E-Strategies

Empowering Development

- ◆ **Internet Protocol**
- ◆ **e-Services/e-Applications**
- ◆ **Multipurpose community telecentres**
- ◆ **e-Legislation**
- ◆ **Cybersecurity**

ITU International Telecommunication Union

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Overview

With the active support of more than 150 ITU Member States on six continents and assistance provided to some 120 developing and least developed countries, ITU E-Strategies is one of the largest e-Empowerment programmes of its kind in the world.

Launched with the aim of using the power of latest generation technologies to spur social and economic development in the world's poorest regions, E-Strategies boasts an extensive global catalogue of activities, a growing network of key partnerships and the cooperative involvement of many of the world's governments and leading private sector players. Through innovative use of the latest Information and Communication Technologies (ICTs) in six key areas – IP networks, e-Applications/e-Services (serving fields such as e-Agriculture, e-Commerce, e-Education, e-Government and e-Health), multipurpose community telecentres (MCTs), cybersecurity, e-Legislation and ICT awareness – ITU's Telecommunication Development Bureau (BDT) is actively working to help communities, businesses and governments throughout the developing world break the poverty cycle and eliminate the Social Divide.

Our aims

E-Strategies is about bringing sustainable, affordable improvements to the daily lives of ordinary people. Using ICTs as a cost-effective distribution channel for a wide range of services, the programme targets concrete goals such as more efficient trading networks, more accessible communications, support for small business initiatives, good governance and better access to health and education.

E-Strategies is effective because it harnesses the power of new technologies to local communities' own commitment to building a better future. By empowering individuals through ICTs, E-Strategies is providing a solid and sustainable platform for real social and economic development, ensuring people all around the world have the chance to take their place as fully-fledged citizens of the Information Society.

Our approach

E-Strategies empowers communities to develop their own ICT capacity and resources according to their individual needs.

ITU's E-Strategies team is working closely with project coordinators in Africa, the Arab region, Asia, Eastern Europe and Latin America, offering technical and policy advice; developing shared MCT facilities, new ICT applications and ICT-friendly legal frameworks; fostering online trust and security; and promoting ICT literacy initiatives and public education programmes.

Using primarily in-house ITU expertise, the programme seeks to link the roll-out costs of new IP infrastructure with cost-effective, useful and affordable new e-Services to create a sustainable platform that not only empowers government, business and key sectors like health and education, but encourages their participation in developing new ICT resources.

Our activities

E-Strategies projects are founded on four basic pillars:

◆ Technology implementation: fostering development of a wide range of technologies, from leading-edge IP infrastructure and MCTs to new applications in the areas of commerce, health, education, agriculture, government and online security

◆ Capacity building: enabling local people to develop and manage their own projects through effective human resources development

◆ Policies and strategies: helping governments draw up and implement policies and legislation conducive to stimulating ICT deployment and uptake

◆ Partnerships/alliances: bringing public and private sector partners together to develop projects that benefit all stakeholders, including the community at large

Our agenda

In consultation with governments, regional authorities and local communities throughout the developing world, ITU E-Strategies identified a number of target areas most able to benefit from the advantages offered by ICTs – agriculture, commerce, education, government and public administration, health services and online security. Priority activities in these areas include:

◆ Developing IP networks – both technical and policy assistance

◆ Implementing projects involving a wide range of ICT applications

◆ Improving access through shared community facilities and multipurpose platforms

◆ Enhancing knowledge through ICT literacy training and campaigns to promote awareness of the benefits of ICTs in day-to-day life

◆ Safeguarding online security and building confidence via advanced security and trust systems

◆ Formulating new legislation to break down current barriers to ICT penetration

Overview

ITU's E-Strategies team currently oversees a broad range of initiatives focused on addressing problems in the world's most disadvantaged countries and regions. More than 120 countries from all ITU regions have benefited from assistance provided in initiatives aimed at sharing information amongst countries, implementing projects, elaborating policies and strategies, increasing basic ICT literacy, securing critical e-application transactions and formulating legislations.

Examples include a diverse range of e-Services initiatives in 45 UN designated Least Developed Countries (LDCs) in Africa and elsewhere, projects to build e-Commerce infrastructure in Morocco and Venezuela, training in e-Security technologies in Azerbaijan, Pakistan and Peru, projects to address regional e-Applications, Internet Protocol and e-Security policies in Argentina, Fiji, the Russian Federation, Rwanda, Thailand and the United Arab Emirates, initiatives to enhance the effectiveness of public services through secure and high trust e-Government infrastructure in Bulgaria, Cameroon, Georgia, Jamaica, Paraguay and Zambia, pan-regional efforts to foster development of e-Legislation in Latin America, the establishment of community internet centres in Honduras, Kyrgyz Republic, Mauritania, Palestinian Authority and Senegal, regional and national telemedicine and MCT projects in Samoa and Solomon Islands, and the establishment of e-Business platforms capable of meeting the needs of enterprises worldwide.

Achievements

Other achievements to date include:

- Operational e-Application projects (e-Health, e-Commerce, e-Education and e-Government) in countries in Africa, Asia, Central America and Europe;

- MCT projects to connect 20 Pacific Island communities in Samoa and Solomon Islands;

- Bringing internet to schools in remote regions of Mali and Senegal as part of the Internet@Schools project;

- Policy guidance in the use of Internet Protocol and e-Applications for Africa, the Arab region, Asia, Europe and Latin America;

- A new e-Agriculture project in Kyrgyzstan comprising online access to commodity prices, collection and dissemination of agricultural information and village telecentres;

- Ongoing development and deployment of advanced online security systems, including digital authentication and biometrics systems, in several developing nations;

- New legislation supporting ICT deployment in countries in Africa and Asia;

- An extensive and ongoing global programme of hands-on training workshops and local and regional seminars designed to empower communities to take full advantage of the potential of new technologies.

E-Strategies' visionary approach, whereby the most modern technological solutions are deployed to address some of the longest-standing social and economic problems in chronically under-developed regions, earned the programme a Global Bangemann Challenge award and has attracted extensive media coverage.

Internet Protocol networks and services

In the Telecommunication Development Bureau, the E-Strategies programme is positioned to introduce a whole suite of assistance on Internet Protocol (IP) issues such as designing IP-based Networks, IP Telephony / VoIP (Voice over Internet Protocol), "Triple Play" (integration of data, voice and video), interactive and VoD (Video on Demand), Network Security in critical IP Infrastructures and the Quality of Service in ICT networks.

Additionally, the programme works on Policy and Strategies related to IP technologies and applications by providing technical assistance and enabling ITU Member States and Sector Members to maximize the potential of ICTs. The objective is to advise and assist in response to the concerns and needs of the developing countries in connection with the introduction of IP-based multimedia and value-added services in the development of all kinds of telecommunication network.

ITU provided technical assistance for the implementation of the "National IP Network Project for the Administration of Burkina Faso" in collaboration with UNDP. This evolving network should cover progressively the whole country. A pilot phase is already operational in Ouagadougou. The objective of this project is to assist the government and the local administration to develop cost-effective communication infrastructure by integrating IP-based applications and value-added services for e-Government purposes. IP planning software was delivered to the Administration of Burkina Faso.

Within the framework of supporting ASAFE (Association pour le soutien et l'appui à la femme entre-preneur), ITU established an IP-based platform for e-Commerce and training to be run and operated by ASAFE for its members and community in Douala, Cameroon.

IP planning software was delivered to the Administration of Equatorial Guinea. ITU and Equatorial Guinea are working on a partnership to implement the internet at school in Equatorial Guinea in 2006. This project will cover secondary schools in all provinces of the country.

A secure state-of-the-art broadband network in the Beirut Central District, Lebanon enabled the government to undertake operations more securely and efficiently with greater transparency. In so doing, citizens and companies have facilitated access to governmental services. The project is under the auspices of the Ministry of Telecommunication, in collaboration with the Lebanese ITU Sector Member TIT-Telecommunication Information Technology and SOLIDERE, a joint-stock Lebanese company.

Achievements

ITU has established an agreement with Swisscom for the implementation of Internet@Schools project in the town of Timbuktu, Mali. Today, more than 1000 students at Timbuktu, Sévaré and Sikasso High Schools can use the internet to access a wide range of information and services for enhancing knowledge and active participation in the Information Society. This connectivity model serves as an implementation pilot for developing countries worldwide.

To the Administration of Mauritania, ITU delivered IP planning system software to be used for designing IP-based networks and applications such as Voice over Internet Protocol. After having developed the national ICT policy and strategy in the domains of e-Applications, internet, cybersecurity and Voice over Internet Protocol, ITU assisted the government in defining an implementation strategy for the government's broadband intranet (e-Government platform). Consequently, schools, hospitals and 216 communes are soon to be connected. The penetration rate expected for PCs is 30 items for 100 government employees, and Microsoft trains 100 engineers per year.

ITU supports the government in defining a strategy to introduce ICTs in Niger, in collaboration with UNDP, EU and the UN Economic Commission for Africa.

At the request of Oman Telecommunications Company, ITU provided guidance and assistance on appropriate strategies and policies regarding the implementation of Voice over Internet Protocol and Power Line communication in Oman.

An Internet@Schools project in Thies, Senegal, is a part of ITU's overall scheme to implement a large number of projects and connect as many schools as possible across the world to the internet. ITU is dedicated to establishing an increasing number of partnerships and coaching personalized projects. Using alliances with the community, beneficiaries include the local school, the community centre and the religious community in the region.

As Somalia pursues its efforts in rebuilding and addressing the needs of businesses and citizens, the implementation of a national IP network is an important instrument for enabling social and economic development. In this regard, ITU is assisting Somalia in the re-delegation of its country code Top Level Domain (ccTLD) and ensuring that Somalia is reachable globally via the internet.

Management of internet domain names and addresses

Countries from Africa, the Americas, Arab States, Asia and Pacific region, Europe and CIS countries met to discuss and adopt common strategies on IP addresses and domain names and other related issues. Policy, operational and technical issues on the internet, in general, and the management of internet domain names and addresses, in particular, were discussed for the benefit of Member States, especially for least developed countries. The objective is to integrate IP-based applications and value-added services in the development of all kinds of telecommunication networks. The role that ITU should play in the domain of Internet Governance and proposed follow-up actions were highlighted in the "Kigali Declaration", "IP Symposium report for Americas", "Dubai Declaration", "Bangkok IP Symposium Statement" and "Moscow Declaration".

Promoting the multilingual internet

Considering ITU's role in information and communication infrastructure (see WSIS Tunis Agenda Action Line C2) and as actor for access to information and knowledge (see WSIS Tunis Agenda Action Line C3), ITU-D and ITU-T are taking the initiative to promote the multilingual internet and to examine issues highlighted in the WSIS Tunis Agenda item 53. A roadmap for further steps in the direction of making the multilingual internet a reality is expected.

Publications

- Handbook on Internet Protocol (IP)-Based Networks and Related Topics and Issues: The use of IP-based technologies is now a strategic element in the design, development and use of telecommunication networks. Following the approval of the ITU Council 2005, a Handbook on Internet

Protocol (IP)-Based Networks and Related Topics and Issues to advise Member States, especially developing countries, on the management of internet domain names and related issues, was published in 2005. This Handbook was made available during WSIS Prepcom 3 and the second Phase of WSIS in Tunis (November 2005). It is available in Arabic, Chinese, English, French, Russian and Spanish at: www.itu.int/ITU-D/e-strategy/.

- The Essential Report on IP-Telephony: The possibility of transmitting voice over IP-based networks, with all the challenges and associated opportunities, such as voice and data integration, constitutes a milestone in the convergence of the ICT sector. The Essential Report on IP Telephony is a publication to assist on how a nation and its citizens, current telephone operators, ISPs and new entrants can benefit from the introduction of IP telephony and broadband access and on how a national telecom policy can increase the benefits of the introduction of IP-based technologies. This publication is available in Arabic, English, French and Spanish at: www.itu.int/ITU-D/e-strategy/.

Achievement

ICT applications (e-Services/e-Applications)

ICT applications can deliver basic services in a wide range of sectors including health, agriculture, education, public administration and commerce. As one of the priority domains for this programme, several activities have been undertaken to deliver and facilitate the roll-out of solutions that will foster social and economic development in developing and least developed countries worldwide. Improving social conditions, building an entry ramp into the Information Society, are amongst the purposes of this programme.

Assistance was provided in capacity building, technology strategies, project coordination and expert technical assistance in the implementation. To ensure that solutions proposed to countries were technology neutral and to make the best use of limited resources, most actions related to the implementation of projects and organization of events were undertaken using in-house expertise. To put in place sustainable ICT solutions aimed at delivering value-added services, the needs of the population must be well assessed and the necessary alliances and partnerships established with the relevant stakeholders. Partnerships and alliances of all types have been essential in the implementation strategy.

The benefits of the internet as a *de-facto* channel for the delivery of services can only be fully realised if security and trust concerns are addressed. In this regard, many projects in domains such as e-Government and e-Health were built on secure and trusted platforms based on Public Key Infrastructure (PKI) to ensure transition from simple online dissemination systems to transaction-based services.

e-Agriculture

Launched as an operational project during WSIS, this project enables rural farmers in the village of Madaniyat in the Kyrgyz Republic to access information about the price of their products, facilitate the establishment of direct relationships with buyers and the collection and dissemination of agricultural information to the rural population. These solutions were delivered through a multimedia multipurpose community telecentre (MCT) also providing access to educational, weather and health information. Projects delivering solutions to the rural population, where farming and agriculture are one of the main sources of income, have been implemented in countries such as Honduras, Mauritania, Myanmar, Nicaragua and Samoa. Enhanced communication with potential buyers through the internet, telephony and fax, access to information on improved ways of farming and prices for their produce are just some of the services delivered that empower the rural population in the use of ICTs in agriculture.

e-Commerce

Assistance in addressing e-Commerce technology strategies, expertise in the design, development and implementation of secure e-Commerce solutions was provided to a number of countries including Azerbaijan, Brazil, Burkina Faso, Cameroon, Morocco, Senegal, South Africa, Turkey, Venezuela and Viet Nam. Operational projects enabling micro-businesses and women's associations to reap the benefits of ICTs in enhancing trade and establishing business relationships have been implemented.

To increase awareness on the potential of ICTs in enhancing business and trade and to enable governments to formulate conducive policies and strategies, guidance on technology policies and strategies has been provided to many countries from all ITU regions. More than 500 delegates representing some 128 countries and 50 companies came together in Geneva for a seminar where developing and least developed counties could see secure e-Business technologies at work.

e-Government

Projects and initiatives enabling and assisting governments, citizens and businesses to communicate efficiently, increased efficiency in government processes, delivery of government services to remote populations where the physical administrative infrastructure does not exist and security for accessing and disseminating sensitive government information are just some of the solutions provided through ITU projects implemented in many countries.

For Bhutan, Mongolia and Papua New Guinea, ITU provided guidance on policies and strategies on e-Government and e-Governance as well as the expertise and funding in the deployment of an e-Government platform to improve communication amongst government officials and enhance workflow. Solutions have been made available to Democratic People's Republic of Korea and the Palestinian Authority, aimed at enabling the use of information technology within government institutions.

To enhance workflow and create efficiencies in the business processes of the regulatory authority in Bosnia and Herzegovina, ITU implemented an e-Government project which makes it possible for complex regulatory processes and procedures that would require years of experience to be undertaken by one person with less than one month experience.

Facilitating access to government information services and online government transactions and empowering citizens and businesses through ICTs to interact more efficiently with government are amongst the solutions put in place as a result of the ITU e-Government projects in Azerbaijan, Kyrgyz Republic and Uzbekistan.

The need for operators and services providers to communicate securely and exchange sensitive business information with the regulator were some of the challenges that the national regulatory authority of Paraguay had to face. This ITU project provided solutions to secure the exchange of information through digital signature techniques, strong authentication, data integrity and non-repudiation.

Achievements

As governments make the transition from paper-based to electronic means of communicating and as sensitive paper documents are being converted into electronic formats, it becomes crucial to ensure that access control, the integrity of information and data and most importantly, the sensitivity of these electronic documents, are assured. Using advanced electronic signature technologies, biometric authentication and strong authentication, countries including Barbados, Bhutan, Bulgaria, Georgia and Jamaica are being assisted by ITU. A number of such projects aimed at building security and trust are already fully operational and others are being implemented.

Through ITU's partnership with the European Commission, projects to enable citizens and businesses to conduct online e-Government transactions, extend government services to remote areas where the physical administrative infrastructure does not exist and enable secure and high trust transactions between government agencies have been launched in Cameroon, Kyrgyz Republic and Rwanda.

To ensure that governments play their rightful role in putting in place an environment conducive to the development and use of ICTs, ITU assistance included guidance in the formulation of policies and strategies.

In partnership with other stakeholders, ITU and the government of Niger are working together to implement the national policy of Niger on the use of ICTs for social and economic development.

e-Employment

The breakdown of geographical and time barriers brought about through ICTs and the ease with which contacts and business relationships can be made is an enabling factor for the use of ICTs to facilitate employment. Through operational ITU projects, women engineers from the 3500-member Association of African Business Women can provide remunerated remote translation services. The solutions provided through these projects also make it possible for local goods to be sold by women producers in Mauritania and for creating networks that are vital in ensuring a proper supply chain. ITU projects delivering e-Employment solutions help to improve social conditions because they have a positive impact in increasing the income of micro-businesses and enable sustainable development.

Women's committees in remote villages in the Pacific Island state of Samoa can, thanks to ITU, use ICT solutions to sustain their business activities and maintain self-employment. Through internet-based MCT solutions aimed at enhancing self-employment capabilities, some 10 Samoan villages are reaping the direct benefits of ICTs for improving the social and economic conditions.

e-Education

In Jamaica, ITU provided expert assistance in identifying the needs, defining the specifications and

elaborating a project document for the implementation of an e-Learning project. ITU assistance also includes funding and guidance on strategies aimed at facilitating the use of ICT applications for the delivery of services in sectors such as education and government services.

Through the Internet@Schools project, in collaboration with Swisscom, youths in a remote village in Mali can now use internet to enhance their educational activities and access a wide range of information. For the youths in the region of Thies in Senegal, ITU assistance is aimed at providing an internet access. To meet the needs of the population, there is close collaboration between ITU and the community; beneficiaries include the local school, community centre and the religious community in the region.

In Honduras, ITU funded and implemented a project enabling a rural community to use internet-based MCTs for e-Education while in Serbia and Montenegro, assistance was provided to develop strategies for the use of e-Applications including e-Education. Regional assistance was provided to the Arab States and ITU organized a seminar in Syria to foster policies and strategies on e-Education, including the use of the Arabic language.

e-Health

Projects and initiatives to foster the delivery of tele-medicine solutions have been implemented in a number of countries including Bhutan, Georgia, Malta, Mozambique, Myanmar, Nicaragua, Senegal, Uganda and Ukraine. There are ongoing and planned activities for several countries such as Bulgaria, Cameroon, Ethiopia, Guinea, Haiti, Kenya, Latvia, Lebanon, Mauritania, Rwanda, Senegal, Sudan, Tajikistan, Turkey, Uzbekistan and Venezuela.

In Ethiopia, 10 hospitals are networked to a hub at the Tikur Anbesa Hospital in Addis Ababa, run by the Addis Ababa University Medical Faculty, enabling medical and health professionals to get training through the use of ICTs. This project has been implemented and a final evaluation report is expected from Ethiopia. In Senegal, a telemedicine link was established enabling the transmission of medical images as well as patient data records and other medical information to remotely located experts to provide teleradiology, teledermatology and teleconsultation services. The most important aim is the potential improvement of the treatment of patients by using distant telemedicine consultation, which can be obtained by better access to medical knowledge and expertise.

For the inhabitants of El Guarrey and La Urbana, using ICTs to bring access to medical services such as remote diagnostics and teleradiology, interconnecting ambulatory services in remote areas in Venezuela and enabling access to medical specialists located in the capital city (Caracas) are just some of the solutions that have been made available.

Thanks to technology and the support of local partners, medical exams and other medical data can be transmitted for diagnosis from the ambulatory sites in the two communities to La Milagrosa or, directly, to the Medical Center in Caracas, instead of moving the patient in difficult conditions to another city.

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For the rural population in Nicaragua, e-Health solutions are today possible through an ITU MCT project which also addresses other challenges faced by the population such as disaster management and mainstreaming gender in ICT use.

Technology strategies and policies to deal with challenges such as securing the storage, processing and transmission of electronic patient records, and providing solutions aimed at ensuring that a patient is actually communicating electronically with a certified doctor are essential components of ITU assistance to countries in the domain of e-Health.

Funded by the Government of Turkey, ITU is assisting in the implementation of this national e-Transformation project with e-Health components. ITU provided assistance to the government in assessing the needs, recommending strategies and policies and providing guidance in the definition of the specifications and requirements for implementation.

Guidelines for the implementation of e-Health projects were developed and published through partnerships with NiCT Japan and the active contribution of various Member States. As part of the EU Sixth Framework programme, ITU, WHO and ESA established a roadmap for the implementation of e-Health in Europe.

e-Environment

To respond to the needs of Member States and carry out its mandate in this domain, ITU is one of the two supporting organizations together with the United Nations Environment Programme (UNEP) in an initiative of ICT service providers and suppliers called the Global E-Sustainability Initiative (GeSI). The mission of this initiative includes better understanding the impact and opportunities offered by evolving technology in the context of a fast growing information society, and providing individuals, businesses and institutions, with sustainable solutions to the challenge they face in their attempt to maintain the fragile equilibrium between economy, ecology and society.

Direct assistance is provided to countries on policies and strategies for the harmonized co-existence of man and the environment through the use of ICTs. Projects in domains such as e-Health and e-Government have been implemented to bring services to the population and reduce the negative impact of carbon dioxide emissions resulting from unnecessary travel from and to urban areas.

e-Post

Cooperation and alliances with the Governments of Afghanistan, Bhutan and Democratic People's Republic of Korea are resulting in initiatives aimed at using post offices for the delivery of ICT services. The rural population can send and receive information more rapidly through e-mail provided at post offices under the umbrella of the ITU e-Post initiative.

Multipurpose community telecentres and multipurpose platforms

The need for affordable access to ICTs and delivery of basic services through ICTs is quite acute in rural and remote areas where, in most cases, the physical and telecommunication infrastructures do not exist. Even in urban areas, individual access to telecommunications and ICTs is not within the reach of the majority of the population in many developing countries.

With the assistance of ITU, multipurpose community telecentre projects have been deployed in a number of countries, providing access to communication facilities and enabling the delivery of services for health, education and agriculture, enhancing business activities as well as facilitating access to government services. ITU has also assisted countries in providing guidance on policies and strategies for promoting access and use of ICTs in rural and urban areas as a vehicle for improving the social and economic conditions of the population in these areas.

In a joint effort with UNESCO and HONDUTEL, the MCTs implemented in Honduras provide e-Education services to the remote area of Corquín. ITU's assistance included funding and coordination of the project with the objective to make ICTs and radio broadcasting accessible for both women and men, young and old.

The district of Rajkot in India received assistance in implementing the MCT pilot project, including training for the managers and operators of MCTs. In Bengal and Kolkata, the deployment of these ICT services helped empower the community.

Agriculture is the primary sector in the Kyrgyz Republic. To enhance access to educational-, climate- and health-related information as well as to foster communications through ICTs, a MCT was implemented together with e-Agriculture applications and services. The inhabitants of a Kyrgyz village in rural surroundings can now benefit from affordable internet access and fair trade.

To facilitate employment for a community of women in Mauritania, ITU assisted in the implementation of an MCT with the objective of integrating e-Employment applications for this country. To create an environment that will foster the expansion of such initiatives, Mauritania also benefited from ITU assistance in drawing up national ICT policy and strategy in the domains of e-Applications, internet, security and Voice over Internet.

ITU assisted Myanmar in establishing an MCT in the village of Phaungy about 100 kilometres from Yangon. This MCT serves the educational institutions and hospital in the surrounding villages. The project uses VSAT-based connectivity to enable shared and

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affordable access to ICT services for the population of the community. Establishment of mini telecentres in nearby schools and hospitals is under way using Wi-Fi technology.

ITU, TELECOR and the Ministry of Public Health established an e-Health programme within the MCT network in a remote area in Nicaragua to provide access to ICTs, to enable disaster management, and to foster mainstreaming gender. ITU provided support through project coordination and funding for equipment.

For the population of the Palestinian Authority, an ITU MCT project delivers solutions enabling shared access to telecommunications and ICTs and facilitating access to online government information services and applications.

For Romania, ITU is assisting in planning the implementation of a network of telecentres, by providing training to the regulatory agency officials in identifying information needs, business opportunities and potential partners for establishing telecentres nation-wide. Through this collaboration with the Government of Romania, ITU aims to support building a knowledge-based economy by efficient use of ICTs for commerce, education and public administration.

Connecting island communities is an ITU initiative based on the priorities of the Government of Samoa to bring telecommunications and ICT access to 10 rural communities in the districts of Upolu and Savai'i. These women-run MCTs are providing telephony, internet access and ICT applications for increasing computer literacy, enhancing business activities and providing basic services in health, education and public administration.

As a result of an ITU-funded and implemented MCT project, youths from 10 schools in the Guadalcanal province of Solomon Islands can now have access to internet-based services to enhance acquisition of knowledge. Implemented with the support and participation of local partners and to ensure sustainability, these MCTs allow the nearby communities to have low-cost access to a wide range of ICT applications capable of delivering services in various sectors.

A network of three telecentres in a refugee environment in Tanzania has been established. These serve Ngara, the district headquarters, K9, a camp for NGO workers operating in the refugee camps, and Lukole refugee camps. These are designed to be self-sustaining ventures meeting the information communication, health and education needs of the population they serve.

In efforts to promote the development of infrastructure and services to meet the needs of rural populations, reports, surveys and analyses have been carried out resulting in a publication on guidelines and best practices for communications in rural and remote areas. Undertaken within the framework of ITU-D Study Group 2, this global report now serves as a useful tool for all parties interested in promoting and developing projects on rural communications in developing and least developed countries.
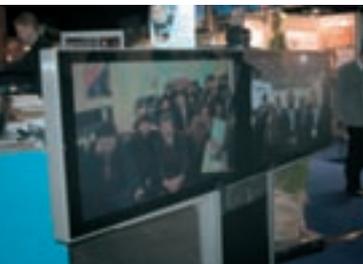
e-Legislation

The information society requires an appropriate legislative framework to address data privacy, prevention of cybercrime, cybersecurity, electronic signatures, certification authorities and electronic contracts, to create the necessary confidence and trust, and to protect the rights of all parties in the use of ICTs in all sectors of life.

Assistance and expertise were provided to ASETA Member States (Bolivia, Colombia, Ecuador, Peru, and Venezuela) to elaborate a harmonized legal framework for electronic transactions, consumer protection, digital certification and electronic signatures.

With the participation of ONATEL, Burkina Faso benefited from assistance in the formulation of national legislation covering electronic signatures, digital certification and electronic transactions. ITU assistance included capacity building in the legal aspects of e-Commerce and public key infrastructures.

In collaboration with local experts and the United Nations Commission on International Trade Law (UNCITRAL), ITU assisted in fostering the elaboration and adoption of suitable appropriate legislation for e-Applications, electronic signatures and digital certification in Cape Verde, Mauritania and Tanzania.

With the goal of assisting in the establishment of a legislative framework for e-Services, ITU, through its partnership with Goodwin Proctor LLP, a US-based firm, provided assistance to Mongolia in evaluating the country's requirements and presenting guidelines for establishing a favourable legal environment.

Assistance in identifying the requirements for a favourable legal framework for ICTs and enabling exchanges between countries was provided to countries from the Caribbean region (in Saint Lucia) and to the Arab region (in the United Arab Emirates). With the participation of experts from the telecommunication, ICT and legal sectors, strategies for addressing legal challenges for electronic transactions at the national and regional levels were discussed.

As part of the E-Strategies programme's efforts to provide guidelines and case studies to developing countries on legislation for data privacy, e-Applications, prevention of cybercrime, a report based on research and analysis containing practical examples on how some countries have addressed legislation on the prevention of cybercrime is now available. The work was undertaken by Ms Michela Menting Yoell of the University of Essex, United Kingdom, as part of the requirements for a Master of Laws (LL.M.) degree in Information Technology, Media and E-Commerce.

Achievements

Cybersecurity – securing the Information Society

The benefits of the Information Society to governments, businesses and citizens can only be fully realized if security and trust concerns are addressed and solutions put in place to deal with cybercrime, enforceable legislation, identity theft, data privacy and the protection of critical information systems. The high reliance of ICTs as a vehicle for enhancing social and economic development and the speed with which critical information systems and data can be accessed, manipulated and destroyed has put cybersecurity on top of the agenda as one of the main challenges to the emerging Information Society and the knowledge-based economy.

The strong synergies between the priorities of the Istanbul Action Plan (IsAP) Programme 3, World Telecommunication Development Conference (WTDC), in cybersecurity and the World Summit on the Information Society (WSIS) Plan of Action can be see in the almost one-to-one mapping (Table 1).

Building trust and confidence in ICT applications

Security concerns are a handicap for using ICTs for certain mission-critical services such as e-Government, e-Commerce, e-Payments, and e-Health, where it is important to protect sensitive data and to establish the identities of the parties. By addressing these security and trust issues, the real potential of ICTs for delivering affordable value-added services is realized.

Practical solutions to leverage the potentials of ICTs for the delivery of critical services built on security and trust technologies have enabled countries to make the step from simple information dissemination systems to the conduct of critical transactions and delivery of service to the population.
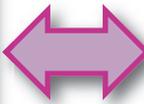
Thanks to ITU, several developing countries have for the first time become actively involved in the deployment and use of services aimed at building security and trust, thereby extending the benefits

WSIS Plan of Action December 2003	Table 1	WTDC March 2002 IsAP Programme 3
C5) Building confidence and security in the use of ICTs 12. Confidence and security are among the main pillars of the information society.	⟷	Enhance security and build confidence in the use of public networks for e-services/applications.
b) Governments in cooperation with the private sector, should prevent, detect and respond to cyber crime and misuse of ICTs... e) Take appropriate action on spam at national and international levels.	⟷	Provide assistance to Member States in developing laws and model legislation for e-services/applications, prevention of cyber crime, security, ethical issues and data privacy.
f) Further strengthen the trust and security framework with complementary and mutually reinforcing initiatives in the fields of security in the use of ICTs...	⟷	Identify security requirements and propose solutions for the development of secure IP infrastructure for e-services/applications on various types of networks using relevant technologies.
g) Share good practices in the field of information security and network security and encourage their use by all parties concerned.	⟷	Develop tools to facilitate the exchange of best practices on IT security, legal issues related to the areas of activity of this Programme.
i) Encourage further development of secure and reliable applications to facilitate online transactions.	⟷	It is necessary to address the security concerns in order to leverage the potentials of public networks as vehicles for delivering affordable value-added e-services/applications

of ICTs beyond commercial applications to societal ones such as government and health.

Projects using advanced security and trust technologies based on Public Key Infrastructure (PKI), including biometric authentication, smart cards, ITU-T X.509 digital certificates and digital signature tech-

niques, have been and are being implemented in Barbados, Bhutan, Bulgaria, Burkina Faso, Cambodia, Cameroon, Côte d'Ivoire, Georgia, Jamaica, Paraguay, Peru, Senegal, Turkey and Zambia.

In Georgia, the ITU project addresses its challenges by delivering cost effective solutions for the secure

Achievements

transmission, access and processing of digitized government documents, thereby increasing the efficiency and transparency of government services. Senior-level officials of the Ministry of Transport and Communications of Georgia will be provided with solutions to enhance work flow automation, enable officials to digitally sign and disseminate official documents, thus replacing the slow and rather expensive paper-based methods. Authorized access to sensitive documents will be made possible through security and trust solutions to establish the identities of authorized personnel within the Ministry.

In Paraguay, the ITU project assisted in the implementation of a platform providing secure and trusted internet-based mechanism for operators and service providers to exchange sensitive information (such as income declaration) in electronic format with the national regulatory agency. The project uses ICT tools to streamline the process of issuing licences to operators of public telephones and increases efficiency in the business process of the regulator.

Assistance was provided in the establishment of a national policy framework on the use of digital certification and the operations of certification authorities. ITU assistance also included the definition of technology specifications and policy guidance for the implementation of a national platform in Jamaica and Barbados for issuing and managing digital certificates, providing strong authentication services and ensuring the security and trust for e-Government and e-Business transactions.

In Cameroon, the ITU project enables the secure transmission of sensitive government documents via the internet and provides internet-based online government services to citizens in urban and remote areas where the physical administrative infrastructure does not exist. Based on electronic signature and encryption technologies, solutions such as strong authentication, data confidentiality, data integrity and non-repudiation make it possible to address some of the cybersecurity threats including identity theft.
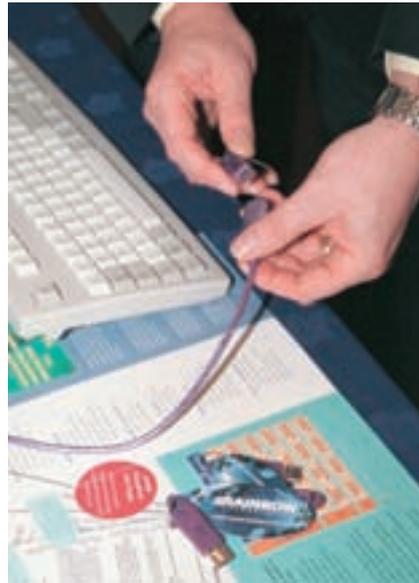
In Bulgaria, ITU assistance in the implementation of a cybersecurity platform enables highly secure communication between the Ministry of Transport and Communications, the Ministry of Finance, the Council of Ministries and the Communications Regulation Commission (CRC), using PKI and PKI-enabled applications. It permits secure, efficient and cost-effective interaction between senior-level government officials, thereby supplementing face-to-face meetings and increasing productivity. All data exchanged between the participating officials is secured, digitally signed through the use of data confidentiality, non-repudiation, data integrity and strong authentication techniques.

The strategic goal of the project is to improve health-care services in Turkey by developing a secure health information medium that enables health-care providers (primary and secondary health care), health professionals and citizens to have easy and safe access to health-related information by using the latest ICTs.

The cornerstones of the project are the development of primary health-care information systems supporting the family doctors' system, the implementation of electronic health records and the development of interoperable systems between health-care service providers including primary health-care centres, hospitals and public/private insurance agencies.

Elaboration of national and regional strategies

ITU has organized national and regional workshops and seminars addressing technology strategies for cybersecurity in a number of countries (e.g. Azerbaijan, Cameroon, Chile (for the Mercusor States), Latvia, Mongolia, Pakistan, Paraguay, Peru, Romania, Seychelles, Syria and Uzbekistan.

A global meeting attended by some 50 security experts and more than 500 delegates representing some 120 countries was organized in Geneva to discuss technologies, strategies, policies and legal issues related to e-Signatures, digital certification and encryption solutions for developing countries.

Security and trust were amongst the main topics discussed at the ITU Regional E-Government and IP Symposium for the Arab Region which resulted in the Dubai Declaration emphasizing the need for continued ITU activities in cybersecurity for e-Applications and services.

A cybersecurity reference manual was developed to assist developing and least developed countries in building local capacity and raising awareness on some of the key challenges in security for the Information Society. This reference manual explains some main problems such as spam, malware (viruses, worms, Trojans), data privacy, lack of authentication, need for data confidentiality and data integrity. Other subjects to be covered include case studies on legislation for cybersecurity and examples of methods that have been applied to protect critical infrastructure.

Getting the support of partners

Many of these activities have been and are being funded by ITU partners and the governments. For example, the Inter-American Development Bank is funding the project in Jamaica while the Communications Authority of Zambia is funding their security and trust platform. The European Commission is providing 85% of the funding for the projects in Cameroon and Rwanda. The government of Turkey is funding the e-Transformation and e-Government projects for Turkey. Funding for projects implemented and ongoing where cybersecurity is a key component surpasses the annual budget allocated for all activities in all six domains in IsAP Programme 3.
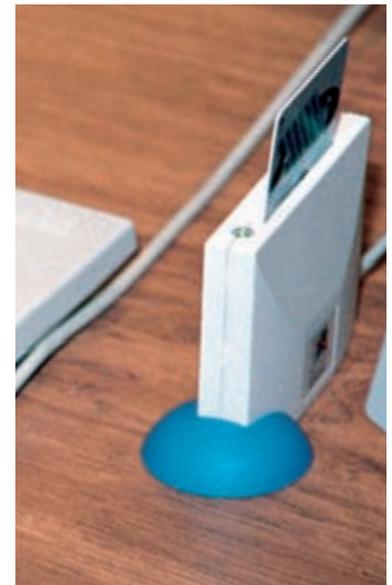
Achievements

Our alliances

E-Strategies's key partnerships include multi-stake-holder agreements and alliances with industry partners, funding organizations, governments and international organizations.

The programme is also actively supported by a growing number of players from the public and private sectors, who have directly assisted in the implementation of numerous projects and generously offered cash and in kind contributions totalling multi millions of dollars.

With a view to fostering further non-exclusive alliances, E-Strategies established the World e-Trust Memorandum of Understanding (MoU), an inclusive, multilateral self-regulatory framework which has already gained the support of governments and industry in a large number of countries worldwide.

For more information on becoming an E-Strategies partner, sponsor or participating organization, please visit the E-Strategies website at www.itu.int/ ITU D/e strategy.

In addition to local partners and many governments, alliances and partnerships have been forged with the following entities:

- European Commission: Agreement with the European Commission for the implementation of ICT applications to meet the Millennium Development Goals. Within the framework of this Agreement, e-Government projects are being launched in developing countries.

- Global e-Sustainability Initiative (GeSI): Industry alliance formed with the support of ITU and the United Nations Environment Programme (UNEP) to address issues on sustainable development and environmental impact of telecommunications and ICTs.
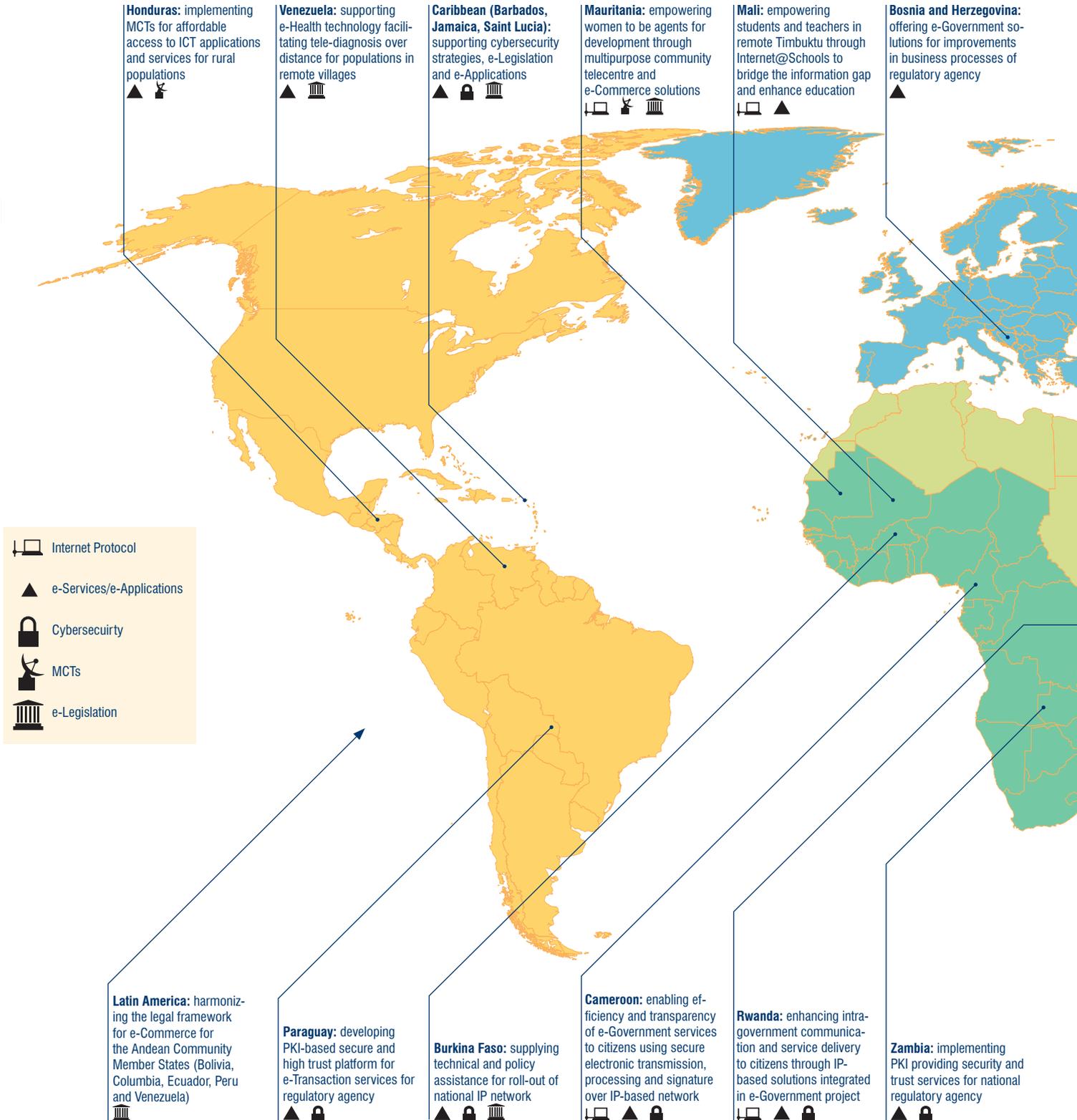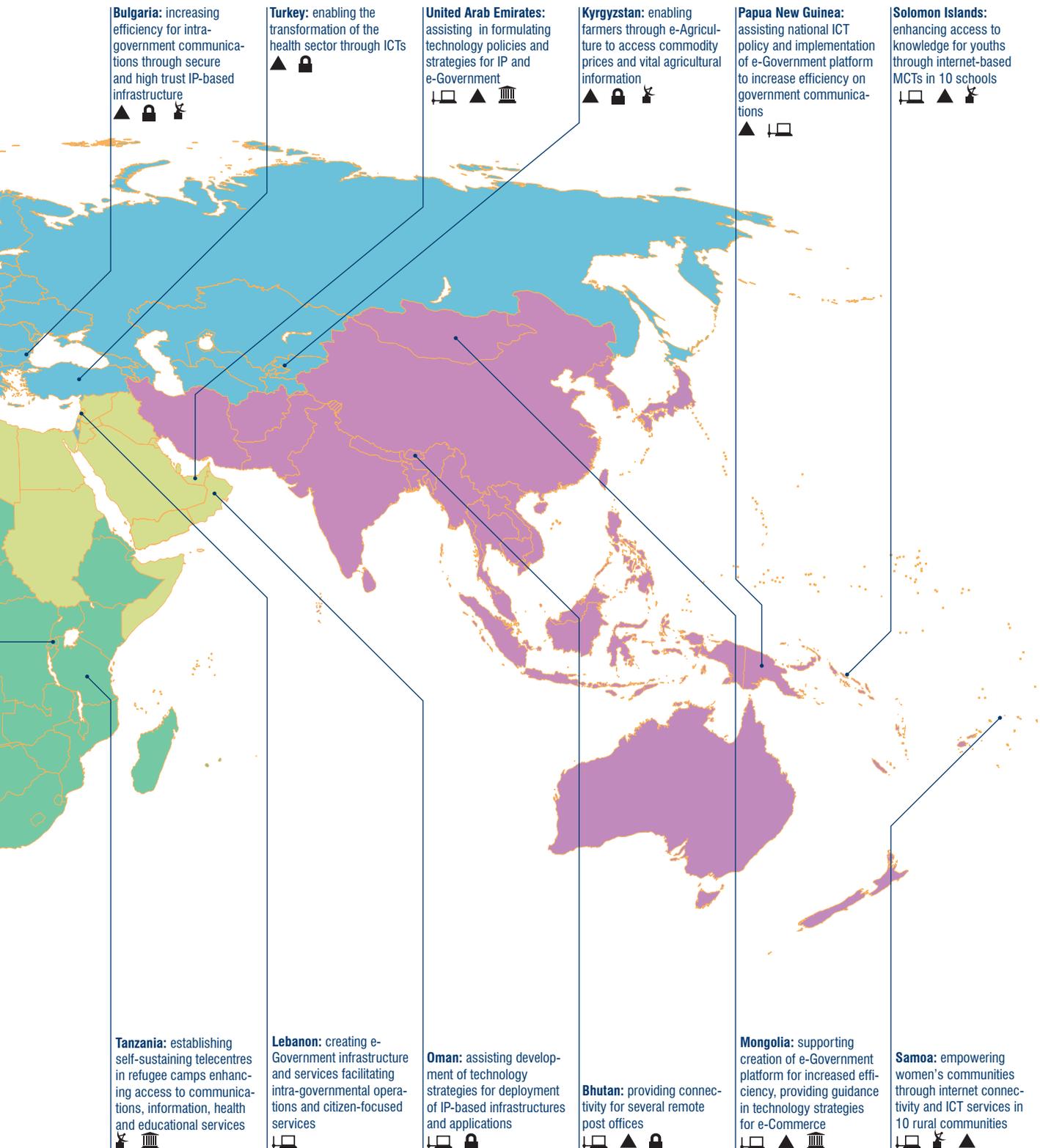
- Government of Turkey: Framework for collaboration with the Ministry of Health of Turkey for the implementation of a National Health Network.

- International Trade Center (ITC): Alliance with ITC UNCTAD/WTO to raise awareness on mobile phone potential for business applications in developing countries.

- Microsoft: Alliance to work on collaborative activities to promote the more effective use of ICTs in developing countries.

- National Institute of Information and Communications Technology (NiCT): Partnership to provide financial assistance to ITU for a publication called "Making better access to healthcare".

- Swisscom: Partnership for the implementation of Internet@Schools projects enabling more than 1000 students at high schools in Timbuktu, Sévaré and Sikasso in Mali to access the internet and thereby acquire knowledge.

- Sysnet Ltd: The joint ITU/Sysnet project aims at establishing e-Applications using secure public key infrastructure (PKI) for e-Business networks in Pakistan.

- Tele-Medicine Alliance Bridge (TMA Bridge): Alliance with the World Health Organization and the European Space Agency with funding from the European Commission to establish a roadmap for the implementation of e-Health in Europe.

- United Nations Development Programme (UNDP): To strengthen African capacity for cost-effective access to the internet and to contribute towards the building of strong internet infrastructure backbone in Africa.

- World Health Organization (WHO): ITU and WHO are collaborating to establish Health Academies in developing countries worldwide. This partnership aims to bring knowledge and know-how in health and disease prevention into the domain of the villagers, the community and the population.

- World e-Trust MoU: Multilateral, technology neutral and inclusive framework where developing countries for developing secure and high trust solutions for ICT applications.

Alliances

Honduras: implementing MCTs for affordable access to ICT applications and services for rural populations

▲ 🏃

Venezuela: supporting e-Health technology facilitating tele-diagnosis over distance for populations in remote villages

▲ 🏛

Caribbean (Barbados, Jamaica, Saint Lucia): supporting cybersecurity strategies, e-Legislation and e-Applications

▲ 🔒 🏛

Mauritania: empowering women to be agents for development through multipurpose community telecentre and e-Commerce solutions

⌨ 🏃 🏛

Mali: empowering students and teachers in remote Timbuktu through Internet@Schools to bridge the information gap and enhance education

⌨ ▲

Bosnia and Herzegovina: offering e-Government solutions for improvements in business processes of regulatory agency

▲

Internet Protocol ⌨

e-Services/e-Applications ▲

Cybersecuirty 🔒

MCTs 🏃

e-Legislation 🏛

Latin America: harmonizing the legal framework for e-Commerce for the Andean Community Member States (Bolivia, Columbia, Ecuador, Peru and Venezuela)

🏛

Paraguay: developing PKI-based secure and high trust platform for e-Transaction services for regulatory agency

▲ 🔒

Burkina Faso: supplying technical and policy assistance for roll-out of national IP network

▲ 🔒 🏛

Cameroon: enabling efficiency and transparency of e-Government services to citizens using secure electronic transmission, processing and signature over IP-based network

⌨ ▲ 🔒

Rwanda: enhancing intra-government communication and service delivery to citizens through IP-based solutions integrated in e-Government project

⌨ ▲ 🔒

Zambia: implementing PKI providing security and trust services for national regulatory agency

▲ 🔒

Bulgaria: increasing efficiency for intra-government communications through secure and high trust IP-based infrastructure
▲ 🔒 🏃

Turkey: enabling the transformation of the health sector through ICTs
▲ 🔒

United Arab Emirates: assisting in formulating technology policies and strategies for IP and e-Government
💻 ▲ 🏛

Kyrgyzstan: enabling farmers through e-Agriculture to access commodity prices and vital agricultural information
▲ 🔒 🏃

Papua New Guinea: assisting national ICT policy and implementation of e-Government platform to increase efficiency on government communications
▲ 💻

Solomon Islands: enhancing access to knowledge for youths through internet-based MCTs in 10 schools
💻 ▲ 🏃

Tanzania: establishing self-sustaining telecentres in refugee camps enhancing access to communications, information, health and educational services
🏃 🏛

Lebanon: creating e-Government infrastructure and services facilitating intra-governmental operations and citizen-focused services
💻

Oman: assisting development of technology strategies for deployment of IP-based infrastructures and applications
💻 🔒

Bhutan: providing connectivity for several remote post offices
💻 ▲ 🔒

Mongolia: supporting creation of e-Government platform for increased efficiency, providing guidance in technology strategies for e-Commerce
💻 ▲ 🏛

Samoa: empowering women's communities through internet connectivity and ICT services in 10 rural communities
💻 🏃 ▲

Performance indicators for 2003-2005

◆ **With more than 120 countries benefiting from activities and with the support of some 150 ITU Member States, E-Strategies is one of the largest e-Empowerment programmes of its kind in the world.**

Indicators

Delivering solutions

As Figure 1 shows, to meet targets set in the Millennium Development Goals (MDGs) and work towards improving the social and economic conditions of the population of developing countries, local capacity building together with secure internet-based ICT projects that deliver services in sectors such as health, education, business and government services make up to nearly 80% of all activities undertaken during this period.

The purchase of equipment (both software and hardware) and in-house (BDT travel) and external expertise for project implementation represent the main expense types for the use of funds allocated to this programme. To add value to the limited financial resources and provide neutral and objective assistance to Member States, much of the expertise is provided by ITU/BDT staff. On average, only 15% of the BDT budget was spent on external expertise, while emphasis was put on building local capacity

Figure 1: Global overview of actions in the six key domains, 2003-2005, as percentages

- e-Applications 32%
- e-Legislation 3%
- Cybersecurity 9%
- MCTs 12%
- IP networks 19%
- ICT awareness 25%
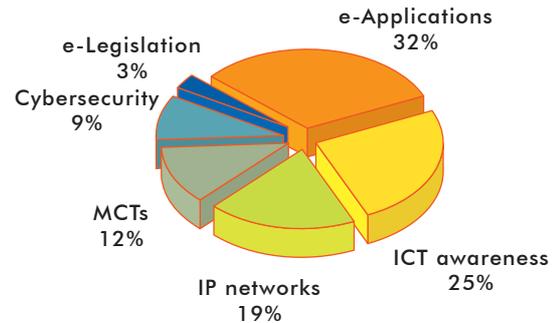
(*Source:* ITU)

to ensure sustainability and technology transfer. This strategy empowers beneficiary countries in the acquisition and use of ICTs for social and economic development.

Figure 2: Distribution of allocated budget, 2003-2005

2003: 100%, 39%, 18%, 15%, 10%, 17%
2004: 100%, 44%, 16%, 16%, 15%, 9%
2005: 100%, 43%, 15%, 17%, 15%, 10%

Year

- Budget
- Equipment
- External expert
- Travel
- Fellowships
- Others
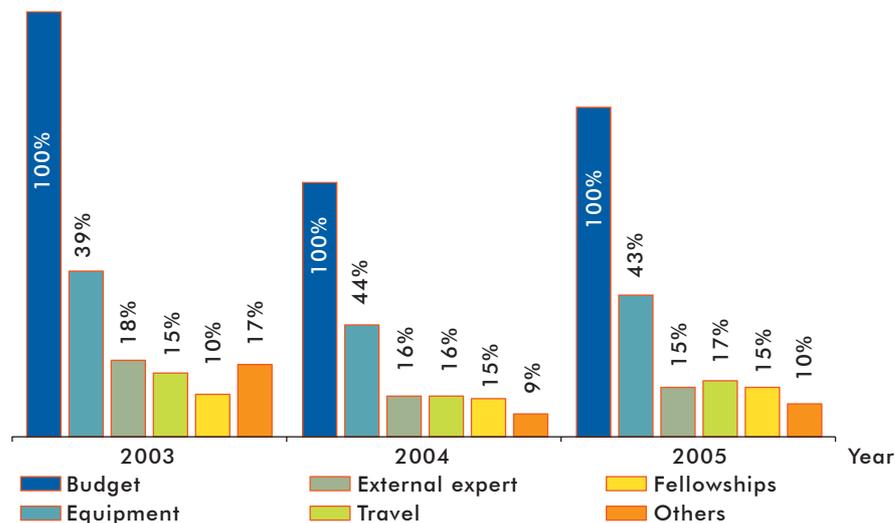
(*Source:* ITU)

Distribution of activities in the five ITU regions, including multiregional and global activities

Addressing diverse regional priorities and needs

Figure 3: Regional actions, by key domain, 2003-2005, as percentages
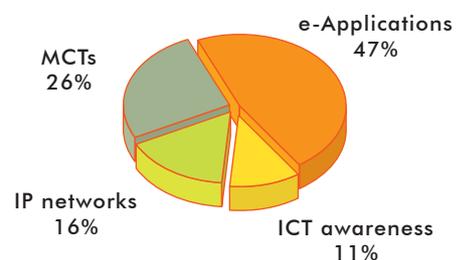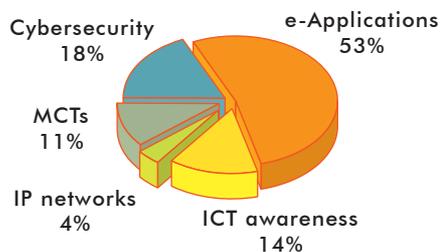
Actions in the Africa region

- e-Legislation 7%
- e-Applications 19%
- Cybersecurity 9%
- MCTs 9%
- IP networks 30%
- ICT awareness 26%
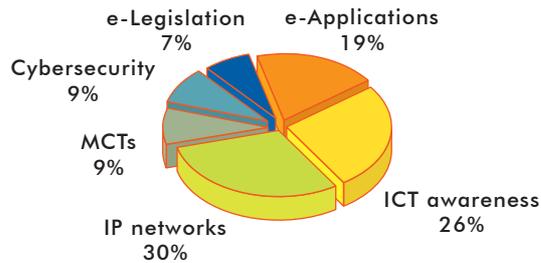
Actions in the Americas region

- e-Legislation 4%
- e-Applications 42%
- Cybersecurity 15%
- MCTs 19%
- IP networks 8%
- ICT awareness 12%
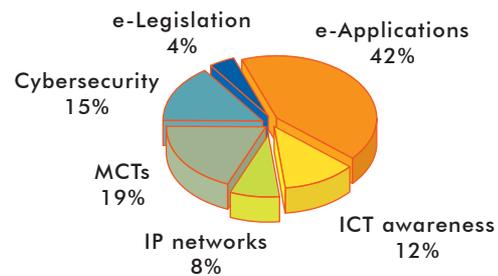
Actions in the Arab States region

- MCTs 13%
- e-Applications 47%
- IP networks 13%
- ICT awareness 27%
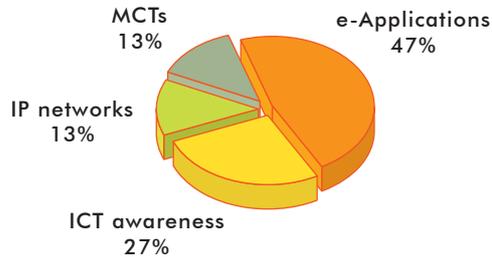
Actions in the Asia-Pacific region

- MCTs 26%
- e-Applications 47%
- IP networks 16%
- ICT awareness 11%

Actions in the Europe and CIS region

- Cybersecurity 18%
- e-Applications 53%
- MCTs 11%
- IP networks 4%
- ICT awareness 14%

Actions with a multiregional target

- e-Legislation 4%
- e-Applications 21%
- Cybersecurity 7%
- IP networks 25%
- ICT awareness 43%
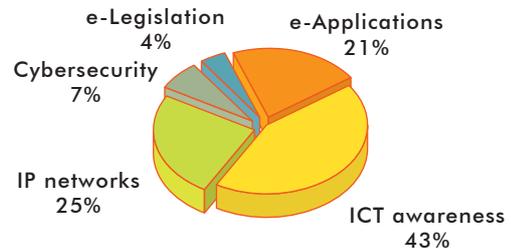
(*Source:* ITU)

The priorities and needs vary from region to region. The pie charts in Figure 3 show the diversity in the domains considered priority by the various ITU regions. While the project implementation is a high priority for most regions, the need to assist countries in the formulation of relevant national policies and strategies is a priority need for other regions.

Satisfying different needs

Figure 4: Regional coverage per key domain, 2003-2005
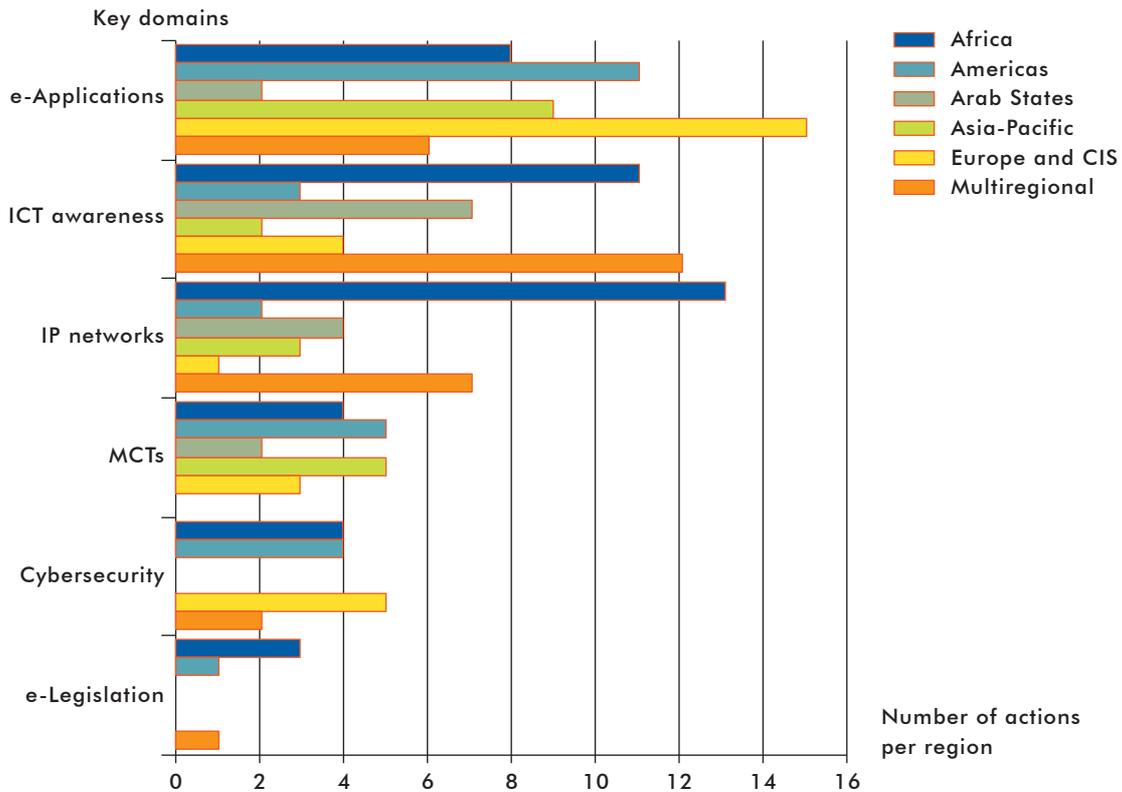
(*Source:* ITU)

Though ITU Member States have a wide range of e-Readiness levels, all six key domains are in demand depending on the countries' needs. Implementing customized e-Applications and IP infrastructure requires technical expertise and a global view with local perception. In particular, increasing awareness of ICTs and implementing value-added and secure services require further attention, based on an appropriate legal environment.

Increasing efficiency

During the period of 2003-2005, more activities were carried out even though there was a reduction in the budget. Increased participation of in-house expertise in implementing actions resulted in a net decrease in the funding required per action.

Figure 5: Action level and allocated budget, 2003-2005

- 2003
- 2004
- 2005

Total actions   Allocated budget
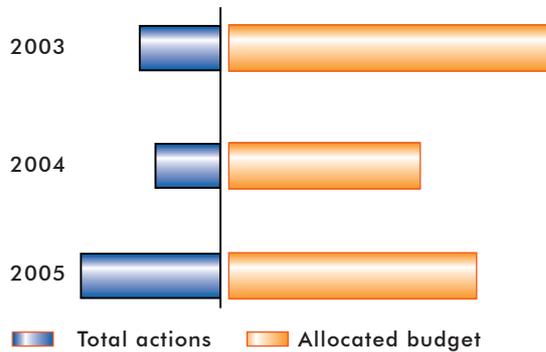
(*Source:* ITU)

Figure 6: Expenses per action, 2003-2005

2003   2004   2005
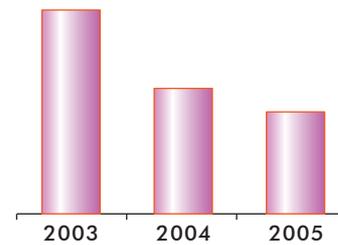
(*Source:* ITU)

Through the use of internal expertise and support from partners and alliances, the reduction in the budget did not result in a reduction in assistance provided to Member States.

Indicators

Growing support and participation of partners

Figure 7: Allocated budget and external contributions, 2003-2005, as percentages

	2003	2004	2005
External contributions	39%	67%	62%
Allocated budget	61%	33%	38%

■ Allocated budget ■ External contributions
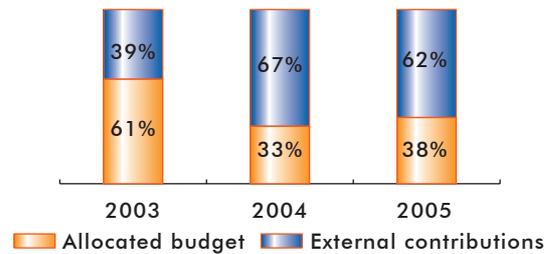
(*Source:* ITU)

Figure 8: External contributions per key domain, 2003-2005

■ Internet Protocol ■ ICT awareness
■ e-Applications
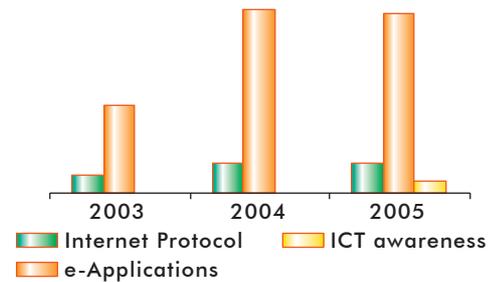
(*Source:* ITU)

With a constant decrease in available funds for the programme and an increase in demands from countries, support from partners played a crucial role in maintaining service quality and increasing activity levels. The increasing support from partners for actions in Internet Protocol and e-Applications domains indicates the level of importance that secure and high trust internet-based ICT applications play in meeting developmental targets.
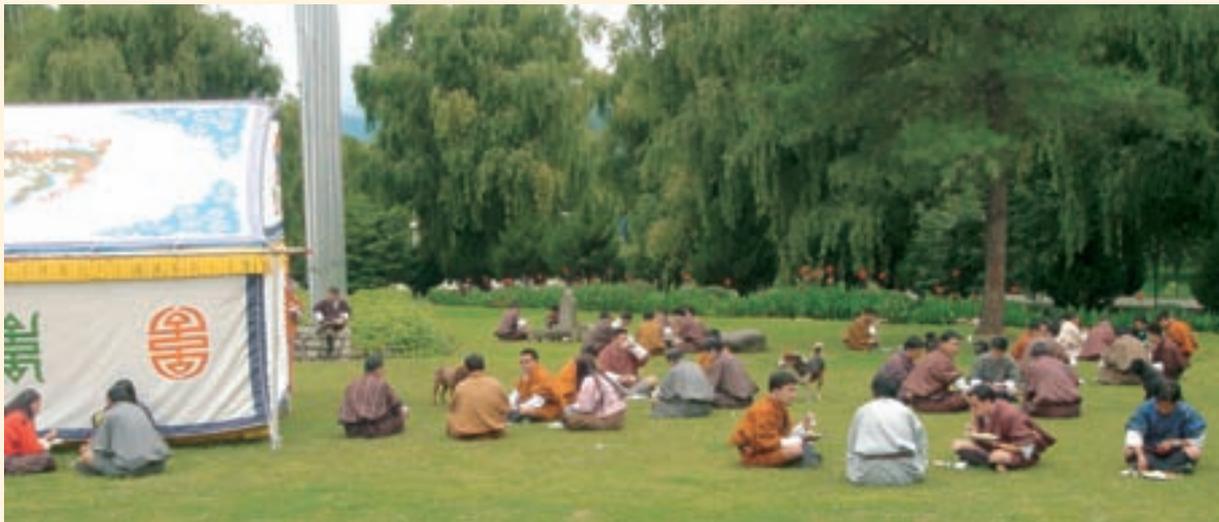
Growing interest from countries

The World Summit on the Information Society led to an increased level of awareness amongst ITU Member States on the role that ICTs can play in fostering social and economic development. The link between Millennium Development Goals and ICTs equally led to an increase in demands from countries for ITU assistance in all six priority domains of this programme. Despite the reduction in the budget during 2003-2005, more than 120 developing and least developed countries benefited from assistance provided by this programme.

Figure 9: Demands from countries, 2003-2005
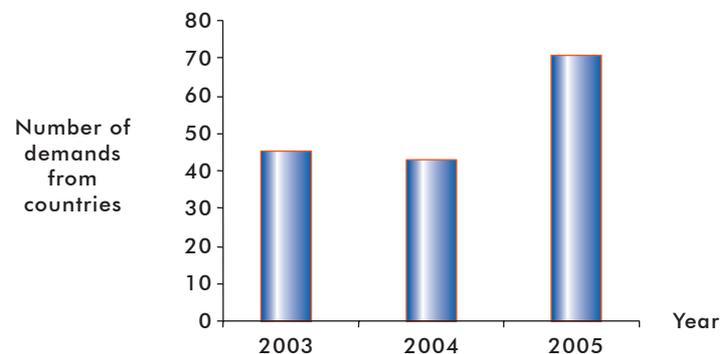
(*Source:* ITU)

While project implementation is a high priority for this programme, it is equally important for countries to share experiences on best practices, to come to a consensus on common challenges and to put in place regional polices and strategies for addressing common issues. In domains such as Internet Protocol and cybersecurity, fellowships enabled least developed countries to participate in regional and multiregional events.

Improving quality of life

Distribution of allocated budget

Figure 11: Allocated budget per key domain, 2003-2005

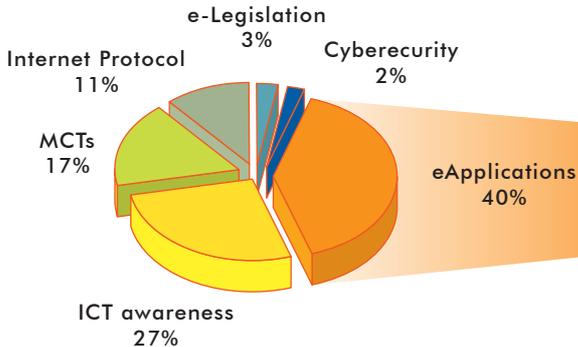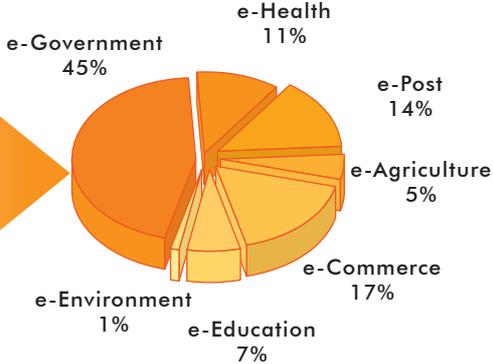### Figure 12: Percentage of budget for various e-Applications, 2003–2005

Internet Protocol 11%
e-Legislation 3%
Cyberecurity 2%
MCTs 17%
eApplications 40%
ICT awareness 27%

e-Government 45%
e-Health 11%
e-Post 14%
e-Agriculture 5%
e-Commerce 17%
e-Education 7%
e-Environment 1%

(*Source:* ITU)

Even though cybersecurity is represented by a low percentage, the component of cybersecurity required for building trust and confidence for critical e-Government and e-Commerce transactions represents more than 80% of the funds allocated to e-Government and e-Commerce projects. A significant amount of the budget was used to implement a wide range of ICT projects delivering services aimed at improving the quality of life in the agriculture, health, education, commerce and public administration sectors.

Nearly 70% of the budget was used for project implementation and the appropriate support policies and strategies, while building awareness and basic ICT literacy cover more than a quarter of the budget allocated.

Maintaining quality of service for Member States requires significant contributions from the donor community.

Improving quality of life

Securing ICT applications

Facilitating entry into the Information Society

Meeting the Millennium Development Goals

Empowering

Development

02 2006