



INTERNATIONAL TELECOMMUNICATION UNION TELECOMMUNICATION DEVELOPMENT BUREAU

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PLENARY MEETING

Telecommunication Development Bureau

PROPOSED NEW QUESTIONS AND FOLLOW-UP OF EXISTING QUESTIONS FOR THE NEXT STUDY PERIOD (FULL TEXT)

- 1 The role of telecommunications and information technology in economic development
- 2 Universal Access/Service
- 3.1 Interconnection
- 3.2 Networks interconnection under multi-operator environment
- 3.3 Interconnection issues in a multi-operator environment in developing countries
- 4 Establishment of an independent Regulatory Body
- 5 Regulatory impacts of the phenomenon of convergence within the telecommunications, broadcasting, information technology and content sectors
- 6 Methods to enhance the viability of public service broadcasting, particularly focusing on developing countries
- 7 Impact of the introduction and utilization of new technologies on the regulatory environment of telecommunications
- 8 Factors to create a climate favorable to investment
- 9.1 Tariff policies and methods of determining the costs of telecommunication services
- 9.2 Tariff models and methods for cost calculations
- 10 Technology transfer and information
- 11 The economic obstacles to access to telematic services
- 12 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

- 13 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
- 14 Examine broadband communications over traditional copper wires on aspects of technologies, systems and applications
- 15 How to enhance implementation of Satellites in developing countries
- 16 Preparation of handbooks for developing countries:
 - Handbook on new developments in rural telecommunications.
 - Handbook on new technologies and new services.
 - Handbook on the legal, economical and structural aspects for the introduction of a new national radio-frequency spectrum management and monitoring system.
- 17 Maintenance-oriented investments - information and computer-aided tools for evaluation of expansion/maintenance needs of bids for procurement of equipment
- 18 Guidelines/procedures for improving efficiency of maintenance of software SPC switched
- 19 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
- 20.1 Communications for rural and remote areas
- 20.2 Development of multi-purpose community telecentres
- 20.3 Penetration and service target for rural telecommunications
- 20.4 Definition of a set of indicators describing the state of development of a country's rural telecommunication network and services
- 20.5 Sound and television broadcasting and communication for rural and remote areas
- 20.6 Measurement of the impact of information and communication technologies in rural and remote areas
- 21.1 Enabling human resources to successfully meet the challenges of sector reform and transformation
- 21.2 Human resource development and management with special emphasis to employment including consideration of gender issues
- 22 Fostering the application of telecommunication in health care
- 23 Telecommunication support for the protection of the environment
- 24 Using telecommunication and telematics to enhance learning environments for development
- 25 The development of long term strategic plans for the future use of the frequency spectrum in developing countries
- 26 Collaboration between Sectors of public interest and telecommunication operators
- 27 Enhancing the capacity of the NGOs to achieve development aims, through the use of telecommunication

[Taken from SG 1 1995 Doc. 1/214 (Rev. 1)]

1 The role of telecommunications and information technology in economic development

1 Statement of Problem or Situation

The World Telecommunication Development Conference, Buenos Aires (1994) identified the "Role of Telecommunications in Economic, Social and Cultural Development" (Question 1/1) as a topic for study:

"in order to provide political decision makers with an overview of the role played by telecommunications in a country's economic, social and cultural development, whatever studies and information are accumulated by other countries should be shared, with a view in particular to quantifying the economic benefits of including the telecommunication sector in general national or regional development plans."

The objective was to assemble the currently available evidence to assist decision-makers to assess the effects of a nation's investment in telecommunications have on economic development.

Quantification of benefits would help determine accurately the composition and level of investment in telecommunications needed to allocate national resources efficiently.

The Study Group 1, reiterates the importance of the study, the results of which will be of assistance in policy formulation, particularly in developing countries and recommends that work on the Question should continue on an on-going basis, with concentration on the economic benefits after the recognition of telecommunications on a trade by itself.

However, there is need to amend the scope of the study to reflect the reality of convergence of technologies and the development of telecommunications on a trade by itself. It is desirable, therefore that information technologies are included in the scope of the study. At the same time it is necessary to limit the scope the study to the impact of telecommunication and information technologies on economic development as a sector by itself and to analyse its impact on other sectors, in particular agriculture, tourism, industry, education, health, transport, environment, etc.

2 Question or Issue Proposed for Study

Continue to analyse the available evidence that helps us to assess the impact of information and telecommunications on economic development? Implicitly this would also involve a discussion of the techniques and tools of analysis to quantify the benefits of telecommunications in the information age.

What are the gaps in available evidence and what new evidence needs to be collected. What is type of evidence that needs to be collected in developing countries which will yield generalizable and comparable results?

How to maximize the benefits on different categories of the population at different spacial locations?

3 Description of the Expected Output

An updated Report with an Executive Summary (Ref. Doc. 1/183).

4 Required Timing of the Expected Output

3-4 years.``

5 "Proposers/Sponsors" - Those who requested study of the Question or Issue

Study Group 1.

6 Sources of Input Required, in Carrying out the Study

Reports of case studies carried out in developing countries, reports by experts in universities and research institutions; national organizations involved in assessment of the impact of information and telecommunications; international organizations dealing with health, education, agriculture, environment, industry, etc.

7 Target Audience for the Output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed Countries	Developing Countries	LDCs
Telecom Policy makers	X	X	X
Telecom Regulators	X	X	X
Service Providers (operators)	X	X	X
Manufacturers	X	X	X

b) Target Audience - Who specifically will use the output

First, political decision-makers; national planners; decision-makers responsible for other socio-economic sectors have been identified as the primary target by the Question 1/1. Second, it could be said that all the categories in developing countries and LDCs could be the second order target audience. Third, it is also possible that the report could find audience in the developed countries as well, particularly because the issues and quantitative techniques relevant to developing countries also have a bearing on industrialized countries which are addressing the problems of peripheral areas, inner cities and loss of employment in traditional industries. Fourth, the public as a generalized target.

c) Proposed Methods for the Implementation of the Results

Wide dissemination of the results, particularly in developing and least-developed countries.

8 Proposed Method of Handling this Question or Issue

a) How. Indicate the suggested handling of the proposed Question or Issue

- 1) Within a Study Group
 - Question (over a multi-year study period)
 - Focus Group (12 months duration maximum)
- 2) Within Regular BDT Activity
 - Programmes
 - Projects
 - Expert consultants
- 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) (UNESCO)

b) Why. Explain why you selected the alternative under a) above

The study shall be conducted on a project basis with the assistance of consultants.

9 Coordination Requirements of the Study

Identification of the requirements of case studies in a specific sector in a country, with the involvement of the national authorities shall conduct the study, with the assistance of relevant bodies, such as research institutions and universities.

Regional organizations; international organizations such as UNESCO, WMO, WHO, FAO, UNEP, UNCTAD Trade points. National agencies which have conducted studies in this area, e.g. USAID studies on evaluation of satellite communication in the Pacific; the Indian Space Research Organization's study on evaluation of SITE programme, China, ETDRC. BDT activities, particularly on the aspect of assessment of the impact of the projects and programmes undertaken, such as community telecentres.

10 Other Relevant Information

[New text]

2 Universal Access/Service

1 Statement of Problem

One of the greatest challenges for all countries is ensuring that an ever larger proportion of their population has access to affordable telecommunications, which is often called universal access/service. Whether the specific goal is to provide telecommunication access to a particular portion of the population, to achieve certain levels of telecommunication penetration, or to ensure that specific services are provided to a particular group, all telecommunication policy makers must address the universal access/service needs of their countries. For further information see the annex.

2 Question or Issue Proposed for Study

The Study Group should establish a set of best practice guidelines for developing countries to take into consideration when developing policies, legislation, and/or regulations to address the critically important issues involving universal access/service. To efficiently and effectively study the issue of universal access/service, the Study Group should build on the work already done by ITU and in particular work already done for Questions 2/1, 3/1, 4/2, and 6/2 for the 1994-1998 study period of the ITU-D and other available materials, e.g., the 1998 World Telecommunication Development Report. To establish the best practice guidelines, the Study Group shall:

- 1) Identify the goals, impacts and expected benefits of existing different universal access/service policies, [*can't read*] explaining the rationale for making these determinations.
- 2) Describe the use and the regulatory implications of new technologies and services in order to maximize the benefits that these technologies can provide for the expansion and improvement of telecommunication services.
- 3) Identify the most common, as well as the most innovative, approaches to achieving universal access/service goals when the private sector is responsible for implementing the telecommunication development initiatives, describing the advantages and disadvantages of each approach.
- 4) Identify guiding principles for raising, allocating, and administering universal access/service programmes, such as transparency, equitable distribution and access, competitively and technologically neutral allocation, and targeted to users.
- 5) Describe the legislative and regulatory frameworks that would be needed to implement universal access/service programmes or initiatives.
- 6) Identify and analyse the relationship that universal access/service policies have on other key telecommunication issues that arise as countries transition to increased competition, such as access charges, interconnection frameworks and agreements, accounting rates, and tariff rebalancing.

3 Description of Expected Output

The output produced during the study of this question should be divided into two stages. The first stage would be mainly descriptive and would provide a review of currently existing universal access/service mechanisms described in tasks 1-4 above. This information would be suitable for providing the necessary background and information on alternatives for universal access/service mechanisms for government officials and telecommunication service providers. This part of the output would focus on casting a framework that could be used to develop detailed procedures to implement a universal access/service programme. The information contained in the first stage of the output could serve as a stimulus for legislative sectors of government to address the issues associated with providing universal access/service.

The second stage would focus on practical information that would be directly applicable to regulators, administrators, and telecommunication service personnel at the working level in order to implement and operate universal access/service programmes. The information obtained during the first stage of the output would be used during the second stage to establish best practice guidelines and recommendations for regulators, administrators, and telecommunication service providers for implementing universal access/service programmes.

4 Required Timing of Expected Output

Because the information gathered for the study question will be useful for countries introducing or reassessing their universal access/service programmes, it should be disseminated as early as possible and without waiting for a final work product of the question. By the end of the first third of the study period, the first stage of the output should be produced. The second stage should be released as soon as practicable after the first stage but not later than the last meeting of the Study Group during the 1998-2002 study period.

5 Proposers/Sponsors of the Question

This Question is a direct result of the study of Questions 2/1 and 4/2 during the study period 1994-1998. There was consensus that the issue of universal access/service is of tremendous importance to many countries, particularly developing countries, and that study should continue on those particular aspects of Questions 2/1 and 4/2, as well as other related Questions such as 3/1 and 6/2. The Rapporteurs for Question 2/1 and 4/2 proposed the specific question, in addition many Member States and Sector Members have also expressed great support for the continued study of this issue.

6 Sources of Input Required for Carrying Out the Study

An important source of input will be the experiences of those countries that have made the greatest gains in establishing universal access/service concepts, including the use of new technologies, programmes and funds. In addition contributions from Members and Sector Members will be essential to the successful study of this issue. Interviews, existing reports, ITU materials including previous work of Study Group questions, Colloquia, and surveys should also be used to gather data and information for distillation into a comprehensive set of best practice guidelines for administering universal access/service programmes. Materials from regional telecommunication organizations should also be utilized to avoid duplication of work.

7 Target Audience for the Output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows**

	Developed Countries	Developing Countries	LDC's
Telecom Policy Makers	Interested	Highly interested because of unmet needs	Highly interested because of critical and unmet needs
Telecom Regulators	Interested and experienced with different models	Highly interested and some countries have implemented innovative approaches	High interest but often no legal framework to implement policies
Service Providers (Operators)	Small operators interested Large operators cautious and usually beneficiary of status quo	Private sector, particularly new technologies, highly interested but government monopolies less so	Government monopolies relatively unsuccessful
Manufacturers	Moderate interest	Moderate interest	Significant Interest

b) Target Audience - Who specifically will use the output

Based on the foregoing evaluation matrix, a broad range of telecom policy makers, regulators, and service providers from LDC's and developing countries will all be highly interested in the results of this question. Policy makers and regulators from developed countries may be interested in the compendium of approaches. Manufacturers will be interested in potential equipment and system sales, as well as in technology transfer opportunities, involving the manufacture of equipment and systems in developing countries under mutually beneficial partnership and joint venture arrangements.

c) Proposed methods for implementing the results

The results should be distributed in the traditional manner at the ITU-D Study Group meetings. However, given the importance of this issue, the BDT could also conduct regional seminars and meetings, perhaps in conjunction with regional telecommunication organizations, to disseminate the results of the question. The results could be published by the ITU for wider distribution.

8 Proposed method for handling this Question

a & b) How and Why

Because the issue of universal access/service is of such great importance to all countries, the study of this question should be within a Study Group over a multi-year study period with interim results as indicated above.

9 Coordination Requirements of the Study

Because the issue of universal access/service is closely related to other issues being studied by the ITU, a great amount of coordination will be required within the ITU-D Study Groups as well as the Study Groups from other ITU sectors. Close coordination will also be required between the BDT and those responsible for this question. Regional organizations such as CITELE and APEC are also currently considering issues regarding universal access/service. Thus, coordination with those organizations should be undertaken to reduce duplication of efforts.

[New text]

3.1 Interconnection¹

1 Statement of Problem

The key to development of a telecommunication infrastructure and to the promotion of competition generally is the determination of an interconnection framework and interconnection charges. Interconnection is essential for new entrants, as it is the only way to reach customers of existing telecommunication networks. The pricing of interconnection, unbundling the network and the basis for establishing interconnection arrangements are the critical factors affecting the speed with which competition and choice develop in a liberalized telecommunications market. This is the case regardless of the competitive model which is adopted or the Member State's level of economic development.

¹ Draft Questions 3.1, 3.2 and 3.3 have been combined following TDAB request (see Document 72).

This Question is directed toward providing details and practical suggestions for implementation of interconnection regimes in an increasingly competitive market for telecommunications services. Setting interconnection charges, establishing cost accounting systems, defining the scope of interconnection and making sure that interconnection is actually available at any technically feasible point of the network are all practical problems facing ITU Member States. For further information see the annex.

2 Question or Issue Proposed for Study

The Study Group should establish a set of best practice guidelines for countries to take into consideration when developing policies, legislation and regulations to address the critically important issues involving interconnection. The Study Group should build on the work already done for Questions 2/1 and 3/1 for the 1994-1998 study period and other available materials. To establish best practices guidelines, the Study Group should:

- 1) Identify the most common approaches for interconnection pricing, cost accounting, unbundling, describing the advantages and disadvantages of each approach.
- 2) Identify the most common approaches for arriving at interconnection arrangements, including those set by the regulator and those arrived at through commercial negotiations. With regard to commercial negotiations, identify the most common approaches to dispute resolution procedures, timetables for completion of negotiations, sanctions for failure to comply, likely outcomes if regulatory arbitration or determination is necessary.
- 3) Identify guiding principles for interconnection pricing, such as cost-orientation[, long-run incremental costing] and transparency.
- 4) Identify guiding principles for arriving at interconnection arrangements, such as non-discrimination, transparency, publication of interconnection charges, availability of cost information.
- 5) Describe the legislative and regulatory framework that would be needed to implement appropriate interconnection pricing, unbundling and interconnection arrangements.
- 6) Create a model interconnection agreement.

3 Description of Expected Output

The output produced during the study of the question should be divided into two stages. The first stage would be mainly descriptive and would provide a view of currently existing approaches to interconnection pricing, unbundling and interconnection arrangements. This information would provide background on alternatives for achieving interconnection objectives for government officials and telecommunication operators. This information would also serve as a framework for developing detailed procedures to implement an effective interconnection regime. It could also serve as a stimulus for legislative or regulatory action to address the issues associated with interconnection.

The second stage would focus on practical information that would be directly applicable to regulators, administrators and telecommunication operators at the working level in order to implement and operate an interconnection regime. The information obtained during the first stage would be used to establish best practice guidelines and recommendations for determining interconnection pricing, implementing cost accounting and unbundling requirements, establishing

interconnection arrangements either through regulatory action or commercial negotiation, and creating dispute settlement procedures and models of regulatory intervention in those disputes.

4 Required Timing of Expected Output

Because the information gathered for the Question will be very useful for countries introducing competition, it should be disseminated as early as possible and without waiting for a final work product of the Question. By the end of the first year of the study period, the first stage of the output should be produced. The second stage should be released as soon as practicable after the first stage but not later than the third meeting of the Study Group during the 1998-2002 study period.

5 Proposers/Sponsors of the Question

This Question is a result of the study of Question 2/1 during the study period 1994-1998. There was a consensus that the issue of interconnection is of tremendous importance to all countries, particularly developing countries, and that a study should continue on that particular aspect of Question 2/1. *[text to be completed after WTPF: Further, the ITU World Telecommunication Policy Forum urged ITU Member States to share experience in the implementation of WTO commitments and invited the ITU to serve as a depository of information on the experiences of Member States.]*

6 Sources of Input Required for Carrying Out the Study

The major source of input will be the experiences of those countries that have introduced competition and addressed the question of interconnection. Contributions from Member States and Sector Members will be essential to the successful study of this issue. Interviews, existing reports and surveys should also be used to gather data and information for distillation into a comprehensive set of best practice guidelines for administering interconnection. Materials from regional telecommunication organizations and working groups should also be utilized to avoid duplication of work.

7 Target Audience for the Output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed Countries	Developing Countries	LDC's
Telecom Policy Makers	Interested	Highly interested because of lack of experience	Highly interested because of lack of experience
Telecom Regulators	Interested and experienced with different models	Highly interested and some countries have immediate need for information	High interest but may need specific models

Service Providers (Operators)	New entrants, regardless of size, extremely interested. Major suppliers cautious and usually beneficiary of status quo	New entrants, regardless of size, extremely interested. Major suppliers cautious and usually beneficiary of status quo	New entrants, regardless of size, extremely interested. Major suppliers cautious and usually beneficiary of status quo
Manufacturers	High interest as will promote development of infrastructure	High interest as will promote development of infrastructure	High interest as will promote development of infrastructure

b) Target Audience - Who specifically will use the output

Based on the foregoing evaluation matrix, a broad range of telecom policy makers, regulators, and service providers from LDC's and developing countries will all be highly interested in the results of this Question. Policy makers and regulators from developed countries may be interested in the compendium. Manufacturers will also have a high interest in the Question since appropriate interconnection measures will promote development of infrastructure.

c) Proposed methods for implementing the results

The study should be carried out by a group of experts and then distributed in the traditional manner at the ITU-D Study Group meetings. However, given the importance of this issue, the BDT could also conduct regional seminars and meetings, perhaps in conjunction with regional telecommunication organizations, to disseminate the results of the Question. The results could be published by the ITU for wider distribution.

8 Proposed method for handling this Question

a & b) How and Why

Because the issue of interconnection is of such great importance to many countries, the study of this Question should be within a Study Group over a multi-year study period with interim results as indicated above. The interaction and participation by experts from around the world in this issue will result in a useful product for developing countries.

9 Coordination Requirements of the Study

Because the issue of interconnection is related to other issues being studied by the ITU, coordination will be required within the ITU-D Study Groups and programmes as well as with the Study Groups from other ITU sectors. Close coordination will also be required between the BDT and those responsible for this Question. Regional organizations such as CITELE and APEC are also currently considering issues regarding interconnection. Thus coordination with those organizations should be undertaken to reduce duplication of efforts.

ANNEX

Interconnection pricing poses the most difficult questions. The level of prices directly affects the viability of competitive networks and the incentives for network investment and development. The challenge for all countries, particularly developing countries, is to set interconnect charges which do not delay competition or make competition impossible to achieve.

Many ITU Member States have undertaken binding obligations to liberalize their telecommunication markets as a result of the World Trade Organization's Agreement on Basic Telecommunications (WTO Agreement). Other ITU Member States have voluntarily introduced competition into at least one segment of the telecommunication market. It is particularly important for developing countries to have the technical knowledge necessary to promote competition when it is introduced. For those countries that have made commitments in the WTO Agreement on regulatory principles, interconnection prices must be cost-oriented. Most countries and their major suppliers, however, lack the relevant cost and other information needed to arrive at cost-oriented interconnection charges. A major challenge is to develop methodologies to determine pricing and accounting systems that will provide the data necessary to determine costs.

To be effective, interconnection must be broken down into its different network elements. Unbundling service elements maximizes competition in local service and thereby brings the benefits of competition to the majority of telecommunication users. Many countries are now struggling with defining "unbundling". There are a number of potential points in the existing network to which new entrants seek access, including the local loop, local and tandem switches, interoffice transmission facilities, network interface devices, signalling and call-related database facilities, operations support systems functions and operator and directory assistance facilities. Deciding which elements are necessary involves balancing the best interests of the major supplier against the needs of new entrants - a difficult task for any country.

There are generally two ways of arriving at interconnection arrangements between operators: they can be set by the regulator or they can be commercially negotiated between operators (with or without some degree of regulatory involvement). There are advantages to commercial negotiations. Operators know best how to handle the technical, commercial and pricing issues which need to be negotiated and moreover negotiated rates are more sustainable. But there are disadvantages also. Negotiations may be lengthy, adversely affecting the pace of competition. In addition, the major supplier may abuse its market position to delay and hinder interconnection arrangements, keeping new entrants out of the market. To minimize the disadvantages, some degree of regulatory involvement in the process may be necessary. Many countries have established dispute resolution procedures, including regulatory intervention to resolve deadlocks or breakdowns in negotiations. In addition, many have set timetables by which negotiations must be completed, with sanctions for failure to comply. The degree of regulatory involvement and the basis upon which regulators base their decisions are issues that must be resolved before an effective interconnection regime can be established.

[Taken from SG 2 1997 Doc. 2/286(Rev.2)]

3.2 Network interconnection under multi-operator environment¹

1 Statement of problem or situation

Analysing the report on Question 3/2 one of the main issues is the deregulation that has led or is leading to a new environment where many operators have to interconnect their telecommunication networks in a given country.

Various new issues which did not exist in a monopoly status appeared in the new multi-operator environment.

Many developing countries are not prepared to face these changes. With the pressure of liberalization, it is becoming crucial that the developing countries be adequately prepared for the coming changes.

Before beginning the restructuring process, all related issues should be studied and solved for a smooth transition to a new multi-operator environment. Interconnection will occur among local, trunk, international, mobile, satellite, Internet and other networks.

2 Question or Issue proposed for study

- a) Network interconnection under multi-operator environment including interoperability of services covers many items that will have to be identified in particular from the national point of view.
- b) Each item covers different aspects such as regulatory, economic, tariff, technical, operational (in particular quality of service) and standardization aspects.
- c) The issues suitable to be studied in other appropriate study groups (in ITU-D, in ITU-R and in ITU-T) will be transferred to them with a liaison statement requesting information and to ensure better coordination of activities.
- d) The question to be studied will include a set of key items to be identified. The most important are the following:

2.1 Numbering plan, including numbering plan for ITU-T Signalling System No. 7

The new national numbering scheme shall be studied for multi-operator networks, paying due consideration to the increase of the mobile telecommunication users who are expected to grow very rapidly in near future.

In order to supply the Intelligent Network (IN) related services, the networks built using ITU-T Signalling System No. 7 should interconnect under one national signalling network numbering scheme.

2.2 Practical interconnection methods

In order to establish adequate interconnection between existing conventional operator (A) and new operators (B), guidelines for the following issues should be proposed.

¹ Draft Questions 3.1, 3.2 and 3.3 have been combined following TDAB request (see Document 72).

For example, the cables of new operators (B) should be allowed to use the cable duct or tunnel of the existing operator (A) to reach the equipment room of "A" building and also allow the installation of transmission equipment of "B" there.

This leads to the common usage of basic telecommunication facilities and the allowance of the entrance of "B" technical staff into the "A" property.

2.3 Offering various new services crossing different operators' networks including the number portability

For example, a freephone call should be terminated by one number regardless the terminating network.

For fair competition, the introduction of number portability could be requested by the regulator.

2.4 Recording charging information

The recording of charging information is very important for the fair settlement of revenues among operators.

3 Description of the expected output

In the draft report on Question 3/2 (Document 2/213), various interconnection methods are listed. Therefore this study should provide guidelines, including practical examples on the methods/procedures to give answers to the issues arising from a multi-operator environment.

4 Required timing of the expected output

Because of the urgency of the situation, the study should be carried out intensively. An intermediate report should be ready by end 1999. The remaining period will be utilized to update the report in order to cope with the new development of technology and the changing telecommunication environment.

5 "Proposers/Sponsors" - Those who requested study of the Question or Issue

This new question is the concern of the developing countries as well as of the developed countries.

6 Sources of input required, in carrying out the study

Experts from member states and sector members of developing and developed countries.

A large range of people facing different situations should participate in the study.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows:

10 Other relevant information

None.

[Proposal from Kenya]

3.3 Interconnection issues in a multi-operator environment in developing countries¹

Statement of the problem or situation

As the developing countries open up their telecommunications sector for competition in line, the incumbent telecommunications operators will be required to provide the necessary communication facilities without discrimination and at fair prices.

The international telecommunications operators will be keen to enter into these markets and due to their long experience in competitive markets and negotiation skills may put the incumbent operators at a disadvantage while negotiating the interconnection agreement.

ITU-D can assist the developing countries in formulating interconnection policies, regulations and guidelines.

Question or issue proposed for studies

- Identify and formulate the necessary policies and regulations required for interconnection agreements.
- Identify the technical facilities incumbent operators are required to provide in order to offer interconnection to the upcoming operators.
- Formulate appropriate guidelines on setting interconnection charges taking into account the existing networks in developing countries.

Expected output

- Policy and regulation document that will guide developing countries in negotiations and arbitration of interconnection agreements.
- Guidelines on technical requirements for interconnection.
- Guideline on calculation/formulation of interconnection charges.
- Recommendations.

Timing of the expected output

Mid-2000.

Input required in carrying the study

Collection of contributions from Member States and Sector Members with experience in interconnection arrangements.

Contributions from ITU-T study group dealing with related issues.

¹ Draft Questions 3.1, 3.2 and 3.3 have been combined following TDAB request (see Document 72).

Target audience

	Developed countries	Developing countries	LDC
Telecom policy makers	X	X	X
Telecoms regulators	-	X	X
Service providers	X	X	X
Manufacturers	X	X	X

Proposed method of handling this question/issue

Due to the complexity of the question and the need to have the output as quickly as possible, it is proposed the question be handled by an expert group.

[New text]

4 Establishment of an independent Regulatory Body

1 Statement of Problem

Reform in the telecommunication sector is occurring at an unprecedented rate. Technological developments have created new opportunities for communication and the globalization of the telecommunications market. Consistent with these developments, many countries have begun to examine the structure of their telecommunication sector. In the past five years, many countries have limited the role of monopoly service providers and have begun to introduce liberalization, privatization, and competition in the industry. Many other countries are preparing to engage in such reform in the near future. In a liberalized industry structure, the role of the regulatory body assumes a crucial position to ensure that new entrants can compete fairly with major suppliers.

As part of this process, a central issue is the separation of different functions, namely the operational and regulatory function as well as the ownership and policymaking function. Adopting these distinctions allows the government to demonstrate that its telecommunication sector is regulated in a fair and open decision-making manner.

Regulatory reform and the resulting institutions will reflect the broader environment of the country, and its historical legal, social, political, and economic foundations. The unique national circumstances will influence the method of, and results of, reform in each country. These factors include: the overall level of economic development; the state of development of the national network; the historical framework of the institutions; constitutional provisions; the legal system; the national tradition of public administration; and the roles and diversity of interest groups.

2 Question or Issue Proposed for Study

The Study Group should identify guidelines for countries to take into consideration when developing an independent regulatory body. To efficiently and effectively study the issue of regulatory reform, the Study Group should build on the work already done for Question 2/1 for the 1994-1998 study period and other available materials. To accomplish this, the Study Group shall:

- 1) Identify methods and criteria that may be used to develop a governmental telecommunication policy and to assess the extent of legislative and regulatory reform necessary to implement a national telecommunication policy.

- 2) Continue identifying regulatory models for a telecommunication regulatory body, describing the legal, economic, and social factors that may lead to the adoption of one regulatory approach over another.
- 3) Describe the range of administrative activities that a regulatory body may engage in, such as rulemaking and enforcement, licensing and concessioning, and management of scarce resources.
- 4) Describe key regulatory issues that a regulatory body may address, such as the provision of service, interconnection, universal access/service, tariffing, quality of service, standardization/type approval, numbering, and competitive safeguards (this may include frequency allocation and assignment as well as broadcasting, however some countries create different bodies for the later issues).
- 5) Identify criteria that may be used to determine the size of the regulatory body, including staff and appointed members of the decision-making body, taking into account the size of the industry, the scope of the regulator's mandate, the degree of initiative the regulator will undertake, and the level of resources necessary for implementation.
- 6) Identify sources of funding for resources, including independent funding mechanisms, as well as a multi-step implementation approach that considers resource limitations and the need to develop regulatory credibility at the outset.

3 Description of Expected Output

The output produced during the study of this Question should be a set of best practice guidelines for countries in transition to more liberalized telecommunications market to establish its independent regulator.

4 Required Timing of Expected Output

Because the information gathered for this Question will be very useful for countries reassessing their regulatory approach or introducing an independent regulator, it should be disseminated as early as possible, preferably by the second Study Group meeting. During the study period, the results should be disseminated widely and early so that countries that are or soon will be establishing independent regulators can reference these materials when creating a regulator.

5 Proposers/Sponsors of the Question

This Question is a result of the study of Question 2/1 during the study period 1994-1998. There was a consensus that the issue of regulatory reform is of tremendous importance to all countries, particularly developing countries, and that a study should continue on that particular aspect of Question 2/1 - the establishment of an independent regulatory body.

6 Sources of Input Required for Carrying Out the Study

An important source of input will be the experiences of those countries that have made the greatest gains in establishing an independent regulatory body. Contributions from Member States and Sector Members will be essential to the successful study of this Question. Interviews, existing reports, ITU materials including previous work of Study Group Questions, Colloquia, and surveys should also be used to gather data and information for distillation into a comprehensive examination of this

question. Materials from regional telecommunication organizations should also be utilized to avoid duplication of work.

7 Target Audience for the Output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows**

	Developed Countries	Developing Countries	LDC's
Telecom Policy Makers	Interested	Highly interested	Highly interested
Telecom Regulators	Interested and experienced with different models	Highly interested and some countries have implemented innovative approaches	Highly interested
Service Providers (Operators)	Small operators interested Large operators cautious and usually beneficiary of status quo	Private sector, particularly new technologies, highly interested but government monopolies less so	Government monopolies cautious and usually beneficiary of status quo
Manufacturers	Moderate interest	Moderate interest	Moderate interest

b) **Target Audience - Who specifically will use the output**

Based on the foregoing evaluation matrix, a broad range of telecom policy makers, regulators, and service providers from LDC's and developing countries will all be highly interested in the results of this question. Policy makers and regulators from developed countries may be interested in the compendium of approaches. Manufacturers will also have some interest in regulatory reform, for example, with regard to the extent that standardization/type approval is considered.

c) **Proposed methods for implementing the results**

The results should be distributed in the traditional manner at the ITU-D Study Group meetings. However, given the importance of this issue, the BDT could also conduct regional seminars and meetings, perhaps in conjunction with regional telecommunication organizations, to disseminate the results of the question. The results should be published by the ITU for wider distribution.

8 Proposed method for handling this Question

a & b) **How and Why**

Because regulatory reform is of such great importance to all countries, the study of this question should be within a Study Group over a multi-year study period with interim results as indicated above. Obtaining the widest possible participation will enhance the study of this question and because the Study Group brings together a diverse group of Member States and Sector Members in a unique setting, it is the best forum to address this issue. The interaction and participation by experts from around the world in this issue will encourage active debate and new ideas from the meetings.

9 Coordination Requirements of the Study

Because regulatory reform is closely related to other Questions being studied by the ITU, a great amount of coordination will be required within the ITU-D Study Groups, programmes as well as the Study Groups from other ITU sectors. Close coordination will also be required between the BDT and those responsible for this question.

[Taken from SG 1 1997 Doc. 1/218 (Rev.1)]

5 Regulatory impacts of the phenomenon of convergence within the telecommunications, broadcasting, information technology and content sectors

1 Statement of the problem

The telecommunications, broadcasting, information technology and content sectors are undergoing increasing convergence, as evidenced by the Internet, among other examples, which raises a number of important policy and regulatory issues. The issue of convergence is of great interest to both developed and developing countries.

- Until now, these sectors have come under different regulatory regimes. The challenge now is how to regulate hitherto separate industries and sectors because increasing convergence makes it increasingly difficult to determine under what regime convergent industries should be regulated, if at all, and if so, how best to do so.
- Global, interconnected, vertically and/or horizontally integrated industries as manifestations of a high degree of convergence call into question whether any single nation state in developed and developing countries can adequately regulate the new players.
- While competition may exist between convergent industry players in the most advanced industrialised countries, the mega-corporations (vertically and/or horizontally integrated) and international alliances may completely overwhelm industries and network capacity - even as it can be acknowledged that the convergent industries offer services which create many new opportunities for even those in the less developed countries, who have not previously had access to such a rich array of information, information-processing and communications capabilities.
- The right to communicate issue leads to the right to access to network and applications using networks. A good example is the issue of the Internet.
- Liability.
- Copyright and intellectual property rights.
- Questions of treatment in situations where some industries are regulated (e.g., telecoms) while others have been subject to little or no regulatory oversight (the Internet), yet both provide effectively the same or functionally similar services.
- Interconnection and payments by one service provider or infrastructure provider to another.
- Network capacity.
- Regulatory jurisdiction - e.g., where a service is supplied from one country but provided in another.
- Fraud and security.

- The blurring of the distinction between content, service provision and infrastructure.
- Etc.

It is important to emphasize that while convergence may create many regulatory conundrums, from the user's point of view, convergence yields hitherto undreamed-of opportunities and instant access to a wealth of information, entertainment and communication at relatively low and declining cost. While convergence may be awkward for policy makers and regulators, the benefits to users are legion.

2 Question

Examine the issues associated with convergence to determine what actions countries may take to optimise their regulatory regimes in order to deal adequately with these issues.

3 Expected output

A report with recommendations.

4 Timing of the expected output

First interim report in two years. Final report for the last Study Group 1 meeting before the next WTDC.

5 Proposers and sponsors

Study Group 1. The Rapporteur's Group should comprise, in the first instance, a core group of representatives from the Study Group who are willing and able to devote some serious time in reviewing existing studies, the trade press, etc., and to extract from such material the key points where regulatory impacts or consequences are evident. Preparation and distribution of the interim report may stimulate and/or warrant additional inputs to or representation in the Rapporteur's Group.

6 Sources of input required in carrying out the study

- KPMG studies commissioned by the European Commission.
- The EC's forthcoming Green Paper on Convergence.
- Inputs from Sector members.
- Web and trade press searches.
- Studies prepared for other organizations, e.g., 1996 ITU Regulatory Colloquium on Convergence, the EC Study on Convergence (1996), Current studies by WIPO on the economics of property rights, the forthcoming Survey of the CTU member states, UNESCO, etc.

7 Target audience

a) Types of target audience

	Developed countries	Developing Countries	LDCs
Telecom policy makers	*	*	*
Telecom regulators	*	*	*
Sector members	*	*	*

b) Who will use the output?

The ITU and telecom policy makers and regulators around the world.

c) Proposed methods for the implementation of the results

Dissemination of the two reports (interim and final) to ITU-D members and sector members. Administrations may wish to consider whether the results of the study are such that some optimization of their regulatory regimes would be appropriate.

8 Proposed method for handling this Question

- 1 Within a Study Group [✓]
 - Question (over a multi-year study period) []
 - Focus Group (12 months duration maximum) []
- 2 Within a regular BDT activity []
 - Programmes []
 - Projects []
 - Expert consultants []
- 3 In other ways - describe (e.g., regional, within other organizations, jointly with other organizations, etc.) [✓]

A study on the phenomenon of convergence should be tightly focused on key issues, especially in regard to the interim report. A review of existing reports and studies should form the basis for identifying the key regulatory impacts and subsequent consideration by Study Group 1 of what recommendations it might wish to make to ITU-D members. While participation in the study of this Question should be open to any member, it may be useful to see if the study could be supported by university researchers and/or regional organizations such as APT, CITELE, the European Commission, etc. In particular, it would be useful to see if experts from the US FCC, NTIA and European Commission would be willing to participate in the Rapporteur's Group.

It would be useful to have the draft report-in-progress available on the ITU-D's Web site so that anyone on the World Wide Web could provide comments and/or inputs to the study.

9 Coordination requirements of the Study

None.

10 Other relevant information

None.

[Taken from SG 2 1997 Doc. 2/284(Rev.1)]

6 Methods to enhance the viability of public service broadcasting, particularly focussing on developing countries

1 Statement of Problem

Broadcasting plays a prominent role in educating and informing the public and in supporting economic, social and cultural development. Social and political changes in many countries are leading to demands for additional broadcast services, requiring more channels and thus to increased fragmentation of the audiences. This loss of audience is a threat to the continued viability of the Public Service Broadcaster, who is operating within a fixed and frequently obsolescent mandate, in turn undermining the capability to provide the educational and informational services required.

Both developed and especially developing countries are facing difficulties in adopting policy, legal and regulatory instruments to deal with these trends to increased numbers of services and with the concurrent trend to technological convergence with other telecommunication services. The Public Service Broadcaster thus requires:

- a new regulatory and legal basis for his activities taking into account the special mandate as well as the new environment and circumstances under which he must operate;
- development of an effective, efficient and competitive infrastructure, taking best advantage of modern telecommunications and information technologies;
- design and development of broadcast services compatible with the mandate and the resources available.

2 Draft Question

- 2.1 What are the key elements in the definition of a model role and mandate for the Public Service Broadcaster (PSB) in developed and developing countries, that will clearly differentiate between the PSB and other broadcasters?
- 2.2 How can digital and information technologies be used to enhance the production capabilities and to improve economies and efficiency of production of broadcasting services by the PSB's in developing countries?
- 2.3 In what ways can digital technology best be introduced into the distribution and delivery of the PSB's services, including rural and sparsely populated areas, particularly taking account of the convergence between broadcasting and other telecommunication services, which offers significant operational, economical and performance enhancements?
- 2.4 How can the emerging GII and other digital networks be used to improve the services of the PSB's especially in developing countries through, for example, the provision of access to shared resources or their use for the collection and distribution of programmes and their elements?

2.5 What other value-added services and products can be introduced to enhance the PSB's performance?

3 Description of the Expected Output

The Studies arising from this Question should be oriented to the achievement of practical results that can be implemented in a relatively short time-frame and which may require cooperation among a number of organizations and agencies. Principally they will be in the form of:

- Guidelines for the development of policies and of regulatory and legal instruments to define the role and mandate of the PSB and to establish the necessary coordination with other telecommunication services.
- Proposals for demonstration and pilot projects in developing countries, for which the specific needs and operational requirements of the PSB's will be identified.
- Guidelines for the economic and effective application of digital technologies to the needs of the PSB in developing countries.

The output from the studies is required prior to the conclusion of the current study period (1998-2002).

5 Source of Study Contributions

The studies arise from the work carried out under Question 8/2 of the WTDC (Buenos Aires, 1994) and are supported by the ITU-BDT, the ITU-R, ITU-T, UNESCO and Regional Broadcasting Unions through the World Broadcasting Unions (WBU) as well as relevant professional institutions.

6 Sources of Input Required, in Carrying out the Study

Inputs to these studies may be found in the work of the ITU in all of its sectors, in the work of UNESCO and of the WBU, as well as from Members of ITU-D and the broadcasting manufacturing industries. The PSB's in developing countries must also play a significant role in developing and supporting the work of any associated demonstration or pilot-project activities.

7 Target Audience for the Output

	Developed countries	Developing countries	LDCs
Telecom Policy Makers	-	x	x
Telecom Regulators	-	x	x
Broadcasting Regulators	x	x	x
Service Providers (operators)	-	x	x
Public Service Broadcasters	x	x	x
Cultural and Educational Authorities	x	x	x
Manufacturers	x	x	x

8 Proposed Method of Handling this Question or Issue

a) How? Indicate the suggested handling of the proposed Question or Issue

- 1) Within a Study Group
 - Question (over a multi-year study period) x
 - Focus Group (12 months duration maximum) -
- 2) Within Regular BDT Activity
 - Programmes -
 - Projects x
 - Expert consultants x
- 3) Joint studies with the UNESCO and WBU may be beneficial x

9 Coordination Requirements of the Study

Coordination of the studies with those of other sectors of the ITU is required. Specifically, ITU-R Study Groups 4, 10, 11, ITU-TS Study Groups 13, 15 have studies planned or in progress in related areas and have produced Recommendations of interest to this work. Similarly, work in progress within the WBU and UNESCO is also relevant to these studies.

[Taken from SG 1 1997 Doc. 216]

7 Impact of the introduction and utilization of new technologies on the regulatory environment of telecommunications

Title of Question or Issue

Impact of the introduction and utilization of new technologies and services on the regulatory environment of telecommunications.

1 Statement of Problem or Situation

New technologies (satellites, optical fibre, intelligent networks, cellular mobile communications, etc.) have brought about a rapid development of new telecommunication products and services to satisfy the increasingly diverse requirements of customers.

In the face of this change, current legislation often does not allow market access to the new suppliers or operators who are better equipped to provide these services than the traditional operators.

The developing countries should in due course have access to information and studies which will enable them to evaluate the regulatory impact of introducing and using new technologies and services in the telecommunication sector.

The first World Telecommunication Development Conference (WTDC-94, Buenos Aires) responded to this problem and adopted Question 3/1 "Impact of the introduction and utilization of new technologies on the commercial and regulatory environment of telecommunications".

This Question was to explore:

"What effects might the introduction and utilization of new technologies have on the supply and regulation of telecommunication services?"

How can a developing country reconcile the utilization of these new technologies in a more competitive commercial environment with the objective of guaranteeing access to basic services at a reasonable cost throughout its territory?"

with the objective to prepare a report and guidelines by mid-1997.

Taking into consideration the importance of this issue, Study Group 1, convinced of the importance of this Question, decided to propose the following update of Question 3/1 for the next cycle, with more focus on the regulatory aspects.

2 Question or Issue Proposed for Study

Continue to study the effects of introducing and utilizing new technologies on the regulation of telecommunication services.

3 Description of the Expected Output

An updated report by mid-1999 (1/195(Rev.2)) with relevant recommendation(s).

4 Required Timing of the Expected Output

Mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or Issue

Study Group 1 participants.

6 Sources of Input Required, in carrying out the Study

Member States, Sector Members and concerned regional organizations (e.g., relevant papers of the European Commission, etc.).

7 Target Audience for the Output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows:**

	Developed countries	Developing countries	LDCs
Telecom policy makers	*	*	*
Telecom regulators	*	*	*
Service providers (operators)	*	*	*

What factors (national legislation, structural aspects, regulatory framework, price control policy, etc.) might help to create a climate favourable to investment?

Study Group 1, in close liaison with the BDT, should study the possibility of contributing to the emergence, in developing countries where it is difficult to make telecommunications profitable, of regional or subregional telecommunication markets with sufficient critical mass to enable returns on infrastructure investment on a larger scale than on the local level.

It would be useful to encourage the harmonization of the rules governing national and foreign investment, and the implementation of appropriate regulations at regional and subregional level.

3 Expected results

Preparation of a report and guidelines by mid-2000.

4 Liaison

In order to study this Question, contacts should be established inter alia with the financing agencies, development banks and other international, intergovernmental or regional organizations concerned with the financing of development projects.

[Taken from SG 1 1997 Doc. 1/208]

9.1 Tariff policies and methods of determining the costs of Telecommunication Services²

1 Statement of problem

The gradual opening up to competition of the telecommunication sector in developing countries will oblige incumbent operators in these countries to develop tariff policies which take greater account of the actual costs of providing telecommunication services at both the national and international levels.

For this purpose, they will need methods and tools for determining and calculating costs, in the context of the stage-by-stage implementation of analytical accounting systems similar to those developed by operators in the industrialized countries.

The use of these tools should be supplemented by an analysis of tariff models in order to assess the conditions in which implementation of a tariff restructuring and rebalancing policy might be both desirable and feasible.

2 Question

Having regard to the outcome of the second ITU World Telecommunication Policy Forum (Geneva, 16-18 March 1998) and to the work of ITU-T Study Group 3 and its regional tariff groups, the Study Group should consider:

² Draft Questions 9.1 and 9.2 have been combined following TDAB request (see Document 72).

- a) the general evolution of tariff structures in countries which have implemented a policy for rebalancing their telecommunication tariffs, following a preliminary analysis to be carried out by BDT on the subject;
- b) the principal methods of determining and calculating the costs of telecommunication services;
- c) the general approach to be adopted by administrations and operators in the developing countries with regard to tariffs for national and international telecommunication services, taking into account both the evolution of the regulatory framework and certain economic, financial and social constraints.

3 Expected results

Preparation of a report and guidelines towards the middle of the year 2000.

4 Liaison and coordination

To secure the required coordination, there should be close liaison with ITU-T Study Group 3 and its regional tariff groups, as well as with other international or regional organizations concerned with the study of problems relating to tariffs for telecommunication services.

[Proposal from Kenya]

9.2 Tariff models and methods for cost calculations²

A Statement of the problem or situation

The level and structure of telecommunication tariffs have an important role to play in at least creating internally generated funds which in most cases is ploughed back towards the development programme and also used in meeting recurrent expenditure requirements of telecommunication entities. The tariffs can also promote efficient use of the network and services, enhance universal service provision and generate multiplier effects in the rest of the economy as telecommunications is both a traded service and facilitator of economic development. The role of tariffs would be enhanced by various countries putting into place appropriate and suitable telecommunication tariffs.

The trends and development in the telecommunications environment have important repercussions for telecommunication tariffs particularly the pressure for efficient and cost-orientated tariffing which has become a prerequisite for enhancing the role of telecommunication tariffs on a sustainable basis.

Most developing countries lack adequate experience and skills in formulating efficient and cost-orientated tariffing to enable them to benefit fully from telecommunication tariff policies, strategies and practices.

Developing countries need assistance in formulating efficient and cost-orientated tariff levels and structure for terrestrial-, space- and submarine-based telecommunication services including accounting and settlement rates, transit fees and interconnection charges.

² Draft Questions 9.1 and 9.2 have been combined following TDAB request (see Document 72).

Question proposed for study

- 1) Identify and develop necessary policies and regulations required for ensuring efficient and cost-orientated levels and structure of telecommunication tariffs for both domestic and international services.
- 2) Identify and formulate telecommunication service categories and associated costs relevant for tariffing.
- 3) Identify, collate and/or develop suitable costing and tariffing models and methodologies for applying efficient and cost-orientated telecommunication tariffing in developing countries and ensuring the provision of universal services.
- 4) Prepare appropriate guidelines and recommendations for possible use by developing countries in implementing efficient and cost-orientated tariffing of various telecommunication services.

B Expected output

- 1) Policy and regulation document on efficient and cost-orientated tariffing of telecommunication services in developing countries.
- 2) Guidelines and recommendations on efficiency and costing considerations for formulating levels and structure of telecommunication tariffs in developing countries.
- 3) Tariffing and costing models for use in formulating efficient and cost-orientated telecommunication tariff levels and structure in developing countries.
- 4) Comparative tariffing and costing models for a developed country and a developing country.

Required timing of the expected output

End 1999.

Proposers/sponsors of the question or issue

Kenya.

Sources of inputs required in carrying out the study

- Member States.
- Sector Members.
- Regional Organizations.
- ITU Sectors.

Target audience for the output

	Developed countries	Developing countries	LDCs
Telecom policy makers	*	*	*
Telecom regulators	*	*	*
Service providers (operators)	*	*	*
Manufacturers	*	*	*

The output will be particularly useful for service providers, telecom regulators and telecom policy makers.

The implementation of the results should be through a number of channels including information dissemination, seminars, workshops, conferences, etc.

Proposed method of handling the proposed question

- Expert group within BDT activities.

10 Technology transfer and information

Text not yet available.

[Taken from TDAB97 Doc 2/12]

11 The economic obstacles to access to telematics services

1 Statement of problem or situation

The role of telecommunications in economic, social and cultural development is beyond question. But the economic constraints associated with infrastructures and the operation of telecommunications are a serious impediment to the availability and accessibility of telematic services for sectors of public interest, particularly in developing countries. The problem takes on a new dimension when one considers the resources and opportunities offered by new information and communication technologies, with the Internet.

2 Question or issue proposed for study

To consider ways of facilitating access to telematic services, particularly by reducing the economic obstacles.

3 Description of the expected output

- Adoption of the principles of differentiated tariffs geared more closely to the different groups of users of telecommunications in general and of telematic services in particular, in view of their role in development.
- Any action that may facilitate access to telematic services for institutions and associations of public interest.
- Any action that may encourage private enterprise to operate in rural areas and among disadvantaged sectors of the population and promote a competitive environment for the provision of appropriate telematic services for these groups.

4 Required timing of the expected output

Three years.

5 "Proposers/sponsors" - Those who requested study of the Question or issue

UNESCO, in view of the interest of Member States and on the basis of its collaboration with ITU.

6 Sources of input required in carrying out the study

UNESCO, universities and research institutes in the regions concerned, ITU, administrations regulating telecommunications, UNCTAD, WTO, UNIDO, chambers of commerce and industry.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed countries	Developing countries	LDCs
Telecom policy makers		Yes	Yes
Telecom regulators	Yes	Yes	Yes
Service providers (operators)	Yes	Yes	Yes
Manufacturers			

b) Target audience - Who specifically will use the output

ITU and telecommunication administrations of the Member States concerned.

c) Proposed methods for implementation of the results

- Adoption by Member States of new regulatory and tariff frameworks with technical assistance from ITU.
- Prompting telecommunication operators to introduce new tariff policies with the participation of users.
- Pilot trials for the implementation of new tariff arrangements, with the collaboration of ITU.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a study group:
 - Question (over a multi-year study period)
 - Focus group (12 months duration maximum)
- 2) Within regular BDT activity:
 - Programmes
 - Projects
 - Expert consultants
- 3) In other ways - Describe (e.g. regional, within other organizations, jointly with other organizations, etc.)

b) Why? Explain why you selected the alternative under a) above

This is a matter of substance and a crucial problem in which it is necessary to take into account the actual situation of different categories of users, who have to be treated as full partners.

9 Coordination requirements of the study

It is necessary that ITU-T should be involved in the work, particularly at the study group level and in discussions with users' groups.

Close collaboration with UNESCO is required, at least with regard to users within its fields of interest.

10 Other relevant information

One of the subjects which have been discussed by ITU and UNESCO, as part of their ongoing collaboration, is the role of telecommunications in economic, social and cultural development, and in particular on the problem of economic obstacles to telematic access in sectors of public interest. These issues were the subject of a specific joint study entitled "The right to communicate: at what price?" (Document 4 of WTDC-94, subsequently published by UNESCO under the symbol UNESCO/CII-95/WS/2). This study, which was submitted to WTDC-94 as an information document, should have served as a basic document for consideration of Question 1/1 at the study group level. But the study group has not yet been able to go into this matter as thoroughly as it should. We would therefore suggest that it be reconsidered within the framework of a specific "Question", which should be the subject of a new study, with the necessary adjustments to developments in the economic and social environment.

[Taken from SG 2 1997 Doc. 2/263 (Rev. 1) pages 29-30]

12 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

1 Statement of problem or situation

The ITU-T and ITU-R do undertake very many study questions of diverse purposes, outputs and focus. Some of these questions are, or could be, of particular concern to developing countries. The developing countries are not so well endowed with resources to follow the work of even a limited number of Study Group work nor are they informed of which questions have been agreed for study, their purposes and the status of their implementation. There is no doubt that some developing countries are now in a position to take part in the work of some of the Study Group Questions and nearly all are likely to benefit from the output of these questions.

2 Question or issue proposed for study

Identification on a continuing basis of those Study Group Questions in the ITU-T and ITU-R Sectors which are of particular interest to developing countries based on an agreed set of guidelines.

3 Specification of the expected output

Annual Progress Reports indicating status of the selected questions and, where completed, an indication of how the outputs can be obtained.

4 Required timing of the expected output

Annually, ad infinitum.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

The question was originally adopted by the WTDC-94.

6 Input required, in carrying out the study

- 1) Examination of all the ITU-T and ITU-R Study Group Questions with a view to selecting those of interest to developing countries.
- 2) Request for updating information from the ITU-T and ITU-R sectors on the selected Questions.
- 3) Discussion in the relevant ITU-D Study Group.

7 Target audience for the output

a)

	Developed Countries	Developing Countries	LDCs
Telecom policy makers	*	X	X
Telecom regulators	*	X	X
Telecom operators	*	X	X

* *The Question outputs are specifically targeted to developing countries and LDCs although it is in the interest of telecommunication policy makers in the developed countries to be aware of the interests of developing and least developed countries.*

b) Target audience - Who specifically will use the output

Depending on the nature of the output, upper- to middle-level managers among operators and regulators in developing and least developed countries are the predominant users of the output.

8 Coordination requirements of the study

The ITU-D Study Group dealing with this question will need to coordinate with:

- Relevant Focal Points in BDT.
- Coordinators of relevant project activities in BDT.
- Regional and Scientific Organizations with mandates over the subject matter of the question.

9 Other relevant information

As may become apparent within the very long life of this question.

NB This is a unique question with a double-barrelled output: first, its own output of an annual progress report, and secondly, the final outputs of the selected Study Group Questions of the ITU-T and the ITU-R Sectors. In discussing output, the two should therefore be borne in mind.

[Taken from SG 2 1997 Doc. 2/263 (Rev. 1) pages 31-32]

13 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

1 Statement of problem or situation

While it seems clear that the migration to digital broadcasting technologies will be universal over time, it will not progress evenly in all countries or regions. Ironically, some satellite digital broadcasting technologies will be introduced in the developing countries before they become available in the developed countries.

The ITU-D can play a role in assisting Member States evaluate the economic issues involved in migrating from analogue to digital broadcasting methods, such as the introduction of digital technology into radio programme production¹, and the provision of high band width terrestrial links between studios and satellite feeder link stations. The ITU-D could also provide updates on related Studies being conducted in the ITU-R and ITU-T Sectors.

2 Question or issue proposed for study

Identify the economic impact and development aspects of proposed and existing digital sound, television and cable broadcasting systems, with particular attention on receiver costs; identify migration techniques from analogue to digital broadcasting, taking into consideration the experiences of ITU-D Member States and Sector Members.

3 Specification of the expected output

Economic cost-benefit analyses of various digital broadcast systems, including an assessment of the demands of these systems on human resources in developing countries and the systems' interoperability with existing networks. The collection, analysis and periodic dissemination of relevant data received from those organizations and groups listed below in Part 9 of this document. Periodic updates on Studies taking place in the other ITU Sectors, including analysis of any economic issues that these Studies might raise. Analysis of various migration techniques/strategies. Examination of distance education applications for satellite digital sound broadcast services, including interactivity.

¹ The latter is a goal set forth in the Beirut Declaration, which emanated from the 1996 Regional Telecommunication Development Conference for the Arab States (AR-RTDC96).

4 Required timing of the expected output

The course of the next ITU-D Study Period.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

This technological array was originally adopted for study by Working Party A/2 during its meeting in May 1995.

6 Input required, in carrying out the study

- 1) Collection of related contributions and data from ITU-D Member States and Sector Members, and those organizations and groups listed below in Part 9 of this document.
- 2) Examination of ITU-T and ITU-R Study Group Questions related to this technological array.
- 3) Discussion in the relevant ITU-D Study Group.

7 Target audience for the output

a)

	Developed Countries	Developing Countries	LDCs
Telecom policy makers	*	*	*
Telecom regulators	*	*	*
Broadcasting operators	*	*	*
* The Question outputs are generally targeted to broadcasters, policy makers and regulators world-wide, and more specifically to those in developing and least developed countries.			

b) Target audience - Who specifically will use the output

Users of the output are expected to be middle and upper level Managers among Operators and Regulators world-wide.

8 Proposed method of handling this Question/issue

It is proposed that this Question be handled within a Study Group.

9 Coordination requirements of the study

The ITU-D Rapporteur's Group dealing with this Question should coordinate closely with:

- Other ITU-D Rapporteur's Groups dealing with similar issues, in particular the successor Groups to Questions 3/1, 2/2 and 8/2.
- The relevant Focal Points in the BDT.
- The ITU-D's SPACECOM Project.
- The Regional Broadcasting Unions and Associations.
- Other International and Regional Organizations, as appropriate.

[Taken from SG 2 1997 Doc. 2/285]

14 Examine broadband communications over traditional copper wires on aspects of technologies, systems and applications

This study will include a cost / benefit analysis as well as an examination of the level of complexity of deploying such solutions, in particular in conjunction with existing or future backbone infrastructure.

1 Statement of problem or situation

There are more than 600 million copper loops installed world-wide. A vast majority of them can support broadband communications using Digital Subscriber Line (DSL) technologies without any particular reengineering.

These new techniques permit deployment of applications (tele-medicine, distance learning, tele-work, Internet access, intranet access) which require multi-megabit per second transmission capabilities on the same access networks which so far were only supporting multi-kilobit per second transmission.

The main merit of broadband communication over traditional copper lines using DSL technologies is the ability to leverage existing investments already made by telecommunication administrations. Also, developed countries have successfully conducted trials, and the technology and products have reached a level of maturity which permits us to consider large scale deployments. Therefore, developing countries can begin to benefit from such experience immediately.

The ITU-D can play a role in assisting Sector members evaluate the appropriateness of this technical array and analyse the economic issues involved in deploying broadband communication applications over traditional copper loops, including the integration of these access network solutions with existing or future backbone networks infrastructure.

2 Question or issue proposed for study

Identify the technical and economical impacts and development aspects of the deployment of broadband communication technologies and applications on traditional copper loops using DSL technologies with particular attention to cost of customer premises equipment, easiness of deployment, and integration with existing and future backbone infrastructure.

3 Specification of the expected output

- Description and evaluation of the DSL technologies (report, year 1998).
- Economic cost-benefit analysis of deployment of broadband communication technologies, products, and applications over traditional copper loops, including an assessment of the demands in developing countries and the interoperability of these solutions with existing and future backbone infrastructure (report, year 1998).
- Guidelines for access network deployment using DSL technologies (year 1999).
- Recommendation (year 2000).

4 Required timing of the expected output

The course of the next ITU-D Study Period.

5 "Proposers/Sponsors" - Those who expected study of the Question or issue

This technological array was originally adopted for study by Working Party A/2 during its meeting in May 95.

6 Input required, in carrying out the study

- 1) Collection of related contributions and data from ITU-D Member States and Sector Members, and those organizations and groups listed below in Part 9 of this document.
- 2) Examination of ITU-T Study Group Questions related to this technological array.
- 3) Discussion of the relevant ITU-D Study Groups.

7 Target audience for the output

a)

	Developed countries	Developing countries	LDCs
Telecom Policy makers	Y	Y	Y
Telecom Regulators	Y	Y	Y
Service Providers	Y	Y	Y
Manufacturers	Y	Y	Y

b) Target audience - Who specifically will use the output?

Users of the output to be middle and upper-level managers among operators and service providers world-wide. Manufacturers will also gain information for designing their solutions with Developing countries and LDCs in mind.

8 Proposed method of handling this question/issue

It is proposed that this Question be handled within a Study Group.

9 Coordination requirements of the study

The ITU-D Rapporteur 's Group dealing with this question should coordinate closely with:

- the relevant Study Groups in ITU-T;
- other International and Regional Organizations, as appropriate.

[New text]

15 How to Enhance Implementation of Satellites in Developing Countries

1 Statement of Situation

Satellite technology has the potential to provide many of the answers to today's enduring telecommunications problems - especially in developing countries where the cost of landline services may prove prohibitive. Satellites can provide almost instantaneous access to services to all types of terrain and to underserved remote and rural regions. Today, with the advent of new satellite technologies, and GMPCS systems that enable end-users to access the satellites directly, the possibilities are even greater. Advances have been made in all aspects of satellite technology: including satellites, space stations, launch vehicles, transmission, user equipment, etc. Taking advantage of satellite technology for the maximum benefit of developing countries is the current challenge.

However, at this time, several obstacles preclude countries taking full advantage of the benefits that new satellite technology can provide. Many countries, and developing nations in particular, are faced with challenges including financing equipment, creating appropriate regulatory structures, and promoting human resource development. These issues, among others, can inhibit the successful integration of satellites into a country's overall telecommunications infrastructure.

2 Issue Proposed for Study

The purpose of this issue is to continue to assist developing countries in fully exploiting satellite technologies, with particular emphasis on remote and rural areas. Since the first World Telecommunications Policy Forum was held in Geneva in 1996, there has been a comprehensive examination of the benefits of GMPCS and the technical, financial or regulatory issues concerning access to this new satellite service by developing nations. The output from this industry-Administration partnership has included, to date, a series of five regional workshops designed to introduce regulators to this exciting new technology, compilation of a Group of Experts Report initiated and published by the ITU-D, and development of a universal, voluntary Memorandum of Understanding and GMPCS Arrangements which provide a framework for the implementation of GMPCS.

In order to move beyond a discussion of GMPCS per se, these technical, operational and regulatory/policy issues need to be re-defined and explored further in a wider context. Furthermore, once these and other possible issues are examined, then future action can be taken to encourage multilateral education and problem resolution. The ITU-D can continue to serve a useful function in this area, as it has in the wake of the GMPCS World Policy Forum, by further enhancing developing countries' knowledge of the evolving space communications technology and of its potential benefits and applications to their unique national infrastructure development process. The Sector can also help acquaint the space industry with developing countries' needs as these new technologies are introduced and evaluated by regulators and regional organizations.

3 Description of the Expected Output

The output is expected to be:

- A database with national satellite regulatory and technical information on a country-by-country basis to promote usage of satellites.
- A realistic assessment of telecommunications requirements in the various regions of the world, particularly in rural, remote and sparsely populated areas.
- A "real-time" library available electronically or through regular ITU publications to enhance developing countries' knowledge of the evolution of space communications technology, basic information on satellite systems (e.g. coverage, services) and of applications, including distance-learning, telemedicine, and economic development. In addition, a website that focuses on satellites could be developed.

4 Required Timing of the Expected Output

The creation of the library, database and assessment of requirements could be completed within 18 months.

5 "Proposers/Sponsors"

Chairman of the GMPCS Group of Experts.

Satellite industry members.

6 Sources of Input Required in Carrying out the Study

- Telecommunication regulators and policy makers.
- Communications service providers and user communities in developing countries.
- Information from other multilateral sources, including World Bank studies, OECD evaluations and published reports by private sector organizations or consulting firms.
- Space segment operators and service providers.
- Earth station and ground equipment manufacturers and vendors.

7 Target Audience for the Output

a) Intended audiences are indicated by "XX" in the table.

	Developed countries	Developing countries	LDCs
Telecom Policy makers	XX	XX	XX
Telecom Regulators	XX	XX	XX
Service Providers, operators	XX	XX	XX
Manufacturers	XX	XX	XX

b) More precisely, those organizations particularly within developing countries that have an interest in incorporating satellite technologies and services into their existing infrastructure, or have had difficulty implementing satellite service would have an interest in this issue.

- c) Proposed Method for Implementation of the Results.
The ITU-D would distribute results, and countries would make use of such results. A mechanism for providing feedback to the ITU could be arranged.

8 Proposed Method for Handling this Issue

- a) Suggested Method for Handling this Question

It is proposed that the ITU-D handle this issue through its regular activities and programmes that are designed to address regulatory and technical matters, recognizing the excellent work that has already been conducted through the ITU-D to create databases and to gather, analyse and publish technical and regulatory information.

9 Coordination Requirements of the Study

ITU-T Study Groups for networking information.

GMPCS MOU Group.

Regional Telecommunications Organizations.

SPACECOM.

10 Other Relevant Information

GMPCS MOU and Arrangements.

Group of Experts Report and Reference Book from the WTPF'96 Opinion 5.

WTO Agreement and Reference Paper, February 1997.

Other ITU Regional Reports.

World Bank Studies.

[Taken from SG 2 1997 Doc. 2/275(Rev.2)].

16 Preparation of handbooks for developing countries

Pursuant to § 41 of Resolution 1 of the Plenipotentiary Conference (Kyoto, 1994), work under Question 2/2 of the Buenos Aires Action Plan (BAAP) during the present study period (1994-1998) has resulted in the development of three handbooks based on current experience and knowledge.

A Handbook on new developments in rural telecommunications

1 Statement of the situation

Telecommunications in rural and remote areas are evolving and changing constantly:

- As a result of technological change and the development of new technologies, users in rural and remote areas are offered services at lower cost, especially through the use of radio technology.

- Some developing countries, aware of the importance and economic advantages of providing rural and remote areas with communication services, have launched major telecommunication programmes which, once completed, will provide us with a great deal of information to add to our present knowledge.
- Expressed requirements and demand on the part of the potential users of telecommunication services in rural and remote areas of developing countries are increasing steadily, and governments are duty bound to respond.
- Significant progress in the field of rural telecommunications has enhanced economic, social and cultural development in some developing countries. The results obtained need to be analysed so that the international community can assess the advantages and the drawbacks (balance sheet).

As new telecommunication technology develops so quickly, especially in the field of radio (WLL, GMPCS, Internet, SII ...), we recommend that Question 2/2 for rural telecommunications be maintained in the programme for the next study period, so that future experience, and in particular the case studies, can be turned to good use, bearing in mind that the Handbook for the 1994-1998 study period is based on current knowledge.

2 Issues to be developed

On the basis of future experience in the operation of telecommunication services and an analysis thereof, the 1994-1998 Handbook should be expanded and improved in the following areas:

- a) Introduction of new technological applications for rural telecommunications (provision of service using radio, broadcasting, multimedia ...).
- b) Study of methods for applying, operating and planning rural telecommunication programmes using new technologies, case studies which take account of economic, financial, tariff and human resource factors.
- c) Improving national governments' awareness regarding the establishment of structures, financing funds and operators dedicated to rural telecommunications, using the results obtained from analysis of case studies. To this end, when the 1994-1998 Handbook is issued, all the players involved in rural telecommunications will be sent a questionnaire which will be used to develop guidelines and draw lessons so as to meet expectations more effectively.

3 Expected output

The results obtained from the analysis of worldwide programmes relating to the aspects described in Section 2 above will make it possible to improve the 1994-1998 Handbook, for example with regard to the choice of new technologies for rural telecommunication services, planning, and programme implementation (case studies).

Analysis of these results will make it possible to produce indicators for defining "universal service and access" in the specific field of rural telecommunications.

4 Timing

A draft Handbook should be ready on the Internet by the end of the year 2000.

5 "Proposers/sponsors"

Retention of Question 2/2 on the agenda of WTDC is recommended by the Group of Experts which prepared the Handbook in the 1994-1998 study period.

6 Sources of input required

In order to enhance the 1994-1998 Handbook, contributions will be required from the governments of developing and developed countries, consultants, using new technologies, operators and Sector Members that have conducted and completed programmes relating to telecommunication services in rural and remote areas.

7 Target audience for the output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows:**

	Developed countries	Developing countries	LDCs
Telecom policy makers	Y	Y	Y
Telecom regulators	Y	Y	Y
Service providers (operators)	Y	Y	Y
Manufacturers	Y	Y	Y

All target audiences in developing countries and LDCs will benefit. Also, manufacturers and operators will benefit, as a result of the new markets which will become open and the consolidation of existing markets.

b) **Target audience - Who specifically will use the output?**

The output will be most helpful specifically to the senior and middle management personnel of all Member States and Sector Members who are responsible for establishing strategies and plans for the delivery of sustainable telecommunication services throughout the rural and remote areas of developing countries and LDCs.

c) **Proposed methods for implementation of the results**

The Handbook will be considered at the next WTDC and, as appropriate, at regional conferences.

8 Proposed method of handling this Question or issue

a) **How? Indicate the suggested handling of the proposed Question or issue**

- 1) Within a study group
 - Question (over a multi-year study period) *
 - focus group Preferred
 - Programmes *
 - Projects *

- Expert consultants Alternative, if necessary
- 2) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) *

b) Why? Explain why you selected the alternative under a) above

The study of this Question involves the review, analysis, and assessment of the experience of many countries with regard to telecommunication services in rural and remote areas.

Work of this nature, involving as it does the careful collection of experiences and opinions from many countries, and noting the relative urgency, can be carried out most effectively and promptly by a focus group of experts. As an alternative, if the formation of a focus group proves to be impractical with regard to a particular issue, some of the work could be carried out by outside consultants.

9 Coordination requirements of the study

Close coordination is required with the successor programmes to BAAP Programmes 9 - "Integrated Rural Development" and 12 - "Development of Telematics and Computer Networks" and in the new Questions that will be entrusted to the ITU-D study groups.

Coordination is required as appropriate with regional telecommunication organizations that are involved in work which relates to telecommunication services in rural and remote areas, and with the ITU study groups (ITU-T, R and D), the BDT Secretariat and regional organizations.

Also, there must be coordination as appropriate with United Nations agencies, including UNDP and UNESCO, and with NGOs which have interests in this field.

10 Other relevant information

In order to optimize costs and delivery time, the Handbook from the 1998-2002 period will take the form of an update of the 1994-1998 Handbook, to which it will be annexed.

B Handbook on new technologies and new services

1 Statement of the situation

During the present study period (1994-1998), work under Question 2/2 concerning the Handbook on new technologies and new services has resulted in the development of a Handbook based on current experience and knowledge:

- Telecommunication services, which are developing apace, benefit from the steady progress made in new technologies developed by operators and industry in order to meet growing user demand.
- Having regard to future technical and operational trends in telecommunication services, the developing countries need to know about the latest advances made by the international community in this regard, in order to pass on the benefits to their own nationals.
- The Handbook on new technologies and new services drawn up in the 1994-1998 study period should be supplemented with further detailed information on the results of the application of new technologies in telecommunication networks.

- The concept of "universal access service" should be analysed for the benefit of the developing countries, in relation to the future application of new technologies for the implementation of new telecommunication services.
- The advent of the information society and its implementation in many programmes worldwide (Internet, intelligent networks, multimedia, telemedicine, WLL, distance education, telework, ...) must be closely analysed so as to take account of what has already been achieved.

Having regard to the constant and ongoing evolution of telecommunication services due to the emergence on the market of new technologies to meet increased user demand, we recommend that Question 2/2 for the Handbook on new technologies and new services be maintained in the 1998-2002 study period. The developing countries must keep abreast of developments and achievements in the application of new technologies in telecommunication networks, in order to pass on the benefits of this progress to their users.

2 Issues to be developed

On the basis of future experience in the introduction of new technologies and new services and an analysis thereof, the 1994-1998 Handbook should be expanded and improved in the following areas:

- a) Introduction of new technologies and their applications in the telecommunication field (for example Internet, intelligent networks, multimedia, telemedicine, distance education, ...).
- b) Analysis of the methods of application of the new technologies in a telecommunication network (planning, human resources, economic and financial aspects). This analysis will be facilitated by a questionnaire to be sent to all telecommunication players when the 1994-1998 Handbook is issued.

3 Expected output

It will be possible to improve the 1994-1998 Handbook on the basis of the results obtained from the analysis of what has been done worldwide, having regard to the objectives laid down in Section 2 above.

Detailed studies will identify concepts which can be made available to the developing countries regarding the application of the Information Society's new high-tech services, in relation to each country's specific characteristics.

4 Timing

A draft Handbook should be ready on the Internet by the end of the year 2000.

5 "Proposers/sponsors"

Retention of Question 2/2 on the agenda of WTDC is recommended by the Group of Experts which prepared the Handbook in the 1994-1998 study period.

6 Sources of input required

In order to enhance the 1994-1998 Handbook, contributions will be required from the governments of developing and developed countries, consultants, operators and Sector Members that have conducted and completed the installation of equipment for the new technologies and derived services.

7 Target audience for the output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows:**

	Developed countries	Developing countries	LDCs
Telecom policy makers	Y	Y	Y
Telecom regulators	Y	Y	Y
Service providers (operators)	Y	Y	Y
Manufacturers	Y	Y	Y

All target audiences in developing countries and LDCs will benefit. Also, manufacturers and operators will benefit, as a result of the new markets which will become open.

b) **Target audience - Who specifically will use the output?**

The output will be most helpful specifically to the senior and middle management personnel of all Member States and Sector Members who are responsible for establishing strategies and plans for the delivery of sustainable telecommunication services in the developing countries and LDCs.

c) **Proposed methods for the implementation of the results**

The Handbook will be considered at the next WTDC and, as appropriate, at regional conferences.

8 Proposed method of handling this Question or issue

a) **How? Indicate the suggested handling of the proposed Question or issue**

- 1) Within a study group
 - Question (over a multi-year study period) *
 - focus group Preferred
 - Programmes *
 - Projects *
 - Expert consultants Alternative, if necessary
- 2) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) *

b) **Why? Explain why you selected the alternative under a) above**

The study of this Question involves the review, analysis and assessment of the experience of many countries with regard to telecommunication services using new technologies.

Work of this nature, involving as it does the careful collection of experiences and opinions from many countries, and noting the relative urgency, can be carried out most effectively and promptly by a focus group of experts. As an alternative, if the formation of a Focus Group proves to be impractical, with regard to a particular issue, some of the work could be carried out by outside consultants.

9 Coordination requirements of the study

Close coordination is required with the successor programmes to the BAAP Programmes and the study groups of the three ITU Sectors.

Coordination is required as appropriate with regional telecommunication organizations that are involved in work which relates to telecommunication services in rural and remote areas, with the ITU study groups (ITU-T, R and D) and with the BDT Secretariat.

Also, there must be coordination as appropriate with other United Nations agencies, including UNDP and UNESCO, and with NGOs which have interests in this field.

10 Other relevant information

In order to optimize costs and delivery time, the Handbook from the 1998-2002 study period will take the form of an update of the 1994-1998 Handbook, to which it will be annexed.

C Handbook on the legal, economical and structural aspects for the introduction of a national radio-frequency spectrum management and monitoring system

At the decision of ITU-D Study Group 2, the draft Handbook has been transmitted to ITU-R Study Group 1. Following its meeting in Santa Rosa (United States) in late 1996, the latter submitted a liaison statement on the subject, requesting that the document be updated to reflect developments in the world radiocommunication market and that the syntax of the English-language version be improved.

After receiving the ITU-D's document and on the basis of the Questions assigned to it, ITU-R has issued a draft "Handbook" on the economic aspects of spectrum management (Document 1/203).

The Special Rapporteurs' Group for ITU-D Question 2/2 has taken note of both documents and will include them in its work.

[Taken from SG 2 1997 Doc. 2/267]

17 Maintenance-oriented investments - Information and computer-aided tools for evaluation of expansion/maintenance needs of bids for procurement of equipment

1 Statement of problem or situation

The importance of maintenance-oriented investments - i.e. consideration of the requirements of expansion and maintenance needs over the life span of the equipment - has been emphasized by the ITU in the BAAP Programme 7.

Access to guidelines/models to enable evaluation of bids for procurement of plant - taking into account the initial capacity, modularity and cost of expansion needs and maintenance support over the life of the equipment etc. - is however not available to most developing countries.

The situation is aggravated as documents/specification issued for invitation of bids for network expansion do not specify information needs in respect of network expansion and maintenance support required over the life span of the equipment. Hence the suppliers are not given the opportunity to respond to the expectations of the future needs of the client. Instead they are offer compelled to submit competitive offers to satisfy the short-term needs of bids invited.

As a result, the choice of equipment is made without consideration of the financial implications of the cost of expansion and maintenance needs over the life span of the equipment offered. According to most administrations the shortcomings in network expansion and maintenance support - which becomes apparent few years subsequent to the procurement of equipment - are fast escalating. Some of the prominent problems encountered by most users of SPC switching systems are increasing costs and turn around time of factory repairs; non-availability of panels having upward compatibility with those of new versions and; difficulties in maintenance of software. In some instances it is reported that due to high maintenance costs, plant had to be withdrawn prematurely prior to recovery of investment cost.

2 Question or issue proposed for study

Cost effectiveness of investments in emerging competitive markets is of crucial importance to telecommunication operators and service providers. It is therefore recommended that ITU-D Study Group 2 develops guidelines of information needs and suitable models to facilitate the evaluation initial costs, equipment, modularity and associated cost of expansion and, operation and maintenance needs over the declared life span of the equipment. The guidelines should aim to identify strategies to improve reliability of estimates of expansion and maintenance costs applicable over the life span of equipment - such as through provision of insurance schemes to protect against technological risks. A typical model is attached at Annex C1 to illustrate generic information needs and approach to evaluate bids received as per criteria aforementioned.

3 Description of the expected output

A set of guidelines of information needs and suitable computers aided models to facilitate financial evaluation of equipment at the time of procurement - taking into account the initial cost, equipment modularity and cost of expansion; and costs of operation and maintenance over the declared life span of the equipment.

4 Required timing of the expected output

12-18 months.

5 Proposers/Sponsors of the expected output

The expected output was initially sponsored by the telecommunication operators/service providers participating in the meetings of users and suppliers of SPC organized by the ITU Regional Office Bangkok. Latterly the requirement was also endorsed by the participants at the WTDC Preparatory meeting convened in Manila in August 1997.

6 Sources of input required, in carrying out the study

Problems encountered by telecommunication operators/service providers, in considering post equipment procurement needs of expansion and maintenance.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix

	Developed countries	Developing countries	LDCs
7.1 Telecommunication Policy Makers	NOTE 1	NOTE 1	NOTE 1
7.2 Telecommunication Regulators	NOTE 1	NOTE 1	NOTE 1
7.3 Service Providers	NOTE 3	NOTE 3	NOTE 3
7.4 Manufacturers	NOTE 2	NOTE 2	NOTE 2
<p>NOTE 1 - Facilitate to strengthen efforts of policy makers and regulators to enhance efficient use of telecommunication investments.</p> <p>NOTE 2 - Facilitate enhancing competitiveness of the products of manufacturers of SPC switches and other telecommunication equipment.</p> <p>NOTE 3 - Facilitate maintenance-oriented investments for network expansion augmentation.</p>			

b) Target audience who specifically will use the output

Telecommunication operators/service providers and suppliers of switching equipment. The concept is however applicable to other telecommunication equipment as well.

c) Proposed methods for the implementation of the results

Disseminating of and providing guidance on the applications of the output specified at item 3, electronically to telecommunication operators/service providers and equipment suppliers - through web sites located at ITU Headquarters and at the ITU Regional Office.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within the study groups
 - Question (over a multi-year study period)
 - Focus Group (12 months duration maximum)

Appoint a focus group of expertise with defined terms and conditions to study and evolve guidelines/models as stated at item 2 and also disseminate the outputs as stated at item 7 c) above. The focus group should interact/coordinate with the users of SPC switches of developing countries of the region and their suppliers - in particular with those participating in the user group meetings convened by the ITU Regional Office Bangkok.

- 2) Within regular BDT activity
 - Programmes

- projects
- Expert Consultants

The study may be supported within regular BDT activity if funding from outside resources is inadequate.

3) In other ways

The study should be carried in consultation initially with users of SPC switches within the region - particularly those ²participating in the meetings of user/suppliers of SPC switches organized by the ITU Regional Office Bangkok, and if time and resources permit the users of SPC switches of other regions may also be consulted.

b) Why? Explain why you selected the alternative under a) above

To ensure expeditious delivery of the outputs stated at 3.

9 Coordination requirements of the study

As stated at item 8 a) 1.

10 Other relevant information

None.

ANNEX

A cost model for evaluation of offers for telecommunications plant/equipment

This document endeavours to illustrate a possible approach to evaluate offers received on invitation of bids for procurement of telecommunications plant/equipment. The main aim is to account for the overall costs - i.e. inclusive of costs of future augmentations and maintenance - over the life span of the equipment. To enable application of the model it is essential to clearly stipulate in the bid document the information requirements relating to life span of equipment, envisaged augmentation to meet the demand over the equipment life span; the costs of expansion modules and ³maintenance support. Alternately the user may estimate the costs using ⁴priori data of maintenance costs. In

² Considering the generic nature of the problems of realising maintenance-oriented investments, encountered in the field, the problems encountered by the users of SPC switches in the region comprise a well represented sample of problems encountered by the users of SPC switches globally.

³ The support should include tools; instruments and accessories and periodic factory training of repair personnel.

⁴ Most users have reported high costs of repairs and spare parts-such data may be also used to estimate future maintenance costs.

respect of ⁵maintenance support - the supplier should be requested to quote an ⁶annual lump sum fee with price escalation factors applicable over the life span of the equipment. The user will however have the option of selecting the maintenance offer made by the supplier or make alternative arrangements.

Consider a Telecom Investment which has an initial investment cost I_1 in the 1st year.

The incremental investment cost of augmentation required in the year r is I_r .

⁷Associated capacity augmentation required in the year r is η_r .

The aggregate installed capacity in the year r is $N_r = \sum \eta_v$ for $v = 1$ to r where $\eta_1 = N_1$.

The maintenance cost in the year r is M_r . This is based on the information quoted in the offer for the declared life span of the equipment or as estimated using priori maintenance cost data available with the user.

The cash out flow in the year r is given by $C_r = M_r + I_r$.

The present value of cash out flow $C_1 \dots C_r$ of years 1 to r is denoted by $|PV, C_r|$.

To facilitate evaluation of offers it is assumed that the uniform incremental cost of unit capacity ⁸"U" will remain constant throughout the life span "s" of the investment.

Then $|PV, C_v| = U * [\sum |PV, N_v|]$ for $v = 1 \dots to = s$
 $U = |PV, C_v| / [\sum |PV, N_v|]$ for $v = 1$ to s

The value of "U" computed for each of the bids submitted, may be used as a guide for selection of a suitable offer from among the offers received.

⁵ An example of the increasing concern of assuring after sales service is the computer industry where most vendors are offering warranty extending to five years.

⁶ These values as appropriate should be included in the maintenance contract to be entered into with the selected supplier at the time placing firm order for equipment.

⁷ Capacity may be expressed by the dimension of the trunks carrying revenue earning traffic or subscriber lines. For this purpose the investments may be subdivided according to its application e.g. international trunks; domestic trunks; access networks. The cost of equipment modules needed for augmentation over the life span of the equipment should be given in the offer.

⁸ U is the hypothetical uniform cost had the capacity of the initial investment been $[\sum |PV, \eta_v|]$ instead of equipping to full capacity "N_s" at the outset.

[Taken from SG 2 1997 Doc. 2/268]

18 Guidelines/procedures for improving efficiency of maintenance of software SPC switches

1 Statement of Problem or Situation

The users of SPC switches participating at user supplier meetings organized by the ITU Regional office Bangkok has expressed their concerns of shortcomings in the facilities provided in the switches for maintenance of software - including those used for billing and other ancillary applications. These concerns mainly reflect the inefficiencies in software maintenance arising from lack or inadequate:

- i) facilities to correct errors, improve systems performance to provide new functional capabilities;
- ii) facilities to clarify modularity, ease of modification and reusability of modules – through use of techniques – such as object oriented programming;
- iii) facilities for adoption of enhancements to new environments;
- iv) standard formats for design specifications, structured coding conventions, test plans, support documents – on installation, testing, operations and maintenance;
- v) managerial aspects of software maintenance; configuration management, source code metrics modes for improving interaction;
- vi) upgrading documentation; and
- vii) quality assurance support.

2 Question or Issue Proposed for Study

2.1 Study the inefficiencies/problems of software maintenance arising from lack or inadequate facilities in respect of the issues quoted at items 1i) to 1vii) and develop guidelines and procedures to facilitate efficient maintenance of SPC software.

3 Description of the expected Output

A set guidelines and procedures to facilitate efficient maintenance of SPC software used for switching and auxiliary applications such as traffic administration, billing, etc.

4 Required Timing of the Expected Output

18-24 months.

5 Proposers/Sponsors of the Expected Output

Initially the output was sponsored by the users /participants of meetings of users and suppliers of SPC switches organized jointly by the ITU Regional Office Bangkok and the suppliers. Latterly the participants of the WTDC preparatory meeting convened in Manila - in August 1997 also endorsed the requirement of the output.

6 Sources of Input required, in carrying out the Study

Problems of software Maintenance encountered by the users/participants of users suppliers meetings of SPC switches.

7 Target Audience for the Output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix.**

	Developed countries	Developing countries	LDCs
7.1 Telecommunication Policy Makers	NOTE 1	NOTE 1	NOTE 1
7.2 Telecommunication Regulators	NOTE 1	NOTE 1	NOTE 1
7.3 Service Providers	NOTE 3	NOTE 3	NOTE 3
7.4 Manufacturers	NOTE 2	NOTE 2	NOTE 2
NOTE 1 - Facilitates strengthening of efforts of policy makers and regulators to enhance efficient use of telecommunication network resources.			
NOTE 2 - Facilitate enhancing competitiveness of the products of manufacturers of SPC switches.			
NOTE 3 - Facilitate efficient maintenance of Software of SPC switches.			

b) **Target Audience who specifically will use the output**

Telecommunication Operators/service providers and suppliers of switching equipment.

c) **Proposed Methods for the implementation of the results**

Disseminating and providing guidance of the application of the output specified at item 3, electronically, to Telecommunication Operators/service providers and suppliers of SPC Equipment - through web sites at ITU Headquarters and at the ITU Regional Office.

8 Proposed method of Handling this Question of Issue

a) **How? Indicate the suggested handling of the proposed Question or Issue**

1) Within the study groups

- Question (over a multi year study period)
- Focus Group (12 months duration maximum)

Appoint a focus group comprising expertise within the study group and consultants from outside with defined terms and conditions to study and evolve guidelines/procedures as stated at item 3 and also disseminate the outputs as stated at item 7c above. The focus group should interact/coordinate with the users and suppliers of SPC switches of developing countries - in particular with those participating in the user group meetings, convened by the ITU Regional Office Bangkok.

2) Within Regular BDT activity

- Programmes
- projects

- Expert Consultants

The activities of the focus group may be supported within Regular BDT activity if funding from outside resources is inadequate.

3) In other ways

The study should be carried out in consultation, initially, with users of SPC switches within the ⁹region - particularly those participating in the meetings of user/suppliers of SPC switches organized by the ITU Regional Office Bangkok - and if time and resources permit the users of SPC switches of other regions may also be consulted.

b) Why? Explain why you selected the alternative under a) above

To ensure expeditious delivery of the outputs stated at 3.

9 Coordination requirements of the study

As stated at item 8 a) 1.

10 Other relevant Information

None.

[Taken from SG 2 1997 Doc. 2/269]

19 Computer-aided tools and error-free traffic data acquisition procedures for strengthening the traffic administration systems of SPC switches to serve the needs of competitive telecommunication markets

1 Statement of Problem or Situation

Limitations in computer aided facilities provided in the SPC switches for acquisition and analysis of traffic data, are impairing:

- a) efficient network planning;
- b) diagnostic of inefficient network resources/subscriber behaviour; and
- c) product development and pricing of services - to harmonize customer expectations and optimal utilization of network resources.

The limitations are mainly due to the under mentioned inherent drawbacks of the traffic administration facilities provided in most SPC switches.

- 1.1 The traffic data generated is output either to a TTY or a proprietary database system. The latter provides predefined outputs and has no flexibility to customize generation of information to suit the needs of the user. In the case of the former the output data has to be manually input to a computer aided system for analysis - it is laborious and prone to error.

⁹ Considering the generic nature of the problems of software maintenance encountered in the field, the problems encountered by the users of SPC switches in the region comprise a good representative sample of problems encountered by the users of SPC switches globally.

1.2 Further significant inconsistencies are noted, in respect of readings of counters, monitoring entities of traffic objects - proper to the Figure 4/E.502 of ITU-T E502 - bound by specific ¹⁰traffic relations. The errors are significant and appear to be due to several reasons.

1.2.1 The most prominent cause appear to be the error arising from sequential reading of these counters - bound by relations - instead of reading them simultaneously at a given instant. The magnitude of the error increases with the increase in the dispersion of the time of reading these counters. The other likely error is the counting of events of ¹¹attempts of calls with enhanced features such as call re-routing.

1.3 Lack of above facilities defeats the scope of ITU-T 502 and is hindering automation of application of traffic data for location of inefficient network elements/subscriber behavior. Further it also inhibits use of traffic data for determination of demand sensitive tariffs - and development of service products to serve the needs of retail whole sale and spot pricing - for enhancing the overall utilization of the network resources.

2 Question or Issue Proposed for Study

2.1 Develop a data model to facilitate design of traffic administration database - to automate the facilities needed for network planning, identification of network and subscriber inefficiencies, and for application of traffic data to determine market oriented service products and pricing of services - using a general purpose data base.

2.2 Study and implement procedures to overcome errors of counters, monitoring entities of traffic objects - proper to the Figure 4/E.502 of ITU-T E502- bound by specific traffic relations.

3 Description of the expected Output

3.1 A data model - with data dictionary - to facilitate design of traffic administration database using a general purpose database.

3.2 A set of procedures to overcome errors of counters, monitoring entities of traffic objects - proper to the Figure 4/E.502 of ITU-T E502 - bound by specific traffic relations.

4 Required Timing of the Expected Output

12-18 months.

5 Proposers/Sponsors of the Expected Output

Users/participants of meetings of users and suppliers of SPC organized jointly by the ITU Regional Office Bangkok and the suppliers.

¹⁰ For example, counters monitoring incoming (IC), terminating (TM), transit (TR) seizures of the traffic object IC and BW trunks are bound by the relation $IC = TM + TR$.

¹¹ In some instances it is noted that answers of a given set of call attempts is greater than the seizures.

6 Sources of Input Required, in carrying out the Study

Problems of traffic administration, encountered by the users/participants of, users-suppliers meetings of SPC switches organized by the ITU Regional Office Bangkok.

7 Target Audience for the Output

a) Indicate expected types of target audience, by noting all relevant points on the matrix

	Developed countries	Developing countries	LDCs
7.1 Telecommunication Policy Makers	NOTE 1	NOTE 1	NOTE 1
7.2 Telecommunication Regulators	NOTE 1	NOTE 1	NOTE 1
7.3 Service Providers	NOTE 3	NOTE 3	NOTE 3
7.4 Manufacturers	NOTE 2	NOTE 2	NOTE 2

NOTE 1 - Facilitates strengthening of endeavours of policy makers and regulators to monitor QS and reduce prices through efficient use of network resources.

NOTE 2 - Promote competitiveness of the products of manufacturers of SPC switches.

NOTE 3 - Facilitate improvement of QS, capacity utilization through development of products and services to serve all segments of the market and accelerate permeation of cost benefits to the end user.

b) Target Audience who specifically will use the output

Telecommunication Operators/service providers and suppliers of switching equipment.

c) Proposed Methods for the implementation of the results

Disseminating of and providing guidance on the application of the output specified at item 3, electronically, to Telecommunication Operators/service providers and suppliers of switching Equipment - through web sites at the ITU Headquarters and at the ITU Regional Offices.

8 Proposed method of Handling this Question or Issue

a) How? Indicate the suggested handling of the proposed Question or Issue

- 1) Within the study groups
 - Question (over a multi year study period)
 - Focus Group (12 months duration maximum)

Appoint a focus group of expertise with defined terms and conditions to study and evolve guidelines/models as stated at item 3 and also disseminate the outputs as stated at item 7c) above. The focus group should interact/coordinate with the users of SPC switches of developing countries and their suppliers - in particular with those participating in the user group meetings convened by the ITU Regional Office Bangkok.

- 2) Within Regular BDT activity
 - Programmes

- projects
- Expert Consultants

The activities of the focus group may be supported within Regular BDT activity if funding from outside resources is inadequate.

3) In other ways

The study should be carried in consultation initially with users of SPC switches within the Asia and the Pacific ¹²region – particularly with those participating in the meetings of users/suppliers of SPC switches organized by the ITU Regional Office Bangkok and if time and resources permit the users of other regions may also be consulted.

b) Why? Explain why you selected the alternative under a) above

To ensure expeditious delivery of the outputs stated at 3.

9 Coordination requirements of the study

As stated at item 8 a) 1.

10 Other relevant Information

None.

[Taken from SG 2 1997 Doc. 2/253(Rev.1)]

20.1 Communications for rural and remote areas¹(continued study from last period)

1 Statement of problem or situation

In the current study period, from 1994 to 1998, the study of Question 4/2: "Communications for rural and remote areas" has resulted in conclusions and recommendations which are based on available and existing experience and knowledge.

At this time, many factors which relate to and influence "Communications for rural and remote areas" are changing and are evolving very rapidly. Examples include:

- Technology is changing and progressing quickly, providing continually increased capability at progressively lower cost. This is especially true in radio technology, which is usually the technology of choice in serving the rural and remote areas of developing countries.
- Experience in implementing major Rural Telecommunications Programmes is expanding quickly as more developing countries recognize and respond to the requirement. This results in an increasing knowledge base which enables well proven conclusions to be reached regarding the "best practices" which should be followed by developing countries in implementing major Rural Telecommunications Programmes.

¹² Considering the generic nature of the problems of traffic administration, encountered in the field, the related problems encountered by the users of SPC switches in the region comprise a well representative sample of the problems encountered by the users of SPC switches globally.

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

- The demands for telecommunication services from residents of the rural and remote areas of developing countries are rising dramatically, as are the demands of those elsewhere who want to communicate with these areas.
- Rapid gains are being made in understanding and taking advantage of the benefits in economic, social and cultural development for the citizens of rural and remote areas through integrated delivery of the applications which are made possible by the advent of telecommunication services.

New information and experience in this field of knowledge is becoming available steadily and rapidly. The conclusions and recommendations of the completed study period are based on the knowledge that is available at this time. In order to take advantage of the new knowledge which will continue to become available, it is recommended that the study of this Question continue during the next study period.

2 Question or issue proposed for study

On the basis of current and recent studies and information, analyse the material which is available and formulate conclusions and recommendations on the following topics:

- a) the best methods and techniques for selecting appropriate technology options for rural telecommunications;
- b) the best methods of planning, implementing and sustaining rural telecommunication development programmes.

Note that topics c), d) and e) from the current study period are not proposed to continue in the next study period.

3 Description of the expected output

The output will specifically address and provide details of "best practice methods" under the defined topics, e.g. selecting appropriate technology options for rural telecommunications, and planning and implementing sustainable rural telecommunication development programmes.

The output will provide helpful guidance at the senior and middle management levels, relative to promoting the provision of telecommunication services in the rural and remote areas, to those responsible for selecting the most appropriate technology, and for planning and implementing rural telecommunications programmes.

4 Required timing of the expected output

A preliminary report and conclusions and recommendations are to be available by mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

Continuation of this Question is recommended by the group of experts who addressed this Question in the study period from 1994 to 1998.

6 Sources of input required, in carrying out the study

In order to study this Question successfully, contributions are required from sovereign governments and service providers which have successfully implemented telecommunications programmes in their rural and remote territories. These contributions will enable those responsible for work on the Question to develop a comprehensive understanding of current "best practice" techniques, and to develop the most appropriate conclusions and recommendations.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows:

	Developed countries	Developing countries	LDCs
Telecom policy makers	Y	Y	Y
Telecom regulators	N	Y	Y
Service providers (operators)	N	Y	Y
Manufacturers	Y	Y	Y

All target audiences in developing countries and LDCs will benefit. Also, Manufacturers in developed countries will benefit, as a result of the new markets which will become open.

b) Target audience - Who specifically will use the output?

The output will be most helpful specifically to the senior and middle management personnel of all Member States and Sector Members who are responsible for establishing strategies and plans for the delivery of sustainable telecommunication services throughout the rural and remote areas of developing countries and LDCs.

c) Proposed methods for the implementation of the results

The report which documents the results of this work should be distributed to all Member States and Sector Members at no direct cost. The conclusions and recommendations should be addressed, and if appropriate endorsed by resolution at the next World Telecommunication Development Conference, and at regional telecommunication development conferences as appropriate. The conclusions and recommendations of this work should be endorsed, supported and promoted by the successor programmes to BAAP Programmes 9 - "Integrated Rural Development" and 12 - "Development of Telematics and Computer Networks".

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

1) Within a Study Group

- Question (over a multi-year study period) *
- Focus Group (12 months duration maximum) Preferred
- Programmes *
- Projects *

- Expert consultants An alternative
- 2) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) *

b) Why? Explain why you selected the alternative under a) above

The study of this Question involves the review, analysis, and assessment of the experience of many countries in the delivery of telecommunication services to the rural and remote areas. From this investigation, "best practice" models will be developed, which will provide the basis for the conclusions and recommendations that will be determined.

Work of this nature, involving as it does the careful collection of experiences and opinions from many countries, and noting the relative urgency, can be carried out most effectively and promptly by a small group of experts, a Focus Group. As an alternative, if the formation of a Focus Group proves to be impractical, the work could be carried out effectively by expert consultants.

As noted above, topics c), d) and e) of Question 4/2, in the 1994-1998 study period, are not continuing. Topics a) and b) are continuing, having been reworded to more precisely focus the work.

9 Coordination requirements of the study

Close coordination is required with the successor programmes to BAAP Programmes 9 - "Integrated Rural Development" and 12 - "Development of Telematics and Computer Networks".

Coordination is required as appropriate with regional telecommunications organizations that are involved in work which relates to telecommunication services in rural and remote areas.

Also, there must be coordination as appropriate with other UN Agencies, including, *inter alia*, UNDP, UNESCO, and with selected NGOs which have interests in this field.

10 Other relevant information

To be defined.

[Taken from TDAB 97 Doc. 2/12]

20.2 Development of multi-purpose community telecentres¹

1 Statement of the problem or situation

In the present context of globalization, it is necessary to put an end to the isolation of rural communities so that they can pool experience and keep abreast of progress in society, and thereby identify for themselves the opportunities that exist for their own activities and needs - in short, so that they too can have a chance to contribute to and draw on the global information society.

Rural communities have not benefited from worldwide and national progress as much as urban societies. In addition to immense problems of infrastructure, organization and human and financial

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

resources, rural areas lack access to information which would be useful for their needs and to training facilities, as well as to machinery for communicating with those involved in development. They are thus excluded from the progress made by "city-based" institutions. At the same time, the knowledge and talents available in rural communities are often neglected or looked down upon, which leads to a break with traditional modes of life without any real prospects for change.

Today's developments in telecommunications and telematics represent for rural communities not just an opportunity to remedy the unbalanced situations existing at present, but also a challenge to make a leap forward into the information age and to become equal and competitive partners in our global society.

An integrated model of services for information, education and telecommunications would be a first step in the process of improving training in the rural environment and could stimulate education for development.

2 Question or issue proposed for study

How to set up and develop services that will involve the rural population? What facilities should telecentres be equipped with and how should they be organized in order to secure the participation of the people in applications for development activities, particularly in the educational and cultural fields? Consideration should also be given at the same time to ways of carrying out an evaluation in order to measure the impact of telecentres in the development process.

3 Description of the expected output

Evaluation studies in the field focusing on pilot projects (such as those undertaken by ITU and UNESCO) in order to make telecentres more viable in future and to develop guidelines for appropriate telematic services.

4 Required timing of the expected output

Three years.

5 "Proposers/sponsors" - Those who requested study of the Question or issue

UNESCO, in view of the interest of Member States and on the basis of its collaboration with ITU.

6 Sources of input required in carrying out the study

ITU, UNESCO, UNDP, FAO, WHO, UNEP, development sector NGOs, public telecommunication operators and public authorities of Member States concerned.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed countries	Developing countries	LDCs
Telecom policy makers		Yes	Yes
Telecom regulators		Yes	Yes
Service providers (operators)		Yes	Yes
Manufacturers			

b) Target audience - Who specifically will use the output

Governments of the different Member States concerned, rural associations and communities, development NGOs involved in the field, regional and international organizations in the development sector.

c) Proposed methods for implementation of the results

- Campaigns to increase the awareness and enlist the support of the local populations around the idea and in the establishment of telecentres.
- Training of managers from the communities to manage and run the telecentres; they will be responsible, among other things, for familiarizing members of the public with the telecentres and for maintenance.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a study group:
 - Question (over a multi-year study period)
 - Focus group (12 months duration maximum)
- 2) Within regular BDT activity:
 - Programmes
 - Projects
 - Expert consultants
- 3) In other ways - Describe (e.g. regional, within other organizations, jointly with other organizations, etc.)

By means of surveys and questionnaires, seek the opinion of national, regional and international organizations and development-oriented NGOs which might be involved in activities around the multi-purpose community telecentres.

b) Why? Explain why you selected the alternative under a) above

It is both necessary and useful to involve development players already in contact with the local people in the telecentre projects.

9 Coordination requirements of the study

ITU and UNESCO have come to develop sound collaboration in the field of telematics. It would be desirable to go on taking advantage of this cooperation for more ambitious projects.

The list of countries hosting telematic projects could thus be extended by involving development partners such as FAO, UNDP and other organizations interested in the Question. This would provide a solid cross-agency team capable of undertaking a rigorous evaluation through progress reports on projects.

10 Other relevant information

In the light of the document "ACC Statement on Universal Access to Basic Communication and Information Services" and within the framework of the Buenos Aires Action Plan (WTDC-94), ITU has set up an integrated rural development programme, in which the concept of a multi-purpose community telecentre is a central element. IDRC, ITU and UNESCO have since worked together on the development of a general multi-purpose community telecentre project, which, initially, is being applied in five pilot projects in Africa (Benin, Mali, Mozambique, Tanzania and Uganda). These are being implemented over a three-year period starting in 1997.

[Taken from SG 2 1997 Doc. 2/253(Rev.1)]

20.3 Penetration and service targets for rural telecommunications¹

1 Statement of problem or situation

When telecommunication services are provided in the rural and remote areas of developing countries, these services are normally provided at a Public Call Office (PCO) and/or Multipurpose Community Telecentre (MCT) located near the centre of the community. This is a cost-efficient way in which a relatively small number of lines can provide universal access to telecommunication services, to serve the entire local population.

It is important to provide sufficient lines to fully meet the telecommunications needs of the local population, both to originate and to receive calls and messages. However, to ensure substantial usage of each line, it is desirable to not provide an excessive number of lines. Matching the number of lines provided to the telecommunications needs of the community will maximize the net revenue of the service provider, and help to ensure the sustainability of the rural telecommunication services.

2 Question or issue proposed for study

On the basis of studies carried out, experience, and knowledge gained by the ITU-D, and by other organizations including Member States and Sector Members, consolidate the information available and formulate conclusions and recommendations on this Question:

What are the appropriate service levels required for rural telecommunications, when the services are typically provided in a PCO or equivalent, relative to the population of the area served and any other significant factors? What other factors are significant, and how should they be measured?

The intention is to define the service level that best meets the joint goals of fully meeting the service needs of the community, for both outward and inward calling, and that also maximizes the net revenue of the service provider.

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

3 Description of the expected output

The output will be a planning guideline that will be used by business development planners, network planners and network development managers, in service provider (operator) organizations, for developing plans and programmes to provide telecommunication services to rural and remote areas.

4 Required timing of the expected output

A preliminary report, conclusions and recommendations are to be available by mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

Study of this Question is recommended by the group of experts who addressed Question 4/2, "Communications for rural and remote areas", in the study period from 1994 to 1998.

6 Sources of input required, in carrying out the study

The input/contributions required will provide appropriately detailed information from service providers in all parts of the world that are providing telecommunication services in their rural and remote areas through the use of PCOs, MCTs and equivalent.

7 Target audience for the output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows:**

	Developed countries	Developing countries	LDCs
Telecom policy makers	N	Y	Y
Telecom regulators	N	Y	Y
Service providers	N	Y	Y
Manufacturers	Y	Y	Y

This information will be used by Policy Makers, Regulators, and service providers in developing countries and LDCs, in developing, evaluating and implementing specific network extension plans to provide telecommunication services throughout the rural and remote areas.

Manufacturers will use this information in product design and product line evolution, ensuring that their products are well matched to the needs of the developing countries and LDCs.

b) **Target audience - Who specifically will use the output?**

The specific target audience is the business development planners, network planners and network development managers, in the service provider organizations of developing countries and LDCs, who are responsible for developing plans and programmes to provide telecommunication services to rural and remote areas. The output will also be used by those responsible for developing national telecommunications policy, and for regulating the provision of telecommunication services, in the rural and remote areas of developing countries and LDCs.

c) Proposed methods for the implementation of the results

The report which documents the results of this work should be distributed to all Member States and Sector Members at no direct cost. The conclusions and recommendations should be endorsed, utilized, supported and promoted by the successor programmes to BAAP Programmes 3 - "Guidelines for the Elaboration of a Business-oriented Development Plan", 9 - "Integrated Rural Development" and 11 - "Information Services".

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- | | |
|---|----------------|
| 1) Within a Study Group | |
| – Question (over a multi-year study period) | * |
| – Focus Group (12 months duration maximum) | An alternative |
| 2) Within Regular BDT Activity | |
| – Programmes | * |
| – Projects | * |
| – Expert consultants | Preferred |
| 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) | * |

b) Why? Explain why you selected the alternative under a) above

The task involves the obtaining of possibly elusive facts, not in rounding up opinion. There will be expert judgement involved, establishing legitimate causal relationships, based on the facts which are obtained, and careful evaluation of them. As well as knowledge and experience in telecommunications, expertise in the area of socio-economic factors and relationships is also required.

9 Coordination requirements of the study

As already noted, close coordination will be required with the successor programmes to BAAP Programmes 3, 9, and 11.

In seeking relevant experience and information, appropriate liaison and coordination should be established, *inter alia*, with regional organizations, e.g. CITELE, ETSI and APEC.

10 Other relevant information

To be defined.

[Taken from SG 2 1997 Doc. 2/253(Rev.1)]

20.4 Definition of a set of indicators describing the state of development of a country's rural telecommunications network and services¹

1 Statement of problem or situation

The appearance of complex market structures with alternative service providers, new services, and competition make it increasingly difficult to assess the overall status and development situation of rural telecommunications in a country. It is widely accepted that the development and outlook of a country's telecommunications strongly impact the country's economic development and prospects. Easy and accurate assessment, enabling national and regional comparison, is helpful to central and local governments and to international organizations and investors, and thus benefits developing countries. The indicators will enable:

- comparative analysis of the state of telecommunications development of a country, via standard concepts, methods of assessment and demand criteria;
- assessment of development objectives;
- comparison via an appropriate set of indicators describing the country's:
 - demography and economy;
 - legal and regulatory system;
 - market structure for delivery of key services;
 - demand, coverage, penetration, service quality and service accessibility;
 - key economic parameters (e.g. rates, investment, earnings, taxation, etc.);
 - human resources used to deliver services.

This information supports efficient market assessment and comparative analysis.

2 Question or issue proposed for study

What is the appropriate set of indicators to adequately characterize a country's current and future telecommunication services market, for the information of business analysts, and political and business decision makers? These indicators and their standard determination and expression should facilitate simple information collection in developing countries.

3 Description of the expected output

The output will define a standard, accepted set of parameters ("key indicators") for national use which will be provided regularly to the ITU, to build and maintain an international database to facilitate analysis and decision-making. The definition of the parameters and their determination is intended primarily to define the state of rural telecommunications in developing countries.

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

4 Required timing of the expected output

A preliminary report and conclusions and recommendations are to be available by mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

The initial sponsorship for this Question came from Inmarsat.

The output, and the regularly published international Key Indicator profile of rural telecommunications which it will make possible, will be of substantial value to all organizations and individuals who take a substantive interest in the creation of infrastructure which enhances economic development. This includes sovereign governments, from both the policy and regulatory points of view, the International Funding Institutions (IFIs), and, in the private sector, both investors and service providers in developing countries and worldwide.

6 Sources of input required, in carrying out the study

The major contributions will come from Member States and Sector Members, in both developing and developed countries. It is hoped that detailed information about the extensive "Key Indicator Suites" which are in current use by both regulatory agencies and service providers in many developed countries will be made available to those responsible for addressing this Question.

7 Target audience for the output

a) **Indicate expected types of target audience, by noting all relevant points on the matrix which follows:**

	Developed countries	Developing countries	LDCs
Telecom policy makers	Y	Y	Y
Telecom regulators	Y	Y	Y
Service providers	Y	Y	Y
Manufacturers	Y	Y	Y

The telecommunications industry is well suited to the use of "Key Indicators" which describe and define both the services which are provided and the networks upon which they are provided. More availability of quantitative information, specifically focused on communications for rural and remote areas, will be helpful in both developed and developing countries, and to both the public and the private sector.

b) **Target audience - Who specifically will use the output?**

The output will be useful and will be used by high level authorities and managers responsible for planning, organizing and controlling the provision and delivery of telecommunication services to rural and remote areas throughout the world, and in particular to the rural and remote areas of developing countries and LDCs. This includes, in the public sector, those responsible for establishing national telecommunications policy and monitoring its implementation, and those with regulatory responsibility. In the service provider organizations, this includes those responsible for setting strategy and for developing and delivering rural telecommunications programmes. Both

manufacturers and financial institutions will find the output helpful in defining and responding to market opportunities.

c) Proposed methods for the implementation of the results

The report which documents the results of this work should be distributed to all Member States and Sector Members at no direct cost. The conclusions and recommendations which result from this work should be implemented to expand and enhance the indicator type information already being provided by the ITU, with specific focus on telecommunication services in the rural and remote areas. The additional information which now becomes available on a regular and continuing basis will be circulated to Member States and Sector Members as appropriate, within existing procedures.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a Study Group
 - Question (over a multi-year study period) *
 - Focus Group (12 months duration maximum) *
- 2) Within Regular BDT Activity
 - Programmes Ongoing
 - Projects *
 - Expert consultants Initially
- 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) *

b) Why? Explain why you selected the alternative under a) above

This proposed Question uses the approach to the development of industry information which is proceeding well under BAAP Programme 11, and focuses specifically on communications for rural and remote areas. Once the appropriate Key Indicators have been developed, agreed on, and have become available, it is expected that the periodic ongoing aggregation and publication of this material will become part of the ITU "routine round" of information publication.

As a component of the work under this Question, it is hoped that it will be practical to address the aggregation of information on rural telecommunications at a finer granularity than the national level. In this regard, the management accounting techniques used by large service providers in developed countries offer valuable examples, both of how such information can be captured and displayed, and of the value that it brings to those responsible for managing and developing the network areas which are reported on.

The nature of this work, which is highly specialized and will require detailed bilateral dialogue and negotiation with many parties, can best be carried out by a knowledgeable and experienced consultant.

9 Coordination requirements of the study

The primary coordination of this proposal is with the successor programme to BAAP Programme 11 - "Information Services". This Question conforms to the objective of Programme 11, focused specifically on the delivery of communications to rural and remote areas.

Following directly from this, close coordination is also appropriate with the Strategic Planning Unit (SPU) of the ITU General Secretariat.

10 Other relevant information

To be defined.

[Taken from SG 2 1997 Doc. 2/253(Rev.1)]

20.5 Sound and television broadcasting and communication for rural and remote areas¹

1 Statement of problem or situation

In the current study period, Question 8/2, "Public service broadcasting infrastructure in developing countries", has addressed the study of this important subject area. One part of this work has related to the identification of the ways and means to assist developing countries in improving their sound and television broadcasting technical infrastructure.

From the results of the survey carried out among the Public Service Broadcasters, it has become clear that the distribution of sound and television broadcasting services throughout developing countries is often difficult to implement due to the lack of communications facilities in rural areas.

The advent of telecommunication services in the rural and remote areas provides an excellent opportunity to take advantage of these new facilities to extend sound and television broadcasting capability into these previously unserved areas.

2 Question or issue proposed for study

On the basis of completed studies, experience and knowledge gained by the ITU-D and by other organizations including UNESCO, WBUs and the FAO, and by the Member States and Sector Members of the Development Sector, develop conclusions and recommendations on this question:

How best can the telecommunications infrastructure in the rural and remote areas be planned and used to provide sound and television broadcasting to the population living there? How will this effect the cost of creating telecommunications infrastructure in the rural and remote areas?

3 Description of the expected output

The output will provide a guideline on the network planning and provisioning of sound and television broadcasting capability throughout rural and remote areas, including appropriate technical and economic detail, for use by the service provider's network planners and/or the network planners of the broadcasting authority. This planning guideline will include broad gauge cost information.

This guideline will be based on "best practice" experience of countries and organizations which have been successful in providing sound and television broadcasting capability throughout their rural and remote areas.

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

4 Required timing of the expected output

A preliminary report, conclusions, and recommendations are to be available by mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

Study of this Question is recommended by the groups of experts who addressed Question 4/2 and Question 8/2 in the study period from 1994 to 1998. Question 8/2 was proposed by the WBUs on behalf of Public Service Broadcasters (both radio and television) in developing countries. Other Proposers/Sponsors TBD.

6 Sources of input required in carrying out the study

Contributions are expected from sovereign governments, Public Service Broadcasters, service providers who provide sound and television broadcasting facilities, manufacturers whose product line includes appropriate systems and capability, and from both UN Agencies and regional organizations that have interest in and knowledge of public broadcasting.

Contributions from regional broadcasting organizations will be particularly helpful, as these organizations will be able to offer regional perspectives on sound and television broadcasting service for rural and remote areas.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows:

	Developed countries	Developing countries	LDCs
Telecom policy makers	N	Y	Y
Telecom regulators	N	Y	Y
Service providers	N	Y	Y
Manufacturers	Y	Y	Y

b) Target audience - Who specifically will use the output?

The intent of this Question is to ensure that Public Broadcasting is appropriately included in plans and programmes that promote Integrated Rural Development through the provision of telecommunication services throughout the rural and remote areas of developing countries and LDCs.

Accordingly, in these countries, the output will be useful to and used by those responsible for establishing national telecommunications policy for remote and rural areas, those responsible for regulating telecommunications in remote and rural areas, and for those who actually plan and implement Programmes which bring telecommunications to remote and rural areas. It will also be used by Public Service Broadcasters who actually provide the sound and television broadcasting service in these areas.

c) Proposed methods for the implementation of the results

The report which documents the results of this work should be distributed to all Member States and Sector Members at no direct cost. The conclusions and recommendations should be addressed, and if appropriate endorsed by resolution at the next World Telecommunication Development Conference, and at regional telecommunication development conferences as appropriate. The conclusions and recommendations of this work should be endorsed, supported and promoted by the successor programmes to BAAP Programmes 9 - "Integrated Rural Development", 10 - "Broadcasting Infrastructure" and 12 - "Development of Telematics and Computer Networks".

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a Study Group
 - Question (over a multi-year study period) *
 - Focus Group (12 months duration maximum) *
- 2) Within Regular BDT Activity
 - Programmes *
 - Projects *
 - Expert consultant Recommended
- 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) *

b) Why? Explain why you selected the alternative under a) above

This Question can best be addressed through a study carried out by a consultant who is knowledgeable and experienced in the field. The output is intended to provide a "best practice network planning guideline" which provides detailed guidance and successful examples of how best to implement sound and television broadcasting service for rural and remote areas.

9 Coordination requirements of the study

The primary coordination requirement is with the successor programme to BAAP Programme 9 - "Integrated Rural Development". Appropriate coordination is also needed with Study Group Question 4/2, "Communications for remote and rural areas", and with Study Group Question 8/2, "Public service broadcasting infrastructure in developing countries".

Other coordination requirements - To be defined.

10 Other relevant information

The WBUs, working in conjunction with the Haso Bunko Foundation (HBF) of Japan, have recently funded an in-depth study of some of the more pressing aspects of Question 8/2, concerning the introduction of digital techniques into all areas of sound broadcasting, including delivery and transmission in telecommunication networks.

The recommendations which have been developed by Question 8/2 have been based on an extensive survey of the Public Service Broadcasters. A recommendation will be put forward to the

WTDC 1998, addressing the issue of the joint development of telecommunications and broadcasting networks in a synergistic and coordinated fashion.

[Taken from SG 2 1997 Doc. 2/253(Rev.1)]

20.6 Measurement of the impact of Information and Communications Technology (ICT) in rural and remote areas¹

1 Statement of problem or situation

It is widely assumed that the provision of access to telecommunication services and the computer-based applications which take advantage of these services, often known collectively as "Information and Communications Technology" (ICT), in previously unserved or underserved rural and remote areas, and also in previously unserved or underserved urban or semi-urban areas, has a significant positive impact in promoting and supporting economic, social and cultural development. More scientific evidence which confirms this assumption would encourage both public and private sector organizations to implement ICT programmes in rural and remote areas. To provide such evidence, a set of standardized key indicators is required to measure and evaluate the impact in case studies, which may involve comparisons over time or comparisons between areas with or without access to ICT. Such standardized indicators would also make international comparisons of the effectiveness of different approaches, technologies, etc. used in rural ICT projects more meaningful and enable identification of "best practice".

These indicators would address all three areas of economic, social and cultural development, and would primarily focus on direction and rate of change, e.g. improvement or worsening, and how quickly, not merely the current level of development. The sorts of indicators contemplated could include income, GDP/capita, trade measurements, measures of productivity, unemployment rates, generation of new employment, literacy and other educational indicators, health indicators (infant mortality, longevity and others), and indicators of cultural development.

Several attempts to develop such indicators at the macro level have been made by UN and other development organizations but there is not yet a set of universally accepted indicators, and additional indicators are needed at the micro level to measure impact in small scale projects, particularly in rural and remote areas and in deprived urban areas.

Clearly such indicators would also be of value to many other development cooperation agencies organizations, such as other UN organizations, financing institutions, bilateral cooperation agencies and NGOs. Governments of developing countries could also use them to measure progress and to evaluate the impact of development projects.

2 Question or issue proposed for study

What are the appropriate indicators to use, to assess the initial and ongoing impact of the provision of ICT in rural and remote areas, and in previously unserved or underserved urban and semi-urban areas, to measure the impact of the availability of ICT in furthering the economic, social and cultural development of the area?

¹ Draft Questions 20.1, 20.2, 20.3, 20.4, 20.5 and 20.6 have been combined following TDAB request (see Document 72).

3 Description of the expected output

The output will comprise an evaluation methodology and a set of "key indicators" that can be used to assess and describe the direction and rate of change of economic, social and cultural development of the area reported upon.

A subject which requires particular attention is the "granularity" of the key indicators. Desirably, it would be applicable to entities as small as a village, and as large as a sovereign country.

4 Required timing of the expected output

A preliminary report, conclusions and recommendations are to be available by mid-1999.

5 "Proposers/Sponsors" - Those who requested study of the Question or issue

Study of this Question is proposed by the group of experts who addressed Question 4/2 in the study period from 1994 to 1998 and by the BDT staff with responsibility for BAAP Programmes 9 and 12 in the same period.

Preliminary discussion with other UN Agencies, with representatives of the IFIs and of many NGOs, and with a wide range of other public and private sector organizations, indicates that a significant number of additional sponsors can be found.

6 Sources of input required in carrying out the study

Participation and contributions are expected from all of the groups indicated above - UN Agencies, sovereign governments, IFIs, NGOs, and other public and private organizations.

The initial approach will be to determine what techniques and measurements are currently in use by the various potential clients/users of the proposed indicators, to assess progress as addressed by this Question. This investigation will form the basis for synthesizing a set of more comprehensive, sensitive and accurate indicators of development state and progress.

The intention of these indicators is to provide a comprehensive, "whole person/whole community" measurement, addressing all aspects of integrated development, recognizing that telecommunications is the essential vehicle to provide access/connectivity to the area or community, and that the applications that provide the actual value, for example in telemedicine, distance education, information access and transaction processing, make use of the underlying ICT.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows:

	Developed countries	Developing countries	LDCs
Telecom policy makers	Y	Y	Y
Telecom regulators	Y	Y	Y
Service providers	Y	Y	Y
Manufacturers	Y	Y	Y
Research institutions	Y	Y	Y
Development agencies	Y	Y	Y
NGOs	Y	Y	Y

b) Target audience - Who specifically will use the output?

The output will be used by senior managers, policy makers and planners at UN Agencies, in sovereign states, the IFIs, the NGOs, development agencies and in many other public and private sector organizations.

A hoped-for outcome of the development and availability of the indicators will be a higher degree of coordination and cooperation between multiple agencies and organizations, based on the expectation that development efforts in the various occupational sectors are mutually supporting each other.

c) Proposed methods for the implementation of the results

The report which documents the results of this work should be distributed to all Member States and Sector Members at no direct cost. The conclusions and recommendations which result from this work should be implemented to expand and enhance the indicator type information already being provided by the ITU. It is expected that it will be appropriate to establish close linkages with the information-reporting function in other UN Agencies. It may in fact be appropriate to provide this integrated information through a jointly-prepared report involving other UN Agencies.

The indicators will also be used for impact evaluation in the pilot projects implemented by the BAAP Programme 9 - Integrated Rural Development.

The specific focus must of course be on the rural and remote areas. The evaluation reports which then become available on a regular and continuing basis will be circulated to Member States and Sector Members as appropriate, within existing procedures and also to the clients/users of reports from other participating UN Agencies.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a Study Group
 - Question (over a multi-year study period) *
 - Focus Group (12 months duration maximum) *
- 2) Within regular BDT activity
 - Programmes Ongoing
 - Projects *
 - Expert consultants Initially

- 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations etc.) *

Cooperation with organizations already involved in indicator development and/or participating in the BAAP Programme 9 will be sought.

b) Why? Explain why you selected the alternative under a) above

This proposed Question will require close coordination with other organizations, primarily other agencies within the UN system. The task, and the challenge, will be to obtain and systematize the best possible information profile utilizing an appropriately modest expenditure of resources. To the extent practicable, it will be desirable and appropriate to use existing indicator components, perhaps captured, aggregated and displayed in new ways, rather than establish unique new indicator components.

Once the appropriate Key Indicators and the resulting profile have been developed, agreed on, and have become available, it is expected that the periodic ongoing collection, aggregation and publication of this material will become part of the "routine round" of periodic information publication currently performed by the ITU and by the other UN Agencies.

As a component of the work under this Question, it is hoped that it will be practical to address the aggregation of the required information at a much finer granularity than the national level. It should be noted that the management accounting techniques used by large telecommunication services providers in developed countries offer useful examples, both of how such information can be captured, aggregated and displayed and of the value that it brings to those responsible for managing and developing the business and network areas which are reported on.

The nature of the proposed work, which is highly specialized and will require detailed bilateral dialogue and negotiation with many parties, can best be carried out by a thoroughly knowledgeable and well experienced consultant.

9 Coordination requirements of the study

In addressing this Question, close coordination will be required with all the agencies and organizations that are in a position both to contribute to and to benefit from the outcome of this work. These will include, *inter alia*, UN Agencies, IFIs, NGOs, and development agencies such as CIDA, IDRC, SIDA and USAID.

In the context of the Buenos Aires Action Plan, there is a logical linkage with Programme 11. The work of Programme 11 will be a valuable component of the answer to this Question. Related to this, close coordination will also be appropriate with the strategic Planning Unit (SPU) of the ITU General Secretariat.

10 Other relevant information

To be defined.

[Taken from SG 2 1997 Doc. 2/294]

21.1 Enabling human resources to successfully meet the challenges of sector reform and transformation¹

1 Statement of Problem or Situation

It is generally believed that the introduction of new technologies and services triggers labour cuts. This perception has often been the basis of labour and sometimes political resistance to these changes. It is interesting to note that a similar preconception exists when sector reforms that include liberalization are under consideration.

The reality, however, is that the relationship between these two variables (new technologies and services vs. level of employment) is complex and involves a series of factors that are either positively or negatively correlated. Since these factors generally occur more or less simultaneously, it becomes difficult to isolate their true impact. We are only, now, starting to obtain data and facts that help us understand this complex relationship and its implications.

On the one hand, some factors are clearly negatively correlated. Technological modernization generally leads to a reduction in the number of staff required to operate and maintain telecommunication networks, whilst these new technologies require new skills and a higher calibre of staff. New technologies also reduce the staff required in the planning and line plant record functions. New technologies that permit centralization of monitoring and control also reduce the level of staff required for these functions.

Furthermore, many incumbent operators have used new technologies, as one of the tools, to re-engineer their processes and remove tasks and activities that were not adding value in the eyes of the customers/users. These re-engineering activities, often occurring in parallel with those mentioned above, also clearly result in surplus staff.

In our parallel, when sector reforms that include liberalization were introduced, the level of employment of the incumbent operator generally decreased, at least initially, as it could only lose a fraction of its historical 100% market share.

On the other hand, other factors are clearly positively correlated. New technologies (e.g. cellular and PCS), insofar as they involve the design and construction of new networks, generate new employment in almost all operational departments.

In our parallel, when sector reforms that include liberalization are introduced, the new employment of new competitors is also, as facts demonstrate, a significant addition to the level of employment of the sector.

Furthermore, and this phenomenon is only in its infancy, the deployment of new technologies and services also generates additional employment in other sectors and components of society.

Data are now appearing, almost monthly, that demonstrates that overall the net impact of both negatively and positively correlated factors is that employment is growing in both developing (e.g. Chile, Philippines, China, Malaysia, Vietnam, Columbia, etc.) and developed nations (e.g. Canada, U.S., Norway, Sweden, etc.) that pursue these policy and operational objectives.

¹ Draft Questions 21.1 and 21.2 have been combined following TDAB request (see Document 72).

As an example, the incumbent Canadian carrier (Bell Canada) has lowered its employment level, over the last few years, by almost 40%. These reductions, it should be noted, were the result of a series of voluntary termination packages (i.e. early retirement packages) that did not involve any lay offs of personnel. But new technologies and services, as well as the introduction of liberalization, resulted in additional net employment in the sector. Bell Canada has now over 150 competitors, who employ Canadians. Cellular companies generate significant employment. New PCS licenses were awarded that will result in the creation of 12,000 new jobs in Canada and as a result of these new technologies and services new jobs are being created in other sectors of the Canadian economy.

Facts and data now show that the net impact of the introduction of new technologies and services (as well as sector reform) is positive on the overall level of employment in an economy.

However, it also appears, generally, that the negatively correlated factors seem to precede, in their impact, the positively correlated factors. Smaller economies need to exercise greater care in determining the policy issues of timing. This phenomenon forces policy makers to face important managerial challenges.

2 Question or Issue Proposed for Study

- a) How can policy makers design policies and associated legislation to minimize the negative short-term impacts of sector reform while maximizing the positive overall benefits for the Nation.
- b) The management and regulation of operating entities in a commercial or competitive environment requires an organizational culture entirely different from the one generally prevalent in a monopoly framework. This new environment requires a substantial transition that involves the development of new skills, new behaviours as well as new working relationships.

This question is designed to help policy makers, regulators and operators in successfully facing the challenges of sector reform and transformation.

3 Description of the Expected Output

The output should produce, inter alia, guidelines, lessons from experience, best practices, as well as recommended action plans to help senior policy makers, regulators and operators meet this rewarding challenge.

4 Required Timing of the Expected Output

Practical guidelines recommendations will be produced and updated periodically as they are developed.

5 "Proposers/Sponsors" - Those who requested study of the Question or Issue

Study Group 2, Question 5/2.

6 Sources of input required in carrying out the study

All relevant experiences from both the developing and developed world will be mobilized in this important task.

7 Target audience for the output

	Developed	Developing	LDCs
Policy makers	—	√	√
Regulators	—	√	√
Service providers	—	√	√
Manufacturers	—	—	—

The primary beneficiaries of the output of this research will be developing countries.

8 Proposed method of handling this question or issue

- 1) Within a study group
 - question √
 - focus group √
- 2) In other ways √

This question will be pursued as relevant learning experiences are documented in a practical and useful format. Furthermore this question will also be pursued through the other means such as the development of specific programmes, for example the establishment of a structured approach designed to help members who have decided to reform their sector and need assistance in:

- a) setting up a regulatory entity;
- b) building the skills required to regulate the policy objectives pursuant to the new legislation and associated policy objectives.

9 Coordination Requirements of the Study

Coordination will be required with all other Working Parties.

[Proposal from Kenya]

21.2 Human resources development and management with special emphasis to employment including consideration of gender issues¹

Statement of the problem

The telecommunications environment continues to experience dynamic and varied transformation including technological changes and sectoral reforms.

For developing countries technological changes and sectoral reforms have normally led to staff downsizing. The latter has often created serious repercussions in terms of unemployment of the affected staff, elimination or reduction in household access to resources, breakdown of family unit,

¹ Draft Questions 21.1 and 21.2 have been combined following TDAB request (see Document 72).

loss of or diminished spouse's support, etc. In addition, the overall performance of the telecommunication entity is usually affected adversely. Gender issues, therefore, become central in the formulation of survival strategies for the affected households and their members.

It is becoming increasingly recognized that the negative impact of telecommunication technological changes and sectoral reforms can be avoided by various telecommunication entities prescribing and implementing employment-friendly and gender-sensitive human resources development and management policies. The policies should recognize that at the current stage of development of most developing countries, various households depend on the economic and labour resources of all their members for survival, and available telecommunication competencies are scarce and should be retained as far as possible to ensure rapid telecommunication development and sustained efficiency in meeting customer requirements.

Employment-friendly and gender-sensitive human resource development and management policies should include retention of skilled human resources, redeployment of human resources (right sizing) instead of downsizing, development of new competencies (e.g. quality management, new skills, leadership, new attitudes and new culture).

Question proposed for study

- 1) Identify relevant telecommunication technological changes and sectoral reforms as well as associated human resource development and management policies and evaluate their impact on employment including gender issues in developing countries.
- 2) Formulate employment-friendly and gender-sensitive human resource development and management programmes and methods necessitated by telecommunication technological changes and sectoral reforms.
- 3) Formulate suitable guidelines and recommendations on human resource development and management for use by developing countries to ensure that telecommunication technological changes and sectoral reforms that may be undertaken fully benefit these economies without creating unemployment and are gender-sensitive.

Expected output

- 1) An analysis of telecommunication technological changes and sectoral reforms as well as associated human resource development and management policies and their impact on employment including gender issues in developing countries.
- 2) Employment-friendly and gender-sensitive human resource development and management programmes and methods necessitated by telecommunication technological changes and sectoral reforms in developing countries.
- 3) Guidelines and recommendations on employment-friendly and gender-sensitive HRD and HRM policies for use by developing countries.

Required timing of the expected output

Mid-2000.

Sources of input required in undertaking the study

- Member States.
- Sector Members.
- UN agencies.
- Regional groups.

Target audience for the output

	Developed countries	Developing countries	LDCs
Telecom policy makers	*	*	*
Telecom regulators	*	*	*
Service providers	*	*	*
Manufacturers	*	*	*

Proposed method of handling the Question

Expert group within regular BDT activity.

[Taken from SG 2 1997 Doc. 2/271(Rev.2)]

22 Fostering the application of telecommunications in health care

1 Statement of Problem or Situation

The Report on *Telemedicine and Developing Countries*, prepared as an output for Question 6/2, together with the discussions and recommendations of the African Regional Telecom Development Conference, the Regional Telecom Development Conference for the Arab States and the World Telemedicine Symposium for Development Countries, as well as reports on the missions to developing countries by telemedicine experts, all show that developing countries have an overwhelming need for the provision of medical and health care services, especially in areas outside the cities and that telecommunications services could be an economical means of achieving national health policy objectives with regard to improvement and/or extension of medical and health care, especially to non-urban areas.

Implementation of telemedicine requires multidisciplinary collaboration, with the active participation of telecommunication operators and health care professionals. There is a need to bridge the gap between the telecommunication and health-care communities at all levels. National Ministries of Health and Communications also need to work together towards introduction of a telemedicine policy and achievement of universal service where emergency services, health and social information systems are concerned.

2 Question or Issue Proposed for Study

The Study Group shall:

- 1) Identify telecommunications solutions to promote health care and to meet its needs, especially in remote and rural areas, for those on the move and for those who might not otherwise have access to the quality of care available in urban hospitals.
- 2) Take further steps to assist in raising the awareness of decision-makers, telecommunication operators, donors and others about telemedicine and how telecommunications might be able to help solve some health-care needs and provide elements to universal service relating to emergency, health and social services. In particular, support a second World Telemedicine Symposium to be held in Latin America in 1998 and a third Symposium to be held in Asia in 1999.

- 3) Identify telecommunications pilot projects for telemedicine applications appropriate to developing countries; provide an analysis of project results and help countries to define a policy and strategy in regard to the application of telecommunications to support implementation of telemedicine.
- 4) Establish a database about the different pilot projects and experience in developing countries, what financing mechanisms and technologies have been used, what services have been provided, what the results of the pilot projects have been, what lessons to learn, what mistakes to avoid.
- 5) Promote development of telecommunications standards for telemedicine applications in conjunction with the ITU-R and ITU-T Sectors in particular.
- 6) Develop a directory of companies, institutes, service providers which includes telecommunications facilities and technologies used in telemedicine applications, services and software which would be appropriate and cost-effective in the context of meeting the needs of developing countries. The directory should include, as far as possible, a list of donor institutions in this domain.

3 Expected Output

The output expected from this Question will include:

- A report on the proceedings of the proposed Symposia for Latin America and Asia, including conclusions and recommendations. As with the first Telemedicine Symposium for Developing Countries convened by the ITU/BDT in Portugal in July 1997, which was supported by the European Commission, Inmarsat and others, representatives from both the telecommunications and health care sectors would be invited to participate, exchange views and ideas re implementation of telemedicine applications in developing countries.
- A report on pilot projects supported by the ITU/BDT, either in whole or in part, with WHO and other relevant international and national organizations. In some instances, the ITU/BDT and its sector members may be collaborating with other funding institutions such as the UNDP, WHO, World Bank and European Commission. The report would identify the scope of the pilot projects, participants, costs and sources of funding, results achieved, prospects for sustainability, telemed technologies and telecommunications used, etc.

The report could include recommendations to assist telecom and health care professionals, including relevant government departments, who are considering implementation of telemedicine.

- Development of telecommunications standards for telemedicine applications. Such developmental activity should be coordinated with the ITU-R and -T Sectors, but also in collaboration with other relevant bodies. Such standards should facilitate the maximum interworking between different telemedicine equipment and telecom networks, particularly in the domain of videoconferencing. Further, the work on these standards should also take into account security and privacy in order to guarantee the integrity and confidentiality of patient information.

4 Timing of the Expected Output

The work undertaken by the Study Group can be phased over the next study cycle. Implementation of small-scale pilot projects should take place over the next two or three years.

5 Proposers and Sponsors

Formulation of the proposed Question has been based on the Resolution from the Second African Telecom Development Conference (Abidjan 1996), the Recommendation from the Second Telecom Development Conference for the Arab States (Beirut 1996) and the recommendations emanating from the Report of the first World Telemedicine Symposium for Developing Countries held in Portugal in July 1997.

6 Sources of Input Required in Carrying out the Study

Inputs will be expected from the European Commission, the European Health Telematics Observatory, the World Health Organization, the Midjan Group, telemedicine institutes, etc. Contributors to and contacts already established in preparing the Telemedicine Report will be tapped for contributions to the work of the Study Group and new contacts will be invited.

7 Target Audience

a) Types of target audience

	Developed Countries	Developing Countries	LDCs
Telecom policy makers	*	*	
Telecom regulators	*	*	
Service Providers (operators)	*	*	*
Manufacturers	*		
Ministries of Health	*	*	
International funding bodies	*		
Telemedicine institutes	*	*	

This Question aims at stimulating collaboration between the telecom and telemedicine communities, between developed and developing countries. Essentially, a transfer of know-how from developed to developing countries is expected. However, the experience gained from telecommunications for telemedicine applications in developing countries will also be expected to benefit equipment suppliers and service providers in developed countries, so that they have a better understanding of what is cost-effective in third world markets.

b) Who will use the output

See sections 3 and 7 a).

c) Proposed Methods for the Implementation of the Results

The outputs of the this Question can be made available via World Wide Web sites (e.g., that of the ITU, Midjan Group, etc.), distribution of hard copies to the mailing lists of the ITU and other organizations, availability at Symposia, etc.

8 Proposed Method of Handling this Question or Issue

The outputs of the Question can be prepared by the Study Group in close collaboration with the ITU/BDT, taking into account missions by telemedicine experts to developing countries and

telemedicine pilot projects. The Study Group should also work closely with, for example, the Midjan Group, which was established as a consequence of the Question 6/2 following the Buenos Aires WTDC, and a similar Asian Telemedicine Collaboration Group, formation of which is under active consideration. The Study Group should invite collaboration with other interested international, regional and national organizations. The Study Group should also establish collaboration with the other ITU sectors in regard to promoting development of relevant standards.

9 Coordination Requirements of the Study

See section 8 above.

10 Other Relevant Information

The activity for the next Study cycle can build on the Telemedicine Report and other initiatives which resulted from Question 6/2, notably formation of the Midjan Group, telemedicine demonstrations at the African and Arab States Regional Telecom Development Conferences, the World Telemedicine Symposium, telemedicine expert missions to developing countries, and the numerous contacts established world-wide in the last three years.

[Taken from SG 2 1997 Doc. 2/288(Rev.1)]

23 Telecommunication support for the protection of the environment

1 Statement of Situation

It is quite evident that the protection of the environment has now become a top priority at the global level. The final Report on the Telecommunication support for the protection of the environment prepared by the Study Group 2 provides an overview of the current situation of the relationship between telecommunications and the environment. During the study of Question 7/2 in the current study period, a link between the telecommunication and the environment communities have been successfully established at the Tunis Symposium on the role of telecommunication and information technologies in the protection on the environment (April 1996) through the initiative taken by the BDT. It is now vital that this link need to be maintained and reinforced through continuous and close coordination between these two communities at global and national levels.

It is therefore proposed to follow up the progress that has already been made by the Study Group 2.

2 Proposed Future Study

It is proposed to continue the study through:

- implementing the ITU Global Project "Telecom-Environment";
- conducting the already identified pilot projects by the BDT and continuing to identify further pilot projects appropriate for developing countries;
- continuing disseminating the results of the pilot projects and other relevant information related to telecommunication support in the protection of the environment;
- maintaining an updated inventory of information sources relating to telecommunication and environment which could be accessed by all concerned parties electronically and otherwise;

- taking further steps to increase awareness among policy/decision makers by way of conducting symposiums/workshops at global and/or regional levels in collaboration with the relevant International Organizations such as UNEP, UNDP, WMO, UNITAR; UNESCO etc.

3 Description of the Expected Output

Status Reports highlighting the progress made in the pilot projects, the outputs of the proposed symposiums/ workshops to be submitted to future Study Group Meetings.

4 Required Timing of the Expected Output

Outputs are expected as Interim Reports submitted to Working Party meetings during the next study cycle (1988 - 2002). Final Report expected for the final Study Group meeting during the cycle.

5 Sponsors

The interested Sector members of the ITU in particular, in partnership with the relevant International Organizations will contribute in providing the necessary financial resources to enable the implementation of the different activities of BDT and the follow-up of these activities related to the protection of the environment issues.

6 Sources of Input Required in Carrying out the Study

- host facilities and support from the Administrations of developing countries where pilot projects have been identified to carry out;
- participation of all ITU Members and Sector Members;
- support and Inputs from International and Regional Environmental Organizations are expected.

7 Target Audience

	Developed Countries	Developing Countries	LDCs
Telecom Policy makers	*	*	*
Telecom Regulators	*	*	*
Service Providers	*	*	*
Manufacturers	*	*	
Ministries of Environment	*	*	*

8 Proposed Method of Handling this Study

- The ITU/BDT within its regular activity and its Global Project "Telecom-Environment", would continue to undertake the various pilot projects in collaboration with the Member Administrations and Sector Members of developing countries.
- Within the same Global Project, Symposiums and/or Workshops aimed at increasing awareness among the decision makers would be organized in collaboration with the

concerned organizations such as UNEP, UNDP, WMO, UNESCO and Ministries of Environment.

[Taken from TDAB97 Doc. 2/12]

24 Using telecommunication and telematics to enhance learning environments for development

1 Statement of the problem or situation

Despite considerable efforts at the local, national and international levels, present educational systems in developing countries are inadequately equipped to prepare citizens for today's and tomorrow's challenges. There are about one billion illiterate people in the world, 130 million school-aged children out of school, and very few options for supporting the continuing learning needs of the multitudes who have dropped out of schools or who have no possibility of joining them. Experience has shown that these learning needs cannot be addressed only by expanding the formal education system. There is also a need to create open learning environments that provide opportunities for lifelong learning.

The success of these key educational reforms will depend critically on the availability and appropriate use of telecommunication and telematics facilities. The emergence of powerful new telecommunication channels and technologies such as digital compression, satellite transmission, fibre optics, wireless networks, along with telematics techniques based on multimedia, groupware, and intelligent interfaces, dramatically expand options for engaging in learning and teaching at the individual, community and societal levels. Opportunities are also emerging for making better use of "traditional" telecommunication technologies that have been previously under-utilized, particularly radio and television, in supporting learning processes and learning communities, and for enriching them through new techniques such as interactive TV.

Past uses of telecommunication and information technology in education focused mainly on traditional modes of learning: lecturing and "drill and skill" based on a perspective of learners as simple recipients. These approaches, and more recent innovations introducing interactivity between teachers and learners and among learners and access to new learning resources through new channels such as videoconference and the Internet, have been mainly useful in higher and specialized education, where funding is more readily available and where students are more likely to be motivated and technologically aware. The challenge is how to concentrate policy, operator and private sector cooperation and grass-roots education efforts towards the effective use of telecommunication and telematics technologies in achieving education for all for development.

2 Question or issue proposed for study

How can telecommunication and telematics be used to build learning environments that are open and responsive to the different learning needs in developing countries, contributing to the ability of individuals and their communities to adapt to and generate change and participate in society.

In this context, the following issues should be addressed:

- support for enhanced learning processes:

- how can telecommunication and telematics help introduce interactivity into the education process to promote authentic social interaction, critical reflection, dialogue, vision-building, problem-solving and creative action?
 - how can telecommunication and telematics support processes of collection, storage, accessibility and sharing of data, information, knowledge and experience in different formats (visual, audio, text, etc.) to benefit learning at the local, national and international levels, including exploitation of learner-generated learning resources?
 - how can interfaces be developed to support culturally sensitive and individually tailored learning, including for illiterates, the handicapped and other disadvantaged groups (e.g. tactile interaction, voice recognition)?
 - how can human facilitators, particularly teachers, be trained and empowered to effectively exploit telecommunication and telematics in their work?
 - how can learners be guided and enabled to discriminate among the vast number of potentially useful information sources, e.g. through a building of "critical media awareness"?
- infrastructure and access:
- what are the infrastructure and institutional requirements to enable telecommunication and telematics to contribute to national educational goals?
 - what telecommunication policies and regulatory frameworks are needed to promote access of all to education, paying particular attention to the needs of educational institutions in rural and disadvantaged areas?
 - how can telecommunication help to bring learning to the people and in particular to rural communities in developing countries (e.g. wireless networks, hand-held devices)?
 - what can be done with older communication technologies in which institutions and countries have already invested large sums of money?
 - how can local capacity for production and maintenance of telecommunication and telematics based educational technologies (equipment, software and content) be strengthened (e.g. public sector - private sector cooperation)?

3 Description of the expected output

Consideration of this Question will lead to:

- policy guidelines related to:
 - access to telecommunication and telematics for education and learning;
 - required telecommunication infrastructure;
 - encouragement of appropriate technologies;
 - required reform of educational structures and systems;
- an inventory of the different telecommunication and telematics technologies relevant to education and learning, and of enterprises involved in the development and dissemination of these technologies;
- technical specifications for model low-cost and appropriate technologies to support multichannel, individually and culturally adapted learning processes;

- completion of case studies and pilot projects that demonstrate "best" practices and an analysis highlighting some of the key issues related to using technology to enhance basic learning and education for all;
- based on the above, a programme of sensitization and training for decision-makers and specialists concerned with telecommunications and education, and other partners in the learning process at the local, national and international levels.

4 Required timing of the expected output

Three years.

5 "Proposers/sponsors" - Those who requested study of the Question or issue

UNESCO, taking account of its collaboration with ITU and the interest expressed by its Member States.

6 Sources of input required in carrying out the study

FAO, ILO, ITU, UNDP, UNEP, UNESCO, UNFPA, UNICEF, UNIDO, WHO, World Bank, IGOs (e.g. Commonwealth of Learning), NGOs (e.g. OLSET, Afgan Education Drama Project), public telecommunication operators, telecommunication industry and the authorities of interested Member States.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed countries	Developing countries	LDCs
Telecom policy makers		Yes	Yes
Telecom regulators		Yes	Yes
Service providers (operators)	Yes	Yes	Yes
Manufacturers	Yes	Yes	Yes

b) Target audience - Who specifically will use the output

Telecommunication administrations and telecommunication operators.

VAS providers and equipment manufacturers.

Educational policy makers and planners.

Teachers and school administrators.

Communities (children, parents and other interested partners).

NGOs, bilateral donors and international agencies involved in educational reform and open learning.

c) Proposed methods for implementation of the results

- Policy debate leading to the policy guidelines.

- Pilot projects to test and assess the impact of potential appropriate telecommunication and telematics applications.
- Publications (guidelines, inventory of technologies, case studies).
- Training and sensitization activities.

8 Proposed method of handling the Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

- 1) Within a study group:
 - Question (over a multi-year study period)
 - Focus group (12 months duration maximum)
- 2) Within regular BDT activity:
 - Programmes
 - Projects
 - Expert consultants
- 3) In other ways - Describe (e.g. regional, within other organizations, jointly with other organizations, etc.)

UNESCO, ITU and other international agencies, national institutions or non-governmental organizations will cooperate in the implementation of activities to promote, test and assess the potential of telecommunication and telematics to enhance learning.

b) Why? Explain why you selected the alternative under a) above

This Question will require the involvement of specialists in areas of telecommunications, telematics and education at both the policy and operational levels. At the same time, the involvement of local and national partners is required to assess and promote impact within specific development contexts.

9 Coordination requirements of the study

UNESCO, through its Learning without Frontiers programme and its mandate in communication, information and informatics will work closely with ITU in coordinating the proposed activities with the other partners.

10 Other relevant information

UNESCO and ITU are collaborating on a number of pilot projects relevant to this Question within their joint programme on telematics for development:

"Creating Learning Networks for African Teachers" project as part of the larger "Harnessing Information Technology for Development" (HITD) programme within the UN system-wide Special Initiative on Africa (SIA). Currently pilot activities are being carried out in Zimbabwe, where five teacher-training colleges have been connected to the Internet, and a core group of teachers and their partners are being trained in using ICTs for their own development and their daily teaching practices.

Multipurpose Community Telecentre Pilot projects in five African countries: a project supported by IDRC, ITU and UNESCO, also within the HITD/SIA framework, to provide rural communities with affordable access to modern information and telematics facilities, and to demonstrate how these facilities can be applied to education and development.

The joint UNESCO/ITU programme on "Educational Applications of Interactive Television", in which pilot projects are being prepared in Morocco and India to develop and disseminate a new model for the training of teachers for educational reform in developing countries, benefiting from the potential of ITV to enhance two-way and real-time interaction, as part of the testing and feedback process within the ITU-R standardization effort on ITV.

[Proposal from the UK]

25 The development of long term strategic plans for the future use of the frequency spectrum in developing countries

1 Statement of problem or situation

The continuing growth in demand for spectrum, from both existing and new radio-based services, places ever greater requirements on a scarce resource. New services are competing for the same parts of the spectrum already in use by existing services and, although there are determined efforts to facilitate sharing based on technical solutions, the introduction of new services often requires existing users to be relocated to other frequency bands or to use non-radiocommunication. In developed countries where there is already extensive use of the spectrum, the cost of relocating existing users due to the investment in existing equipment and infrastructures can be high and the disruption to the users' business in the transition period can be damaging. Major changes in the use of the spectrum are therefore often difficult to achieve, except in the longer term. In developing countries this problem is not so acute, however, it is important that decisions on the use of the frequency spectrum are based on a sound footing taking account of likely trends, so as to avoid the problems now being faced in developed countries.

Many of the new telecommunications products are intended for global applications and therefore require access to spectrum on a global basis.

The different stages of development in different countries results in conflicting requirements and difficulties which become apparent during WRCs. Although compromises have been achieved, the relatively short periods available, both in the preparation for and during a WRC and the intense working environment of a WRC, result in an outcome which is often less than satisfactory (though for different reasons) for many countries and their radiocommunication users. It is particularly difficult for many developing countries to influence such decisions because of the lack of overall strategic plans for spectrum use.

The need for planning

Planning may be summarized as a process that must precede the efficient and effective conduct of any activity, be it business or government. Immediate resolution of issues generally means that the best solutions are no longer available.

Spectrum planning is no different. Optimum solutions require a forward looking perspective that gives adequate time to consider all the factors involved. Planning, however, requires the establishment of, and the commitment to, processes to carry it out, because crisis situations can

always divert attention from long-term tasks. Both short-term and long-term planning are an absolute necessity for management of the spectrum that will satisfy dynamically changing spectrum requirements.

2 Question proposed for study

DRAFT NEW QUESTION [G-WTDC-1]

THE DEVELOPMENT OF LONG-TERM STRATEGIC PLANS FOR THE FUTURE USE OF THE FREQUENCY SPECTRUM IN DEVELOPING COUNTRIES

The World Telecommunication Development Conference (Valletta, 1998),

considering

- a) that the continuing growth in demand for spectrum, from both existing and new radio-based services, places ever greater requirements on a scarce resource;
- b) that, due to the investment in existing equipment and infrastructures, major changes in the use of the spectrum are often difficult to achieve, except in the longer term;
- c) that the ITU encourages the development of national long-term strategies for spectrum use and management;
- d) that national strategies should take into account international commitments, global changes in telecommunications and developments in technology;
- e) that increased spectrum access may be facilitated through technical innovation and greater sharing;
- f) that ITU-D is well placed to provide, as an aid to planning in developing countries, a global understanding of radiocommunication technology and spectrum utilization trends and how they relate to the needs of developing countries;
- g) that such information would enable spectrum managers in developing countries to develop their own national long-term strategies on the basis of an overall strategy;
- h) that such information would enable developing countries to benefit from sharing and other technical studies in cooperation with ITU-R,

recognizing

that it is the sovereign right of every nation to manage spectrum use within its territories,

decides

that, as detailed in the Work Plan in the Annex, the following Question be studied:

- 1 to examine current trends of the radio spectrum use and its anticipated growth, taking into account the new services likely to want to gain access to the spectrum and other technology changes likely to take place over the next 10 to 15 years;
- 2 to assess the impact of these changes, in particular for the developing and least developed countries;

3 to prepare a plan of action to ensure that the ITU is adequately equipped to solve today's problems and to meet tomorrow's challenges,

further decides

that ITU-R be requested to cooperate in the above studies.

ANNEX

(to draft ITU-D new Question [G-WTDC-1])

Draft Work Plan for the development of a long-term strategy for the future use of the frequency spectrum in developing countries

- 1) To examine current trends in global spectrum use; the anticipated growth in spectrum usage; the technical and operational changes taking place or foreseen.
- 2) To estimate the requirements in developing countries for radio services, planned or likely to arise within the next 10 to 15 years or so.
- 3) To assess the impact of probable additional services on overall demands for radio spectrum on a global or regional basis.
- 4) To report and make recommendations as appropriate.
- 5) The review should be conducted in stages. The first stage will concentrate on the frequency range [xx MHz to yy MHz] and is to be completed by [ddmmyy].

3 Description of the expected output

It is proposed that a series of studies be undertaken, each one examining a specific range of radio frequencies and each one resulting in a report. The frequency range for the initial study should be decided by Study Group [2], taking into account proposals from administrations and any related activity in ITU-R.

4 Required timing of the expected output

A two-year period is usually sufficient to complete all the necessary phases of a study: consultation and data gathering; analysis and preparation of an interim report; analysis of responses to the interim report; final report. This is based on the experience of national reviews of spectrum use.

5 "Proposers/Sponsors" - Those who requested study of the Question or Issue

[United Kingdom

Lebanon

Syria

India

South Africa

Mali

Mexico]

6 Sources of input required in carrying out the study

The process will involve: information gathering, analysis and forecasting. Administrations, operators and industry should be encouraged to participate and contribute in order to ensure that the output of the study represents adequately the global situation. Cooperation with the ITU-R Sector should be sought to provide information on radiocommunication technology and techniques for spectrum utilization.

7 Target audience for the output

a) Indicate expected types of target audience

	Developed countries	Developing countries	LDCs
Telecom policy makers		X	X
Telecom regulators		X	X
Service providers (operators)			
Manufacturers			

b) Target audience - Who specifically will use the output

The output will be useful to regulators and policy makers in all countries but particularly developing countries to assist in the preparation of national long term plans. Many developed countries have already recognized the benefits of national spectrum studies and these may be used as contributions to the global studies. However, the developing and least developed countries will benefit the most from obtaining information directly relevant to their needs, prepared within the framework and with the resources of ITU-D.

c) Proposed methods for the implementation of the results

Administrations may base their long-term plans on the reports, advising their users where changes can be expected. Operators and other radiocommunication users will be better informed when considering investments in new technology. Manufacturers will be better prepared to meet market needs, in particular those having global spectrum requirements.

8 Proposed method of handling this Question or Issue

a) How? Indicate the suggested handling of the proposed Question or Issue

- 1) Within a study group
 - Question (over a multi-year study period) ÿ Yes
 - Focus group (12 months duration maximum)
- 2) Within regular BDT activity
 - Programmes Yes
 - Projects Yes
 - Expert consultants Yes
- 3) In other ways - describe (e.g. regional, within other organizations, jointly with other organizations, etc.) Yes

b) Why? Explain why you selected the alternative under a) above

As explained above, it will be necessary to undertake a series of studies on different frequency ranges within the radio spectrum, each lasting about two years. Some administrations may wish to contribute to the studies on a regional or subregional basis. The BDT will need a specific programme and may need to find expert consultants to assist some countries in the preparation of their contributions or during the analysis phase of the study. A joint project could be envisaged with ITU-R. Some regional organizations could be expected to contribute.

9 Coordination requirements of the study

Whether or not a joint project is established with ITU-R, close coordination will be required with the Radiocommunication Sector. The various ITU-R Study Groups will be the main source of advice on new technologies and their impact on the use of the spectrum.

10 Other relevant information

[None.]

[Taken from TDAB97 Doc 2/12]

26 Collaboration between Sectors of public interest and telecommunication operators

1 Statement of problem or situation

Access to telecommunications, not to mention the Internet, cannot be evaluated solely in terms of the number of users (e.g. teledensity) but must also take into account the quality and scale of actual access possibilities and the services offered to institutions involved in the development process. To date, however, such access has been limited in the developing countries, notwithstanding the goodwill and efforts of the authorities.

The public sector is a huge potential market which unfortunately often lacks the requisite material and financial resources. This may be offset, however, by participation in kind through appropriate adaptation or development of human resources and through the performance of specific functions that fall within the province of public institutions, in balanced cooperation with telecommunication operators.

2 Question or issue proposed for study

How, in general, to promote cooperation among users and operators in order to clarify the requirements of the former and improve the services offered by the latter? This question is of particular relevance to public-interest institutions as users, in terms of facilitating their access to telematic resources and improving their contribution to people's cultural, scientific, social and economic development.

3 Description of the expected output

- Measures designed to encourage public institutions and their users to acquire (learn to use and adapt) technologies, to develop technological applications and to engage in productive cooperation with public authorities and operators.
- Steps must also be taken to encourage cooperation between the private sector and public-interest institutions with a view to offering the public the competitive and innovative services they require.

4 Required timing of the expected output

Three years.

5 "Proposers/sponsors" - Those who requested study of the Question or issue

UNESCO, in view of the interest of Member States and on the basis of its collaboration with ITU.

6 Sources of input required in carrying out the study

UNESCO, ITU, UNDP, UNCTAD, UNIDO, NGOs, public telecommunication operators, universities and research institutes.

7 Target audience for the output

a) Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed countries	Developing countries	LDCs
Telecom policy makers		Yes	Yes
Telecom regulators		Yes	Yes
Service providers (operators)	Yes	Yes	Yes
Manufacturers	Yes	Yes	Yes

b) Target audience - Who specifically will use the output

Public telecommunication operators, value-added service providers, manufacturers and developers of application software; universities and other public-interest institutions (training, health, environment, etc.); NGOs and users' associations.

c) Proposed methods for implementation of the results

In the light of the results, establishment of a permanent platform to bring together public institutions, telecommunication operators and groups of users in order to tailor responses more closely to needs.

8 Proposed method of handling this Question or issue

a) How? Indicate the suggested handling of the proposed Question or issue

1) Within a study group:

- Question (over a multi-year study period)
- Focus group (12 months duration maximum)

2) Within regular BDT activity:

- Programmes
- Projects
- Expert consultants

3) In other ways - Describe (e.g. regional, within other organizations, jointly with other organizations, etc.)

b) Why? Explain why you selected the alternative under a) above

9 Coordination requirements of the study

Ensuring, at the different stages of the study, close collaboration between, on the one hand, public and private telecommunication operators and, on the other, public-interest institutions and groups of users.

10 Other relevant information

UNESCO, ITU and four other regional and international organizations (UNDP, Pan American Health Organization, Commonwealth of Learning, International Council for Scientific and Technical Information) sponsored a first pilot project on operator-user cooperation in the Caribbean (Barbados, Saint Lucia, Saint Vincent and the Grenadines) in 1996-1997, the results of which will be made available to the study group.

[Taken from SG 1 1997 Doc 1/205]

27 Enhancing the capacity of NGOs to achieve development aims, through the use of telecommunication

1 Statement of Problem or Situation

Increasingly, development efforts in less and least developed countries are being led by national and international NGOs, recognised by governments, the UN system and others as key actors. Some are directly involved in media (e.g. community radio, development video, telecentres); others use telecommunication to achieve their aims (e.g. aid agencies, training and educational initiatives, local economic initiatives etc.); while others still are generally aware of the important role of telecommunication but have yet to come to grips with the issues and possibilities.

There is a danger that many opportunities to enhance development using telecommunication are being lost, because of lack of awareness of potential especially of new technologies, lack of coordination between NGOs, national authorities and private sector, (often unintended) obstacles in

national and international broadcasting policy and telecommunication regulation, and even poorly designed international standards that impede appropriate technologies.

Finding a solution to these problems should significantly increase the capacity of these NGOs to achieve their development aims, through the use of telecommunication and information technologies.

2 Question or Issue Proposed for Study

General Question:

What is the actual and potential impact of current telecommunication trends on the activities of development NGOs, and what policies and actions can enhance their capacity to utilize telecommunication more effectively to achieve development aims?

Specifically:

- 1) Based on existing evidence, what new opportunities have recent events opened up for development-oriented NGOs through communication media and technologies use (e.g. Internet, radio and television broadcast, satellite, video). How do they, and can they, contribute concretely to achieving the development aims of NGOs, especially in least developed countries?
- 2) What are the current obstacles to the widespread dissemination of these benefits? This might include: lack of awareness regarding benefits; lack of finance; inadequate universal service and access to basic network; restrictive telecommunication regulation; unsupportive broadcast policy including frequency allocation; inappropriate technology and standards, including digital sound broadcasting; etc.
- 3) What policies and action, from NGOs, governments, ITU, and others, can best address these obstacles? These might include better coordination between NGOs; additional support for non-commercial Internet use; regulation and frequency provision of local development-oriented radio; support for innovative universal service actions, especially in the context of liberalization; access to satellite broadcasting by NGOs; and so forth.

3 Description of the Expected Output

- An analysis of the impact and potential of telecommunication technologies on the development-oriented NGOs, especially in least developed countries.
- An analysis of the obstacles to disseminating the effective use of telecommunication technologies, in terms of awareness, regulations, access to resources and services, broadcasting policy, standards etc.
- Concrete policy guidelines and proposals for actions, at national and international level, to ensure NGOs can take advantage of these technologies, working with national governments, ITU and others, to maximize development gains.

The users will be:

National and International NGOs, and their representative and other organizations; national government, especially those involved in telecommunication and broadcasting policy and regulation; broadcasting and telecommunication regulators; telecommunication operators; the ITU.

4 Required timing of the expected output

This question must be addressed urgently, but without undue haste. The timescale for the recommendations extends into the future, taking into consideration the rapidly evolving national and international telecommunication environment

A careful consultation and research methodology (see below) will have to be deployed, if the output is to address the issues effectively. An 18- to 24-month study period would seem reasonable, before preliminary results can be achieved.

5 Proposers/Sponsors - Those who requested study of the Question or Issue

Organization: Platform for Cooperation on Communication and Democratization

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The Platform is in the process of becoming a member of ITU-D.

6 Sources of input required in carrying out the study

The following organizations would benefit from the output and are to contribute to the work in different ways:

Media related NGOs: The Proposers comprise an association of NGOs, members of which have agreed to contribute to this Study Group. Among these are:

- 1) AMARC: World Association for Community Radio Broadcasters;
- 2) APC: Association for Progressive Communication;
- 3) Article 19: International Centre Against Censorship;
- 4) Catholic Media Council;
- 5) IAMCR (PCR Section): International Association for Media and Communication Research;
- 6) IFJ: International Federation of Journalists;
- 7) IWTC: International Women's Tribune Centre;
- 8) MacBride Round Table on Communication;
- 9) PANOS London;
- 10) People's Communication Charter;
- 11) Vidéazimut: International Coalition for Audiovisuals for Development and Democracy;
- 12) WACC: World Association for Christian Communication;
- 13) Worldview International Foundation;
- 14) ZEBRA: Audio-Visual Network for North-South Understanding;
- 15) Group of Eight: A Network of Communication in Latin America and the Caribbean;

The support of others will be gained prior to the WDTC. These include:

- other agencies and organizations involved in communications and development especially in least developed countries, such as IDRC and FES;
- major development NGOs, such as Concern Worldwide, OXFAM and Trócaire, a number of whom have already been contacted;
- national governments, especially regulators and policy makers in broadcasting, media and development.

UNDP (especially Sustainable Development Media Programme);

UNESCO (Communications, Information and Informatics Sector);

ITU (all three sectors; and Inter-Agency Project on Universal Access);

World Bank (InfoDev Programme).

7 Target audience for the output

7.1 Indicate expected types of target audience, by noting all relevant points on the matrix which follows

	Developed countries	Developing countries	LDCs
Telecom Policy Makers	Limited	Yes	Yes
Telecom Regulators	Yes	Yes	Yes
Service Providers (Operators)	Limited	Yes	Yes
Manufacturers	Limited	Limited	

The enhancement of development activities by NGOs is of keen interest to governments and indeed regulators from the universal service perspective. Major commercial service providers have some interest in providing service, but small operators with a development brief, for instance in Internet provision, will be most interested. Manufacturers may have an interest in niche areas such as digital radio standards for use in local and small scale development radio.

7.2 Target audience – Who specifically will use the output

The target audience is primarily national and international NGOs, working hand in hand with government policy makers and development support actions. Those in development policy, telecommunication, and broadcasting will be especially targeted. The policy recommendations and actions will be focused especially on their requirements, and related to the practical problems they face in achieving their aims and the environment in which they daily work.

International organizations, especially the UN Agencies such as ITU, UNDP and UNESCO, will also be targeted for practically useful and feasible policies and actions that can, with minimal levels of financial support, significantly enhance the use of communications by NGOs.

7.3 Proposed methods for the implementation of the results

The Platform for Communication and Democratization comprises now over 20 international NGOs active in media, communication and development issues. This offers a ready-made means of dissemination, to their target groups, collaborators, partners and others. Several of these produce regular magazines and newsletters, organise conferences and meetings and engage in other dissemination and information activities. Members will also undertake to publicise the findings at the many international and national gatherings in which they participate.

The output will also be the subject of one or more Colloquia, or Workshops dedicated to the results.

8 Proposed method of handling this question or issue

a) How? Suggested handling of the proposed Question

The preliminary proposed methodology for addressing this question is:

- a survey questionnaire to a selected number of NGOs, with a view to gaining at least 200 responses biased towards those involved in least developed countries;
- a review of the literature, including "grey literature" (unpublished reports, conference proceedings etc.) in the academic, NGO, UN and commercial contexts;
- a review of the activities of UN organizations in this domain, and possibly of selected countries, especially least developed countries;
- a series of interviews with key individuals among NGOs, UN and other agencies, national government, telecom operators and service providers;
- at least one Colloquium/workshop, or perhaps one each in a couple of regions, to debate preliminary findings and proposals.

The appropriate combination of mechanisms is still a matter for discussion. However, the following is a first approximation.

Within a Study Group

- | | |
|---|----------|
| - Question (over a multi-year study period) | yes |
| - Focus Group (12 months duration maximum) | possible |

Within Regular BDT Activity

- | | |
|----------------------|-----------|
| - Programmes | yes |
| - Projects | uncertain |
| - Expert consultants | yes |

This work will be completed working closely with the Platform for Cooperation on Communication and Democratization, and its member organizations. In particular, the Platform will be willing to prioritise this issue and devote its resources, in terms of time and energy, towards completing and disseminating the work.

b) Why? Why we selected the alternative under a) above

A Study Group would seem appropriate in order to bring together the range of interest represented at the ITU, and to allow a sufficient amount of time to complete the work. A Focus Group might be relevant only at a certain stage on the work.

A Programme (sharing with other related Questions) would be useful in organising the Colloquia, and in piloting possible actions towards the end of the study period.

Expert consultancy would be required in developing the methodology to be used, in undertaking the literature reviews and in organizing the interviews.

9 Coordination requirements of the study

Coordination will be required with related Study Groups and Programmes of ITU-D. Currently, in the two Study Groups, issues of relevance arise in: SG1/1; SG 2/1 SG 3/1; SG4/1; SG1/2; SG2/2; SG 4/2; SG 6/2; SG 7/2; SG 8/2. In relation to BAAP Programmes 1, 6, 9 10, 12 and 12 appear to be most relevant.

However, close cooperation may also be required with specific issues discussed in Study Groups of ITU-T and ITU-R, around specific spectrum allocation, technology and standardization issues.

Coordination will also be required with a range of organizations outside the ITU, including UN agencies as mentioned above; NGOs coalitions; regional telecommunications organizations; etc.

10 Other relevant information

Fundamentally, this is a request from the NGOs involved in the Platform for Cooperation on Communication and Democratization to engage in constructive cooperation with ITU member and UN agencies to together explore the obstacles, and develop proposals to enhance the use by NGOs of communication media to achieve common development aims.
