Harnessing Information and Communication Technologies for a more Sustainable Future

St. George's House, Windsor Castle

Consultation
24 - 26 April 2001

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Introduction

Information and communication technologies (ICTs) are changing the pattern of people's lives - even more so than broadcasting, telephones and high speed transport have done before. ICTs are powerful tools whose potential to date has been only slightly tapped or understood. Improved access to education, health care, jobs and income generating opportunities and social contact are some of the advantages they offer. Improved urban governance and community empowerment are also made possible.

For all the potential benefits of ICTs it is as well to remember that rice and vegetables do not fly through cyberspace, nor indeed do they provide shelter. In addition a reliable energy supply is essential in order to use them. There are dangers that the early adoption of the technologies by the wealthy will make the gap between richer and poorer communities even larger, both within and between countries. This emerging digital divide follows existing divides between poverty and wealth, sickness and health, knowledge and illiteracy. Whilst technology will not solve these basic problems, it does provide a tool that can be used to help reduce these divides and to provide opportunities for more sustainable development.

ICTs are powerful tools whose potential to date has been only slightly tapped and understood. They offer opportunities to reduce the social and economic exclusion experienced by poor communities, as well as a more sustainable use of the earth's resources.

Rapid increases in computing power, plunging prices for silicon chips and electronics and advances in wireless communications have made powerful technologies accessible in many parts of the world which have historically lagged far behind in technology adoption. These tools offer opportunities to reduce social and economic exclusion of poor communities, as well as enabling more sustainable use of the world's resources. Such benefits are as yet dimly perceived but early adoption will undoubtedly bring advantage.

The Consultation at St. George's House was organised by the Building and Social Housing Foundation to consider how ICTs can be harnessed for a more sustainable future. Persons of experience and expertise were brought together from around the world, in order to share and develop ideas as to how to meet this challenge. A clear and simple Agenda for Action has been drawn up as a result of these deliberations and sets out clearly the action to be taken if the potential benefits of ICTs can be brought to bear to facilitate a more sustainable future.

Contact points for the organisations referred to in the text can be found on pages **here**.

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An Agenda for Action

The deliberations and discussions of the three day consultation were distilled into an Agenda for Action. This identifies key areas of action to be taken in order for ICTs to be utilised to promote a more sustainable future and to raise the human spirit. The following key principles should be used to guide all action:-

❑ Keep people at the centre of the process.

❑ Recognise that technologies are advancing so rapidly it is difficult to foresee what will be possible even in the near future.

❑ Do not accept existing practices as unchangeable - government structures, organisations and human behaviour may be changed by greater connectivity.

❑ Recognise the limitations of ICTs.

The key areas for action identified at the Consultation can be categorised under three broad headings - i) raising awareness of the potential of ICTs to transform other activity, ii) reducing barriers to enable individuals and groups to have access to and use the technologies and iii) building on approaches that will sustain ICTs and the benefits they bring.

Raising awareness

❑ Promote actual examples of how ICTs are being used to show their relevance in people's day to day lives - helping to find jobs or generate income, medical advice, education and funding opportunities etc.

❑ Use all possible networking and campaigning opportunities, including social and economic networks, to disseminate information.

❑ Use training games, fun and humour to get messages across.

❑ Raise the profile of ICTs by taking the technology to where people are (post offices, pubs, sports centres, community centres, mobile shops and libraries).

❑ Establish centres for community access to ICTs and encourage people to use them. Simply making them available is not enough.

❑ Follow through successful initiatives to help spread good practice into mainstream activity and share experience from bad practice.

❑ Use national and international awards to emphasise the importance of ICTs.

❑ Co-ordinate international research to ensure that available knowledge is spread quickly and easily.

☐ Ensure that the role of ICTs in business and economic activity is highlighted.

Reducing barriers

☐ Put even more emphasis on improving basic literacy skills.

☐ Remember that it is more important to give people confidence to approach technology, rather than any one particular skill to use it.

☐ Use technologies that do not rely on the written word, such as video, for training purposes and encourage the take-up of touch screen and voice recognition technologies.

☐ Keep costs down by encouraging the recycling of second hand computers that still have useful capacity, whilst recognising the danger that offering low-level equipment can widen the digital divide.

☐ Make the technology available in places where people naturally meet and would want to use it, with advice and support on hand to help overcome initial problems.

☐ Reduce costs by using existing infrastructure wherever possible, e.g. national networks of post offices, spare capacity in telecom systems.

☐ Provide easier access to learning opportunities - provide these locally, at convenient times and with the provision of crèches, good access to buildings and other support as needed.

☐ Seek to overcome problems with lack of power supply by using alternative 'on-the-spot' sources, such as solar energy and the lack of communication infrastructure by using satellite communication systems etc. and by establishing joint venture partnerships to assist with capital costs.

☐ Develop basic hardware and software that is affordable, easy to use, expandable and durable.

Using ICTs for a more sustainable future

☐ When a clear need has been established - just do it - start a small project and build on it. Don't wait for full political support. This will come once it is proved successful.

☐ Carry out continual monitoring and evaluation to ensure that resources are being spent effectively and that the desired results are being achieved.

☐ Recognise that governments have a critical role as a catalyst and in providing a framework for action.

- ❑ Highlight lessons to be learned from failures or mistakes, as well as from successful approaches.

- ❑ Encourage government departments and agencies to work together to avoid competence gaps, as well as duplication of activity.

- ❑ Encourage research and investment into renewable energy sources to meet the growing demands for energy as the use of ICTs expands globally.

Social, economic and environmental sustainability can all be further advanced and facilitated by the use of ICTs. Although these three elements are interlinked, the three strands of sustainability have been identified separately below:-

Social

- ❑ Identify and nurture local champions who understand the problems of their community and have the support of local people.

- ❑ Seek to use existing social or economic networks to encourage the uptake of ICTs but recognise that ICTs cannot be used to create community structures in the first place.

- ❑ Recognise that there is a wide spectrum of community needs and contexts and that ICT provision and information should be tailored to meet local needs.

- ❑ Encourage a diversity of local ICT provision in a neighbourhood and ensure that ICT training overlaps with other local activities.

- ❑ Encourage municipal authorities to use interactive decision taking and information systems in urban areas to ensure improved governance and community empowerment.

- ❑ Involve the community, government and the private sector in the development and management of the project, so they may be willing to take over the project after it is well established.

Economic

- ❑ Identify funding models and approaches that are appropriate to the context, bearing in mind delivery methods, user requirements and who will be paying the bill.

- ❑ Encourage municipal authorities to use ICTs to ensure their municipal tax base is up to date and thus help to maximise municipal tax income.

- ❑ Use ICTs to increase the profitability of small businesses, by improving market information, eliminating the middle person and expanding markets.

- ❑ Create opportunities for income generation and small scale entrepreneurial enterprise through e.commerce and related ICT activity.

- ❑ Promote research and development into cheaper hardware and suitable software.

- ❑ Identify suppliers who might provide discounted or free hardware for local community facilities.

- ❑ Encourage the use of satellite transmission to avoid the costs and problems with installation of overground cables.

- ❑ Permit debt forgiveness of the indebted nations if they are prepared to invest the expenditure saved into ICT infrastructure and training.

- ❑ Encourage free and unmetered access to the local loop.

Environmental

- ❑ Establish a database of innovative solutions for built and natural environment problems that can be accessed by those in search of new ideas for solving problems.

- ❑ Encourage citizen involvement in reporting environmental abuse such as illegal dumping, tree felling etc.

- ❑ Include simple illustrations of a practical kind appropriate to the particular area showing how materials, physical resources, water and energy can be used in a sustainable way, in the layout, servicing and construction of low cost homes.

- ❑ Facilitate improved service delivery in urban areas through improved governance systems.

- ❑ Offer access to and encourage awareness of environmental legislation to assist local involvement in, and enforcement of, sustainability issues.

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Challenges and opportunities of a networked world

Information and communication technologies such as the internet, personal computers and mobile telephones are changing the pattern of people's lives, as well as the nature of their social and political relationships. These technologies are constantly evolving and increasingly powerful. People working at the leading edge of these technologies realise that their impact and potential has been understated rather than overstated.

The information revolution is only just getting underway. In five years time today's bulky computers and the specific skills needed to use them may well be redundant.

Connection to the web will become increasingly ubiquitous - not necessarily through computers, but rather through our TV screens, wristwatches or small hand held computing devices. Any consumer device will have a screen on it and a chip to allow connection to the web.

The world is becomingly increasingly interconnected with constantly expanding networks of individuals, firms and governments communicating and interacting with each

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other. The internet is the fastest diffusing medium in history and its use has predictably followed the existing income divides, both within and between countries. However, it is still only used by two per cent of the world's population, the vast majority of whom live in OECD countries. Social and economic benefits are disproportionately enjoyed by those who adopt ICTs early and as these networks grow stronger and more pervasive, those who do not use them will become increasingly isolated and remote. Therefore, whilst ICTs have the potential to erode inequalities in and between societies, they also have the capacity to further exaggerate the existing divides. How we choose to use them is driven by the underlying values of society and the extent to which we understand the implications. If they are to be harnessed for a more sustainable future they need to be used to improve the quality of life, freedom and human interaction for all.

Using ICTs to erode inequalities

A summary of the possible uses of ICTs that are currently available can be seen in the table below. Note however that the benefits can be reversed by the abuse of power of ICTs.

Activity	How ICTs can be used to erode inequalities
Communication	· Provide faster and cheaper communication e.g. e.mail and chat rooms. · Provide rapid support and advice during times of disaster and emergency. · Help to reduce oppression and promote human rights by bringing greater attention to bear on individual cases.
Education	· Provide choice of how to study, when, where and at what pace. · Enable all levels of education to be brought to the more remote parts of the world. · Encourage non-traditional learners to acquire basic literacy skills.
Health	· Provide medical advice and information on-line. · Disseminate health awareness programmes and disease control information. · Provide easier contact with medical staff for people in areas inaccessible by road or water transport.

Community empowerment	· Cut through hierarchies and bureaucracies to transform power relationships between communities and those in authority. · Give enhanced knowledge and opportunity for low income communities to leapfrog existing technologies. · Facilitate community participation and activism. · Act as a social leveller to overcome social barriers and form the basis of a more integrated, just and equitable society.
Income generation	· Help to obtain better prices through the provision of market information and the elimination of the middle person. · Establish potential new markets for goods through e.commerce. · Help create jobs and income generation opportunities. · Stimulate entrepreneurial ventures in and through small and micro-enterprises. · Generate an economic multiplier effect.
Housing and environment	· Use of the internet to access information on possible low cost building materials and methods that are suitable for the area. · Facilitate the potential for independent living for older persons and those with special needs. · Establish better contact between landlord and tenant to provide an improved service to both.
Personal	· Reduces social isolation. · Increases self-confidence and self-esteem. · Provide easy access to information and entertainment. · Facilitates contact with family members and home contact for those living away from their families. · Provides new opportunities for participation, learning and leisure.
Urban governance	· Enables more effective and accessible government services to be provided to citizens. · Facilitates better procurement of goods by governments. · Promotes transparency of government activities. · Creates possibilities for interactive decision taking and e.Democracy.

It is suggested that by 2003 over 99 per cent of decisions made in economic and business development will be based on information that has been generated electronically. Access to information is thus a key factor in the generation of wealth and there is a strong link between a nation's level of development and the level of technology used. Any society that has the capacity to access IT driven services to a wide cross section of its population is well set for development and growth.

Although the use of ICTs can enable communities to leapfrog into better opportunities for economic growth and development, the capital cost of providing the necessary infrastructure is prohibitive for governments who have many other pressing expenditure needs. Governments need to act in partnership with the key stakeholders in ICT provision - including existing and possible future carriers, Internet Service Providers, high-tech companies, business users, educators, bankers and community groups - in order to ensure that a comprehensive system is put in place.

ICTs can contribute to the actual and potential empowerment of people in the decision-making processes that affect them. With appropriate support it can move people along the continuum from data to information to knowledge to wisdom and give them new chances and opportunities. The organising power of the internet enables like-minded people to be brought together (for good or ill). Increasing knowledge gives confidence to deal with professionals and experts, especially in

areas such as medicine. All in all it adds up to the beginning of a redefinition of social and political boundaries.

Communication is the crucial element of ICTs in identifying how communities will be part of the network society. The technology and information elements will have minor impact compared to the impact that the communications side will have, for this will affect our capacity to network with each other and how we relate to society. If there is no established community activity or network in the community, then providing ICT equipment may prove ineffective. If a strong network is in place then the beneficial effects will probably be quickly felt.

Health warnings!

Enthusiasm for the opportunities provided by ICTs should not blind us to their limitations. These include:-

- ☐ ICTs do not provide shortcuts to development. They do not provide better shelter, sanitation or access to food. It is people who reduce poverty, not the internet.

- ☐ ICTs are useful tools but they are not a panacea. There is a danger that people will exaggerate the good that they can do in poor communities, and leave more crucial work undone.

- ☐ It is unrealistic to expect that ICTs can create strong social networks where there were none to start with. They can help to strengthen existing networks, but cannot create them in the first place.

- ☐ There is no guarantee that ICTs will be used to achieve lofty ideals of education for all, any more than television has lived up to these expectations over the last sixty years.

- ☐ The use of ICTs tends to further impose western culture, standards and expectations on the urban elites in developing countries.

- ☐ The use of ICTs may serve to reinforce existing differentials between urban and rural areas and accentuate existing inequalities between the educated and the uneducated.

- ☐ In the longer run it may be exclusion by information rather than from information that is the greater problem, as the use of personal information becomes a tool for exclusion itself.

It is as well to remember that 90 per cent of the world's population have never made a telephone call and that rice and vegetables will not fly through cyberspace. ICTs do not provide security of tenure and basic housing. On the contrary, secure tenure and basic housing as evidenced within the UN's HABITAT Agenda are precursors to the provision of other services, including information. Being under constant threat of eviction does not encourage communities to take advantage of the opportunities offered by ICTs.

It is important not to forget that more conventional media still have an important role to play in imparting information. There are now over 1.5 billion TV sets in the world and 2.5 billion radios. The introduction of television in the early 1940s was seen as bringing a golden opportunity for learning and education for all. By and large this has not been the case, either in the developed or the developing world. Rarely have TV and radio been used to their best advantage and there is no guarantee that the more recent and more sophisticated technologies will be any better used.

Vast quantities of personal information, legitimately collected by government and commerce, help

Secure tenure and basic housing as evidenced within the UN's HABITAT Agenda are precursors to the provision of other services, including information. Being under constant threat of eviction does not encourage communities to take advantage of the opportunities offered by ICTs.

to fuel modern economies. These databanks enable organisations to make decisions on the risk and profitability of individual people and areas and these organisations are thus able to concentrate their efforts on those markets most likely to create profit with least risk.

Barriers to using ICTs and how to overcome them

ICTs are changing how people can learn, purchase goods and access information. Often those people who would benefit most from using these new technologies are those who are least able to do so. A summary of the main barriers to their use and possible means of overcoming them are set out overpage.

Some of these barriers - such as the lack of the necessary physical infrastructure (digital communications, electricity, reliable telephone systems) - present greater obstacles in the developing world, especially away from the major urban centres. Other barriers are common to all countries, for example, the lack of awareness of the benefits that ICTs can bring. Providing training and the computers is the comparatively easy part of the process - the real challenge to be faced is changing the mind-set of people, or their representatives, who believe that ICTs have no value or relevance to their lives.

Everyone who today uses ICTs with ease has had to move through the cycle of competence, from a point where they were completely unaware of the technologies to a point where they are so familiar with them that they have become second nature. This learning process can be summarised in the diagram below:-
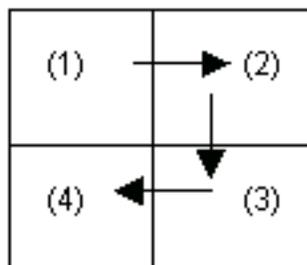
(1) unconscious non-competence (unaware-"don't know what you don't know")

(2) conscious non-competence (aware but not able to use it – "know what you don't know")

(3) conscious competence (through training and learning)

(4) unconscious competence (second nature)

The process cannot be started without awareness of and access to the technology and any one of the above barriers may prevent access. Once access is possible, people can begin to engage in the process and move to complete competence in their use. There is no stigma attached to not being able to use the technology, whilst there is with the inability to read and write, and there is no social pressure to acquire these skills. The fact that a large proportion of senior decision makers in all sectors of society are technologically illiterate is a very real hindrance to the promotion and

the use of ICTs. Care must be taken to ensure that a western cultural ethos does not become even more evident.

Digital solutions are not necessarily the answer to the digital divide. Language problems - an inability to read English, or to read at all - present major problems for those wishing to use the internet. 90 per cent of all information on the internet is in English whereas only 10 per cent of the world's population can read it. Translation services and touch screen technologies are beginning to emerge to help overcome these problems. These language problems may indeed only be an interim problem, as the technology we currently use is comparatively unsophisticated.

Barrier to take up	Possible means of overcoming it
Awareness and confidence	· Use of training games, fun and humour to identify uses and opportunities. · Recognise that it may be temperament that prevents people being willing to take up the technology, rather than age, gender or cultural factors. · Take the technology to where people are (pubs, sports centres, post offices, mobile shops). · Use a range of training methods, including mentoring, class learning, on-line learning and drop-ins. · Identify and nurture local champions who understand the problems of their community and have the support of local people.
Language and literacy	· Put increased emphasis on teaching basic literacy skills. · Use technologies that do not rely on the written word, such as video, for training and confidence building. · Use touch screen and voice recognition technologies.
Relevance	· Promote actual examples of how ICTs are used to show their relevance in day to day situations – finding employment, checking market prices, house buying, medical support, contacting landlords etc. · Establish local learning and work banks to provide information on jobs and learning opportunities.
Infrastructure	· Use of satellite, radio links and optic fibre to avoid problems with installation and vandalism to overground cables. · Use of 'on-the-spot' alternative energy sources such as solar power to provide an electricity supply. · Governments need to take a lead in using ICTs for development. · Use existing infrastructure where possible, e.g. network of post offices, banks, railways.
Cost of access	· Ensure that the perceptions of cost are realistic. · Establish joint-venture partnerships with international companies and use bi-lateral loans to provide the basic infrastructure needed in developing countries. · Free up local loop and unmetered access.
Lack of equipment	· Encourage the recycling of useful second-hand equipment. · Encourage the development and use of 'scaled-down' versions of current computer hardware and software that are simpler to use and encourage wider access. · Establish tele-centres where facilities can be available for community and business use.

Cost is also a major barrier for poorer communities to gain access to ICTs. The constantly changing nature of the technology can make it extremely expensive to use state of the art technology and keep constantly updating it. A range of funding options needs to be used to meet different needs. These options include private-public relationships, charities, multi-lateral and bi-lateral aid organisations, credit and micro-credit programmes, subsidies, grants and awards, bartering and commercial and market-based options.

In the UK 55 per cent of adult men have used the internet and 39 per cent of adult women, 82 per cent of young people and 14 per cent of those aged over 60. Seventy one per cent of those in the professional occupations have used it but only 26 per cent of those with unskilled occupations. People will only find the internet relevant to their lives when it reflects their own interests and needs or when there is a critical mass of users. Locally relevant content is a major driver of internet usage. Interactive chat rooms, online interest groups, special interest software, bulletin boards for local community jobs and activities all encourage people to use ICTs more widely in their lives.

Digital solutions are not necessarily the answer to the digital divide. Language problems - an inability to read English, or to read at all - present major problems for those wishing to use the internet. A reliable supply of energy is also necessary.

Cultural acceptance of information devices such as televisions, fax machines, pagers, telephones and computers is necessary if ICTs are to be accepted. In communities where incomes are low publicly available facilities can offer an alternative opportunity to use the technology. These facilities need to be appropriately sited, low cost and accessible and people need to be encouraged to use them. Simply making them available is not enough.

The emerging role of ICTs in alleviating poverty

1,500,000,000 people live on less than $1 a day. The majority of these are women and young people who are living in inner cities and slums. These concentrations of poverty are some of the most challenging problems facing the world. How can the use of ICTs help to meet the challenge of not only alleviating poverty but also helping to redistribute wealth in a networked world?

Poverty has two main elements - private poverty which has been defined as the individual's inability to meet basic requirements and public poverty which exists when there is an inadequacy of publicly provided goods and services to meet the basic needs of citizens, i.e. roads, water, electricity and transportation. In the developing world private poverty is exacerbated by public poverty. Poor roads, lack of electricity and running water and limited access to public services, including health and education, retard the ability of these communities to improve their situation. The lack of basic infrastructure and services are major inhibiting factors preventing a greater uptake of ICTs in developing countries. There is no point in having improved market information or more outlets for locally produced goods if there are no roads to transport the goods, or ports from which to export them. The basic development work therefore still needs to be continued.

Whilst the globalisation process has brought many new opportunities, these tend to be concentrated in the wealthier communities and a yawning digital divide is becoming apparent. The great divide between rich and poor countries, long recognised with regard to economic wealth and social conditions, is increasingly apparent with regard to the usage of ICTs. This digital divide also exists between rich and poor communities within countries. For example, in the USA only six per cent of those earning less than $10,000 had access to the internet compared to fifty per cent of those earning over $75,000. Unless concerted action is taken to ensure that poor communities become part of the networked world, the productive use of ICTs will remain a phenomenon that is largely confined to the richest parts of the world.

ICTs have the potential to enable communities to leapfrog into a new arena of possibilities for economic growth and development. International funding agencies are increasingly making available development assistance programmes which enable governments to develop strategies for providing an ICT infrastructure. Such projects accounted for $130 million of the Inter-American Development Bank's spending in 1998 and by the year 2000 this had increased to $4,500 million.

ICTs enable global initiatives to take place linking funding needs and opportunities. The Be The Change! initiative is one such example. This enables youth-led sustainable development projects to be put in touch with possible sources of funding identified by Netaid. This is an organisation

founded by UNDP and Cisco Systems in October 1999 to use the power of the internet to raise money for poverty eradication projects around the world.

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Moving into a more sustainable future

ICTs bring many opportunities for change to the way that people live and interact with their environment, including the opportunities to establish more inclusive and sustainable practices.

Using ICTs in low income communities

Jamaica is an example of a developing country with a comprehensive strategy for putting in place an ICT infrastructure. The public telephone system has been opened up to competition and an official regulator established to regulate telecommunications. A separate authority has been established to regulate and monitor the issuing and use of radio licences to include satellite linkages and cellular telephones. Access to ICT facilities is to be provided for all communities, including those in rural areas as well as in poor urban areas. ICTs will be used to enhance education, health and national security. These government initiatives are being funded by the sale of cellular licences. Given the rapid rate of technological change the government has realised that it cannot provide all the necessary funding and public/private partnerships are necessary to ensure the long-term sustainability of the country's ICT infrastructure. Above all it recognises the crucial role of the public sector in promoting ICTs and the knowledge economy.

In Jamaica the postal network is well-positioned to provide a reliable mechanism as the main carrier of ICT based services to communities, and in particular to low income communities in both urban and rural areas. 700 postal service points are to be equipped with ICT facilities. A wireless digital backbone will connect all postal points, giving post offices the capacity to deliver Internet-based services over the counter. Through the use of Internet Kiosks every citizen will have an e.mail address and will have access to the internet. This will facilitate person to person communication as well as eliminating barriers to business communication and facilitate the growth of micro-enterprise within communities. There will be broad access to e.government services such as tax collection, registration of births and deaths, passport applications, government information services and labour market information, enabling citizens to become part of mainstream society.

The technologies themselves will help to stimulate entrepreneurial activity through small and micro-enterprises. Maintenance services, programming, sale of accessories and sale of access to internet based services all serve to generate much needed local income and create employment. Having an established ICT infrastructure also enables foreign companies to provide employment through call centres, data entry, programming and other ICT related services. This phenomenon is witnessed by the clustering of such services in high-tech centres, for example in Bangalore in India.

The post offices in Jamaica are almost all run by women who have been attending training courses to be able to use the new technologies. Learning how to use the technologies has encouraged the women to take on greater responsibility and become more entrepreneurial. Many are now drawing up their own business plans and using the newly acquired skills to enhance their income-earning capacity.

A further example of how ICTs are being used for the benefit of the poor is the use of mobile phones by the **Grameen Bank in Bangladesh**. This bank was established in 1976 with the aim of extending banking facilities to the very poor in order to alleviate poverty by creating new opportunities for income generation and eliminating the exploitation of the moneylenders. Twenty-five years after it started the bank is now established in over 40,000 of Bangladesh's

68,000 villages and has 2,400,000 active borrowers. From an initial loan of $26, over $3.3 billion has since been lent and $2.96 billion repaid. Each month $28 million is loaned and there is a 98 per cent repayment rate.

Bangladesh provides an example of a national telecommunication system that does not work. It has one of the world's lowest densities of phone lines (2.6 lines per 1,000 people), the waiting time for a connection is ten years, the installation charge of $450 is one of the highest in the world and only 20 per cent of calls are successfully completed. In 1997 the Grameen Bank organisation launched its mobile phone initiative. This had been developed by combining the bank's expertise in micro-enterprise and micro-credit with the latest digital wireless technology. Grameen Telecom was established as a non-profit organisation to focus exclusively on the development of the mobile phone programme in rural Bangladesh. The main objectives of the programme are to:-

- ☐ Provide easy access to a telephone, when needed, all over rural Bangladesh.

- ☐ To introduce a new income generating source for the Grameen Bank borrowers.

- ☐ To bring the potential of the information revolution to the doorstep of the villagers.

- ☐ To introduce telecommunication as a weapon against poverty.

A Grameen Bank borrower purchases the phone under the loan programme of the bank and provides telephone services to the people in her neighbourhood. Known as a 'Telephone Lady' she charges villagers to use the phone, with the charges covering call and rental costs plus an element for profit. There are currently 5,000 small phone businesses covering 10,000 villages. Incoming calls are either made at a predetermined time or the telephone lady takes the phone to the villager when the call comes in. The coverage continues to increase daily and it is expected that it will eventually cover over 40,000 villages. On average the net income per month to the phone entrepreneur is $100 after meeting all costs. This is a high income compared to other rural occupations. Bulk air time is purchased by the Grameen bank through its Grameen Phone subsidiary and this is retailed to the individual telephone ladies.

Most of the calls made are to exchange market information (local markets are telephoned to check the price and availability of produce), followed by family and personal uses and health related issues. The use of the phone thus enables villagers to get fair prices for their commodities as well as a regular supply of inputs enabling productivity to be increased. By enabling villagers to get accurate information on foreign currency exchange rates there is reduced opportunity for exploitation when cashing in remittance transfers from family members working overseas. In times of national disaster expatriate family members can telephone to make sure that their families are safe and to get information about their villages.

Impact studies in villages show that surpluses are greater and higher prices are obtained for agricultural products in those villages where there is access to a phone. They also show that running a mobile phone business significantly explained variations in nutrition and food intake levels in rural households. There is also social empowerment when richer villagers use the telephone services provided by the poor and women are accorded a higher status in their family due to their increased earning potential.

The use of mobile phones has been established for only three years in rural Bangladesh but already it is emerging as a solid business idea, bringing benefits to whole communities and turning villages into growing centres of economic and social activities.

The Grameen Bank is increasingly using ICTs in its own banking operation systems. Mobile phones make links between the bank managers and headquarters much easier and the use of computers enables information to be e.mailed back to HQ for speedy processing. Smart card technology will soon be used to record the weekly payments made by borrowers and transfer this information to the central records system, rather than the bank managers having to make handwritten entries in individual passbooks and in the banking records.
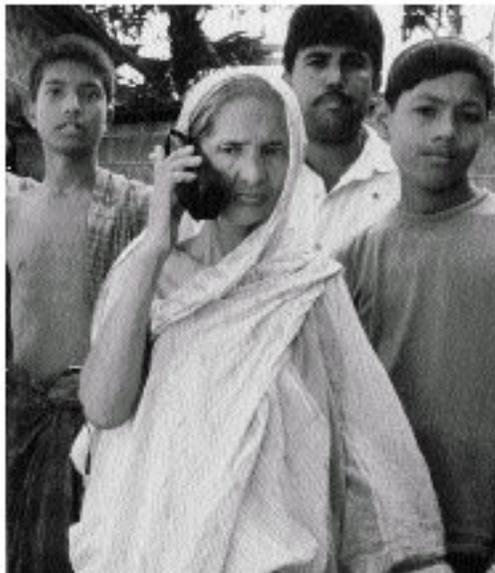
Although there is less public poverty in developed countries, there are many millions of low income households who struggle with private poverty. ICTs have a valuable role to play in reducing the social exclusion experienced by such households. In areas where extensive urban regeneration is being planned, ICTs can have a special role to play. Community web-sites can be developed and local people can be kept updated on changes in the area on a more regular basis than via newsletters. Local people can also take part in on-line forums to express their views. ICTs also enable better links between landlord and tenants to be established.

London and Quadrant Housing Trust is one of the social landlords in the United Kingdom that is pioneering this approach. As social landlords, housing associations are in an ideal position to reach many of those who are socially excluded and help them to gain the skills and access to ICTs that will prepare them for the future. Internet ready computers have been given to most London and Quadrant residents' associations, using recycled machines supplied by Computers for Charity.

Their Residents On-line project has proved very popular. This includes a free learning programme of ten hours of ICT training for those who want it (155 persons have been trained in the first year, and a further 290 residents are waiting to start the training).

A repairs on-line service was developed at the direct suggestion of residents and enables a more efficient and cost effective repairs service to be provided. The project has been driven from the start by a panel of committed residents who make decisions on both the content of the web-site and the shape and direction of the learning programme. Residents in sheltered housing schemes have been some of the most enthusiastic learners and training programmes have been carried out in five sheltered housing schemes and a computer with internet connection has been provided in the common room of each complex. These computers are well used and demand is growing for more courses in sheltered homes.

Shipley Communities On-line is another example of how ICTs are helping to increase access to jobs, training and to the Information Society for low income households in the Shipley East area of Bradford. This is a partnership project developed within a council-backed but community-led regeneration framework, Shipley East Regeneration. It involves fifteen organisations from the statutory, voluntary and private sector. The project provides ICT facilities in community venues for residents who want access to ICTs to gain new skills and update qualifications for work. ICT provision is provided as a drop-in facility to meet a range of diverse needs, as well as access to structured qualifications provided through on-line learning by Shipley College, a major partner. On-line learning allows people to study near their homes at a time convenient to them, without having to attend set classes. Students come into the local community centre, work on computers at their own pace and send their work via the internet to their college tutor for assessment. No prior knowledge of how to use computers is required and tutor support is provided in each centre. Information on local job vacancies, training opportunities, local childcare provision and much more is also provided through the Shipley Communities On-line web-site. This includes web-sites for each community organisation, increasingly designed by local residents. The project has been made possible through funding from the European Regional Development Fund and more recently the UK On-line Centre Programme.

The **Interchill Project** in Liverpool is an exciting project based in Liverpool where youngsters manage and run the whole place. Best known for its modern computer suite, the concept is inspirational and has attracted 400 young people to become members. ICT is the focus with members contributing to a vibrant web-site. Counselling facilities are provided in addition and a 'chill out' room with comfortable sofas. Members pay £1.50 to join and a swipe card gives access to the building as well as automatically monitoring usage.

The role of government
Political will to create wider access to ICTs for all is vital if there is to be effective use of the technologies to support poorer communities. Government has a critical role to play in promoting wider access to ICTs. It can help by providing a favourable climate for internet use and e.commerce and by encouraging communities, individuals and organisations to invest in and use the technologies. The particular roles for government include:-

- ❑ Acting as a catalyst and giving a strong lead to show the importance of the use of ICTs.

- ❑ Creating the regulatory infrastructure to enable ICTs to be used easily by ensuring affordable pricing for consumers and maximising access by encouraging multiple providers of services, especially in the local loop, broadband and unmetered access.

- ❑ Establishing genuine and productive partnerships with other stakeholders to ensure that there are sufficient resources to fund a comprehensive approach to ICT provision.

- ❑ Ensuring that there is mainstream curriculum IT training in schools and that there is appropriate vocational training support for the unemployed and underemployed. Wherever possible this should be integrated into other subjects, projects and tasks.

- ❑ Minimising barriers to trade and tariff levels on electronic equipment, software and trade to further encourage uptake of the technology.

- ❑ Taking the needs of poor communities as the starting point, rather than imposing its own agenda, ideas and expectations.

- Using the introduction of ICTs as part of a comprehensive regeneration programme.

Government has to allow community groups to have a role to play. Only after listening to local people expressing their own needs can the role of ICTs in these people's lives be identified, i.e. people first, technology second. It is up to local communities as to how they then use the technologies.

Funding of capital investment as well as the skills training for all those that need it may prove too expensive for governments to take on alone. expensive for governments to take on alone. There is the need to work with partners. Whilst partnership is frequently lauded, it is important to understand how the partnership process works and to establish more genuine and productive partnerships in the future. It would be unwise to rely too heavily on the private sector whose prime concern is commercial and based on their profit level, rather than long-term subsidy of good causes.

At the end of the day it will be popular demand that drives political will. Governments can therefore play an important role by raising awareness and highlighting good practice. This is particularly the case with ICTs since few people have any idea of the potential of how they can be used. Once practical examples are given however, there is a rapid increase in awareness and uptake. It is not always possible to anticipate the use to which technology can be put. It is crucial to show what can be done and to give the people the awareness, confidence and facility to use it.

The promotion of the greater use of ICTs needs to be done within an existing framework of social and economic regeneration and has to be part of an integrated approach. The key to an effective spread of ideas is to have well-established networks - not only electronic ones, but, more importantly, of people who are prepared to share ideas and experience.

Changing cities for the better

The role of information is critical if our cities and towns are going to be inclusive. Despite the depressing statistics relating to the digital divide, there are many positive examples emerging of how new technologies are changing the ways that cities are working. In some instances they are being used to help the poor, in other instances they are being used by the poor themselves. There are three main factors that are driving the process:-

- An improvement in the efficiency of local service delivery.

- Citizens are demanding improved customer care.

- Local municipal income is increased through the use of ICTs to provide up to date information on the tax base of the municipality.

The main ways in which cities are changing with the increasing use of ICTs include:-

- e.Democracy is changing the way that local authorities are running their cities and towns. Transparency can be increased by establishing comprehensive land registries and providing information on the city decision making processes.

- The use of ICTs by municipal administrations in establishing up to date inventories of their municipal tax base enables more efficient collection of city taxes. The additional income is then available for spending on public services. Access to government services can also be provided on-line.

- Access to the internet enables agencies and community based organisations to act as information intermediaries for poor communities, passing on information about forced evictions etc. It also facilitates greater activism in fighting them. This is an important way of empowering the poor, which should not be underestimated. It also encourages greater connectivity between poor communities.

- The exchange of positive ideas through databases of innovative solutions to housing and environmental problems, enables information on solutions to local problems to be easily accessed. This can be further promoted by setting targets for the increased interchange of electronnic information.

- Use of the new technologies can help overcome some of the bottlenecks and monopolies set by the traditional forms of infrastructure and are being utilised by poor communities to improve their quality of life, for example by the use of mobile phones where there are no fixed land-line installations.

- Improved security in squatter settlements through the use of mobile phone technology.

Building houses as if the future mattered

Intelligent and green technologies can be harnessed to provide affordable and sustainable housing to meet future needs, including communication. The main difficulty in developing such housing is not with the use of the innovative technology involved, nor the commercial challenge of delivering good value and good performance, but rather that of achieving cultural change. House-builders are cautious, preferring to sell out-moded products to buyers who know no better. Social housing providers are hampered by lack of capital.

A positive vision is needed of how housing can be provided in the future. Rather than retreating into a fictional future which conjures up idyllic images of the past, house design needs to face up to the challenges of the future and provide a product that combines intelligent technology with that of improved environmental performance. In order to meet these challenges it is important to work closely with both the end-users and contractors, as part of an integrated process.

The INTEGER organisation was established in 1996 to demonstrate how intelligent and green technologies can improve people's homes and lives. It is producing homes that are more cost effective, sustainable and robust. An IT infrastructure is carefully planned and installed to allow for an extensive range of communications, computing, security and home management. This ensures that householders are able to take full advantage of the digital future. The technology, for example, also allows the gas supply to be switched off automatically if a gas leak is detected and smoke detectors can be linked to a local monitoring system. Such advances mean that the houses have great potential for helping older or disabled people to live independently, rather than having to be cared for in a residential home.

Full network cabling is provided to all rooms, situated behind removable skirting boards or cornices. This means that the house is wired throughout for digital television and sound and networked computers. Security alarms, sound systems and disabled support systems can be provided in every room. Flexible partitioning enables room sizes to be easily altered to meet

changing needs and effectively 'future-proof' the house. Economy of energy and water usage ensures that houses require only 60 per cent of the energy and water used in a conventional house. Technological innovation allows the house functions to be controlled and monitored (remotely if necessary).

Sixty INTEGER homes have been built with many more in the pipeline. High quality, rapid construction techniques are used which maximise the thermal and environmental performance of buildings by the choice of materials and methods and by design of the building form. All-dry construction using pre-fabricated components enables rapid and high quality construction on site, with kitchen and bathroom units delivered as completed units and lifted into place by crane.

The INTEGER model for change puts much emphasis upon the role of education. Schoolchildren are involved in the housing programmes to increase their understanding of designing and building for future needs. The schoolchildren are encouraged to visit the site and monitor the progress of the building. This 'real-life' learning is popular with all concerned and a range of integrated learning programmes have resulted, including creative writing, art, technology, science and civics projects.

The INTEGER process has been successfully completed in countries outside of the UK showing that it is a suitable model for change and can be adapted to meet a range of different cultural values.
Information and communication technologies are useful tools to assist people in various situations across the world with direct, visual and replicable examples of sustainable ideas to improve their habitat. They range from the simplest provision of basic services for informal development, through self-build structures, to more advanced forms of housing and rehabilitation, which still contribute to a sustainable future.

Questions still to answer ….
Many questions were raised at the Consultation, but not all were answered. Some of these unanswered questions are included here as a focus for future debate.

- ☐ How will ICTs change human behaviour?

- ☐ .How will ICTs change our understanding of institutions and formal structures and what will be the implications of this for the way society is organised?

- ☐ Does being on-line have any impact on how people communicate face to face in their own neighbourhoods?

- ☐ How to assess what kinds of ICT initiatives really make a difference?

- ☐ How can government make funding available and set targets for ICT use that are relevant to people's needs?

- ☐ How can ICTs be used to meet the challenge of not only alleviating poverty but also redistributing wealth in a networked world?

ICTs are clearly powerful tools for social, economic and environmental change. Their impact on helping to use information and resources to alleviate poverty and contribute to sustainable development is only just beginning to be recognised. A range of factors will help determine whether or not these tools are able to achieve their full potential. Individual and societal values will determine the extent to which ICTs will be used to bring real benefits to the poor. The importance of citizens actively using ICTs cannot be stressed too strongly if the wide variety of cultural, community and individual needs can begin to be met by using ICTs.

Given the rapid pace of technological change the issues raised at the Consultation cannot remain static. They will need to be revisited and possibly reconsidered in the light of the future advances

in technological capacity and opportunity. The Agenda for Action established here provides the framework for that future debate.

Next

Sources of further information

United Nations Centre for Human Settlements (Habitat)
P.O Box 30030
Nairobi
KENYA

Tel   00-254-2-625001
Fax   00-254-2-623919
Web   www.unchs.org

Shipley Communities On-line
Shipley East Regeneration Office
Shipley Town Hall
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Web   www.lqgroup.org.uk
         www.residentsonline.org.uk
         www.towerhomes.org.uk

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E.mail   g_admin@grameen.net
Web   www.grameen.com/grameen/gbank

Useful Web-sites

www.PAT15.org.uk - UK government report on the digital divide.

www.dfee.gov.uk/wired - Details of a programme to show how individual access to the internet can transform

opportunities for people living in the most disadvantaged communities.

www.dfee.gov.uk/ukonlinecentres/ - For people who have limited or no access to skills in using new technologies.

www.learndirect.co.uk - Provides on-line learning, covering many topics, which can be taught any time, any place, anywhere.

www.worktrain.gov.uk - Helps find jobs, training courses or information on particular occupations to help make career choices.

www.readinessguide.org - Guide for developing countries wishing to increase their access to the networked world.

www.interchill.co.uk - Details of the Liverpool based youth project formed and run by young people and focusing on internet usage.

www.peacechild.org and **www.netaid.org** - To find details of the Be The Change Programme.

www.ageconcern.org.uk - Survey results on older people and ICTs and information on Age Concern initiatives to provide greater ICT access to older people in the UK.

www.housingnet.co.uk - Independently run web-site that is full of useful infomation on housing with links to a range of relevant sites.

www.un.org/esa/coordination/ecosoc/itforum - Highlights the contribution that ICTs can make to meeting the challenges of globalisation for the benefit of all.

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Building and Social Housing Foundation

The Building and Social Housing Foundation is a research institute based in Coalville, Leicestershire. It is an independent research body which gained its financial endowment from a building organisation formed by a group of homeless and penniless ex-servicemen just after World War Two. The Foundation carries out research into all aspects of housing, concerning itself with the immediate and practical problems of housing today, as well as attempting to look to the future in a progressive and imaginative way. Of particular interest is the need to identify solutions rather than problems. In all its work it aims to avoid bureaucracy, eliminate the waste of resources and encourage self-help and self-reliance.

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BACK TO START