



V. REGIONAL COOPERATION IN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

INTRODUCTION

ICT constitutes both a challenge and an opportunity for developing countries. It is one of the key driving forces behind globalization. ICT alone provides a powerful convergence of tools for handling information, from acquisition and production to transmission, archiving and storage. Combined with space technology,¹ it has an enormous impact on all aspects of life by reducing time, distance and the information gap. It increases the scope for greater and faster interaction within different groups of people from different societies and civilizations.

ICT is perhaps the most dynamic force behind globalization in its power to dismantle national boundaries

Debate on the importance of access to ICT and its value in addressing global development disparities is part of the wider discussion on the potential benefits and risks of globalization. The level and pace of global flows in physical and intangible assets have been boosted dramatically by ICT's ability to connect vast networks of individuals across geographic boundaries, at negligible marginal cost. In its power to cut across national boundaries, ICT is perhaps the most dynamic force behind globalization.

Under favourable conditions, ICT can be a powerful instrument for increasing productivity, generating economic growth by facilitating trade, transport and financial issues, thus creating jobs and improving the quality of life of all. ICT has brought e-commerce, e-learning, e-health and e-sustainability, and among many other things, the creation of an e-society. The challenge for the developing world is how to harness the potential benefits of ICT to achieve the Millennium Development Goals (see box V.1). ICT has become so important in the process of both globalization and achieving the Goals that it has warranted the

¹ Space technology, here mainly referring to satellite communications, remote sensing and geographic information systems (GIS), plays both a complementary and a supplementary role to conventional technologies in the different types of applications. It has indeed been instrumental in providing the means to extend the reach of ICT services to even the most remote and isolated regions.

Box V.1. Using ICT to achieve the Millennium Development Goals: some Asian experiences

The effective use of ICT can enhance the possibilities of achieving the Millennium Development Goals. In fact, ICT enables the rapid development of various sectors of the economy and can generate widespread gains and positive effects.

Eradication of extreme poverty and hunger

ICT can help to reduce poverty through direct and indirect means, creating employment opportunities as well as increasing productivity. ICT can help the poor to acquire literacy and marketable skills. In rural India, TARAhaat, a portal designed to serve villages, provides information about job opportunities on local web sites in local dialects. The successful use of ICT in Bangladesh by the Grameen Bank in its Village Pay Phone initiative is quite well known. In a village in Thailand, Baan Samka, children and youth gather useful information from the Internet and broadcast it to adults via the village audio tower. Microfinance initiatives using ICT can help to reduce transaction costs. India's Swayam Krishi Sangam smart card project is a good example of this.

ICT can also help to combat hunger by providing timely information to trigger a rapid response in delivering food to areas with severe shortages and also help to monitor and manage the procurement, storage and distribution of essential foodgrains. China's Beijing FarmKnow project enables a large number of farmers, through its web site, to access information on crop planting, disease control, pest identification and control, seed prices and market prices of agricultural products. In Malaysia, farmers can consult agricultural specialists by e-mail under the TaniNet project.

Achieving universal primary education

ICT can be used to reach people living in distant and remote areas, making education feasible. Governments in most countries of Asia are initiating programmes to promote the use of ICT at all levels of education. The Government of India has an ambitious programme (announced in June 2003) to connect 60,000 schools in the country through an online library and provide academic services and training through the Internet. Other countries, such as Pakistan through the Pakistan Education Network (launched in 2003), and Viet Nam, through its Educational Network, have invested significant resources to provide computer-based connectivity to improve the education system. China's Advanced Distance Learning Satellite Broadband Multimedia Transmission Platform became operational in November 2000 to serve the country's western and other remote regions.

Promoting gender equality and the empowerment of women

ICT can help women to overcome the mobility barriers that restrict their access to education, knowledge and information and offers possibilities to engage in e-commerce, distance education and e-government. It also empowers them through increasing the potential for their participation in politics and decision-making. The Gobi Women's Project in Mongolia uses radio broadcasts to provide non-formal distance education to some 25,000 nomadic women, giving useful instructions on health, family planning, traditional crafts and environmental issues. The Centre for Women's Research in Sri Lanka has launched a women's electronic information network and provides women with training.

Reducing child mortality

ICT can help to reduce infant and child mortality rates by improving the effectiveness of health promotion and disease prevention programmes as well as health-service delivery. ICT increases access by caregivers in rural and remote areas to specialist support and diagnosis and reduces the need to transfer patients to a site of medical expertise. Telemedicine is also becoming more popular. In India, the Apollo Hospitals Telemedicine project specializes in providing consultations and second opinions to rural and remote areas where access to quality health care for children is difficult. In western China, the Angel Programme established a telemedicine network, connecting hospitals at the national level. In Thailand, the Government's major health promotion schemes use ICT to deliver health information to pregnant women and mothers of the newborn, as well as health-care workers.

Improving maternal health

In order to improve maternal health, ICT can be used to access and link networks of expertise, manage medical information and patient data, enable remote medical assistance, improve public knowledge and awareness of maternal health issues, facilitate maternal health research and training, generate locally relevant content and mobilize volunteers. Hand-held computers, such as personal digital assistants (PDAs) and emerging wireless technologies,

provide health-care practitioners with unprecedented opportunities to improve their services. The Indian Health Care Project in Rajasthan equipped auxiliary nurse midwives with PDAs and relevant support tools to improve the management of patient health information at the village level. In order to improve the quality of their diagnoses and provide prompt treatment, the village doctors in mountainous areas of Yunnan, China, use mobile telephones to consult directly with experts at provincial capital hospitals several hundred miles away.

Combating HIV/AIDS, malaria and other diseases

ICT can help in addressing HIV/AIDS, malaria and other diseases by disseminating relevant information to patients, caregivers and other family members. ICT can be used as a tool for advocacy, awareness-building and education for preventing the transmission of infectious diseases as well as facilitating support groups, counselling, etc. In Thailand, 488 radio stations and 15 television stations aired HIV/AIDS preventive messages for 30 seconds every hour and owing partly to public health campaigns, the number of new HIV/AIDS cases dropped from 143,000 in 1991 to 29,000 in 2000.

Ensuring environmental sustainability

GIS and satellite remote sensing have played an important role in collecting information, pinpointing sensitive and vulnerable forest, watershed and marine ecosystems which are of critical relevance to the livelihoods of the poor. In Thailand, the "Forest Loves the Water and the Land" project used satellite images to identify denuded forest areas in five northern provinces. GIS was applied for the rehabilitation of the water distribution system in Mirzapur, India. China used GIS and remote sensing systems to track urban development and the decrease in arable land in Shanghai between 1996 and 2000 and floods along Dongting Lake in the Yangtze River Basin in 1998. Mongolia's disaster management system through upgraded emergency warning systems using ICT, is a good example of how to protect people from natural disasters.

Source: UNDP, *Promoting ICT for Human Development in Asia 2004: Realizing the Millennium Development Goals – Summary* (New Delhi, Elsevier, 2004).

attention of a world summit, the World Summit on the Information Society, which is being held in two phases. The first phase already took place in Geneva in December 2003. The second is scheduled in Tunis in November 2005.

Developing countries face major obstacles in hooking up their population to ICT and the benefits it can deliver. ICT requires infrastructure and connectivity but government budgets are limited and private investment in the sector is often deterred by outdated legislation, policies that block investment in and the use of new converging technology, the lack of intellectual property rights protection and ICT service market barriers. Another issue in many cases is the small size of the market for ICT services. The use of such technology is not yet commercially viable in many of these countries owing to the low levels of education and knowledge of ICTs among the general public, resulting in a lack of demand for ICT-enabled services. However, the absence of effective laws and regulations in some countries has allowed them to become a base for cybercrime, another major obstacle to ICT development. A range of other issues further complicating the situation of developing countries includes the weakness of old-model education systems, the high cost of training to develop ICT personnel, cultural and social attitudes and the local market dominance of key hardware and software companies.

Developing countries face major obstacles in hooking up their population to ICT

The extent to which a country adopts ICT will determine its position in the new world economic order

The digital divide is actually several gaps in one

Most countries lack a comprehensive framework on how to use ICT to meet the needs of the poor, vulnerable and marginalized groups

The extent to which a country can overcome these problems and adopt the use of ICT will do much to determine its position in the new world economic order. However, huge disparities are already evident among the countries of the region in the main ICT development indicators. This points to a digital divide, which threatens to increase the gap between the rich and poor among and within countries.

This so-called “digital divide”² is in fact several gaps in one. There is a “technological divide” exposing the lack of basic infrastructure in many countries to absorb the minimum ICT technology. There is a “content divide”; much of the web-based information is simply not relevant to people’s needs and a significant portion of the content is in English, at times crowding out local voices and views. There is a “gender divide”, with women and girls enjoying less access to information technology than men and boys; this can be true in both rich and poor countries. There is also a “commercial divide”, as e-commerce, which leads to faster business communication among companies and people, is more prevalent in some countries than in others. There are also social, economic and other disparities and obstacles that affect a country’s ability to take advantage of digital opportunities.³ The challenge is how to convert these “digital divides” into “digital opportunities” for all, particularly for those at risk of being left behind and further marginalized.

There is no single approach to using ICT for development purposes. Most countries have a national policy on ICT in place. What is lacking is a comprehensive framework on how to use ICT to meet the needs of the poor, vulnerable and marginalized groups.⁴ Countries need a specific policy or action plan to realize the potential benefits of ICT, foster sustainable development, empower people, including women and youth, build capacity and skills, assist small and medium-sized enterprises and reinforce popular participation in decision-making at all levels. Attention should also be given to the issues of cultural and linguistic diversity, the ethical dimensions of ICT usage, the use of the right technology (which is cost-effective and user-friendly) and human resources development.

In addition to framing sound ICT policy, Governments need the political will to implement it. Before ICT can work for the poor, Governments first need to create an enabling environment by preparing innovative policies for the sector, strengthening institutions and improving infrastructure and connectivity. Distance education cannot function without a school with electricity; telemedicine will not work if hospitals do not exist. Second, Governments need to concentrate on “application programmes” to enable understanding of the development linkages among

² See chapter I: the disparities are discussed in some detail in section B 6.

³ Address by the Secretary-General to the World Summit on the Information Society (SG/03/15).

⁴ ESCAP, Report of the Ad Hoc Expert Group Meeting on ICT for Rural Poverty Reduction: Developing National ICT Policies, Bangkok, 28-29 January 2003.

various sectors. Governments should involve ICT service providers and agencies working in poverty alleviation in developing the institutional mechanisms of ICT policy. Third, they need to improve ICT awareness, develop skills and human resources to create sufficient demand and manage the sector properly. Attention should also be given to monitoring the impact of ICT projects and adjusting projects on the basis of experience.⁵

The challenge of building an open society using these technologies is political, economic and social. The World Summit on the Information Society (see box V.2) adopted a Plan of Action for tackling the digital

Box V.2. World Summit on the Information Society

ICT has become so important to achieving the Millennium Development Goals that it warranted the convening of the World Summit on the Information Society, the only world summit to be held in two phases. The first took place in Geneva from 10 to 12 December 2003, and the second will be held in Tunis in November 2005.

The two principal outcomes of the World Summit are the Declaration of Principles and the Plan of Action.

The Declaration of Principles reaffirmed the commitment of all stakeholders to build a people-centred, inclusive and development-oriented information society to harness the potential of ICT to promote the Millennium Development Goals, namely, eradicating poverty, achieving universal primary education, promoting the empowerment of women, ensuring environmental sustainability, combating HIV/AIDS and developing a global partnership for development. The Declaration of Principles stresses that regional integration contributes to the development of the global information society and makes strong cooperation within and among regions indispensable. In particular, regional dialogue should contribute to national capacity-building and the alignment of national strategies with the goals of the Declaration of Principles.

The Plan of Action identifies specific targets for establishing the information society at the national level in the framework of national e-strategies. These include 10 specific national targets for improving connectivity and access to ICT by 2015; the development of national e-strategies, including human capacity-building, by 2005; and the establishment of public-private partnerships or multisector partnerships by 2005 as a showcase for further action. The Plan of Action also highlights 11 action lines and stresses the vital role of international and regional cooperation in pursuing them. It suggests that consideration be given to the creation of a voluntary Digital Solidarity Fund.

International as well as regional cooperation among different stakeholders is vital in implementing the Plan of Action and needs to be strengthened with a view to promoting universal access and bridging the digital divide. Governments of developing countries should raise the relative priority of ICT projects, promote public-private partnerships in ICT to achieve the Millennium Development Goals and invite international and regional organizations to assist. The Plan of Action lays down a Digital Solidarity Agenda aiming to put in place the conditions for the mobilizing human, financial and technological resources for the inclusion of all men and women in the emerging information society.

Before the World Summit, the Asian Regional Conference for the World Summit on the Information Society held in Tokyo in January 2003, provided guiding principles which are commonly known as the Tokyo Declaration. These became the basis for the Summit's Declaration of Principles and the global Plan of Action.

The second phase of the World Summit will consider the follow-up to, and implementation of, the Plan of Action at the national, regional and international levels. For this purpose, all countries and regions are required to develop tools for providing statistical information on the information society, including basic indicators and an analysis of its key dimensions.

Source: World Summit on the Information Society, Declaration of Principles-building the information society: a Global Challenge in the New Millennium (WSIS-03/GENEVA/DOC/4-E) and Plan of Action (WSIS-03/GENEVA/DOC/5-E).

⁵ ESCAP, *Use of Space Technology Applications for Poverty Alleviation: Trends, Strategies and Policy Frameworks* (ST/ESCAP/2309).

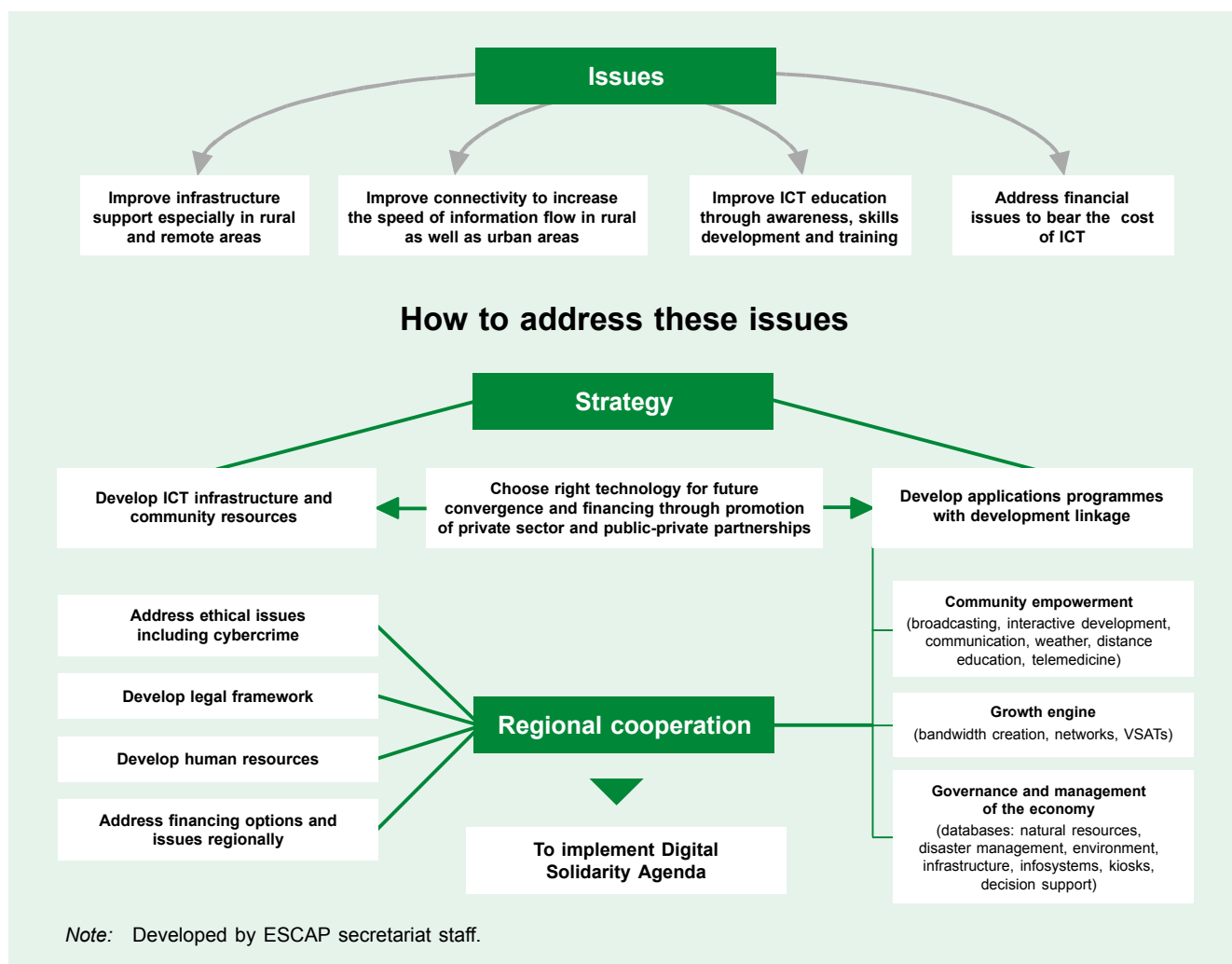
divide, which calls for new forms of solidarity, partnership and cooperation among Governments and other stakeholders, ranging from the private sector to civil society and international organizations, and seeks their commitment to the Plan’s Digital Solidarity Agenda. Regional dialogue should contribute national capacity-building and the alignment of national strategies with the goals set out in the Summit’s Declaration of Principles.

A. ANALYSIS OF SELECTED REGIONAL COOPERATION IN ICT

Regional cooperation on ICT should tackle the disparity in its use

Regional cooperation can help poor countries to bridge the digital divide and address core issues of developing ICT infrastructure, improving connectivity and supporting ICT education and financing. Regional cooperation can also help to develop the necessary legal and regulatory framework to promote e-commerce, prevent cybercrime and create an “application programme” that addresses issues of governance, community empowerment and economic growth (see figure V.1). At the World

Figure V.1. Bridging the digital divide and regional cooperation



Summit, regional organizations were invited to mainstream ICTs in their work programmes and assist all levels of developing countries in preparing and implementing national action plans in line with the Declaration of Principles.

A number of initiatives have been launched in the Asia-Pacific region in recent years to address the digital divide. For example, ESCAP has organized a number of high-level regional conferences on several issues of ICT with the countries of the region and partners from the Regional Inter-agency Working Group on ICT, which includes the Asia-Pacific Telecommunity (APT), ADB, the International Telecommunication Union (ITU), UNESCO and UNDP. Several organizations, such as ASEAN, SAARC and the Pacific Islands Forum, have also launched initiatives to increase and share the economic and social benefits of ICT.

1. ICT COOPERATION IN ASEAN

The key areas of cooperation in ICT among ASEAN countries are the e-ASEAN Initiative (1999),⁶ the e-ASEAN Framework Agreement (2000),⁷ the e-ASEAN Reference Framework for Electronic Commerce Legal Infrastructure (2001)⁸ and the Manila Declaration (2002).⁹ The e-ASEAN Initiative developed a comprehensive action plan to promote an ASEAN e-space covering the economy, society and government. The e-ASEAN Task Force identified pilot projects for each sector to clarify the policy issues involved in establishing an electronic marketplace. The Task force is now working on establishing an ASEAN Information Infrastructure and consulting with the private sector on short- and long-term plans. It has formulated plans to accelerate the development of e-commerce across the region (cyberlaws, security infrastructure, payment gateways, online services and products).

The e-ASEAN Framework has a comprehensive programme for development of e-commerce, cyberlaws, Internet security and training

The e-ASEAN Framework Agreement signed by member States at the Fourth ASEAN Informal Summit held in Singapore from 22 to 25 November 2000, aims to promote cooperation to strengthen the competitiveness of the ICT sector and narrow the digital divide within and among member countries. To that end, it promotes the liberalization

⁶ The Initiative aims to develop a broad-based and comprehensive action plan, including the physical, legal, logistical, social and economic infrastructure needed to promote an ASEAN e-space, as part of an ASEAN positioning and branding strategy. E-ASEAN would cover the economy, society and government.

⁷ The Agreement was signed in Singapore. It seeks to promote, develop and enhance the competitiveness of the ICT sector.

⁸ The Framework was formulated by the ASEAN Secretariat and focuses on the general principles, scope, legal effects, provisions, presumptions and implementation of e-commerce law.

⁹ The ASEAN telecommunications ministers met on 27 and 28 August 2002 and signed the Manila Declaration resolving to exploit ASEAN's competitive edge in the ICT sector.

of trade in ICT products, services and investments. An e-ASEAN working group has been formed to oversee the implementation of the agreement. A number of e-government and ICT training programmes, workshops and seminars were conducted in a number of member countries.

The e-ASEAN Reference Framework for Electronic Commerce Legal Infrastructure acts as a guide to help to accelerate the drafting of e-commerce laws by member States that do not yet have them and facilitate cross-border e-commerce and cross-recognition/cross-certification of digital certificates/digital signatures (for those member States that have e-commerce law). An e-commerce white paper is under preparation to share information on each country's initiatives and developments. Cyberlaw seminars have been held to share the best practices of more developed countries in ASEAN. An e-ASEAN forum has been established and is studying the harmonization of cross-border e-transactions. It is considering a range of other activities, including the creation of a business environment to support the e-commerce development of SMEs.

Under Space Technology Applications programme, ASEAN focuses on remote sensing, natural resource and environment management

The ASEAN Subcommittee on Space Technology and Applications working under the ASEAN Committee on Science and Technology, has formulated a framework for enhancing collaboration in space technology and its applications in the ASEAN region. The Subcommittee also designs and coordinates collaborative programmes and projects using space technology applications. These include remote sensing, communications and satellite technology applications for environmental and natural resource management, and applications for development planning. It also proposes ways to involve government agencies, industries and academia in promoting and sustaining regional cooperation in space technology and its applications. These include exchanging information on national policies and programmes to facilitate the transfer of space technology and its applications among ASEAN members.

2. ICT COOPERATION IN PACIFIC ISLAND COUNTRIES

Pacific island countries emphasize the need for a cooperative framework in socio-economic development areas, including telehealth and distance learning

Pacific island countries have recognized that ICT is important for promoting socio-economic development ("ICT for every Pacific islander").¹⁰ However, the countries realize that substantial resources are required to put the endorsement into practice. Moreover, limited accessibility of equipment and lack of technical personnel are major obstacles to the development of this sector. Against this background, members of the Pacific Islands Forum have launched a number of

¹⁰ Forum Secretariat web site, <<http://www.forumsec.org.fj/division/DEPD/infra/ICT/2002-Review.htm>> 20 November 2003.

initiatives, including the Forum Communications Action Plan, the Pacific Islands ICT Policy and Strategic Plan and the Pacific 14D Initiative,¹¹ which identify priority areas for island countries, including telehealth, distance learning and universal access through community telecentres. These are important for small island countries scattered over large distances. The Pacific Islands Forum Secretariat's regional input paper¹² identified a number of regional institutes to build a cooperative framework to implement priority ICT projects, including a pilot telehealth project, Pacific Resources for Education and Learning and a community telecentre development project which involves the setting up of Internet cafes.

3. ICT COOPERATION IN SAARC

Cooperation in the SAARC subregion has been extensive in telecommunications and in other areas such as audio-visual exchange programmes, information-sharing and networking. At the Ninth SAARC Summit, held at Male in 1997, member countries agreed to enhance economic cooperation by simplifying complex documentation procedures. The first SAARC Communications Ministers Conference held in Colombo in 1998, adopted the Plan of Action on Telecommunications¹³ and proposed to modernize telecommunications in the subregion. It also proposed that regulations, including tariffs, be simplified. SAARC also runs joint programmes with APT and ITU in telecommunications. SAARC has also emphasized the use of ICT in the media as a tool for disseminating information. The SAARC Audio-Visual Exchange (SAVE) Programme already uses radio and television channels to encourage socio-cultural exchange programmes aimed at improving public understanding of the culture and society of member countries. The SAVE Programme includes joint productions on such issues as the environment, disabled youth, literacy, participatory governance, safe and clean water, and mountains and hills. The Islamabad Declaration issued by the Twelfth Summit held in January 2004,¹⁴ pledged greater efforts to bridge the digital divide in the region.

Cooperation in ICT in the SAARC subregion includes audio-visual exchange programmes and information networking

¹¹ The Forum Communications Action Plan focuses mainly on facilitating the construction, expansion, technical cooperation and development of human resources in the sector. The Pacific Islands ICT Policy and Strategic Plan includes the vision "ICTs for every Pacific islander", which is a regional approach to bringing about coordination among national policies. Pacific Islands Information and Communication Technology of Development (the Pacific 14D Initiative) proposes partnership through ICT to address World Summit issues.

¹² Submitted by the Pacific Island Forum Secretariat at the Asian Regional Conference for the World Summit on the Information Society, Tokyo, 13-15 January 2003.

¹³ The Plan of Action calls for a reduction in telecommunication tariffs within the SAARC subregion, special rates for transiting regional traffic, cellular roaming, liberalized leased lines and human resources development, among other things.

¹⁴ <<http://www.saarc-sec.org/summit12/summit12declaration.htm>>, 15 January 2004.

4. ESCAP'S INITIATIVES ON ICT

There are many other regional initiatives in the area of ICT, some of which are discussed in annexes III and IV. ESCAP also has a number of programmes to assist its members and associate members in exploiting the potential benefits of ICT.

ESCAP has promoted the use of ICT for the socio-economic development of the region

ESCAP promoted ICT accessibility for persons with disabilities in Asia and the Pacific (in 2002) through the Biwako Millennium Framework for Action towards an Inclusive, Barrier-free and Rights-based Society for Persons with Disabilities in Asia and the Pacific during the Decade of Disabled Persons, 2003-2012. It recommended specific action at the national and regional levels using technologies such as speech synthesizers, computer screen readers and text magnifier programmes to provide training and jobs for the disabled. ESCAP also organized the Asia-Pacific Conference on Cybercrime and Information Security in 2002 to develop common understanding between all stakeholders, in particular, Governments, the private sector and members of the international community, regarding priority action to address the issue at both the national and regional levels. The Asia-Pacific Conference on E-commerce Strategies for Development, also held in 2002, adopted the Declaration on Electronic Commerce for Development, which recommended urgent action at the national and regional levels to narrow the gap in e-commerce capacity and ICT infrastructure within the Asia-Pacific region.

ICT provides a number of opportunities to women but in general they are unable to take advantage of this technology (see box V.3). To address the issue of the gender divide within the digital divide, since 2000, ESCAP, in collaboration with the Asian Women's Resource Exchange, has been organizing an annual Women's Electronic Network Training workshop, which trains women from all over Asia and the Pacific to develop web-based information services, using online communication tools to advance their social and advocacy work and to develop databases. A partnership with a network of women's groups that seek to increase the capacity of women's organizations in the Asia-Pacific region to share information using ICT has been established.

ESCAP also takes an active part in developing an ICT policy environment and preparing a regional road map towards an information society as part of its ongoing and future work in following up on the targets set after phase I of WSIS and achievement of the Millennium Development Goals. It has a Regional Inter-agency Working Group on ICT and has worked with the United Nations ICT Task Force.

ESCAP has played a catalytic role in promoting space technology applications for sustainable development and assisted Asia-Pacific countries in building the capacity to use them. The Regional Space

Box V.3. Women and the Internet

The emergence of new ICTs has shaped and transformed today's society, forming new social and political structures. Feminists view ICTs, and the Internet in particular, as the "radical potential of communication", as they provide unprecedented possibilities for women through communication and new means of raising political issues that move beyond male domination. The Internet offers unique opportunities for new forms of knowledge-building by women, especially for those outside global politics. Through global networking, women from diverse cultures can gain knowledge, share information, promote women's rights and create a more gender-equitable global culture.

Cyberspace enables women's groups around the world to link up with broader women's movements. Local and international development agencies are also using ICTs to build connections around global issues such as violence against women, reproductive health and trafficking of women and children. New ICTs seem to provide the greatest opportunities for women who have less exposure owing to social and cultural barriers to enter into broader structures of knowledge, power, language and life. Women working in NGOs in countries with such barriers can use the Internet to express themselves and give their views on politically sensitive topics, which would be impossible in their own country. By helping to shape cultural space, the Internet appears to have great potential for counteracting social segregation and discrimination in many societies.

There is also growing concern that ICTs contribute to widening the gap between the information-rich and information-poor. It is believed that ICTs will simply follow historic patterns of economic inequality. Like the Industrial Revolution, the ICT revolution will further enhance differences between the rich and the poor, between women and men and between the North and the South. The problems of infrastructure and access to new technology are not the only major obstacles for women. These include cost, computer literacy, lack of training and time constraints. To use the World Wide Web also requires a high level of literacy unavailable to vast numbers of women living in the developing world.

The digital divide and the consequences of uneven access to new technologies have become a matter of critical concern among developing countries and international development agencies. Many countries in the ESCAP region regard ICTs as a tool to promote women's empowerment, rights and full participation in all spheres of the society in line with the goals of an equitable information society. ESCAP is playing an active role in promoting gender perspectives in policies, programmes and projects related to ICTs. ESCAP initiatives to bridge the gender gap include providing capacity-building for women's organizations and strengthening their networking and advocacy work through the Women's Electronic Network Training Workshop in collaboration with the Asian Women's Resource Exchange.

At the global level, the World Summit's Declaration of Principles underlines that women are key actors in and an integral part of the information society. The World Summit aims to promote women's empowerment and full participation in the use of ICT, not only on the basis of gender equality but also in all decision-making processes. The Plan of Action of the World Summit also calls for international and regional cooperation to support its Digital Solidarity Agenda, which aims to put in place the conditions for mobilizing human, financial and technological resources for the inclusion of all men and women in the emerging information society. Collective national, international and regional cooperation is vital in implementing the Plan of Action. It needs to be strengthened with a view to promoting universal access and bridging the "gender divide" within the digital divide.

Sources: W. Harcourt, ed., *Women@Internet: Creating New Cultures in Cyberspace* (London, Zed Books, 1999); B. D. Loader ed., *Cyberspace Divide, Equality, Agency and Policy in the Information Society* (New York, Routledge, 1998); and World Summit on the Information Society, Declaration of Principles – Building the Information Society: a Global Challenge in the New Millennium (WSIS-03/GENEVA/DOC/4-E) and Plan of Action (WSIS-03/GENEVA/DOC/5-E).

Applications Programme for Sustainable Development (RESAP), initiated in 1994, promotes operational applications of satellite-based ICT for sustainable development and improved quality of life in the region. A wide range of RESAP activities have been initiated at both the regional and national levels.

B. PROMOTING FURTHER REGIONAL COOPERATION IN THE AREA OF ICT

There are enough regional resources to tackle the digital divide in the region

There are a number of countries in the region with surplus capital, world-class expertise in electronics, hardware and software technologies and very good technical institutes. Many developed countries outsource their business processes which use ICT to countries of the region. Moreover, hardware and software industries constitute a major export sector in many countries which has created substantial employment opportunities in the region. In spite of this, there are many countries that do not possess even the basic ICT infrastructure. Regional cooperation in the region should aim to narrow this gap and foster development. There are enough regional resources to tackle the digital divide: the issue is to utilize them strategically (as an example of cooperation, see box V.4).

Box V.4. Cooperation in ICT to achieve the Millennium Development Goals: developing a global partnership for development

Creating inclusive global partnerships is one of the major challenges of the twenty-first century. This is important, as many developing countries have been marginalized, lacking the skills, technologies and financial resources required for development. The eighth Goal, "Develop a global partnership for development", addresses the ways in which industrialized countries can assist developing countries in achieving the seven other Goals. The partnership can be supported through the development and dissemination of ICTs. Knowledge exchange and the sharing of technical expertise can help developing countries in the new information age. Regional cooperation in this context is important in achieving other Goals. Asian countries have taken up various initiatives to develop partnerships within and across countries and institutions through ICT.

Partnerships in education and research

ICT tools have linked worldwide research institutions enhancing scientific research and supported the development of innovative projects through collaborative efforts. Indonesia has been aggressive in using ICT to build partnerships with foreign research institutes to enhance its education sector, through such projects as the Global Distance Learning Network at the University of Indonesia. The Asian Technology Information Programme, part of Japan's efforts towards global partnership, has promoted high performance computing activities in Asian countries through partnerships between Asian and Australian universities and research institutions and their partners in the United States and European countries.

Global public policy networks

Global public policy networks are international networks and coalitions that can work consensually in developing sustainable policy positions. They have been effective in drawing the interest of a wide group of individuals and institutions with similar objectives although they operate in different local environments. A good example is RosettaNet, which is a consortium of the world's leading electronic companies working to create and implement e-business process standards, enabling companies in the supply chain to communicate and conduct business electronically through common codes for the sourcing of parts and components. ICT facilitates the standardization of formats, systems, standards, codes and protocols which are essential for international collaboration and exchange.

ICT as a business tool to facilitate international trade

The use of ICT has radically transformed the way business is conducted with foreign parties. China has established wide public and private networks for global and regional networking through the Internet, such as the international web site for the new Euro-Asian Continental Bridge, the International Network for Bamboo and Rattan and the Asian City Network. In Sri Lanka, the implementation of electronic data interchange (EDI) has also resulted in the setting up of MARINET by the Sri Lanka Ports Authority linking it with the shipping agents and the adoption of some of the UN/EDIFACT (EDI for administration, commerce and transport) standards.

ICT for SMEs

ICT can provide critical support to SMEs in accessing global markets with limited expenditure on advertising and overhead expenses. E-mail communication cuts costs and provides an instantaneous mode of communication linking suppliers and purchasers across the globe. Even rural and excluded groups have succeeded in leveraging ICT to improve their economic status through these channels.

Governance issues

ICT can be used extensively to streamline public service delivery (procurement, forms and registration) and improve efficiency. In 1993, China initiated the Golden Customs Project intended to create an integrated data communication system connecting foreign trade companies, banks and the customs and tax authorities to solve criminal and smuggling cases. The Regional Network Project of the Indonesia Environmental Impact Management Agency is a joint venture with ADB providing an environmental network for 7 provinces and 14 districts to disseminate information to the public.

Partnership among stakeholders

In 2001, Intel launched its worldwide effort to help teachers to integrate technology into instructions known as the "Teach to the Future" programme in Karachi, Pakistan. Several government bodies have worked together under India's *Warna* wired village project to increase computer penetration to a cluster of 70 contiguous villages, and civil society has been involved extensively. To raise awareness on the environment, the United Nations Environment Programme and the World Wide Fund for Nature established the International Television Trust for the Environment in 1984. Yet another partnership was established between the Asia-Pacific Broadcasting Union and Sri Lanka to provide skills and training for improving broadcasting standards in Sri Lanka. In Mongolia, the Millennium Development Gateway, which is part of the Global Development Gateway, uses ICT for development by sharing knowledge and experiences among 45 countries.

Source: UNDP, *Promoting ICT for Human Development in Asia 2004: Realizing the Millennium Development Goals – Summary* (New Delhi, Elsevier, 2004).

An analysis of the cooperation arrangements in ICT shows that most regional groups and institutions are concerned about the digital divide. Every group emphasizes different aspects based on specific subregional priorities. However, some countries are still not mainstreaming ICT comprehensively in their development policy framework. In general, regional cooperation in ICT has been sporadic and sometimes superficial. However, the extent and nature of cooperation vary from one subregion to another.

ICT is used to promote people-to-people contact among SAARC member countries through the audio-visual exchange of culture and ideas for promoting awareness on literacy, health, participatory governance and other socio-economic issues. In Pacific island countries, the application of ICT has been proposed to enhance telehealth and distance learning programmes through community telecentres. However, the issue of financing ICT applications in Forum countries and the timely supply of ICT equipment in different islands is important. By contrast, ASEAN, having a relatively high penetration of ICT, gives more importance to the commercial use of the technology, especially in e-commerce, an appropriate legal framework governing electronic translation and promoting private investment and training in this field.

*Varying subregional
focus in ICT
cooperation*

ICT issues are not yet at the forefront of discussions among members of the ECO region. However, some attempt is being made to modernize telecommunications. Emphasis is placed on the harmonization of regulatory and technical features and the development of telecommunication networks. ECO secretariat is currently engaged towards developing a framework for Ministerial Conference in ICT.

Meaningful regional networking and cooperation with other subregional groupings regarding institutional development, helping private sector participation in these sectors and understanding the benefits of using ICT in the trade and transport sectors may prove useful to enhance the growth and development of the region.

In the case of space technology, wider application of the technology and rural penetration will bring down the cost significantly

Many countries are unable to take full advantage of space technologies to enhance the use of ICT because of high costs. However, wider application of the technology and rural penetration will reduce the cost significantly as economies of scale are high and marginal costs are minimal. Satellite communication application programmes can be used extensively to promote education, health and multi-purpose community telecentres in rural and remote areas¹⁵ and to help the self-employed.

ESCAP's attempt to strengthen regional cooperation in this sector is to create a regional information society in line with World Summit guidelines towards implementation of its Declaration of Principles and Plan of Action. The Regional Road Map towards an Information Society in Asia and the Pacific, adopted by representatives of 16 member countries at the Fifth Regional Inter-agency Working Group Meeting on ICT, held in August 2003, recommends specific action at the national and regional levels to create such an information society and mainstream ICT to achieve the Millennium Development Goals.

It further suggests that since the actions required at the regional level are cross-sectoral in nature, ESCAP is the appropriate organization to facilitate cooperation with ITU, APT, UNDP, UNESCO and others. The suggested regional priorities include preparing a regulatory, legal and security framework, facilitating and promoting a regional broadband network, preparing an e-readiness index and developing special programmes for weaker countries (see annexes III and IV and box V.5).

However, more collaboration is required among countries and regional institutions to widen access to space technology applications and integrate them into development programmes at the national, regional and international levels. ESCAP needs to encourage and seek cooperation from individual countries and subregional organizations to improve the network infrastructure and access to it. It also needs to

¹⁵ Community telecentres can provide information about the weather, education and many issues of public interest.

Box V.5. Satellite communication and broadband: transcending barriers

Access to low-cost bandwidth connectivity will be a vital component for economic development in the new millennium. Therefore, one aspect of what makes space more relevant to the poor and marginalized is the outreach capabilities of satellite communication. While broadband terrestrial networks are likely to cover urban areas and dynamic corridors, rural regions having lower concentrations of people and generally less intense economic activity will continue to be isolated digitally if the satellite communication option is not used. Although terrestrial wired (fibre optic, Digital Subscriber Line), wireless (microwave) and satellite-based communications are all experiencing significant technological advances, the big improvements that are looming in the affordability and broadband capacity of satellite communication will arguably have the greatest potential benefit for reaching previously underserved or unserved communities.

The main issues in this context are availability, reliability, affordability, relevance of content and services, training abilities and motivation to use the capabilities of this technology. Satellite communication provides enhanced opportunities for enabling and diversifying broadband access. It has also demonstrated the potential to bridge the digital and knowledge divides and to reach out and benefit the poor, if used innovatively. There are different measures for achieving satellite broadband applications and services. One-way broadband broadcasting by satellite has contributed greatly to distance education programmes in China and Thailand for years. There are many commercial models for asymmetric satellite broadband access: two-way access through satellite, and externally interactive Internet access through satellite broadband downlink and ordinary dial-up Internet uplink. Service practices have demonstrated their technical availability and economic affordability. Developments in local wireless connectivity (Wi-Fi) will further enhance the affordability of delivering broadband ICT applications to remote and underserved areas. Although this service has not been generally available in the Asia-Pacific region, the timely development of enabling policies and viable institutional models may be appropriate for developing countries in the region. Satellite Communication-based VSAT-WLL services offer cost-effective and appropriate community-level solutions providing a variety of services to some areas, but the large-scale provision of services appears to be possible only by the mainstreaming of satellite broadband services, which will be available shortly.

However, further understanding is needed of how this technology will affect poverty alleviation programmes in terms of accessibility, affordability and usefulness. ESCAP and other regional institutions have a vital role to play in assessing the operational viability of this technology and refining the financial models (for example, revenue-sharing between government and community) for using it. Other key roles for ESCAP include fostering partnerships among different players, namely, satellite operators, service providers, Governments, the application service industry, NGOs, international organizations and multinational companies. It can also help to develop sustainable service mechanisms for least developed countries and commercial service providers.

Broadband satellite-based multi-purpose community telecentres have a clear potential to emerge as a one-stop multi-purpose service provider for bridging digital, knowledge and health divides in underserved areas. Blending satellite and terrestrial networks, multi-purpose telecentres can enable accessible, affordable and useful services to empower the poor with knowledge, responsive governance and entrepreneurship. Multi-purpose centres appear likely to emerge as viable grass-roots-level enterprises, managed by their stakeholders and connecting their activities with the forces of globalization, transcending many current barriers. However, quasi-operational prototype development would still benefit the process of bringing telecentres into operation. It would help to better understand the operational framework of telecentres in settings where poverty and deprivation continue to exist. The ultimate success of the centres will depend on support from local community leaders working with agencies engaged in education, health and welfare and with strategic alliances with broadband satellite communication service providers.

Promoting broadband satellite-based telecentres is likely to be of great benefit to areas and peoples currently isolated from, or at least partially underserved by, the global economy. The new trend of convergence of ICT services with broadband Internet will attract countless small and medium investors into the arena of satellite broadband-based services, if appropriate policies can be adopted. The newly developing service models separating satellite operators and service providers have created opportunities for least developed countries to access ICT services and applications more easily.

Source: ESCAP, Use of Space Technology Applications for Poverty Alleviation: Trends, Strategies and Policy Frameworks (ST/ESCAP/2309).

encourage competition, research and development and human resources development in the sector to achieve better value in terms of quality and price. It also needs to highlight the role of SMEs in ICT applications on the ground.

It is necessary to facilitate regional negotiations on technical, institutional and policy-level issues in order to (a) foster public-private partnerships, (b) build strategic partnerships among stakeholders, (c) strengthen institutional capacity, particularly of least developed countries, (d) develop viable and sustainable ICT service provision and (e) develop the mechanisms for regional and subregional cooperation.

ESCAP is also well positioned to promote the implementation of the outcome of the World Summit and monitoring of the results and to facilitate the regional cooperation that can convert the multidimensional challenges of the digital divide into a digital dividend.