 8/1 Promotion of infrastructure and use of the Internet in developing countries
- Question 9/1 The role of telecommunications in social and cultural development, including the protection and promotion of indigenous culture and identity
- Question 10/1 Technology transfer

### **Study Group 2**

- Question 1/2 Identify study group Questions in the ITU-T and ITU-R Sectors which are of particular interest to developing countries and systematically, by way of annual progress reports, inform them of the progress of work on the Questions to facilitate their contributions to the work on those Questions as well as, ultimately, to benefit from their outputs in a timely manner
- Question 2/2 Communications for rural and remote areas
  - a) Communications for rural and remote areas
  - b) Development of multi-purpose community telecentres
  - c) Penetration and service target for rural telecommunications
  - d) Definition of a set of indicators describing the state of development of a country's rural telecommunication network and services
  - e) Sound and television broadcasting and communication for rural and remote areas
  - f) Measurement of the impact of information and communication technologies in rural and remote areas
  - g) Enhancing the capacity of the NGOs to achieve development aims, through the use of telecommunication
- Question 3/2 Examine digital broadcasting technologies and systems, including cost/benefit analyses, assessment of demands on human resources, interoperability of digital systems with existing analogue networks, and methods of migration from analogue to digital technique

- Question 4/2 Examine broadband communications over traditional copper wires on aspects of technologies, systems and applications
- Question 5/2 Fostering the application of telecommunication in health care. Identifying and documenting success factors for implementing telemedicine
- Question 6/2 Human resource management and development to successfully meet the challenges of sector reform and transformation, with special emphasis to employment including consideration of gender issues

### **[I.5 Advisory committee on human resource development**

In accordance with Resolution ..., this Conference established an advisory committee which will provide guidance and advice in the field of human resources development, new technologies and new services.

Specific areas or actions to be pursued by the advisory committee could include, but not be limited to, the following:

- preparation of handbooks for developing countries;
- updating of the annexes to the ITU-D handbooks;
- preparation of guidelines and handbooks (case studies);
- formulation of guidelines for developing countries, taking into account the regulatory, financial, technical, human resources and maintenance aspects;
- preparation of handbooks for human resources management and development.]

## CHAPTER 2

### **VALLETTA ACTION PROGRAMMES**

#### **Preamble**

In building on the achievements of the Telecommunication Development Sector in a rapidly changing telecommunication environment, the Valletta Action Plan is focused on activities and programmes which are directed toward the achievement of the purposes and objectives for the ITU-D set out in the Constitution and Convention. In addition to the 6 programmes specifically enunciated in the Action Plan, the World Telecommunication Development Conference (Valletta, 1998) emphasized the importance of establishing a special programme for the LDCs and elaborated a set of issues to be included as a regular part of the operational plan of the BDT which will be part of the programmes either as a focus group activity or as a regular activity of the ITU (see Annex 1 to Chapter 2). The Conference also emphasized the need for gender balance in its programmes and to reflect the needs of other aspects of global society such as youth and the needs of indigenous peoples. Emergency telecommunications is another area where renewed efforts are required. Collaboration with the private sector should be more clearly defined and expanded to reflect the changing roles of public and private entities in the telecommunication sector. As a matter of urgency, the "Year 2000" problem should be addressed. ITU-D should also use the mechanisms for advancing Sector goals included in Opinion B of the World Telecommunication Policy Forum, Geneva, 1998 and the opportunities provided by the ITU TELECOM Surplus Programme. In addition, the implementation of annual operational and financial planning within the ITU-D is

considered to be very important from the point of view of optimizing the efficiency of the BDT in carrying out its work plan.

Electronic information exchange is useful for multilateral decision-making processes. This should be encouraged, for all developing countries, in particular LDCs, so that they may participate in electronic exchanges on a fair basis. The ITU should contribute to sustainable projects supporting these objectives.

During the period 1999-2003, the strategic processes of the Development Sector will incorporate all resolutions and recommendations adopted by this Conference, as well as all other pertinent ITU resolutions and recommendations of other relevant conferences.

## **Programme 1: Reform, legislation and regulation of telecommunications**

### **Purpose**

The purpose of this Programme would be to assist governments in the preparation and implementation of reform keeping in view the technological convergence of telecommunications, broadcasting and informatics having regard to the progressive globalization of the telecommunication and broadcasting sector.

This would entail, *inter alia*, the elaboration of national telecommunications and broadcasting policies, the establishment of independent and autonomous regulatory body/ies the drafting of new or modified legislations and designing optimal institutional structures.

The programme will explore various ways to assist governments in developing the structure of the regulatory body, the mechanisms to finance the regulatory bodies to ensure independence and to assist in training, licensing, staffing needs and overall management.

### **Activities**

#### **1.1 Studies and reports**

- Publishing on an annual basis the report *General Trends in Telecommunication Restructuring*, highlighting trends on a global and regional basis, and using information gathered in the annual Telecommunication Regulatory Survey (see activity 1.3).
- Preparing and disseminating Manuals and Guidelines on regulation, including structural options for regulatory bodies; scope and authority of the regulator, licensing procedures; interconnection; universal service; regulation of Global Systems, etc.
- Conducting case studies of different models or approaches undertaken in the reform process, identifying advantages and disadvantages.

#### **1.2 Workshops/seminars**

A series of workshops/seminars for Regulators and/or Policy Makers will be carried out in order to provide a forum for the exchange of opinions, views and experiences among countries on specific areas/concerns in sector reform. These workshops/seminars will be carried out on a regional/subregional basis, and to the extent possible, in collaboration with relevant international and regional/subregional organizations. The participants will be primarily Regulators, or in the case that no "Regulator" exists, officials having responsibility for regulatory/policy making functions. Workshops and seminars will be carried out using traditional means, as well as electronic means through the Virtual Training Center (see activity 1.4).

Partnership and collaboration arrangements will be pursued with existing Regulatory Associations (e.g. Asian Telecommunication Regulators Council-ATRC). In regions/subregions where no association exists, ITU/BDT will provide the forum for discussion.

### **1.3 Regulatory library**

In order to keep track of the rapid reforms underway in the sector, ITU/BDT will establish an electronic library which will include key regulatory information as well as basic laws/legislation of all ITU Member States.

Specific tasks for this activity include:

- Documenting national communication policies and regulations through the dissemination of the ITU/BDT annual Telecommunication Regulatory Survey.
- Enhancing the ITU/BDT Regulatory Database and providing on-line access.
- Expanding the ITU/BDT Telecommunication Regulation web site to include: links to regulators that have web sites; contact information for all regulators; basic regulatory information on all countries; access to all basic telecommunication and broadcasting laws; studies and reports on key issues of regulation. A search engine to facilitate easy use of the system will be created. Assistance will also be provided to those regulators who do not yet have World Wide Web pages.

### **1.4 Training**

This activity will provide relevant training to regulators of developing countries, together with the Human Resources Development and Management Programme (i.e. Programme 6). Training will be based on the Manuals and Guidelines elaborated in activity 1.1 and using both traditional and electronic means. Collaboration will be continued with already established training institutions.

### **1.5 Direct assistance**

Under this item, direct assistance will be provided to developing countries, in particular the Least Developed Countries (LDCs). ITU/BDT will endeavour to use its own in-house expertise, to the extent possible subject to budgetary appropriations.

This activity will include, among others, providing short-term assistance to countries in:

- Drafting the national communication policies and strategies and setting up a national consultative mechanism.
- Introducing or modifying the relevant legislation to facilitate the reform implementation.
- Establishing regulatory Body/ies- assisting in implementing the Guidelines on the establishment of a Regulatory Body/ies or making the established Regulatory Body/ies functional, etc.

Establishing a regulators net-line/hot-line where assistance can be provided by telephone, fax, or Internet.

## **Programme 2: Technologies and GII development and applications, including GMPCS and Internet**

### **Purpose**

The convergence of broadcasting telecommunications and informatics, enabled by digital technology, offers sizeable opportunities for the implementation of (appropriate) new technologies by developing countries.

The purpose of the programme is to assist developing countries to plan, build, operate, upgrade, manage and maintain technologies applicable in their networks and services. Attention should be given to resource mobilization.

Applied research and the transfer of technological knowledge, should be an indispensable part of the task of expediting the access of new technologies on a non-discriminatory basis to developing countries and countries in transition economies and should be carried out by various means including symposia, workshops, conferences, seminars, experts advice, etc.

The issues of network reliability and quality of service will continue to be of considerable interest to developing countries. To this end, the programme should focus on management issues, marketing techniques and the introduction of new services taking into account the recent trends in telecommunication, broadcasting and informatics development.

In accordance with the wishes of the regional development conferences and relevant fora, it is proposed to give priority to the following technology-related domains:

#### **a) Spectrum management and monitoring**

Strengthening of Regulatory entities in Administrations together with a national structure for spectrum management, supported by the necessary frequency assignment registration and monitoring facilities, is proposed. It is proposed to continue activities on implementation of the Basic Automated Spectrum Management System (BASMS) while shifting the emphasis to speedy establishment and implementation of an Advanced Spectrum Management System (ASMS) including the elaboration of specifications, development of relevant software and accompanying documentation based on those specifications, taking into consideration the design guidelines for the development of such systems as approved in ITU-R SM.1370.

#### **b) Network and infrastructure planning**

Optical fibre networks, radiocommunication terrestrial networks and satellite communications networks will form the future Global Information Infrastructure (GII) of the world. Moreover Global Mobile Personal Communication Systems (GMPCS), cellular mobile telephone systems and data broadcasting will have a growing importance in enhancing the GII. Programme activities should focus on relevant technological developments and be accordingly documented to enable developing countries to modernize their networks. The needs of various services including sound, TV and data broadcasting should be reflected. Assistance and advice on information infrastructure matters should be made available to ITU and Sector Members from the developing world.

#### **c) Innovative technological applications**

Internet, world-wide web and multimedia applications should be closely monitored and relevant advice be made available to developing countries. Further innovative applications of new technologies should be promoted via pilot projects (such as rural telecentres, tele-medicine, life-long distance learning, protection of the environment, etc.). Relevant technological solutions

should be integrated into overall network planning with the aim of improving project sustainability and enabling relevant system standardization. The BAAP experience showed that the approach to focusing the actual planning work and operational responsibilities on a national task force was quite productive and cost-efficient and should be encouraged to be continued.

### **Activities**

- 2.1** Elaboration of technology-oriented guides, planning manuals and professional engineering training material;
- 2.2** Development of PC user-friendly software tools/software support and provision of training courses;
- 2.3** Regular organization of regional seminars, symposia, workshops, etc. On new technologies with documented proceedings in print and electronic form;
- 2.4** Provision of methodological and expert assistance to national task forces in planning and implementation of innovative pilot projects and making available relevant information to interested parties. Close cooperation and partnership with Sector Members and industry should be encouraged;
- 2.5** Engineering assistance to ITU and Sector Members in the developing of project documents and project implementation, producing feasibility studies as well as the provision of technical consultation and advice on technology-related matters by means of short missions or correspondence;
- 2.6** To provide consultancy support in engineering matters to the Study Groups, to UN or relevant specialized agencies of the UN family.

### **Programme 3: Rural development and universal service access**

#### **Purpose**

The purpose of this programme is to continue to promote universal access, not only to basic telecommunications, but also to broadcasting and to value-added services and, in particular, the Internet, as tools for development. To this end, the BDT will continue to work collaboratively with other development agencies and the private sector in the field of Information and Communication Technology (ICT) development, with particular focus on rural and remote areas.

Priority will be given to continuing the support to the ongoing programme of rural Multipurpose Community Telecentre (MCT) pilot projects, started by the BAAP Programme No. 9 and Spacecom project. The objective of this programme is to develop and test sustainable models for provision of universal access to ICT-based services in rural and remote areas.

The pilot projects will provide answers to questions, related to choice of technology, policy and regulations, tariffs and financing strategies and partnership arrangements, capacity building and marketing of services, etc. They will explore appropriate concepts for providing broadcasting service to underserved rural populations. They will also provide a test bed for development of content and services adapted to the particular needs and conditions of developing countries. Thus, they provide ideal platforms for cross-sectional, private-public sector collaboration and the experience gained will assist decision makers in the development of appropriate information and communication policies and infrastructure plans.

## **Activities**

### **3.1 Implementation and evaluation of MCT pilot projects**

BDT will continue to support the rural MCT pilot projects already started or planned. Funding has in many cases been pledged by the ITU and its international partners. Some additional pilot projects may be justified to ensure the development of a wide range of optional models adapted to different socio-cultural and geographical conditions. BDT's participation and assistance is particularly essential in the impact evaluation and identification of sustainable, replicable best-practice models and appropriate technologies, with a view to promoting the implementation of MCTs at a large scale and, hence, universal access.

### **3.2 Awareness and capacity building activities (training)**

This includes organization of symposia and training courses for information and communication service managers, technicians, developers of services and applications, such as telemedicine, tele-education, teletrading, as well as for end users. Several such events are already planned or proposed as part of ongoing collaborative planning, e.g. regional symposium on telematics for development in the Americas, Asian and European regions, where such symposia have not yet been held and the Internet related training programme for Africa within the framework of the UN Special Initiative for Africa and the African Information Society Initiative.

When possible, such activities will be linked with the MCT pilot projects which provide "laboratories" for developmental testing of applications relevant to rural populations.

### **3.3 Web site development**

Development and maintenance of a fully fledged BDT web site, describing programmes and activities, opportunities for partners, etc. And including links to all relevant documents produced by the BDT (ITU-D Study Groups contributions and reports, studies made, non-confidential mission reports, description of pilot projects and pipeline projects). Databases should be designed in such a way that it could be easily used to update the PICTA<sup>1</sup> database maintained by IDRC for donor coordination purposes.

## **Programme 4: Finance and economics, including WTO issues, tariffs, accounting rates, etc.**

### **Purpose**

The purpose of this programme is to help the developing countries, and in particular the LDCs, to adapt to the new telecommunication environment by the putting into place the appropriate financial policies with emphasis on the following activity areas:

- a framework to assist in the follow-up to the second WTPF;
- assistance to governments in the introduction of new financing schemes for the development of their telecommunication networks, including public service broadcasting networks;

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<sup>1</sup> PICTA = Partnership on Information and Communication Technologies for Africa is an informal forum for donor coordination. Many UN organizations, the WB and ITU participate in this, as well as some bilateral agencies and a number of Foundations.



- assistance to governments, particular in collaboration with the WTO, UNCTAD, and the World Bank in the negotiation process of the GATS;
- assistance to governments in dealing with the consequences of the reform of the international accounting and settlement system.

The following areas will be accorded particular attention:

### **Financing strategies and policies**

The provision of assistance and guidance to telecommunications and public service broadcasting organizations (administration, regulators, operators, regional organizations) in order to set up financial policies and strategies, advising policy-makers on the options available in tailoring policies, in particular through expert missions to countries, participation in regional and subregional workshops through the publication of annual reports.

### **WTO agreements on basic telecommunication and GATS**

The provision of assistance to developing countries, particularly in collaboration with the WTO, UNCTAD and the World Bank on issues related to the GATS, from a development perspective, taking into account the principles set out in the WTO reference paper.

### **Tariffs, international accounting and settlement rate issue**

Helping the developing countries to participate in, and make contribution to, the work of the focus group of Study Group 3 of ITU-T and more generally, helping countries to review their international settlement policy.

### **Activities**

- 4.1** To assist in developing new configurations of joint financing, management and revenue sharing.
- 4.2** To publish and update, on an annual basis the report on financial institutions and creating a financial institution Web site to disseminate information.
- 4.3** To disseminate information (case studies and models) on the financing of rural telecommunications which meet the criteria of affordable cost and an acceptable rate of return.
- 4.4** To assist countries in setting up a universal service and access fund suitable to their specific conditions.
- 4.5** To enhance collaboration with, among others, the development banks and WorldTel.
- 4.6** To build national negotiation capabilities in order to be able to participate fully in negotiations with their partners.
- 4.7** To assist countries to integrate into their financial strategies the changes in the evolving international telecommunication environment by organizing:
  - a series of workshops for countries to enable them to plan the stages of the financing restructuring process taking into account the WTO reference paper;
  - subregional information seminars to describe the implications of the WTO agreements on basic telecommunications and models of commitments already undertaken by countries.
- 4.8** To support the transition in accounting rates, and settlement and tariff reforms, by organizing in every region a task force of national experts under the leadership of BDT

regional experts. This task force will be charged with organizing regional group training workshops for public and/or private entities on the following themes:

- financial management of enterprises;
- price and cost calculation methods;
- methods for reducing the impact on the developing countries of the reforms in the system of accounting rates and tariff rebalancing.

In addition, BDT will organize training on the introduction of analytical accounting (for example, within the centres of excellence) and will help countries implement such practices by developing appropriate computer programs.

**4.9** To support the work of Study Group 3 (TSB) in:

- compiling a database and Web pages to establish basic information to enable comparisons on macro-economic data, cost data, trends and scenarios for tariffs and international settlement rates;
- presenting at regional or subregional level, case studies already conducted, and validating the results in ITU-T regional tariff groups or any other relevant regional working group (recognizing the need to avoid overlap with the work of the regional tariff groups). The results of the work of these groups should allow contributions to be made to the work of the focus group established under the responsibility of the ITU-T study group.

**4.10** To promote, in collaboration with other relevant international organizations, the application of tariffs for the use of telecommunications networks by publicly funded services such as education, health care and public service broadcasting.

### **Programme 5: Development partnership with the private sector**

To promote various types of partnership arrangements with the private sector in activities related to telecommunication development including, *inter alia*:

- participation in government or internationally financed pilot projects, such as telecommunication training, telemedicine and distance learning;
- establishment of joint ventures and strategic partnerships with public and private entities of all sizes and types in all countries, with particular emphasis on building partnerships between private sector in developed countries and developing countries in order to strengthen the private sector in developing countries; and
- facilitating activities related to telecommunication sector development of mutual benefit to the partners;
- working for an improved understanding between the developing countries and the private sector to the mutual benefit of all ITU-D members.

## Activities

### 5.1 BDT cooperation

BDT will undertake:

- to encourage participation by new private sector members with the ITU-D, highlighting opportunities to take part in the development of all telecom activities beneficial to potential customers, with emphasis on those in developing countries;
- to develop its capabilities as an important source of information for partnerships and business opportunities with telecom entities in the developing countries, and in particular in the least developed countries, to enhance the interest of the private sector to participate in ITU-D project activities.

### 5.2 Private sector collaboration

The scope of tasks of the private sector should include, *inter alia*:

- To recommend mechanisms by which the private sector, through ITU-D, can better participate and influence BDT strategy development, programme design and project delivery, with the overall goal of increasing mutual responsiveness to the requirements of telecommunication development.
- To identify mechanisms to enhance cooperation and arrangements between the private and public sectors as well as between private sector entities in developing countries and in developed countries by building upon the recommendations of ITU-2000.
- To advise on the means by which partnership with the private sector can be enhanced; to seek means to reach out to the private sector of developing countries and the many small companies in industrialized countries that are not knowledgeable of BDT activities; and to determine modifications to ITU-D processes, practices and projects that would facilitate and encourage private sector support, cooperation and participation.
- To advise on integrating the financial contributions of the private sector more fully into the activities of the BDT while ensuring requisite financial transparency to provide understanding of functions and priorities.
- To review the essential products of ITU-D which should be developed by Sector Members and the BDT secretariat.
- To discuss means to ensure that increased private sector participation is built into the Valletta Action Plan and the study group cycle.
- To coordinate its activities with those of Programme 2, especially the follow-up of GMPCS activities.

The subgroup of TDAB on private sector issues would be expected to advise on the details of Programme 5.

## Programme 6: Capacity building through human resources development and management

### Purpose

To assist developing countries to build institutional and organizational capacity through human resource management and development and organizational development activities. These activities

will use and demonstrate modern techniques including distance learning, computer-based and teletraining to increase effectiveness and reduce costs, and reflect developmental objectives related to access and gender.

These activities will be carried out in six main areas:

- 6.1 Transfer of knowledge:** through training by strengthening national and regional centres to cope with new technologies, centres of excellence (including broadcasting), partnership with training institutes, emphasizing areas of interest such as spectrum management, modern management techniques and the training of managers and executives in order to adapt to the changing regulatory and commercial environment. This includes training for building business cases, managing the process of sectoral reform, introducing new services and marketing.
- 6.2 Sharing of experience and know-how:** among Members of ITU and of the Development Sector using study visits and internships, electronic round-tables and task forces to focus on common issues, through regional and interregional HRM/HRD meetings, the programme of technical cooperation between developing countries (TCDC), and other technical consultancy support to the ITU-D study groups and United Nations organizations, and any other means which are effective and efficient for the Members of ITU.
- 6.3 Assistance** to telecommunication and broadcasting organizations in HRM/HRD including the use of experts on short missions, the Virtual Training Centre, analyses of training needs, feasibility studies, design and preparation of project document models, guidelines and tools for practical applications, helping in financing and providing professional support for implementation.
- 6.4 Distribution of information:** through enhancement of the human resources development information system including information and data on training opportunities, best practices and case studies, training materials, and directory of training centres and through the publication of the Human Resource Development quarterly.
- 6.5 Training and human capacity building:** through the centre of excellence concept utilizing both strengthened, subregional training institutions and a network of institutions for senior government officials and executive level managers from the private sector focusing on areas such as telecommunication policies, restructuring, regulatory reform, spectrum management, network harmonization, business strategies, new services and technologies, corporate management, human resources development and management, and any other area of interest identified by the Members of ITU.
- 6.6** The exchange of experiences and know-how between ITU members and ITU-D Sector Members, through round-table discussions and by the formation of action groups mandated to examine issues related to the human and social dimension of the restructuring of the telecommunication sector in developing countries.

## CHAPTER 3

### SPECIAL PROGRAMME FOR LDCs

[See Document 244.]

ANNEX 1

**List of Study Questions approved by the Conference to be incorporated  
into the BDT Operational Plan**

**A Studies Questions related to focus groups**

- 1) Maintenance-oriented investments - information and computer-aided tools for evaluation of expansion/maintenance needs of bids for procurement of equipment
- 2) Guidelines/procedures for improving efficiency of maintenance of software SPEC switches
- 3) Computer-aided tools and error-free traffic data acquisition procedures for strengthening the traffic administration systems of SPC switches to serve the need of competitive telecommunication markets
- 4) Using telecommunication and telematics to enhance learning environments for development
- 5) Collaboration between sectors of public interest and telecommunication operators
- 6) Year 2000 - Millennium problem
- 7) Study various mechanisms by which to promote the development of new telecommunication technologies for rural applications

**B Study Questions related to BDT regular activities**

- 1) The role of telecommunications and information technology in economic development
  - 2) The economic obstacles to access to telematic services
  - 3) How to enhance satellite telecommunication services in developing countries and, in particular, implementation of the new satellite-based technologies applications
  - 4) Telecommunication support for the protection of the environment
  - 5) Application issues of frequency management
  - 6) The formulation of a strategy for development of telecommunications network in developing countries
  - 7) Virtual knowledge city
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