
Promoting youth income generation opportunities through information and communication technologies (ICT): best practices in Asia and the Pacific – a 2003 update

Richard Curtain
Curtain Consulting, Melbourne
E-mail: curtain@bigpond.net.au

Paper prepared for Youth and ICT for Development: International Conference of the Information Society Malaysia 2003, Equatorial Hotel, Melaka, 21-24th June 2003

2 June 2003

Revised version of a paper originally completed in November 2001 for the ILO Asia Pacific Region entitled: 'Promoting youth employment through information and communication technologies: best practices in Asia and the Pacific'. Although the framework of the best practice five principles remains the same, many of the examples are new to ensure that more initiatives have been taken into account. The recommendations have also been revised to take into account recent developments concerning this rapidly changing issue.

The author has also benefited since the original paper from valuable face-to-face discussions at the Youth Employment Summit in Alexandria, Egypt, 7-11 September 2002 with young people and others on the difficulties involved; participants at a seminar at the Asian and Pacific Development Centre, Kuala Lumpur and a visit to the Multimedia Super Corridor and briefing from Dato V. Danabalan, Senior Vice President, Multimedia Development Corporation on 4 September, 2002.

Whatever its stage of development, no country can afford to ignore ICT. Although this technology may not be of decisive importance to the very poorest countries, it may still exert a major influence on their ability to acquire knowledge and tap into global networks. Without minimal levels of competence in ICT, poor countries may find themselves excluded from markets which they are otherwise competent to supply.¹

Executive summary

The focus of this paper is on best practice examples from mainly Asia Pacific countries of the use of information and communications technologies (ICT) to generate youth employment. The initiatives are presented against a background that acknowledges the differences in the technological and socio economic capacity between countries.

The ICT-related income generation opportunities for young people are used to illustrate the following best practice principles: promoting youth entrepreneurship; promoting public-private partnerships; targeting vulnerable groups of young people; bridging the gap between the digital economy and the informal sector and putting young people in charge.

The initiatives described in the paper confirm that the constraints on ICT access that apply in high-income countries, are much less important in the different social context of developing countries.² The best practice examples cited show that ICT access does not require personal ownership of a computer; nor does it require the use of expensive computers. Some best practice examples also show that other infrastructure constraints such as electricity supply can also be addressed. Nor is the use of the Internet limited to English speakers or even to the literate.

The final part of the paper discusses how the use of information and communication technologies in low and middle income countries differs from their use in high income countries. This paper concludes with eleven recommendations aimed at promoting ICT-related income generating opportunities for young people.

The digital divide within and between countries is real and best practice examples of ICT-based income generation opportunities for young people are not necessarily easy to repeat elsewhere. This paper seeks to balance optimism about ICT's potential with an awareness of the constraints that obviously exist for many developing countries.

¹ ILO, 2001, World Employment Report 2001:Life at Work in the Information Economy. Geneva, p52.

² Prahalad, C.K. (2000): 'Let 's focus on the digital dividend: Conventional mental models may be an impediment to the diffusion of internet benefits to poorer countries', in *European Business Forum*, (http://www.ebfonline.com/at_forum/at_forum.asp?linked=32&id=26).

Contents

Executive summary	2
Part 1: The context	4
1.1 Young people in the Asia Pacific region.....	4
1.2. ICT broadly defined	4
1.3. Socio economic differences and ICT capacity	4
1.4 Sources	5
1.5 Five key principles	5
Part II: Best Practice examples of ICT generated-employment opportunities for young people..	6
2.1 ICT employment generation through youth entrepreneurship	6
2.2 Promoting public-private partnerships to generate ICT related employment	16
2.3 The potential of ICT to assist the vulnerable	21
2.4 Bridging the gap between the digital economy and the informal sector	26
2.5 Putting young people in charge.....	27
Part III: Some general considerations	29
3.1 How ICT use differs in developing countries	29
3.2 Inequalities in access to ICT skills and employment	31
3.3 The potential gains from ICT for the economy and society.....	31
3.4 Supporting conditions needed	33
Conclusion.....	34
Recommendations	34

Part 1: The context

1.1 Young people in the Asia Pacific region

Young people aged 15 to 24 years in South East Asia number some 103 million (based on a 2000 estimate). This figure is projected to increase to 110 million by 2010. Young people represent one fifth (19.7 per cent) of the total population in South East Asia in 2000. It is not the sheer size of the youth population that is significant to governments and communities. It is the challenge of enabling young people to make a successful transition from being dependent on others to independence. The latter refers to not only economic independence but also socially in relation to establishing their own households and roles as citizens.

1.2. ICT broadly defined

Information and communication technologies, broadly defined, facilitate by electronic means the creation, storage, management and dissemination of information.³ ICT are both a means of processing information and a vehicle for communication. ICT as a means of communicating range from: radio (analogue, digital and high frequency two-way), television, telephone, fax to networked computers and the Internet.

The new, more advanced forms of ICT include networked computers, satellite-sourced communication, wireless technology and the Internet. A feature of these technologies is their capacity to be networked and interlinked to form a 'massive infrastructure of interconnected telephone services, standardised computing hardware, the Internet, radio and television, which reaches into every corner of the globe'.⁴

The important point to be made with this broader definition is that information and communication technologies can be used in a variety of combinations. It is these combinations of technologies that can often deliver the most cost effective development outcomes. Expensive and technically difficult-to-maintain equipment can be used at a node point to link with other forms of ICT such as a radio transmitter to deliver news and other information through low cost radios to rural villages.

1.3. Socio economic differences and ICT capacity

Clearly not all countries have an equal opportunity to generate employment opportunities for young people through ICT. Countries vary widely in their capacity to participate in technological innovation. The UNDP's Human Development Report computes a 'technology achievement index' to show how well a country as a whole is participating in creating and using technology.⁵

The technology achievement index is based on four components: the capacity to create new products and processes through research and development, the capacity to diffuse new and old technologies in production and consumption (viewed as two separate as separate capabilities) and having the skills for technological learning and innovation.⁶ Given the data available, the index can only be calculated for 14 countries in the Asia Pacific region (see Table 1).

³ Gerster, R & Zimmermann, S, 2003, Information and communications technologies for poverty reduction: Discussion Paper. Swiss Agency of Cooperation & Development; p 4. www.gersterconsulting.ch

⁴ UNDP Evaluation Office, 2001, 'Information Communications Technology for Development', Essentials: Synthesis of Lessons Learned. No 5, September, p 2.

⁵ UNDP, 2001, Human Development Report 2001: Making new technologies work for human development. Published for the United Nations Development Programme (UNDP), Oxford University Press, New York.

⁶ Ibid, p 39.

Table 1: Four groupings of Asia Pacific countries based on the Technology Achievement Index

Category	Brief Definition	Countries in Asia Pacific region – where data available
Leaders	High achievements in technology creation, diffusion and skills - at cutting edge of self-sustaining technological innovation	Japan, Republic of Korea, Australia, Singapore and New Zealand
Potential leaders	Have high-level human skills but limited capacity to innovate. Low ranking in diffusion of recent innovations or of old inventions.	Malaysia
Dynamic adopters	Have important high-technology industries and technology hubs, but diffusion of old inventions is slow & incomplete	Thailand, Philippines, China, Indonesia, Sri Lanka and India
Marginalised	Technology diffusion & skill building limited - population has not benefited from diffusion of old technology.	Pakistan and Nepal

Source: UNDP, 2001, Human Development Report 2001: Making new technologies work for human development. Published for UNDP, Oxford University Press, New York, pp 39 & 45.

Table 1 shows Malaysia is in the ‘potential leaders’ group of countries in the technology achievement index. The ‘potential leaders’ group of countries has invested in high levels of human skills and diffused new technologies widely but still needs to show that they can innovate in their own right. The third grouping, classified as ‘dynamic adopters of new technology’, are: Thailand, Philippines, China, Indonesia, Sri Lanka and India. These countries have important high technology industries and technology hubs, but the diffusion of inventions is regarded as slow and incomplete. A fourth group of countries is defined as ‘marginalised’ because their scores on the index reflect low technology diffusion and low levels of skill building. Pakistan and Nepal fall within this grouping.

1.4 Sources

The best practice examples cited below draw heavily on web-based information and from recent reports by the ILO, particularly its comprehensive 2001 World Employment Report entitled *Life At Work in the Information Economy*. The CD-ROM version of the report also includes a number of relevant country specific and general background papers. Another valuable source of information on best practice ICT projects is the finalist and winners list for the 2001 and 2002 Stockholm Challenge Award. The Stockholm Challenge Award focuses on the positive effects of the information society. An international jury judges best practice in IT projects largely in terms of the social benefits produced.

1.5 Five key principles

The UN's Youth Employment Network, an initiative of the UN, in collaboration with the World Bank and the International Labour Office, has produced a series of recommendations in relation to youth employment.⁷ These urge Governments to incorporate youth employment goals into comprehensive employment policies and to stimulate broad-based employment-intensive growth as the best means of creating employment for young people. In particular, four areas are highlighted for national action:

- Employability: the need for governments to invest in education and vocational training for young people, and improve the impact of those investments;
- Equal opportunities: the need for governments and enterprises to give young women the same opportunities as young men;

⁷ see <http://www.un.org/esa/socdev/youthemployment/yenpr.doc>.

-
- Entrepreneurship: the need for governments to make it easier to start and run enterprises to provide more and better jobs for young women and men; and
 - Employment creation: the need for governments to place employment creation at the centre of macroeconomic policy.

As noted above, Recommendation 5 of the eminent persons' panel emphasises the importance to youth employment prospects of tapping the potential of ICT. Seven specific ways are proposed for governments to give effect to this recommendation. The first is the need for governments to provide opportunities for young people to acquire ICT literacy, technical skills in ICT, and to look to ICT industries to provide employment or entrepreneurial opportunities for young people.

Governments are also exhorted to make greater use of both new and traditional information and communication technologies as tools for development and to close the ICT gender gap in terms of access to ICT. Governments are encouraged to use infrastructure development and appropriate trade and fiscal policies and legislative frameworks to create an enabling environment for ICT diffusion. Finally, governments are urged to use public-private partnerships to bridge the digital divide.

The following principles, first proposed by the author in a background paper for the Secretary General's Youth Employment Network, serve to highlight key themes in the recommendations of the High-level Panel.⁸

- (i) The importance of the role of youth entrepreneurship in creating employment opportunities from ICT;
- (ii) the value of public-private partnerships in making the most of the employment potential of ICT for young people;
- (iii) how ICT opportunities can also assist vulnerable groups of young people
- (iv) ways that ICT can help link the informal sector to opportunities in the world economy, and
- (v) the importance of putting young people in charge, starting with young people's input and to ensure that they have a key responsibility for the outcomes.

Part II of the paper presents best practice examples of the five principles in operation. In some instances, the examples illustrate only one principle; in other instances the initiative illustrates several of principles.

Part II: Best Practice examples of ICT generated-employment opportunities for young people

2.1 ICT employment generation through youth entrepreneurship

Many young people, for a variety of reasons, are likely to be risk takers. Young entrepreneurs have been closely identified with ventures associated with the digital economy and the spread of the Internet in particular. This has been particularly the case in countries such as Japan, China, India and Singapore.

The following section offers examples of how young people have used ICT as a launching pad for initiating a range of entrepreneurial activities. It first outlines low-income generation opportunities, involving telephony and the use of mobile phones in particular. This is followed

⁸ Curtain, R, 2000, "Identifying the Basis for a Youth Employment Strategy Aimed at Transitional and Developing Countries", commissioned by the United Nations Social Development Division <http://www.un.org/esa/socdev/youthemployment/research.html>

by a discussion of the role of young people as information intermediaries and opportunities for e-commerce in remote communities. The focus then moves to middle-income entrepreneurial opportunities in the form of telecentres. The section concludes with a discussion of the obstacles that young entrepreneurs are likely to face. In particular, the problem of access to credit and the role of micro credit are discussed.

Low-income ICT opportunities for youth entrepreneurship

The worldwide expansion of mobile phone networks and the growth in the number of mobile phone subscribers has been phenomenal in recent years. Between April 2000 and July 2001, the total number of mobile phone subscribers in the world increased by over a third to 860 million.⁹ Over the same period, in the Asia Pacific region the number of GSM subscribers (the largest network) increased by 56 per cent to 182 million.¹⁰ China has the third largest mobile telephone network in the world and by 1999 had 98.4 million subscribers.¹¹

Selling telephone-based services

The availability of mobile phone networks in many low and middle-income countries opens up many opportunities for young people in particular. One common option is to purchase a mobile phone through a micro credit program and to earn income by providing low cost phone calls to others, as illustrated in the story below about a 16-year-old schoolgirl in rural India (see Box 1).

Box 1: On-selling telephone-based services

Every day at 8 a.m., her straight black hair tied neatly in a braid, 16-year-old Neelam Aggarwal rides almost 5 kilometers to school in a horse-drawn buggy. She would like to be a doctor someday. But for girls like Neelam, who lives in the dusty, impoverished village of Farah in India's northern state of Uttar Pradesh, such a vocation seems remote. For starters, her school--like most village schools in India--doesn't even offer science classes for girls.

Still, Neelam, one of eight daughters of a sweets maker, has no intention of becoming a housewife. "I want to make something of myself," she says. So each day after school, Neelam operates what amounts to the village's only public telephone--a cellular phone owned by Indian cellular operator Koshika Telecom. By charging her fellow villagers to make calls, Neelam can make as much as US\$8.75 on a really good day. She's saving the money for computer classes, which she hopes will lead to a good job....

Source: Business week Online: October 11, 1999.

The potential of mobile phones to create low income earning opportunities for young people is further illustrated by the Grameen Village Pay Phone program (VPP). Grameen Bank is a pioneer of small loans to the poor. Since its founding in Bangladesh in 1976, Grameen Bank has grown to lend US\$3.46 billion to nearly 2.4 million borrowers (November 2001).¹² The Village Pay Phone program makes it possible for a Grameen borrower to buy a mobile phone, and then to make the telephone available for others in the village to pay for phone calls, to send short message services (SMS) and to enable villagers to receive incoming calls. Grameen Telecom charges Grameen borrowers a wholesale airtime rate.¹³

Grameen Village Pay Phones operates in more than 2,000 villages in Bangladesh in September 2000 and an average of 100 additional villages are being connected each month. A typical pay

9 http://www.gsmworld.com/membership/ass_sub_stats.html

10 Ibid.

11 'National report on the ICT sector in China', background paper for World Employment Report 2001, para 1.1.

12 See Grameen Foundation USA web site <http://www.gfusa.org/>. In November 2001, there are, 1,170 Grameen branches in Bangladesh and 105 micro credit organisations in 34 countries operating on the same Grameen model.

13 For details, see Grameen Telecom <http://www.grameen.org/> and 'Grameen Telecom Connects Thousands', Grameen Connections: the Newsletter of the Grameen Foundation USA, Vol 3. Issue 4. October.

<http://www.gfusa.org/newsletter/fall00/telecom.shtml>

phone owner can earn up to four times the average per capita income in Bangladesh (see Box 2). The phones are used for a variety of purposes. Farmers use them to find out where they can get the best prices for their crops, and relief workers are able to better coordinate disaster response measures. Villagers are also able to use the phones to communicate with local government officials.

Grameen Telecom is itself is a good example of entrepreneurial activity in a low income setting (see Box 2).

Box 2: Grameen Telecom's Village Pay Phones as an income generator

Low cost communications enable rural households and small enterprises to take advantage of market information to increase profits and reduce productive expenses. A Canadian evaluation of the pilot project for Grameen Village Pay Phones found that the income that operators derived was on average about 24 per cent of their household income - and in some cases it was as high as 40 per cent of household income. The evaluation report recommended that youth be offered small loans to establish public call offices or kiosks to provide a range of services including telephone, fax, e-mail and access to the Internet as well as photocopying and computer word-processing services.

The evaluation showed that the basic Village Phone package in 1999 cost US\$310. The VP operator pays for the phone through weekly loan payment instalments equivalent to US\$4.50. These payments are made through the local Grameen Bank branch, which is responsible for collecting on the repayments. For the usage charge, the VP operators pay a minimum monthly bill of approximately US\$3.20. This includes a monthly fee for the line, Value Added Tax (VAT), a service charge, and a fee for the annual government license and a royalty fee. Actual airtime charges are added on top of all this.

Source: Canadian International Development Agency (CIDA), 2000, Grameen Telecom's Village Phone Programme in Rural Bangladesh: a Multi-Media Case Study Final Report, p 2, 11, 15.
<http://www.telecommons.com/villagephone/>

The potential of Grameen Telecom as an income generator has been acknowledged by an international consortium led by the World Bank's International Finance Corporation, which has invested US\$50 million in the project. The Norwegian company Telenor has invested US \$25 million, and the Soros Economic Development Fund invested \$10.6 million.

Young people as 'information intermediaries'

The widespread use of English on the Internet has created the need for local content and applications to enable non-English speakers to make effective use of it. For the poor in particular, the vast amount of information on the Internet requires an intermediary to sift through it to identify what is relevant and then interpret it in the light of the local context.¹⁴ Young people are well placed to perform this role of 'information intermediary' (see Box 3). For example, young people can use their knowledge of how to access the Internet and combine it with other forms of communication such as radio. In Sri Lanka and Mongolia, for example, local populations have gained access to information on the Internet through community radio networks. Radio stations use facilitators to search the Internet for information sought by local communities and broadcasts the information in their language.¹⁵

The Kothmale Community Radio Internet Project in rural Sri Lanka uses a pioneering 'radio-browse' model to give listeners the chance to obtain relevant information from cyberspace through a daily one-hour interactive radio program.¹⁶ The broadcasters, supported by resource personnel, browse the Internet on-air and discuss in local language the significance of the information they find. The listeners can request the broadcasters to surf the Web on their behalf and the resulting information is broadcast in response to the specific requests. This information

¹⁴ ILO, 2001, *World Employment Report 2001: Life at Work in the Information Economy*, Geneva, p58.

¹⁵ ILO, 2001, *Generating decent work for young people: An Issues Paper*, prepared for the Secretary-General's Youth Employment Network, p 9.

¹⁶ See www.kothmale.net/ -

is also explained with the help of studio guests such as a local doctor who may explain what information is available on a health website.

Box 3: Young women as Information Intermediaries

... information intermediaries would be useful in connecting rural women with the information they need. They could be extension agents, community workers, or simply young school girls from the community who know English and can use computers, who would work at community centers to get information from international sources and relay it to local women farmers. They could also assist the farmers in two-way communication, delivering their messages transmitting indigenous knowledge, requesting agricultural advice, and sending e-mail from the farming community to the research station.

The involvement of school girls translating and passing information to their mothers might stimulate them to consider remaining in rural areas and taking up modern farming as a career. For most farming communities, a dedicated donor-financed telecenter would not be necessary to do this. All that is needed is a PC with the capacity to receive/send faxes, a telephone connection with Internet access at the community center and a small stipend for the school girls, at a cost of roughly \$1000 per community per year.

Source: Nancy Hafkin and Nancy Taggart, 2001, Gender, Information Technology, and Developing Countries: An Analytic Study. June, p 46.

Another option is for young people to use their skills in information technology to develop web sites in local languages or to facilitate communication between NGOs. Two examples of this are presented in Boxes 4 and 5.

Box 4: E-Academy, Tanzania: Demand-Driven Kiswahili Software Opportunity

Although E-learning overcomes the obstacles that accompany traditional education in Tanzania, it does raise new challenges. The reach of the Internet is far greater than the availability of the Internet; there are still areas of Tanzania that lack access to the World Wide Web. Another challenge is the acceptance of Tanzanians to learn at one's own pace, at one's own encouragement and without the presence of a teacher/trainer while maintaining personal integrity.

Identifying the opportunity and taking in consideration the challenge, E-Academy Ltd. was established. This company, based in Dar es Salaam, aims to touch the mind of every Tanzania with the gift of quality education at an affordable price using electronic learning to facilitate a greater reach and maintain a set of standards, while creating local content in the local language. E-Academy's Demand-Driven Kiswahili Courseware project is designed to expand the reach and quality of education in Tanzania by developing courseware in the local Kiswahili language and incorporating familiar Tanzanian terminology into its content. Content will be developed by experts within Tanzania and from other parts of Africa.

E-Academy will take advantage of mushrooming Internet cafes throughout Tanzania to provide Internet connectivity to subscribers of E-Academy as a means to bring education to otherwise excluded communities. They will also provide CD-Rom - based education to those areas without Internet connectivity. The project is distinctive in its special attention to local needs in the context of ICT use. For example, as part of their payment method for access to the courseware, E-Academy has developed a pre-paid scratch card system as many Tanzanians do not possess credit cards.

Source: Digital Partners Social Enterprise Laboratory Case Study prepared for the 2003 Baramati Initiative on ICT and Development, May 30 – June 2, 2003, Baramati, India.

Box 5: Use of ICT to provide services to NGOs as information intermediaries

The independent foundation PAKTA in Jakarta was founded in 1996 to support and build capacity amongst NGOs working for civil society and related issues in Indonesia. Since then they have assisted NGOs in developing and maintaining skills in using ICTs for civil society issues. PAKTA's mission is to:

- *work with local partner organisations to develop capacities and abilities necessary to achieve a civil society in Indonesia.*
- *develop and strengthen liaisons with international and local partners, for mutual benefit.*
- *carry out research, in particular social research, to underpin development strategies and*
- *strengthen advocacy abilities and deepen networks between Indonesian NGOs.*

PAKTA has surveyed the needs of a large number of NGOs and identified the need for training in 1. Programming, 2. Management Information Systems and Data management systems & 3. Computer Networking. The Foundation runs a regular IT training camp for NGO staff.

Source: <http://www.pakta.or.id/>

Other roles for an information intermediary include using e-mail to respond on behalf of program beneficiaries to feedback on specific local issues of concern to them. For example, the people who are the target group of a poverty alleviation program could work through a young person as an information intermediary to provide comment on the limitations of a current poverty program and to suggest improvements (see Box 6).¹⁷

Box 6: Information intermediaries in rural villages

Kampung Raja Musa is a small palm oil farming community in Malaysia with a population of about 270 households and about 1200 residents. About 56 percent of the residents are younger than 25 and 75 per cent of the residents have at least a secondary level education. The aim of the project is to help the community to work together to achieve their collective goals.

Touch screen computer systems have been locally networked and installed in four strategic locations in the village. These locations were at the primary school (for students), at the mosque (for the elderly), at the women's' activity centre (for women), and at the community hall. Local content was identified through community research and loaded into the sm@sy database.

Local technicians have been trained to maintain and develop this database according to the community's needs and desires. The sm@sy database holds information relating to health, agriculture, tourism, environment, social development, income generation and village profile, all of which is presented to the user via various multimedia such as text, voice, graphics, video, and audio.

The local sm@sy database has links to various Internet-based applications, such as the e-PS system described above. Users can also access e-mail. While use of the local sm@sy database is free, users must pay to access the Internet. This is achieved through the use of smart card technology.

Source: Melody Kemp, Stuart Mathison & Jane Prasetyo, 2002, Digital dividend or digital divide? A world of difference. July, p17-19, Foundation for Development Cooperation

17 ILO, 2001, *World Employment Report 2001: Life at Work in the Information Economy*. Geneva. p59.

Opportunities for E-commerce-based entrepreneurship in remote communities

Other low-income generating opportunities are available to young people in remote locations. The Los Angeles-based Greenstar Foundation has set up self-contained, solar-powered community centres in remote communities on the West Bank, India, Jamaica and Ghana.¹⁸ Each centre offers an Internet connection, health facilities, including telemedicine, a classroom complete with distance learning equipment, and a business centre, through which traditional cultural products can be sold via the Internet. Traditional art, music, photography, legends and storytelling in small villages can be recorded and brought to global markets through the Internet. Revenues are returned to the village to support their ongoing, independent development. To demonstrate what it is seeking to do, the Greenstar Foundation web site offers for free download a sample of compressed MP3 music files (see Box 7).¹⁹

Box 7: E-commerce based on local culture

To deliver these services efficiently and quickly, Greenstar has designed a portable community center. Using solar power generated by large photovoltaic panels, the center can drive a water purifier, a small clinic, a vaccine cooler, a classroom, a digital studio and a satellite or wireless link to the Internet. We work with the people of each village to develop an ecommerce website, employing local musicians, teachers and art professionals to record the voice of the community. Greenstar packages the materials for various markets, both direct to the consumer, and through licensing to businesses.

To date, we have completed pilot installations in a remote Bedouin settlement on the West Bank in the Middle East; in a small community in the Blue Mountains of Jamaica; in the central India village of Parvatapur; and in a traditional Ashanti community in Ghana. Centers have been started in New Mexico, Brazil and Tibet as well with a South Africa program in planning. In over 60 other communities on all continents of the world, Greenstar has developed connections with people aimed at building an "Edge Network" of people, skills, ideas, tools and cultural voices that will be of incalculable value to the whole world -- and to the women, men, children and families of those villages.

Source: <http://www.greenstar.org/>

The Greenstar projects are deliberately targeting areas that do not have electricity. The approach is to use this market mechanism to sell cultural products in digital formats to pay for the hardware and connections needed and to produce ongoing revenue without the need for external funding. The projects are the product of public-private collaborations between governments, local ICT companies and international funding sources.²⁰

A program in Nigeria is using ICT to work with different gender, age and religious groups to promote economic opportunity (see Box 8).

Box 8: use of ICT to promote entrepreneurship and religious tolerance

The TechPreneurs program is a systemic, bottom-up and information technology driven program designed to uplift rural Nigerian women from poverty and fuel innovation in Nigerian youth. Women participants in the program will be selected from different religious and social backgrounds in an effort to fill the gap between poverty, religious intolerance and social disintegration in Nigeria.

The TechPreneurs program has ...participation from youth, women small-scale entrepreneurs and artisans in villages. Segment one consists of the youth participants who will develop a PC-based software application, Ndinwayi n'Akpa

18 <http://www.greenstar.org/>

19 <http://www.e-greenstar.com/>

20 For details of the support for the Indian Greenstar project, see <http://www.e-greenstar.com/>

Aku, used by segment two participants to manage their small-scale businesses more effectively. In segment three, Youth for Technology Foundation, in partnership with USAID Global Technology and Trade Network (GTN), will organize production villages where rural artisan Muslim and Christian women will learn to work together in harmony and begin producing goods for marketing globally. The production village is a proven concept that has successfully eliminated middlemen who generally exploit individual rural producers in Nigeria and other developing countries.

The goals of the TechPreneurs program are to: 1. Unlock the innovative potential in disadvantaged youth by giving them an opportunity to develop a local software application for use by women in their community. 2. Give small-scale entrepreneurs the resources and tools they need to create wealth by providing entrepreneurship training for underserved women. 3. Facilitate an active role for artisan women in export promotion by mobilizing rural raw materials their participation in the Global Trade and Technology Network (GTN)..4. Promote effective dialogue and collaboration between women of Christian and Muslim backgrounds for the purpose of reducing religious and ethnic violence and social exclusion.

Source: Digital Partners Social Enterprise Laboratory Case Study prepared for the 2003 Baramati Initiative on ICT and Development, May 30 – June 2, 2003, Baramati, India.

Middle income entrepreneurship opportunities for young people

Middle-income entrepreneurial opportunities can also be identified involving the use of ICT in the service sector focused on domestic markets. The ILO, in a paper entitled *Generating decent work for young people*, notes that some developing countries have been able to create employment for thousands of women and men through community-access points and telecentres.

Such facilities can also offer small and micro-enterprises that do not have their own private facilities, the opportunity to use ICT for business purposes. ... Young people are particularly well placed to take advantage of such growth areas.²¹

Telecentres as income generators for young people

Telecentres are being set up through public and private initiatives in many developing countries in telephone shops, schools, libraries, community centres, police stations and clinics. Sharing the expense of equipment, skills and access amongst an ever-increasing number of users also helps to cut costs and make these services viable in remote areas.

UNESCO have produced a user-friendly manual on how to set up several different types of community-based Telecentres.²² It is aimed at telecom operators, NGOs, community groups, local government or someone wanting to establish a small business. The manual outlines how to set up four types of telecentres. At the most basic level, 'micro telecentres' use only pay phones and possibly a smart card reader and a receipt printer. They are usually housed in a shop or other business and some are outdoor kiosks. 'Mini Telecentres' usually offer a single phone line (possibly mobile phone) with a three-in-one scanner/printer/copier, a fax machine and a PC with a printer, Internet access and a call meter.

A 'Telecentre' offers a number of phone lines, a call management system, fax machine, photocopier, several PCs with a printer, Internet access and perhaps a scanner. Finally, a 'Full Service Telecentre' offers many phone lines, and multi-media PCs with Internet access. Other

²¹ ILO, 2001, 'Generating decent work for young people: an issues paper prepared for the Secretary-General's Youth Employment Network', p 8.

²² Jensen, M & Esterhuysen, A, 2001, *The community telecentre Cookbook for Africa Recipes for self-sustainability: How to Establish a Multi-purpose Community Telecentre in Africa*, UNESCO, Paris.

equipment can include a high-volume black and white and/or colour printer, a scanner, a digital camera, a video camera, a TV, an overhead projector, a photocopier, a laminator, meeting rooms, and a video conferencing room.

Telecentres in India

India has seen a rapid growth in 'cyber kiosks' or 'telekiosks' which can provide access to business support services for underprivileged groups.²³ These 'internet kiosks' are often upgraded STD (Subscriber Trunk Dialling) booths that are a common in India. These are small street shops, offering access to public phones for long distance calls. They number about 300,000 and have generated more than 600,000 jobs.²⁴

The Indian Ministry of Information Technology has ambitious plans to convert over 6,000,000 public call offices (PCOs) into public 'tele-info-centres' offering a variety of services such as Internet browsing, fax, e-mail and long distance phone calls. The Maharashtra State government has plans to link 40,000 villages with Agronet, a specially developed software package for farmers, which aims to provide the latest information on agriculture.²⁵

Communal access to Internet facilities through Telecentres or Internet kiosks offers opportunities for informal sector workers such as plumbers, vendors, roadside restaurant owners or garment makers to obtain information on markets or administrative procedures, and to publicise their services to a wider clientele.²⁶ Communal access to the Internet is also useful for self-employed professionals such as journalists and accountants. These professionals may not have the funds to purchase equipment and technical support to communicate with distant clients.

Telecentres or Internet kiosks offer a good opportunity as they involve fairly low start-up costs. Equipment costs in India are about US\$10,000 and the telecom service provider's investment in a telephone line is about US\$ 1,000.²⁷ Young people especially have a particular advantage in being able to set up such enterprises because computer literacy and familiarity with maintaining computer hardware are required to operate such kiosks.

Income generation through cable television

Another related opportunity for ICT generated self-employment for young people is through the purchase of satellite antennas to provide fellow villagers with paid access to cable television. Cable TV systems (government authorised or otherwise) have been installed in many developing regions to provide access to TV channels (typically from a satellite) for a fee. The most striking current example is India, where cable TV systems have sprung up in urban neighbourhoods to deliver programming from AsiaSat.²⁸

One micro credit case study from India reports that a loan of 80,000 *taka* (US\$1,569) was sufficient for a Grameen borrower to purchase two satellite antennas. These satellite antennas are able to supply an eight TV channel service to 30 houses at a fee of 200 *taka* per month per connection thus generating income of an average of 12,500 *taka* (US\$245) per month.²⁹

23 Mitter and Ramani, 2000

24 ILO, 2001, *World Employment Report 2001*, p38.

25 Avina Lobo, 2000, 'Taking IT to the villages', ZDNet India, November 06, <http://www.zdnetindia.com/news/features/stories/2033.html>

26 ILO, 2001, *World Employment Report 2001*, p37.

27 Swasti Mitter and Jane Millar, 2001, 'The impact of ICT on the spatial division of labour in the service sector - Employment and trade in the digital economy', Section 4. 'From teleworking to tele-networking', Science Policy Research Unit University Of Sussex, Brighton, UK, Background paper. *ILO World Employment Report 2001*.

28 Hudson, H; 2001, 'The potential of ICTs for development: Opportunities and obstacles', Background Paper, World Employment Report 2001, section 5.6

29 'Grameen Telecom Connects Thousands', Grameen Connections: the *Newsletter of the Grameen Foundation USA*, Vol 3. Issue 4. October, <http://www.gfusa.org/newsletter/fall00/telecom.shtml>

E-commerce opportunities and obstacles

E-Commerce initiatives in low-income countries have difficulty in achieving success. Supporting infrastructure such as reliable shipping services, credit card facilities or alternative solutions, such as wire payment guarantees by local banks are often not available.³⁰ A study of small and medium size enterprises in Botswana showed that access to reliable information is important for the success of the business. But, the study noted that it is only one part in a chain of resources which include infrastructure, skills, and access to credit required for the enterprise in a low-income country to benefit. If these other resources cannot be sourced, then, 'there is no point providing information via ICTs (or via other means) as it will be of no value'.³¹

This is not to claim that e-Commerce for an enterprise in low-income countries has no future. It depends on the business model used. A more limited e-commerce venture which is profitable is EthioGift, (www.ethiolink.com/EthioGift), an on-line gift shop based in Addis Ababa. The gift shop enables Ethiopians living overseas to buy traditional gifts (such as goats, cakes and flowers) via the Internet and have them delivered within 48 hours to their families in Ethiopia. The site's success is linked to Ethiopia's large number of expatriates, the country's strong cultural traditions of gift-giving, and the fact that goods are delivered locally (i.e., not shipped abroad). The success of EthioGift demonstrates that a well-conceived business model, grounded in an accurate assessment of the needs of the target market, can drive a successful e-Commerce venture. This is despite poor quality infrastructure and access to little capital.³²

Problems faced by young entrepreneurs

Entrepreneurship is not an easy option and is best suited to those with the necessary skills and acumen. Young people starting their own businesses are likely to experience a range of problems. Many of these problems apply to anyone starting a new enterprise but some problems are related to the youthful age of the entrepreneur. Young people are likely to have limited business networks and contacts compared with older people. They also are likely to have fewer financial resources as they have had less time to accumulate personal savings or acquire property. They may also experience age discrimination from customers, suppliers or finance lenders.³³

Young people, for their part, need to put some effort into developing their own business skills. Expertise in ICT is not sufficient to start a new venture. A number of common problems faced by young people in business can be identified.³⁴ One fundamental problem is the inability to secure start-up funds leading to under capitalisation (starting a business without enough funds).³⁵ Other problems commonly encountered are managing cash flow, especially dealing with bad debts and late payments; and coping with stress, especially without the support of friends who understand the demands of self-employment. Once under way, problems can arise with managing the expansion of the business such as working out how to employ the right staff and managing other people for the first time.

Governments, the private sector, non-government agencies and local communities can, each in their own way, promote efforts to support young people starting up enterprises based on ICT. However, enterprise support programs run by governments or international agencies have often

³⁰ Gerster, R & Zimmermann, S, 2003, *Information and communications technologies for poverty reduction: Discussion Paper*. Swiss Agency of Cooperation & Development; p 16. www.gersterconsulting.ch

³¹ Duncombe, R. and R. Heeks, 2001, 'Information and Communication Technologies and small enterprise in Africa', Institute for Development Policy and Management. University of Manchester, http://idpm.man.ac.uk/idpm/di_wp7.htm

³² UNDP Evaluation Office 2001, p 12.

³³ Kenyon, P and White, S, 2001, *Enterprise-based youth employment policies, strategies and programmes*. International Labour Office, Geneva, p 7.

³⁴ Kenyon, P and White, S, 2001, pp 7-9.

³⁵ OECD, 2001, *Putting the Young in Business: Policy Challenges for Entrepreneurship*. p40.

had high failure rates. Particular problems have been insufficient resources, risk-adverse staff and overly rigid and inappropriate procedures.³⁶

A recent paper for the International Labour Office suggests that enterprise-based employment programs for young people need to have several key features.³⁷ First, the external assistance provided by governments or NGOs needs to have a commercial orientation. This means that those who deliver the assistance program have to act in a risk taking way themselves. This means acknowledging that the venture being assisted has the productive capacity to create profit, re-pay loans and expand to employ others. Second, the assistance needs to help young people manage risk more effectively. Third, the assistance needs to be tailored to meet the needs of individuals in terms of their skills, work experience, aspirations and capacity to obtain resources. Finally, the enterprise support program needs to be cost effective and not rely on a single source of external support, be it technical, organisational or financial.³⁸

Micro credit and young people

Micro credit refers to the provision of small loans to the poor without requiring security for the loan (collateral free). It is potentially an important vehicle for young people to obtain the funds needed to start in self-employment. The micro credit has achieved considerable success through tapping the social networks of borrowers to encourage high repayment of loans. The poor are able, through the use of mentors and the acceptance of mutual responsibility, to obtain credit based on their accumulated social capital.³⁹

Micro credit is based on the assumption that the poor are the best judges of their own situation and know best how to use credit when it is available, especially when they are being supervised and encouraged by their peers. The success of micro credit programs for the very poor shows that, when properly administered, they reinforce entrepreneurial behaviour and self-sufficiency rather than promoting dependency.⁴⁰

One important way that young people could reduce their high credit risk profile is to show that they have demonstrated competency in the business skills needed to run a successful enterprise. This could be done by undertaking a recognised course in how to run a small business. Financial institutions for their part could promote recognised courses as an important step in improving a young person's chances of gaining a start up loan (see Box below).

³⁶ Ibid, p 8.

³⁷ Kenyon, P and White, S, 2001, p 9.

³⁸ Ibid, p 9

³⁹ Lisa Young Larance, 1998, 'Building Social Capital from the Center: A Village-Level Investigation of Bangladesh's Grameen Bank', Washington University, St Louis, Missouri

Thierry van Bastelaer, 2000, 'Imperfect information, social capital and the poor's access to credit' Center For Institutional Reform And The Informal Sector, University of Maryland, College Park, Working Paper No. 234, <http://www.iris.umd.edu/publications/detail.asp?ID=wp&number=234>

⁴⁰ Grameen Foundation USA 'Eight reasons why micro credit is a viable and powerful anti poverty tool', <http://www.gfusa.org/microcredit.html#info>

Box 9: Micro credit for the urban jobless in South Africa

...make it easier for would-be entrepreneurs to borrow start-up capital. Ordinary banks will not lend to them, so some kind of micro-credit scheme is needed. The usual model is Bangladesh's Grameen Bank, which makes tiny loans to village women and relies on peer pressure to ensure repayment: other people in the village cannot have a loan until the first borrower repays hers.

This would not work for the urban jobless in South Africa: community ties are too weak. But the Start-Up Fund, a charity based in Cape Town, has devised a method for lending money to the unemployed without losing it. Would-be borrowers must pass through a five-day basic business course known as the "township MBA", and put up 100 rand of their own money as a surety. Then they can borrow 300 Rand. If they repay this on time, they can raise ever-larger loans.

Because borrowers' business plans are not scrutinised, the Start-Up Fund's overheads are low: two staff with computers deal with 15,000 customers. Combined with fairly high interest rates (3.25 per cent per month), the surety fund covers what few bad debts there are, and pays for the township MBAs as well.

Most borrowers are women, who are more likely than men to spend their earnings on their children rather than on beer. Four-fifths of those who pass through the scheme are soon either employed or self-employed. Now that the organisation makes a profit, its director, Tony Davenport, has started to raise capital from investors instead of donors.

Source: The Economist, 1998, 'Out of work, out of hope', Oct 29th 1998

2.2 Promoting public-private partnerships to generate ICT related employment

The second best practice principle highlights the use of public-private partnerships to create ICT related employment opportunities for young people. The UN ICT Task Force, in its report to the Secretary General in May 2001, has emphasised the value of partnerships between governments and the private sector to 'enable real, tangible and sustainable transfer of knowledge and technology, especially ICT, to developing countries'.⁴¹

*The private sector has at its disposal the financial strength and technological wherewithal which, if utilised appropriately within the context of a genuine partnership, can make a positive contribution to the development process.*⁴²

Public-private partnerships have the potential to enable governments to increase public infrastructure or public services by using fewer of their own resources while maintaining or even improving the quality of the standards offered.⁴³ Public-private partnerships are particularly suited to ICT-related development programs because the private sector partner is in a good position to not only provide funding but also to assist with the knowledge and expertise required to operate ICT facilities.

Tri sector partnerships refer to collaboration between private enterprises, government and a non government organisations. This sort of partnership is particularly valuable in the context of ICT for development because it pools resources and risk and builds on core complementary competencies. The result is a 'added value' outcome over and above the outcome each party could achieve alone (see Box 10 for an example).

⁴¹ UN ICT Task Force, 2001, Report of the Secretary-General: *The role of the United Nations in promoting development, ...especially information and communication technologies, ...through partnerships with relevant stakeholders, including the private sector.* E/2001/59, 2 May, para 70, p33.

⁴² Ibid, p33.

⁴³ The Canadian Council for Public-Private Partnerships, see <http://www.pppcouncil.ca/whoweare.htm>

Tri-sector partnerships involving business, non-governmental organisations and governments) are usually formed through a four-stage process: partnership exploration, partnership building, partnership maintenance, and partnership completion. Often the partnership will be defined by a set of agreements designed to deliver on shared expectations and a joint action program. These agreements, or charters, may vary in their nature from voluntary arrangements to formal contracts between equal parties.⁴⁴

Box 10: Example of a public private partnership in relation to use of ICT in the Asia Pacific

The "e-LEARNING FOR LIFE: The Malaysian Initiative" is a partnership between the Government of Malaysia (Ministry of Education), Coca-Cola Far East Limited, Malaysia Branch ("Coca-Cola Malaysia"), and Asia Pacific Development Information Programme/United Nations Development Programme (APDIP/UNDP).

The central concept of the "e-Learning for Life" (ELFL) initiative is to enable schools to become "hubs" for life-long e-learning, by extending ICT access to their local communities. Students, teachers, and community members will all share the ICT facility and infrastructure of the school. It is expected that the latter will pay a nominal user fee as contribution towards the maintenance of the facility. For more information please visit: <http://www.elearningforlife.org/>

Source: <http://www.apdip.net/projects/projects.asp>

However, tri sector partnerships will not work in all circumstances. It is important to note the preconditions that need to be present to improve the chances of success.⁴⁵ These conditions include first, evidence that the planned activities for delivery through a tri-sector partnership will produce added value outcomes for all partners. This will also require evidence that alternative mechanisms would be less effective than working through a tri-sector partnership model. The partners will need to appreciate that some modification and compromise is necessary to create a sustainable partnership. At least one internal champion will be needed within each of the partner organisations to drive the partnership-building process forward.

Public-private partnerships to generate employment through ICT facilities

Several other Asian governments are also actively promoting technology pilot projects and the creation of national IT corridors in partnership with major overseas enterprises. The Government of Hong Kong is developing a \$1.7 billion 'Cyberport' and Malaysia is setting up a multimedia super corridor (MSC). The latter is linked with the new administrative centre of the Federal Government of Malaysia, 'Putrajaya'⁴⁶ It also encompasses 'Cyberjaya', a new city housing multimedia industries, R&D centres, a Multimedia University and operational headquarters for multinationals wishing to direct their worldwide manufacturing and trading activities using multimedia technology (see Box 11). Supporting the MSC is a high capacity, fully digital telecommunications infrastructure designed to the highest international standards in capacity and reliability.⁴⁷

⁴⁴ Business Partners for Development, 2002, *Putting Partnering to Work: Business Partners for Development 1998–2001: Tri-sector Partnership Results and Recommendations*, p7. <http://www.bpdweb.org/products.htm> Business Partners for Development Program was a three-year program initiated in 1998 by the World Bank, the UK Department for International Development, and 118 other international organizations, corporations and NGOs to study, support, and promote examples of tri-sector partnership.

⁴⁵ Business Partners for Development, 2002, *Putting Partnering to Work: Business Partners for Development 1998–2001: Tri-sector Partnership Results and Recommendations*, p18.

⁴⁶ The MSC covers a 15 by 50 sq km area which begins with the Kuala Lumpur City Centre in the north and extends to the new K L International Airport at Sepang in the south. See <http://www.pjholds.com.my/intro/introfrm.html>

⁴⁷ http://www.cyberjaya-msc.com/project/1_project01.html and National report on the ICT sector in Malaysia, ILO World Employment Report 2001.

Box 11: Employment objectives of Malaysia's multimedia super corridor initiative

A key objective of Malaysia's multimedia super corridor initiative is to generate local employment opportunities for its educated workforce. One of the conditions that companies have to meet to set up operations within the multimedia super corridor (MSC) is to employ a substantial number of knowledge workers. ...

Companies granted MSC status are eligible for a package of financial and non-financial incentives. Non-financial incentives include the unrestricted employment of foreign knowledge workers, the freedom to source capital globally and freedom of ownership.

As at mid-May 2000, 326 companies have received MSC-status. Of these, 192 companies are fully owned by Malaysians. The number of companies participating in the initiative so far is beyond the original target of 50 companies by the end of the year 2003.

Source: 'National report on the ICT sector in Malaysia', *ILO World Employment Report 2001*, Para 2.1 Comprehensive ICT policy initiatives, strategies and programmes

One way for a country or region to promote partnerships is to set up a 'Digital Diaspora Network' between those professionals with the skills and access to capital now resident in the USA or Europe and their home country. This has been done in relation to Africa and the Caribbean by the UN ICT Taskforce (see Box 12). The African network has set up 'AfriShare', a platform for sharing best practices and matching innovative projects with mentors and potential sponsors. It has also launched a Social Venture Fund for Africa to provide financial support for entrepreneurial activities using ICT in Africa.

Box 12: Digital Diaspora Network

...the United Nations ICT Task Force launched an initiative aimed at bringing together qualified members of the Diaspora – high-tech professionals, entrepreneurs and business leaders – into a network with their counterparts in order to promote ICT-for-development initiatives in their home country.

This initiative, known as the Digital Diaspora Network, aims to promote development and the achievement of the Millennium Development Goals through mobilising the intellectual, technological, entrepreneurial and financial resources of the Diaspora entrepreneurs.

Through the Digital Diaspora Networks, expatriates working in the high-tech sector in North America and Europe will seek to jump-start ICT initiatives in their home region. Thousands of Internet nodes and digital activities are taking shape in many developing countries, but usually lack the capital, expertise and networking ability to stabilise and grow. The Networks will mobilise expatriate leaders and entrepreneurs to underwrite and mentor these developments. The modalities of the initiative are modelled, to a large extent, on the successful IndUS Entrepreneurs network created nine years ago for the Indian Diaspora in the United States.

Two Digital Diaspora Networks have been launched by the ICT Task Force so far: The Digital Diaspora Network for Africa (DDN-A) and the Digital Diaspora Network for the Caribbean (DDN-C).

Source: UN ICT Taskforce, 2003, Challenges and Partnerships: Opening Up ICT To The World
A contribution of the UN ICT Task Force to WSIS. <http://www.unicttaskforce.org/>

These initiatives by Governments to work in partnership with leading international companies have been described as pursuing a 'leapfrogging' development strategy. This refers to the potential for developing countries to 'leapfrog' traditional stages of development into a higher value-added, knowledge-intensive growth path.⁴⁸ The ILO's World Employment Report 2001

⁴⁸ ILO, 2001, World Employment Report 2001, p 57.

on *Life at Work in the Information Age* notes that because ‘no nationality has a monopoly on brilliant insights, there are real prospects for developing countries to generate commercially significant new ideas about ICT applications’.⁴⁹

Need for Public-private partnerships to create ICT related employment opportunities

As noted above, young people have the opportunity to gain employment through the growth in remote processing facilities that are located outside the high-income countries. These provide a range of services from help lines, technical support, and handling reservations and sales to data conversion including voice to data transcription. Other remote processing includes payroll accounting to internal auditing and credit appraisals. High-end remote processing includes creating digitised maps of townships, utilities, roads, and other facilities. It is claimed that back office functions likely to grow in importance are settling insurance claims and summarising legal documents, such as witness depositions.⁵⁰

However, ‘teletrade’, as remote processing between countries has been called, is only possible when a country has the necessary telecommunication infrastructure. These links require installing and maintaining a sophisticated network both within a remote processing facility and between countries. This equipment is not only expensive, it also requires supporting maintenance skills and reliable infrastructure, conditions which many developing countries require external assistance in the form of public-private partnerships to provide.⁵¹

Some small states such as Jamaica in the West Indies, nevertheless, have been successful in setting up ‘Digiports’ (Free-Trade Zones for digital work) to create jobs through attracting information processing work. Incentives provided by government to foreign-owned data-entry firms in Jamaica’s Montego Bay Free Trade Zone have included: low cost premises, tax benefits, and the right to repatriate all profits and dividends to home countries.⁵² The type of ICT-related remote processing work that small island countries have attracted is diverse. It ranges from relatively low-skilled operations, such as data processing to more skilled tasks, such as assessing and authorising insurance claims.⁵³

Call centres

A related source of ICT-generated employment for young people is through Call centres. These offer telephone-based services from a central office to customers in a variety of business sectors. Call centres handle telephone calls, fax, e-mail and other types of customer contact - in live and automated formats. They have expanded rapidly in Europe and are important sources of work in Hong Kong (China), Taiwan (Province of China), South Korea, Malaysia and the Philippines.⁵⁴ Many young people in both high income and developing countries have found work in call centres. In Malaysia and Nepal, for example, call centres have attracted diploma and degree-holders, the majority of whom are working full-time.⁵⁵

ICT skills provision and Public-private partnerships

There are a number of public-private partnership arrangements in the Asia Pacific region related to ICT skills transfer involving governments, local educational institutions and international

49 Ibid.

50 Mitter, S and J. Millar, 2001, ‘The impact of ICT on the spatial division of labour in the service sector’, Science Policy Research Unit University Of Sussex Falmer, Brighton, UK, background paper for the World Employment Report 2001

51 Ibid, Section 4: ‘from teleworking to tele-networking’

52 Mitter, S and J. Millar, 2001, ‘The impact of ICT on the spatial division of labour in the service sector’, Science Policy Research Unit, University of Sussex, Brighton, UK, *Background Paper for the World Employment Report 2001*, Appendix Case studies, Case study 3: Alternative entry points into digital commerce for small states.

53 Ibid.

54 ILO, 2001, *World Employment Report 2001*, p 37

55 Ibid

companies. Cisco Networking Academies, for example, operate in over 8,500 locations and 9 languages around the world, including 24 Asia Pacific countries with 79,202 students enrolled.⁵⁶

The Cisco Networking Academy program, through its Least Developed Countries initiative, trains local workforces basic skills to build and maintain an Internet infrastructure. Currently, Cisco Networking Academy's Least Developed Countries initiative has established 83 Cisco Academies in 31 least developed countries (see Box 13). The Networking Academy Program is said to have been successful for two reasons: the Internet and partnerships.⁵⁷

Box 13: Cisco Global Learning Network & Cisco Networking Academies

The Cisco Networking Academy Program is a worldwide effort designed to teach Internet technology skills to youth and adults. The Networking Academy program is also helping to transform education as the world's largest e-learning laboratory. Cisco has expanded the program to include optional, partner-sponsored courses by IT leaders in the Fundamentals of UNIX, sponsored by Sun Microsystems, the Fundamentals of Web Design, sponsored by Adobe Systems, the Fundamentals of Voice and Data Cabling, sponsored by Panduit, and IT Essentials sponsored by Hewlett-Packard. All courses are delivered through the Cisco Networking Academy Program.

Network efficiencies, interactivity, multimedia, personalization, and an appreciation of multiple learning styles have all come together in the Cisco Global Learning Network (GLN). This standards-based, end-to-end network-enhanced learning infrastructure supports highly scalable, flexible, advanced e-learning.

The GLN integrates e-learning applications for authoring, management, and assessment with rich media content, delivery, and a network infrastructure. Implemented as the e-learning environment for the international Cisco Networking Academy Program beginning in the summer of 2001, the GLN brought many important new capabilities. These include global scalability, lack of extensive integration needed for implementation, a distributed architecture with sophisticated caching to avoid latency, the ability to deliver rich media and interactive components seamlessly, a clearly defined pedagogical hierarchy for authoring, personalized feedback, and the use of Web-based open standards.

Source: <http://cisco.netacad.net/public/academy/index.html>

Cisco, Hewlett-Packard and key US Government and non-governmental agencies announced in March 2003 the launch of the Digital Freedom Initiative (DFI), public-private venture with the goal of promoting technology-led economic growth in developing nations. The coalition will initially focus on tactics to bridge the 'Digital Divide' including placing volunteers in small businesses to share business knowledge and technology expertise, and leveraging existing technology and communications infrastructure in new ways to help entrepreneurs and small businesses better compete in both regional and the global market place.

Resources from the private sector and non-government organizations could reach \$6.5 million in the first year pilot with Senegal in West Africa. Cisco and Hewlett Packard have pledged support to the project and will work with US officials to provide on the ground expertise to help turn existing networks into better resources for entrepreneurs and small businesses. If successful, the program will be rolled-out in 20 countries in the Africa, the Persian Gulf region and Latin America over a five year time-frame.

Another example of a public-private partnership to generate employment opportunities for young people involves Oracle Corporation of the USA and the Punjab Provincial Government

⁵⁶ The countries listed as having academies are: Australia, Bangladesh, Bhutan, Cambodia, China, Fiji, Hong Kong SAR, India, Indonesia, Malaysia, Mongolia, Nepal, New Zealand, Papua New Guinea, Philippines, Singapore, Republic of Korea, Sri Lanka, Taiwan, Thailand and Viet Nam. <http://www.cisco.com/asiapac/academy/>

⁵⁷ Cisco Helps With New Public-Private Venture Called The Digital Freedom Initiative To Help Bridge the 'Digital Divide', 17 March, 2003 - http://newsroom.cisco.com/dlls/ts_031703.html

in Pakistan.⁵⁸ This partnership with the second largest software company in the world is seen as an important step in positioning Pakistan on the global IT map.⁵⁹ To implement the initiative, the Punjab Government formed the Punjab Information Technology Board (PITB) and to advise the government in the field of IT. PITB is a government agency designed to work as a private sector organization. The PITB model of public-private partnership is being followed at the federal level in Pakistan as well as in other provinces of the country.⁶⁰

In March 1999, the PITB negotiated with Oracle Corporation to commit US\$13.5 million in free software and courseware to launch the Oracle Academic Initiative and to train within a year over one thousand IT professionals in Oracle Database Management software. The specific objective of the initiative was to develop the capacity of a set of partner educational institutions to prepare students to become Oracle Certified Professionals (OCPs) involving skills for which there is a global shortage.⁶¹ In less than twelve months, the initiative was judged a success and Oracle Corporation increased its investment in Pakistan to US\$20 million.⁶²

Public-private partnerships in other countries in the Asia Pacific region are also increasing the opportunity for young people to compete in the global ICT labour market. Sri Lanka's University of Colombo, for example, has created an "External Degree Program" resulting in a Bachelor of Information Technology. While university staff members conduct the examinations, the program is linked with research facilities and private sector training institutions to design jointly the curriculum and provide the actual instruction. The program aims to produce 3,000 graduates in the next three years, 100 times the capacity that the university alone could have produced.⁶³

2.3 The potential of ICT to assist the vulnerable

The third key best practice principle concerns the use of ICT-based employment opportunities to assist the most vulnerable among young people. One way this can be done is through the use by young people of acquired ICT skills to assist local development agencies and operators to deliver services to those most in need.⁶⁴ For example, the Internet can be used to deliver health care training to remote locations. A leading non-profit organisation in the field of reproductive health, has developed for delivery via the Internet a course in infection prevention designed for health staff who work in developing countries. Topics include disease transmission, aseptic technique, use and disposal of needles and other sharp instruments, and waste disposal.⁶⁵ However, access to this course and others like it requires people with the technical skills to show health care workers how to use the Internet.

Other potential ICT applications in health care include the use of relatively simple Internet-based data management systems to exchange information such as patient records between health care professionals. Tele-medicine applications now available also make it possible to deliver health care to people in isolated locations (see Box 14). The use of low-cost ICT in the health system will create the demand for young people with ICT skills in rural locations. Skills are required to establish and then maintain a local area network and to provide 'help desk' assistance for health staff to enable them to use the system effectively and easily.

It may also offer a business opportunity as the following example shows. A business model has been proposed for the use of personal digital assistants in health service delivery based on three

⁵⁸ 'Lahore: A public-private partnership to enter the global IT market', Background paper, World Employment Report 2001, para 3.1

⁵⁹ PITB, 2000, 'An effort to position Pakistan on the global IT map', Press Release, April 2.

<http://www.pitb.gov.pk/2apr2000.html>

⁶⁰ Ibid.

⁶¹ Ibid

⁶² Ibid

⁶³ McConnell International, 2001, *Ready? Net. Go! Partnerships Leading the Global Economy*. May, p 18,

<http://www.mcconnellinternational.com/ereadiness/ereadinessreport2.htm>

⁶⁴ ILO, 2001, World Employment Report 2001, p59.

⁶⁵ Ibid, p 60.

income generating activities: disseminating general and targeted health information via subscription to the network; managing data collection and information dissemination for hospitals and other health services; and providing email service to institutional and individual clients.⁶⁶

Box 14: Hand-held Personal Digital Assistants (PDAs) and Better Health In Uganda

The aim of the project is to improve the decision-making capacity of health professionals by arming them with PDAs that will provide them access to the information they need to make timely diagnoses and provide appropriate treatments.

In a country where many health workers do not have access to a telephone, let alone the Internet, information for decision-making is a scarce, potentially life-saving resource. Building on its experience implementing a PDA project in Uganda and Kenya, HealthNet Uganda is poised to introduce this technology on a wider scale. PDAs can be used in the most remote locations, have the computing power required for simple but essential functions, are easily customizable to meet the particular needs of individuals and institutions, and can hold large quantities of timely, relevant, and appropriate content and facilitate rapid data collection and analysis.

...In addition to project design, technical support and training, SATELLIFE provides a powerful combination of content, including country-specific clinical guidelines for malaria, tuberculosis, and HIV/AIDS, the World Health Organization Essential Drug List, a country-specific essential drug list, a multi-functional medical calculator, medical references, customized local content, and customized survey instruments. ...Business revenue generation will be based on a fee-for-service structure, with local clients paying for fully-loaded PDAs, training, technical support, and subscriptions to information services. SATELLIFE and HealthNet Uganda look to deploy 12,000 PDAs in East Africa over the course of the next three years.

Source: Digital Partners Social Enterprise Laboratory Case Study prepared for the 2003 Baramati Initiative on ICT and Development, May 30 – June 2, 2003, Baramati, India.

Other uses of ICT- related skills to assist the most vulnerable

Geographical information systems offer young people with the required skills in ICT other opportunities to identify for governments or international agencies a range of uses related to the poor and isolated. It is possible, for example, to combine with spatially referenced data using geographical coordinates, other non-spatial data on access to welfare services, telephone availability, education levels, access to health services, water quality and income levels. The resulting information can be used, for example, to identify where the incidence of poverty is greatest. The data can be stored, retrieved and processed in various ways to produce summaries, statistics and maps.⁶⁷ In particular, maps based on digital data are a valuable way to make displays of relationships between spatial and non-spatial data to pinpoint where efforts to reduce poverty need to be directed.

Marketing pro poor tourism

Another opportunity to use ICT to assist the poor and isolated is pro-poor tourism. This type of tourism aims to generate net benefits for the poor through expanded opportunities for economic gain, other livelihood benefits, or engagement in decision-making.⁶⁸ Pro poor tourism strategies can ‘tilt’ the tourism sector at the margin to expand economic opportunities for the poor. This is done by increasing demand for their goods and services and enhancing the asset base of poor people.⁶⁹ Pro-poor tourism has the potential to play a significant role in increasing livelihood

⁶⁶ Digital Partners, 2003, Social Enterprise Laboratory Case Study

⁶⁷ ILO, 2001, World Employment Report 2001, p60.

⁶⁸ http://www.propoortourism.org.uk/what_is_ppt.html

⁶⁹ Ashley, C; Roe, D & Goodwin, H, 2001, *Pro-Poor Tourism Strategies: Making Tourism Work For The Poor a*

security of vulnerable groups, including young people (see Box 15). Tourism directed to poor areas can generate employment opportunities, especially for young people with education as well as generate earnings for the wider community. The potential of pro poor tourism has been recently highlighted by the Asian Development Bank as a basis for redirecting their loan policy (see Box 16).

Box 15: New focus on pro poor tourism by Asian Development Bank

After several years of involvement with the Mekong Tourism industry, the region's foremost multilateral funding institution, the Asian Development Bank, has signalled a major shift in the way it views and approaches its future participation.

...tourism would be repositioned as a poverty-alleviator rather than just a job-creator or foreign exchange earner. ...The ADB is an influential player in the GMS countries – Thailand, Cambodia, Vietnam, Myanmar, Laos, Cambodia and China (the southern province of Yunnan).

As Asia's leading development institution, we have rededicated ourselves to the eradication of poverty in the world's most populous continent. We have become more country-focused and have sharpened our perspectives. The new nomenclature for this is pro-poor tourism (PPT) which, he said, was not a new product but an approach. Well-guided, pro-poor policies that lead to genuine social, cultural and environmental benefits would be favoured. The ADB has become much more wary of past policies that may have inadvertently set tourism off on an anti-poor course via unguided development, poor planning, environmental destruction and the inevitable decline of destinations.

In future, ... the ADB will focus on expanding business and job opportunities for the poor; retention of benefits at the local level; integration of tourism into local development plans and appropriate benefit sharing systems; development of conservation ethics and promotion of local products; ensuring sustainable development; infrastructure, capacity building and training; and participation and empowerment.

Sources: Bank Signals Funding Pull And Visa Push: Address by Mr. Arjun Thapan, Director, Social Sectors Section, Mekong Department, Asian Development Bank, www.propoortourism.org.uk and 'Developing Tourism in Lower Mekong River Basin Countries', 12 December 2002 – www.adb.org

A website (<http://www.propoortourism.org.uk/index.html>) provides up-to-date information on pro poor tourism, including a range of research reports and studies that focus on how tourism's contribution to poverty reduction can be increased. The website also provides access to evaluations of recent initiatives in Africa, Latin America and Europe. The website has been created by the Pro-Poor Tourism Partnership, a collaborative research initiative between the UK-based International Centre for Responsible Tourism, the International Institute for Environment and Development (IIED), and the Overseas Development Institute.

Box 16: Pro Poor Tourism: bringing tourists to the remote Humla District of north-west Nepal.

The Dutch development agency SNV works with local communities... in a very poor and remote area of Nepal. The aim of the project is to produce and supply locally the goods and services required by the tourism industry rather than from Kathmandu

SNV's strategy revolves around developing tourism initiatives that benefit poor and disempowered groups as opposed to the Kathmandu-based trekking agencies. The focus of the initiative is... at the local level - on specific enterprises and communities along a trekking trail... The emphasis of the Pro Poor Tourism strategy is on social mobilisation through the development of

community-based organisations; business planning and training designed to enable the poor to develop micro-enterprises and to take up employment opportunities.

Source: http://www.propoortourism.org.uk/nepal_sum.html

The marketing of the pro poor tourist facilities has to be a key feature of any strategy. The aim is to work out ways to establish a secure and appropriate market rather than simply attracting more tourists.⁷⁰ This can be done in a variety of ways such as brochures, trade fairs, and advertising. The Internet can also play a pre eminent role in a pro poor tourism marketing strategy by providing information about remote tourist locations, including photos of key features as well as providing a ready means of low cost communication via e-mail.

The Namibia Community-Based Tourism Association in south-west Africa assists local communities to set up tourism enterprises in the previously neglected rural areas of Namibia. The Association has set up a web site with detailed information including a map about each of the seven regions in rural Namibia and the community-based tourism facilities in each region (see Box 17).⁷¹ Young people are well placed to acquire the skills to set up or at least maintain a web site as well as respond to e-mail inquiries for remote tourist facilities.

Box 17: Pro poor tourism: From the Namibia Community-Based Tourism Association web site

Why visit Nyae Nyae Conservancy? The Ju/'hoansi have organised themselves to form the first communal area conservancy in Namibia. Meet the people and experience their traditions and culture in this remote and beautiful corner of Namibia.

What can you experience? Go on a traditional hunt with Ju/hoansi hunters. Experience the tracking of elephants or simply view the wildlife that frequent the seasonal pans Witness the gathering & cooking of veld (bush) food! Enjoy traditional dance & music. Enjoy birdwatching!

What facilities are available? Campsites at Djokhoe & Makuri with very basic camping facilities, fireplaces and toilet Please bring your own water Prices: On request at the Conservancy Office in Tsumkwe. Nearby attractions include: Kaudom National Park (1-2 hrs 4x4 required)

Your support of these enterprises also makes a crucial contribution to rural development in Namibia. It allows communities to take part in the tourism sector and to develop businesses, which will provide employment opportunities and generate income in the region where they live. This in turn provides communities with another livelihood strategy and gives them more control and choice over their own development. Thank you for your support.

Source: NACOBTA (Namibia Community Based Tourism Association) web site
<http://www.nacobta.com.na/en/About.htm>

ICT skills and enhancing access to education

Governments are in a position to provide opportunities to use ICT to assist the most vulnerable by connecting schools to the Internet. Some middle-income countries, such as Malaysia, and Thailand, are making good progress in connecting their schools to the Internet. Where there is a government program to increase schools' access to computers and the Internet, scope exists for

⁷⁰ Ibid, p 31.

⁷¹ NACOBTA currently has approximately 45 members including campsites, rest camps, traditional villages, craft centres, open museums and tour guide associations. Of these, about 25 are currently (August 2001) open for business whilst the others are in development.

young people to be trained as computer technicians to maintain a bank of networked computers within a school.

In Malaysia, as part of the drive to narrow the digital divide within the country, the Government has launched its Computers-in-Education program to improve digital literacy education in schools. The initiative aims to create 'smart schools' that foster a new learning environment by adopting new teaching methods and curricula, and training teachers to use ICT effectively.⁷²

Training young people to recycle PCs for distribution to low-income communities

Another best practice initiative that combines several key principles involves the employment of disadvantaged young people and bridging the digital divide between the poor and the rest of the society. Green Peripherals and Components, otherwise known as Green PC, is a not-for-profit, social enterprise aimed at helping the long-term unemployed young people obtain IT maintenance and repair skills.⁷³ The project won the prestigious Stockholm Challenge Award for Information Technology projects in 2001. The Green PC project employs former long-term unemployed young people to refurbish second hand computers donated by the corporate sector, government departments and educational institutions.

In Australia, over 200,000 computers are retired every year. The aim of the project is to donate or resell the computers after refurbishment to low-income families to enable them to access the Internet. The project started with more than 1,000 redundant computers from the State Government of Victoria. InfoXchange Australia has also entered into partnership agreements with the State Government Department of Human Services, The University of Melbourne and a number of other large corporations to receive their redundant hardware on a rolling basis.

The project has received funds from the State Government's Community Jobs Program in January 2001 to employ long-term unemployed people by training them to refurbish the 'retired' computers. Up to 33 people have been employed for a period of six months. The average age of the people employed is 20 to 21 years. They are employed in apprenticeship type employment and training arrangements to refurbish the equipment. Other young people are undertaking training in web page design.

Info Exchange Australia has also initiated the 'The Reach for the Clouds' project to enable low-income communities to access computer connected to the Internet.⁷⁴ The project has provided computers and connected 800 residents to the Internet in four high-rise towers in a public housing project in inner city Melbourne. Six Aboriginal communities along the Murray River have also been provided with networked computers. Its best practice status is reflected in the fact that the project was also a finalist in the top 100 projects selected for the 2001 Stockholm Challenge.

The project is to act as a model for similar developments in other public housing estates. The aim is to assist those who otherwise would not have the resources to participate in the information age, to develop IT skills and establish opportunities that may be otherwise denied. A computer-training centre has been established in the ground floor of the high-rise complex. Residents are able to attend classes, which are conducted twice daily for durations of two hours for five days a week.

⁷² ILO, 2001, *World Employment Report 2001*, p63.

⁷³ The following information on Green PC and reach for the clouds is drawn from The info Xchange's web site <http://www.infoxchange.net.au/> and from an article by Maria Hinas 'IT for homeless - Can we use Technology to Create Social Justice?' posted on the Stockholm Challenge web site <http://www.challenge.stockholm.se/challenge.html>

⁷⁴ (<http://www.infoxchange.net.au/highrise/>)

2.4 Bridging the gap between the digital economy and the informal sector

The fourth best practice principle concerns the use of ICT to help bridge the gap between young people's opportunities for self-employment in the informal economy and the high growth sectors of the world economy. Reference has already been made above to how informal sector workers can gain easy access to the Internet through telecentres to obtain information on markets or administrative procedures, and to publicise their services to a wider clientele. For example, the Foundation of Occupational Development in India, which operates eleven telecentres, has also established a website called *IndiaShop* to provide a market outlet for indigenous crafts people. As a result, an isolated community is able to fetch much higher prices from international customers than from retailers in nearby cities.⁷⁵

Reference has also been made above to how communities in remote locations can make use of self-contained, solar-powered ICT centres to sell, among other things, traditional cultural products such as art, music, photography, legends and storytelling via the Internet. This is being done on a pilot basis in remote communities in India, Jamaica, Ghana and the West Bank.

Another example of the use of ICT to help bridge the gap between employment for young people in the informal sector and the mainstream economy is India's Self Employed Women's Association (SEWA). Its members, who number 220,000, are women (including young women) who earn a living through their own labour or through small businesses.⁷⁶

SEWA has been one of the first organisations in India to realise the potential for harnessing ICT to help women in the informal sector. It has sought to develop the organisation's capacity to use computers by conducting awareness programs and imparting basic computer skills to its team leaders, 'barefoot' managers and members of its various member associations. Many of SEWA's member organisations have launched their own websites to sell their products in the global virtual market place.⁷⁷ Since the entire membership of SEWA consists of poor self-employed women, giving its members access to software in the 'language of daily use' is of great importance. Hence, efforts are being made to develop software to enable grass-roots workers and members to make the best use of the tools provided by ICT.

Recently, SEWA has started using telecommunications as a tool for capacity building among the rural population. SEWA uses a combination of landline and satellite communication to conduct educational programs on community development by distance learning. The community development themes covered in the education programs delivered include: organising; leadership building; forestry; water conservation; health education; child development, the Panchayati Raj System and financial services.⁷⁸

A local gateway to promote sustainable livelihoods

The potential for ICT to bridge the gap between young people's self employment opportunities in local informal sector markets and the wider domestic and international economy is amply demonstrated by India's TARAhaat.com. TARAhaat or 'Star Marketplace' is an Internet gateway that connects the village user to information about social services, health, entertainment, and to markets, through a network of franchised cyber centres, customised in the language of their choice. The website attracts between 5,000 and 25,000 contacts per month.

The project illustrates a number of best practice features, which won it the 2001 Stockholm International Challenge prize as best practice in the category of a Global Village.⁷⁹ The first

75 Heather E. Hudson, 2001, 'The potential of ICTs for development: Opportunities and obstacles', Background paper, ILO World Employment Report 2001, Section 7, The contribution of ICTs to development.

76 Reema Nanavaty, General Secretary, SEWA. bdmsa@ad1.vsnl.net.in, personal communication.

77 ILO, 2001, World Employment Report 2001, p60.

78 Ibid.

79 Source: http://www.challenge.stockholm.se/new_tavlande_index.html

feature worth highlighting is that it is targeted at the poor by seeking to create sustainable livelihoods for people located in areas with limited economic opportunities and harsh living conditions. Second, it has been designed using extensive market research and socio-economic surveys, including a house-to-house survey of selected villages in the region. Third, its format aims to cater for the needs of people with wide variations in literacy, language, financial liquidity and levels of understanding.

Fourth, the project is supported by partnerships with enterprises in the public and private sector including the Indira Gandhi National Open University. Fifth, the project has support from youth organisations through the National Youth Cooperatives.

Sixth, the project is based on features that go beyond simply using the Internet to communicate with its target audience. TARAhaat covers all three components for rural connectivity: content, access and fulfilment. Content in relation to law, governance, health and livelihoods is provided by the TARAhaat.com mother portal. Access is provided through a network of franchised local enterprises. Delivery of information, goods and services is provided by local courier services or franchised TARA vans. The revenue streams of TARAhaat provide for profit generation at each step of the supply chain, serving to further cement its networks.

The project, although still in its pilot stage, is said to have increased the economic opportunities for the physically disabled and the franchisees as well as improve access to education for rural girls. Other benefits include the generation of alternative sources of income for young people through desktop publishing.⁸⁰

2.5 Putting young people in charge

The fifth best practice principle in the use of ICT to generate employment for young people relates to the importance of their participation in the design and implementation of ICT-based initiatives. The value of participation can be justified on a number of grounds.⁸¹ However, in pragmatic terms, evidence exists to show that participation is a crucial ingredient in achieving program effectiveness.⁸²

*It is not only that such participation brings to the project relevant information that outside development agencies (or even governments) are not likely to have. Participation also brings with it commitment, and commitment brings with it greater effort—the kind of effort that is required to make the project successful.*⁸³

The importance of the principle of youth participation is stressed in the Dakar Youth Empowerment Strategy, the product of the deliberations of 350 representatives of youth organisations at the UN's World Youth Forum in August 2001.⁸⁴ The Strategy urges governments and international agencies to support initiatives that 'empower young people to have greater control over their individual and collective destinies, and their ability to effectively contribute to the advancement of the global community'.⁸⁵

⁸⁰ Ibid.

⁸¹ Narayan, D, Chambers, R; Kaul Shah, M and Petesch, P; 2000, *Voices of the Poor: Crying Out for Change*. New York, N.Y: Published for the World Bank, Oxford University Press.

⁸² Isham, J., D. Kaufmann, and L. Pritchett. 1997. 'Civil Liberties, Democracy, and the Performance of Government Projects', *World Bank Economic Review* 11(2), 219- 42.

⁸³ Stiglitz, J; 1999, 'Participation and development: perspectives from the comprehensive development paradigm', *The World Bank*, February 27, Seoul, Korea, p 10-11.

⁸⁴ The 2001 Dakar Youth Empowerment Strategy builds on earlier World Youth Forum Declarations, follow-up work by the UN and the resultant national youth policy and action plans developed by governments. See UN, n.d. *Youth Participation Manual. & Youth Policy Formulation Manual*. Human Resources Development Section, Social Development Division, United Nations & Economic and Social Commission for Asia & the Pacific.

⁸⁵ World Youth Forum, 2000, *Dakar Youth Empowerment Strategy*, para 16.

<http://www.un.org/esa/socdev/unyin/forum/dakar.doc>

*Technical, human and financial support must be focused on assisting marginalized and vulnerable youth to organize themselves in order to address their own needs and interests, and make their particular contribution to social progress... Young people and youth NGOs are the best agents for delivering change for other young people...*⁸⁶

As noted above, a limitation of many government support programs for youth enterprises is the failure to recognise that the initiative that comes from young men and women, based on their assessment of its viability and motivation to succeed rather than as a product of the program itself.⁸⁷

Youth Access Program

A project in Australia offers a good illustration of youth input at the design and implementation stages. Located in regional Australia, the project is based on the principles of self-help, self-financing and self-mentoring. The project developed because of a failed grant application to repair 'retired' computers. When the computers became available, the young people themselves decided to start the project without external funding.⁸⁸

The thrust of the project is for young people themselves, using recycled computers and free software, to teach each other skills such as networking computers, how to repair computers, and how to design start up IT projects to provide themselves and others with employment. Refurbished computers are given to other members of the group without a computer. Other recycled computers are made available to regional schools, youth groups and handicapped and indigenous youth. Network members are expected to actively seek out recycled hardware, refurbish it and make it available to others.⁸⁹

The self initiated actions of a Nepalese teacher shows how the Internet can benefit a remote village even though he has to have to walk down for a full day to the nearest city where an Internet service is available to communicate with people from around the world (see Box 18).

Box 18: Village in the clouds embraces computers

Mahabir Pun is a Nepalese educational pioneer who is trying to break the cycle of poverty in his mountain village of Nangi by taking it into the computer age. Having founded Himanchal High School, he sees the Internet as the way to improve the children's education.

The Internet has been a great help for Nangi, even though we do not have a connection here. One of my professors had helped me to put a simple website about my village and school on the web in 1996. That website has connected my village to the outside world, and I think my village is the first one in Nepal to be on the Internet.

With the simple website we have now, people from around the world have been able to locate my village and have come to volunteer. We regularly get volunteers from America, Britain, Australia, Singapore, Switzerland and Malaysia.

Those who have not been able to visit have also helped in different ways, such as sending books, teaching materials, and money as a donation. Moreover, students from Australia and America have been writing letters to our pupils as penpals through ordinary mail.

... I have installed two small hydro-generators in the stream near our village for

⁸⁶ Ibid, para 43 & 44.

⁸⁷ White, S and Kenyon, P 2001, *Enterprise-Based Youth Employment Policies, Strategies and Programmes*. International Labour Office, Geneva, p 14

⁸⁸ http://www.challenge.stockholm.se/new_tavlande_index.html

⁸⁹ http://www.challenge.stockholm.se/new_tavlande_index.html

power for the school. We got some computers from Australia, Singapore and Malaysia as donation. I also collected some used computer parts in the US and took them to the village and assembled the parts in wooden boxes, building 14 computers.

Now we have 15 computers in our school, which has about 300 students from six neighbouring villages. As far as I know this is the only community school in the entire country that provides computer classes for high school students.

I have seen that even a small village like mine can benefit a lot from the Internet. We can use it to generate money for the village, to provide quality education for our children, to provide information about our culture to children all over the world, and to invite volunteers to come to our village.

Source: BBC News, 22 October, 2001
http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_1606000/1606580.stm

Part III: Some general considerations

3.1 How ICT use differs in developing countries

The best practice examples of the uses of ICT to generate employment for young people have demonstrated that technology is a tool that can be applied in a variety of ways. The challenge for each country and for different socio economic groups within a country is to work out the most cost effective way to use ICT. The ways that high-income countries use ICT need not apply to middle or low-income countries of socio economic groupings within countries. Four common but incorrect assumptions about the use of ICT in middle and low-income levels have been identified.⁹⁰ These are:

1. ICT access requires personal ownership of a computer.
2. ICT access requires use of expensive computers.
3. The infrastructure commonly used in rich countries to access ICT is not readily available in many developing countries.
4. The use of the Internet is text-based and is English dominated which means that users need to be literate and literate in English in particular.⁹¹

The best practice examples show that access to ICT does not require personal ownership of the computer. CK Prahalad points out that while it may be common for people in wealthy countries to own a computer for personal convenience reasons, the poor in developing countries may decide to make an equally rational trade-off offering low cost access (and no cash investment) for a level of personal inconvenience.⁹² This different approach to access means that a range of telecommunications-based services such as making telephone calls, sending faxes or using the Internet can be used on a fee-for-service basis through facilities known variously as cyber cafes or telecentres. The more common pattern of ICT usage in developing countries, therefore, is likely to be access through community facilities, as with many other services in these countries, rather than through personalised access for individual families.

The second incorrect assumption is that ICT access requires use of expensive computers. This assumption is being challenged in Brazil, India and China where simplified, low cost versions of

⁹⁰ CK Prahalad, 2000, 'Let 's focus on the digital dividend: Conventional mental models may be an impediment to the diffusion of internet benefits to poorer countries', *European Business Forum*
http://www.ebfonline.com/at_forum/at_forum.asp?linked=32&id=26

⁹¹ Ibid

⁹² Ibid.

computers have been or are being developed.⁹³ In India, the first working prototypes of the Simputer have been developed. The Simputer will cost around US\$200 and will run on widely available AAA batteries. It is slightly larger than the popular Palm handheld computers, and has a built-in web browser, e-mail software, a text-to-speech program for several Indian languages and a sound player. A feature of the Simputer is the use of a Smart Card to enable individuals to use and store data utilising a community-based machine (see Box 19). The machine is planned to be available for sale by March 2002.⁹⁴

Box 19: The Simputer: 'radical simplicity for universal access'

... The most significant innovation in computer technology in 2001 was not Apple's gleaming titanium PowerBook G4 or Microsoft's Windows XP. It was the Simputer, a Net-linked, radically simple portable computer, intended to bring the computer revolution to the third world.

The Simputer...is a small hand-held device designed for the rough conditions of rural India. It operates -- without a keyboard -- through touch, sound and simple visual icons. It translates English-language Web sites into local Indian languages, reading the content aloud to illiterate users.

The Simputer is expected to cost 9,000 rupees, or about US\$190; it is meant to be owned not by individual users but by village cooperatives. Each user carries a simple, tough, very cheap "smart card," which will hold all his or her settings and data. No training is required; there are no upgrades, no broadband and no planned obsolescence. It runs on batteries.

Source: New York Times Magazine Desk, December 9, 2001 and <http://www.simputer.org/simputer/about/>

The third assumption that the infrastructure required is not available in many developing countries is also easily challenged in many low and middle-income countries as the spread of mobile phones has opened up access to telephony in place of fixed line telephones. Mobile phones in Bangladesh, China, Philippines, Indonesia, Sri Lanka and Malaysia are often a substitute for fixed line telephones, rather than a complement as in high-income countries.⁹⁵ In these countries, fixed line telephones are regarded as expensive and unreliable whereas mobile phones are viewed as more reliable and easier to use.

The fourth assumption about IVT usage in developing countries is that the Internet is only for the literate and within this group, those who are literate in English. However, literacy is not required to gain access to information. It is possible to send e-mails that consist of voice messages. However, it needs to be acknowledged in relation to ICT that 'literacy multiplies the potential gains – and multiplies the channels through which such gains can be received'.⁹⁶

Literacy in English is also not an essential precondition for use of the Internet. The dominance of English on the Internet is receding. It is estimated that English is now the mother tongue of less than half of all Internet users, and the proportion is falling all the time.⁹⁷ Other languages such as German, Russian and Spanish are said to be spreading at exponential speed on the Web. The Internet is also said to be helping to revive minority languages and cultures.⁹⁸

However, much still needs to be done to develop relevant content in local languages for use by those who would otherwise be excluded. This applies particularly to the availability in local

⁹³ Rachel Anderson, 2001, 'Low-Cost Computers for the People, Benton Foundation', August 27, <http://www.digitaldividenetwork.org/content/stories/index.cfm?key=178>

⁹⁴ Ibid

⁹⁵ Canadian International Development Agency (CIDA), 2000, *Grameen Telecom's Village Phone Programme in Rural Bangladesh: a Multi-Media Case Study Final Report*, p 16.

⁹⁶ ILO, 2001, *World Employment Report 2001: Life at Work in the Information Economy*. Geneva, p 62.

⁹⁷ Barry James, 2001, 'Online, and Off, English's Hegemony Is Challenged Globally', February 12, The International Herald Tribune www.iht.com

⁹⁸ Ibid.

languages of information from government sources. The opportunities for young people to act as ‘information intermediaries’ was highlighted above.

3.2 Inequalities in access to ICT skills and employment

It is important to acknowledge that not all young people have an equal opportunity to acquire ICT-related skills or to benefit from ICT-generated employment opportunities. Access to relevant education and training is not equally distributed according to sex. While women have made notable inroads into highly skilled ICT work, such as software programmers or computer analysts, in India, and Malaysia, there is still far from a balance in numbers. In India, for example, women occupy nearly 20 percent of the professional jobs in the software industry, with higher percentages found in Calcutta and Bangalore. In Malaysia, they are 30 percent of IT professionals, including those at the professional level.⁹⁹

*However, nowhere are these jobs the majority of those held by women in the workforce nor are women the majority of workers in these occupations. The women working in these areas comprise a small, educated elite. However, it is an important area for women to break into and to become role models for the next generation whose numbers in these fields are likely to increase.*¹⁰⁰

A recent report on gender access to information technology in developing countries notes that the jobs that women have gained through IT have been in countries with high rates of female literacy in Asia (notably in the Philippines, Thailand, and Vietnam and Latin America). The report concludes from this that *...As information technology becomes more tightly linked with the development of knowledge economies, education for young women becomes more and more important.*¹⁰¹

Another factor limiting the potential benefits of ICT related employment for young women, in particular, is likely to be workplace practices such as long working hours. These work practices serve to reproduce the patterns of gender segregation channelling young women into lower skilled, lower paid jobs with more repetitive and less creative work.¹⁰²

3.3 The potential gains from ICT for the economy and society

ICT offers three major gains to a country’s economy and society.¹⁰³ Efforts by governments, enterprises, civil society organisations and citizens to capture these benefits can produce significant employment opportunities for young people with the requisite ICT skills.

The first major potential benefit comes from the opportunity to participate in a rapidly growing sector of the world economy through the supply of hardware and software. In the Asia Pacific region, India, China, Malaysia, Thailand and the Philippines in particular, have been able to capture a significant share of the world market for digital computers, semi-conductors, electronic micro-circuits, and other automatic data processing (ADP) products. Exports to these markets from these countries have played a major part in promoting economic growth and creating jobs in these economies.

The second area of gain that ICT offers to a country’s economy and society is through the capture of information in a digital form. The benefits can extend from improvements in the production of goods and services through more efficient processes and higher quality outputs. These benefits come from more precise monitoring of production, faster speed of operations and

⁹⁹ Nancy Hafkin and Nancy Taggart, 2001, *Gender, Information Technology, and Developing Countries: An Analytic Study*. For the Office of Women in Development, Bureau for Global Programs, Field Support and Research, United States Agency for International Development, June, p 41

¹⁰⁰ Ibid, p 41

¹⁰¹ Ibid, p 43.

¹⁰² ILO, 2001, ‘Generating decent work for young people: An Issues Paper prepared for the Secretary-General’s Youth Employment Network’ <http://www.un.org/esa/socdev/youthemployment/Issues%20paper.doc> , p 9

¹⁰³ ILO, 2001, *World Employment Report 2001: Life at Work in the Information Economy*. Geneva, p52.

better knowledge of customers. Other benefits to the economy as a whole can stem from more cost effective commercial transactions related to business-to-business (B2B) such as operating supply and distribution chains or providing banking services. Business-to-customer (B2C) transactions in the form of information about and the purchase of goods and services also offer the potential for significant economic benefits (see Box 20).

Box 20: Electronic commerce in Korea

Electronic commerce has emerged as a new growth area in Korea with 56 per cent of Internet users having purchased goods over the Internet from home. The number of Internet users in 1999 was 10 million and expected to rise to 30 million or almost two-thirds of the population by 2002.

Source: OECD, 2000, OECD Economic Surveys: Korea. p258.

The third area of potential gain from ICT relates to benefits for civil society. This can come from the application of ICT to improving the lives of citizens in general and the poorest in particular. These opportunities apply to not only offering new or improved opportunities to earn income. They also relate to better information about and access to government-funded services in education and health.

The transactions involving government-to-citizen (G2C) can also be made more accessible and less costly to perform through the use of ICT. These can range from accessing information about government regulations and services through a CD ROM or the Internet to purchasing online licences or payment of taxes. ICT also offers the potential for more accurate and transferable patient health records as well as providing medical staff with access to world-class medical advice. Another use of ICT is to provide on-line services for job placement through electronic labour exchanges in public employment service or other placement agencies (see Box 21).

Box 21: Use of ICT in provision of job placement services

Previously, job brokering was usually carried out as a closed system involving staff as intermediaries on behalf of their clients. The greater transparency enabled by ICT opens up possibilities for more precise information-seeking or "data-mining". Through open job seeker banks, for example, employers can search and directly access résumés which, in turn, are linked electronically to job vacancy banks. Data banks on public training opportunities or other career or labour market information are also openly available. Tools have been developed to assist employers in screening résumés, or to send e-mails automatically to job seekers when job vacancy announcements fitting certain pre-selected criteria are posted.

Source: ILO World Employment Report 2001, Section 8.2 'Labour market intermediation for the information economy'.

Other benefits for citizens and the economy can flow from the transparency that publicly available records can provide (see Box 22). For example, in relation to the land rental market in developing countries, costless and easy access to land records via the Internet can reduce the risk of renting land by identifying conclusively who the real owner is.¹⁰⁴ This is not to claim that transferring government records to a digital format is a simple or inexpensive process. However, it does highlight how ICT has the potential to deliver gains from the introduction of new systems and processes in the public sector as well as the private sector.

¹⁰⁴ ILO, 2001, *World Employment Report 2001: Life at Work in the Information Economy*. Geneva, p 60.

Box 22: Use of ICT in Nepal to modernise public administration

Old records used to lie in dusty corners in Kanchanpur, a district in far-west Nepal. Now they have become part of the digital revolution. Kanchanpur is one of the areas in this mountainous country most dedicated to using information technology to modernise public administration and promote local development. Rishi Raj Lumsali, chairperson of the district development committee, has a vision of Kanchanpur as a model "information technology-friendly" district, one that is coming to life through a programme jointly supported by the Government of Nepal and UNDP.

'The old records that used to be tightly wrapped up in big pieces of cloth and piled above the cupboards have found their place on hard-disks, and there has been an enormous change in the management system,' said Mr. Lumsali. The abundant socio-economic data on the computers has brought a dramatic revolution in the committee's planning processes, and it also provides information services for all the agencies in the district. The district committee also produces colourful computer-generated maps depicting road networks, health clinics, educational centres, communication centres and other infrastructure. These transformations have made the committee a resource for activists, planners and students seeking maps and data

Source: Sangita Khadka, UNDP, Nepal, posting to GKD e-discussion, 18 Oct 2001

Not least, ICT also offers increased opportunities for citizens to communicate with their government (C2G) as a means of holding them more accountable. E-mail campaigns against corruption influenced Korea's 1999 elections and gave rise to the recent popular movement that deposed Philippine President Joseph Estrada.¹⁰⁵

3.4 Supporting conditions needed

However, this is not to claim that use of ICT to generate employment for young people is a straightforward and easy option for governments, enterprises or NGOs. The optimism inherent in highlighting the benefits of ICT as a development tool needs to be balanced by reference to the preconditions needed for a comprehensive ICT strategy to work. A report published in July 2001 for The Digital Opportunity Initiative of the United Nations Development Program (UNDP) emphasises five key strategic elements that need to be addressed for countries to develop successful ICT strategies.¹⁰⁶ These relate to the provision of appropriate infrastructure, human capacity, supportive public policy, support for enterprises and appropriate content and applications.

However, it is important for Governments to note that for these elements to have the greatest impact, they need to be addressed not in a piecemeal fashion but as an integrated strategy. The need for an integrated strategy is further highlighted by the assessment of Sanjaya Lall, Professor of Development Economics at Oxford University, in Box 23 below.

Box 23: New Technologies, Competitiveness, and Poverty Reduction: prospects for developing countries

Globalisation moves productive resources and knowledge around the world at an accelerating pace. It does not, however, reduce the need for local capabilities and institutions; quite the contrary, the strength of the local learning system becomes more and more important to attract and 'root' the mobile resources available externally.

Simply because capital and technologies are more available (and more footloose), countries have to offer stronger skills, capabilities, supply networks, institutions, and

¹⁰⁵ UNDP, 2001, *Human Development Report 2001: Making new technologies work for human development*. Oxford University Press, for the United Nations Development Programme, New York., p 36.

¹⁰⁶ Accenture, the Markle Foundation and the UNDP, 2001, *Creating a Development Dynamic: Final Report of the Digital Opportunity Initiative*, July, init.org/framework/pages/contents.html July.

infrastructure if they are to attract high-quality resources. Simply opening up economies to global market forces without upgrading skills and capabilities may serve to exploit existing capabilities, but over the longer term may be a recipe for stagnation at the bottom of the technological and income ladder.

Source: Sanjaya Lall, 2001, 'New Technologies, Competitiveness, and Poverty Reduction', Paper delivered at the *Asia Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction*, Asian Development Bank, Manila, 5-9 February 2001, p 14.

Conclusion

Governments have undertaken, as part of the Millennium Declaration at the UN General Assembly in 2000, to develop and implement strategies to give young people a real chance to find decent and productive work. The Heads of State and Governments also resolved to 'ensure that the benefits of new technologies, especially information and communication technologies are available to all.'¹⁰⁷

The main aim of this paper has been to show in practical terms how ICT has been used to generate employment for young people in the Asia Pacific region and elsewhere. The focus has been on identifying best practice examples in relation to five key principles: initiatives involving self-employment and entrepreneurship, the use of public-private partnerships, a focus on the most vulnerable among young people, ways to link informal sector activities with the digital economy and the participation of young people at the design and implementation stages.

The paper has also sought to balance the optimism of much of the writing on the potential of ICT for generating employment with reference also to the barriers that many developing countries in particular have to address to realise this potential. Innovative bottom-up initiatives show what can be achieved. However, it needs to be acknowledged that stand-alone efforts to tap the potential of ICT are limited in what they can achieve.

For these best practice initiatives to diffuse more widely, they need to be linked to an integrated strategy delivered by governments and the private sector with the support of non-government organisations and international agencies. As noted above, the integrated strategy needs to encompass appropriate infrastructure provision, an adequate skills pool, supportive public policy in general, and financial support for new enterprises in particular. Capitalising on the potential of the Internet also requires relevant local content and applications that are suited to the needs and capabilities of most of the country's population.¹⁰⁸

Recommendations

The range of initiatives outlined above shows the potential for ICT to generate employment for young people. However, this potential will not be realised unless a country has a range of supporting strategies in place.

1. It is difficult to find on the World Wide Web and from other sources best practice examples of the involvement of young people in the use of ICT to generate employment and income. It is recommended that governments encourage young people, through their representative organisations, to participate actively in developing concepts, implementing projects and evaluating the outcomes of ICT-related employment generation initiatives.

¹⁰⁷ UN General Assembly, 2000, *United Nations Millennium Declaration 55/2*.
<http://www.un.org/millennium/declaration/ares552e.htm>, para 20.

¹⁰⁸ Accenture, the Markle Foundation and the UNDP, 2001, *Creating a Development Dynamic: Final Report of the Digital Opportunity Initiative*, July, init.org/framework/pages/contents.html July.

-
2. ICT offers opportunities for young people to become self-employed or to start up a small enterprise. Therefore young people could be encouraged to view self-employment in ICT related activities as a viable option. This could be done by governments, and non government agencies publicising in-country case studies of young self-employed using ICT on a web site. These case studies could act as valuable role models for young people, presenting them with an image of success and achievement.¹⁰⁹
 3. It is important to acknowledge also that young people, in addition to ICT skills, need other skills to start a new venture. These include: managing cash flow, assessing one's strength and ability; learning how to seek relevant information and advice; making decisions; planning one's time and energy; carrying through an agreed responsibility; communicating and negotiating; dealing with people in power and authority; solving problems, resolving conflict; evaluating one's performance; and coping with stress and tension.¹¹⁰

Case studies of young people setting up their own enterprises in an ICT-related activity need to emphasise the importance of these skills and the obstacles that were encountered.

4. National or regional competitions are a high profile way of promoting youth enterprises related to ICT. Competitions could be promoted as an opportunity for young women and men to explore and develop a business idea with the assistance of a business adviser or mentor. The competition is likely to generate significant publicity in the media.¹¹¹
5. Mentor support for starting ICT-related enterprises is a key service that governments or NGOs could organise. The role of the mentor is to offer informal advice and guidance based on relevant business experience. It may also be a means of making it easier for young people to access business networks to obtain other forms of support.¹¹²
6. The lack of capital may a primary constraint on a young people starting and expanding an enterprise. Young people, for several possible reasons, appear to face this constraint more than other age groups. It is recommended, therefore, that micro credit programs and other financial institutions scrutinise their borrower profile and, if necessary, develop specific measures to make it easier for young people to obtain credit.

One such measure might be for providers of credit to encourage young people to undertake a recognised small business course as a step in reducing their risk profile and hence in improving their chances of qualifying for a loan.

7. Partnerships between governments and private sector enterprises are 'essential' to enable the transfer of ICT infrastructure and knowledge to developing countries, according to the UN's ICT Taskforce.¹¹³ It is recommended that governments and non-government organisations explore further the use of public-private partnerships in relation to ICT as the basis for creating/expanding employment opportunities in this area or in providing up-to-date ICT skills.
8. The UN ICT Taskforce has recommended that the UN and its agencies assist developing countries and regional institutions of developing countries in 'building local,

¹⁰⁹ White, S and Kenyon, P 2001, *Enterprise-Based Youth Employment Policies, Strategies and Programmes*. International Labour Office, Geneva, p 17.

¹¹⁰ OECD, 1989, *Towards an enterprising culture—A challenge for education and training*. Organisation for Economic Cooperation & Development, Paris.

¹¹¹ White, S and Kenyon, P 2001, p 18.

¹¹² White, S and Kenyon, P 2001, p 24.

¹¹³ UN ICT Task Force, 2001, *Report of the Secretary-General: The role of the United Nations in promoting development, ...especially information and communication technologies, ...through partnerships with relevant stakeholders, including the private sector*. E/2001/59, 2 May, para 70, p 33.

national and regional networks of partnerships suited to the demands of their particular challenges'.¹¹⁴ One way to assist the process of building networks is to create a web site to post information about case studies of partnership initiatives in different countries and to otherwise assist in the exchange of information.

9. There is considerable potential to base partnerships on a 'Digital Diaspora Network' with links to a country's professionals and successful entrepreneurs now operating from the United States, Europe and other high income countries. No such network appears to exist for South East Asia.
10. It is recommended that the business model underpinning a partnership between governments, non government agencies and the private sector in relation to ICT should identify and attempt to quantify the public good benefits as well the private benefits that the parties are seeking to achieve. The business models underpinning public-private partnerships need to incorporate a strong element of corporate social responsibility and a significant development dimension. Where possible, such business models should explicitly address the needs of the poor.¹¹⁵
11. The UN ICT Taskforce has recommended that mechanisms and tools be developed by UN agencies to 'monitor, measure and evaluate the effectiveness of knowledge and technology transfer partnership initiatives in terms of their performance, especially in relation to achieving specific socio-economic goals and targets as defined by the partners'.¹¹⁶

¹¹⁴ UN ICT Taskforce, 2001, Ibid, para 72, p 35.

¹¹⁵ UN ICT Taskforce, 2001, Ibid, para 72, p 34.

¹¹⁶ UN ICT Taskforce, 2001, Ibid, para 72, p 34.