ENHANCING THE LIVELIHOODS OF THE RURAL POOR THROUGH ICT: A KNOWLEDGE MAP

Bangladesh Country Study

June 2008

Information and communication technologies (ICTs), appropriately adapted, help improve the livelihoods of poor individuals, families and communities in rural areas and increase their income opportunities, thereby improving their chances of escaping from persistent poverty. This Knowledge Map helps understand what we know, both from research and from experience in the field, and what do donor staff and their country counterparts most urgently need to know about these issues. In addition, it provides recommendations on the use and role of ICT in enhancing the livelihoods of the rural poor.

WORKING PAPER NO. 10, 2008

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1. Introduction

1.1 Role of ICTs in the livelihoods framework

Livelihood analysis is deeply rooted at the micro level, where individuals, families, households and groups create their own coping strategies within a context of vulnerability. The vulnerability of the rural poor is determined by multiple influences related to trends, shocks and seasonality concerning economic, social, political, geographical and natural resource factors. Vulnerability can increase owing to lack of access to resources, weak economic integration and climatic problems, factors which are often exacerbated by ineffective governance, lack of economic opportunities, social exclusion, conflict, discrimination, and lack of voice for the poor (Hulme and Shepherd, 2003). Vulnerability can also decrease when trends move in directions that are favorable to the poor.

Information can play two key roles in reducing the vulnerability of the poor: i) an analytical role in assessing the vulnerability context and ii) communicating such information to those who can act upon it. The following figure proposes an information chain which explains how information and communication processes within the livelihoods framework reduce the vulnerability and enhance welfare of the poor.

![Image of Information in the Livelihoods Framework]

Information can be understood in terms of a staged process. Within the structure of the information system, both analytical and functional approaches have an important role to play. The model suggests that raw data (disorganized and unprocessed information concerning trends, shocks, and seasonality) need to be accessed, assessed, and applied in some manner before they can be considered usable information which can be acted upon. Institutions (government, non-government, market, donors, etc.) can create a favorable environment for livelihoods by parsing this data. Overt resources (money, skills, technical infrastructure) and embedded/social resources (trust, motivation, knowledge, power) must also be incorporated.

1.2 Potential of ICTs and constraints

Information and communication technology (ICT) has the potential to improve rural livelihoods and expand a range of knowledge bases for the rural poor in Bangladesh. ICTs can improve capacity and efficacy both for the rural poor and for institutions engaged in improving rural livelihoods. Institutional systems can act directly and
indirectly to ensure the well-being of the poor: through direct physical assistance which may have a visible impact on vulnerability and through dissemination of information which has an influence in terms of improving livelihoods. Embedded resources are required for the poor so they can assimilate the content of information communicated to them and access a contextual understanding of the sources of such information (World Bank, 1998).

However, understanding the context in which ICTs work and do not work is critical to realizing their potential. Infrastructural requirements of ICT mean that some forms of ICT are not scale neutral; costly initial investments mean that benefits are beyond the reach of many of the rural poor. Moreover, excessive monopolization, along with overbearing regulatory control, has held back the spread of ICT.

Furthermore, low literacy rates hamper ICT adoption. According to recent statistics on ICT accessibility in Bangladesh, only 0.8% (eight per 1,000 people) of the total population possesses a personal computer, while the rate of internet user is languishing at 0.5%. The density of fixed-line telephone is struggling at 0.86%, even 36 years after independence, as a result of capacity constraints from inadequate investment as well as pervasive corruption within the state-owned Bangladesh Telegraph and Telephone Board (BTTB), which monopolized the sector until 2004. On the other hand, the mobile phone penetration rate jumped to 15.8% in 2006, up from 6.7% in the preceding year, thanks to recent growth in the country's fledgling mobile phone industry.

Two examples below demonstrate how a lack of information can cause vulnerability.

1.3 Vulnerability caused by lack of information

On 17 September 2006, over 1,500 fishermen on some 500 trawlers went missing when a storm hit in the country’s southeast coast. In addition to the lives lost, the storm caused extensive damage to property. Many fishermen did not take shelter as they had not received any forecast warning from the country’s Weather Department (see COAST, 2006). Although the impact of this crisis was particularly large, incidents such as this are not new phenomena in Bangladesh. They occur almost every year.

A well-built network between the Weather Department and fishermen communities in coastal areas could save lives and property. Time and again, fishermen have demanded that the government modernize the forecasting and warning systems, including the establishment of mobile phone and radio networks in deep sea (see Box 1). However, very little has been done in this connection.

Box 1: Fishermen Demand Mobile, Radio Network in the Deep Sea

Following the storm of 17 September 2006, the trawler owners’ association demanded that the government modernise the weather forecast and warning systems, and provide cell phone and radio networks in the deep sea in order to reduce loss of life during natural calamities.

Fazlu Gazi and Nimai Chandra, president and secretary of Mohipur Fishing Trawler Owners’ Association, announced the demand while talking with local journalists in the association’s office yesterday. They said about 50,000 men were involved in fishing. About 200,000 mounds of fish, including Hilsa, are netted annually in the Kuakata area alone, all of which is exported, but the sector is ignored by the government.

They demanded a mobile network covering 50km offshore, which would allow fishing trawlers to maintain communication with law enforcers and trawler owners, as most of the piracy take place within 50km of the beach.

They also demanded a radio network for the same area in order to listen to weather forecasts and warnings without interruption. Now, fishermen cannot listen to radios because of poor networks in the deep sea. They also demanded a modernised warning system, as the current one is hard for the fishermen to understand. They said the measure would enable them to reduce the number of deaths and destruction caused by such storms.


1 See news reports from the Daily Star, New Age and Prothom Alo.
A recent award-winning television commercial for a mobile phone company drew the attention of many. The commercial, themed “making difference in peoples’ lives,” showed how the advent of mobile phones could improve the lives of fishermen. In the past, when fishermen could not learn prices on urban markets, exploitative middlemen bought fish locally at low prices, trapping fishermen in perpetual poverty. With the arrival of mobile phones, fishermen were able to contact urban markets to find out real prices and thereby improve their livelihood.

1.4 Background to the research

By better understanding the role that various forms of ICTs can and do play in rural poor households, and in institutions which work with the rural poor, donors, practitioners, policymakers and information providers can tailor ICT projects to the needs of a historically underrepresented segment of society. To obtain this knowledge, we reviewed the literature available and interviewed key informants, including rural users and non-users of ICTs. The study includes consultations with both rural users and ICT service providers (e.g. donors, practitioners, private sector actors, and government officials and policymakers who implement and support ICT services or who use ICT services to enhance their work with the rural poor). We used the interviews as a means of filling the gaps identified in the literature review and as an opportunity to explore some of the successes and failures of ICT in Bangladesh. For a comprehensive understanding of the impact of ICTs on livelihoods of rural Bangladeshis, a larger-scale survey would be required.

The paper is structured as follows: Section 2 gives a socioeconomic overview of Bangladesh and Section 3 looks at the state of ICT in Bangladesh today. Section 4 provides an overview of two case studies. Sections 5 and 6, provide more details of the case studies, examining the role of ICT service providers and users in rural Bangladesh. The final section reviews policy measures as well as strategies to determine the impact of ICTs on rural livelihoods, and the role of different stakeholders.
2. Socioeconomic Background

Bangladesh is a low-income, least developed country with 55 million, or 40% of the total population (138.8 million), living below the poverty line, according to the Bangladesh Bureau of Statistics’ (BBS) Household Income and Expenditure Survey (HIES) for 2005. Of these, 35 million live in extreme poverty. About 43.8% of the total population living in rural areas (about 75% of the total population) exists below the poverty line, whereas the incidence of poverty in urban areas accounts for 28.4%. Agriculture is the main livelihood source in rural villages. The literacy rate has yet to make any significant progress, hovering at 62.66%. Income inequality has increased over the past five years.

Table 1: Head Count Ratio (by cost of basic needs) of Poverty Incidence

<table>
<thead>
<tr>
<th></th>
<th>Poverty incidence</th>
<th></th>
<th>Extreme poverty incidence</th>
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<tbody>
<tr>
<td>National</td>
<td>40.0</td>
<td>48.9</td>
<td>1.78</td>
<td>25.5</td>
</tr>
<tr>
<td>Rural</td>
<td>43.8</td>
<td>52.3</td>
<td>1.70</td>
<td>29.3</td>
</tr>
<tr>
<td>Urban</td>
<td>28.4</td>
<td>35.2</td>
<td>1.36</td>
<td>13.7</td>
</tr>
</tbody>
</table>


Per capita GDP rose to US$456 in 2006 as compared with US$361 in 2001. The GDP growth rate peaked at 6.71% in 2006, sourced from remittances and urban economic sectors, such as manufacturing and exports.

Table 2: Country Background Information

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<table>
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<tr>
<td>Total population (2006*)</td>
<td>138.8 million**</td>
</tr>
<tr>
<td>Population density (2006*)</td>
<td>941</td>
</tr>
<tr>
<td>Population growth rate (%) (2003)</td>
<td>1.43</td>
</tr>
<tr>
<td>Urban population (% of total population)</td>
<td>23.4</td>
</tr>
<tr>
<td>Literacy rate (2002)</td>
<td>62.66</td>
</tr>
<tr>
<td>Total labour force (2004)</td>
<td>44.3 million</td>
</tr>
<tr>
<td>Unemployment and underemployment rate (% of total labour force)</td>
<td>37.6</td>
</tr>
<tr>
<td>GDP growth (%) (2006)</td>
<td>6.71</td>
</tr>
<tr>
<td>GDP per capita (US$)</td>
<td>456</td>
</tr>
<tr>
<td>GNI per capita (US$)</td>
<td>482</td>
</tr>
<tr>
<td>Incidence of poverty (%) (2005)</td>
<td>40</td>
</tr>
<tr>
<td>Incidence of extreme poverty (%)</td>
<td>25.1</td>
</tr>
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</table>

Source: Ministry of Finance (Bangladesh Economic Survey, 2006)

* P = provisional estimate

** Population statistics give official estimates. However, unofficial estimates stand at over 140 million.
3. State of ICT in Bangladesh

Successful ICT initiatives meet three intertwined objectives: availability, access, and demand. Poor ICT policy and low accessibility have meant that the vast majority of ICTs (fixed-line telephony, mobile telephony, newspapers, radio, television, radio trunking, very small aperture terminal (VSAT), computer, and internet) remain beyond the reach of most of the population. This is particularly the case for the rural poor, who cannot afford to pay for ICTs and, owing to the urban bias and lack of skills and infrastructure, cannot access most technologies. However, ICT policy has recently seen some profound changes, leading to the entrance of private firms into the ICT sector, including the opening up of television and radio to private enterprise and licensing for extensive mobile telephony coverage.

3.1 ICTs and government policy

ICTs are regarded as one of the four priorities in the Bangladesh Poverty Reduction Strategy Papers (PRSP), recognizing that improved access to cost-effective information and communication systems can contribute to faster poverty reduction. The strategy paper stresses development of appropriate strategies to harness the employment generation and welfare enhancement potential of ICTs by creating an enabling environment for comprehensive technology acquisition and its diffusion through developing required infrastructure; creating a legislative and policy framework; supporting entrepreneurial activities; facilitating and fostering community initiatives; and developing partnerships among public-private institutions. To integrate ICTs with the economy, the strategy paper urges the creation of a comprehensive technology policy (especially on ICT). Current institutional infrastructure for the delivery and adoption of new technologies is inadequate, so the PRSP points out that improving access to telecommunications facilities can contribute to poverty reduction through its impacts on the income-earning capacity of poor households and entrepreneurs. In this regard, access to services is the third critical element in the infrastructure package, after roads and electricity, for pro-poor growth. The PRSP also recognizes the importance of computers and internet for harnessing job creation.

Recognizing ICT as a growth sector, the Ministry of Science and Information, and Communication Technology formulated the National Information and Communication Technology Policy (NICTP) in 2002. The policy aims to build an ICT-driven nation by creating a knowledge-based society. Considering the social, economic and political aspects of Bangladesh, the ICT policy statements stress the development of infrastructure facilities and the legal framework to expedite growth in the software industry and to ensure transparency, good governance and efficiency in all sectors of the economy. To compete effectively in the global ICT market, government policy statements have identified a number of key implementation areas. Areas for intervention include:

- training and human resources development;
- establishing appropriate ICT infrastructure;
- promoting ICT research;
- implementing development of software, hardware and services;
- facilitating links with economic and social development; and
- ensuring transparency and accountability.

While both the PRSP and the NICTP have recognized the role of ICT in poverty reduction through employment generation and empowerment of the poor, its targets may be overly ambitious. There is no specific strategy in either of the documents as to how ICT actually would reduce poverty. Moreover, the government has yet to take any practical action that could link ICT with poverty reduction. Despite declarations of intent and deeming that spending on ICT should be increased to at least 2% of the annual development programme (ADP) by 2006, the ICT budget has not yet been increased accordingly.
3.2 Availability

Fixed-line telephony

State-owned BTTB has a monopoly on domestic fixed-line telephony in urban areas and on international telephony, with over 1.12 million connections up to June 2006, according to the Bangladesh Telecommunications Regulatory Commission (BTRC). Bangladesh’s telecommunications sector has remained underdeveloped, with one of the lowest teledensities in the world: in 2006, the teledensity of fixed telephones – measured by the number of lines per 100 people – was at just about 0.86%. This low penetration occurred because of the BTTB monopoly in the sector until 2004, whereby it measurably failed to increase its client base because of capacity constraints and inadequate investments, as well as pervasive corruption within the state body.

Table 3: Growth of Fixed-Line Telephony in Bangladesh

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Central zone (Dhaka multi-exchange area)</th>
<th>Rest of country</th>
<th>Total</th>
<th>Rate of growth of central zone</th>
<th>Rate of growth of rest of country</th>
<th>Rate of growth total</th>
<th>Central zone share (%)</th>
<th>Rest of country share (%)</th>
</tr>
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<tr>
<td>1999/00</td>
<td>294,781</td>
<td>196,522</td>
<td>491,303</td>
<td>31.94</td>
<td>14.98</td>
<td>14.98</td>
<td>60.00</td>
<td>40.00</td>
</tr>
<tr>
<td>2000/01</td>
<td>388,928</td>
<td>225,952</td>
<td>564,880</td>
<td>9.63</td>
<td>7.27</td>
<td>7.27</td>
<td>60.00</td>
<td>40.00</td>
</tr>
<tr>
<td>2001/02</td>
<td>363,559</td>
<td>242,372</td>
<td>605,931</td>
<td>-6.52</td>
<td>8.75</td>
<td>7.27</td>
<td>60.00</td>
<td>40.00</td>
</tr>
<tr>
<td>2002/03</td>
<td>422,964</td>
<td>293,757</td>
<td>716,721</td>
<td>16.34</td>
<td>21.20</td>
<td>18.28</td>
<td>59.01</td>
<td>40.99</td>
</tr>
<tr>
<td>2003/04</td>
<td>490,042</td>
<td>320,116</td>
<td>810,158</td>
<td>15.86</td>
<td>8.97</td>
<td>13.04</td>
<td>60.49</td>
<td>39.51</td>
</tr>
<tr>
<td>2004/05</td>
<td>510,000</td>
<td>340,000</td>
<td>850,000</td>
<td>4.07</td>
<td>6.21</td>
<td>4.92</td>
<td>60.00</td>
<td>40.00</td>
</tr>
<tr>
<td>2005/06</td>
<td>540,000</td>
<td>469,490</td>
<td>1,009,490</td>
<td>5.88</td>
<td>38.09</td>
<td>18.76</td>
<td>53.49</td>
<td>46.51</td>
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</tbody>
</table>

Source: BTTB (http://www.bttb.net/)

More than half of these telephone connections were provided to residents of Dhaka city. Most of the 85,000 villages across Bangladesh do not have access to a landline. BTTB paid little attention to the needs of rural communities. However, the government initiated a process to deregulate the fixed phone sector in early 2004, allowing the private sector to invest in the business.

BTRC, the regulatory body for the country’s telecommunications sector, started working on the licensing process in the middle of 2004 and divided the country into five zones for the awarding of licenses: central or Dhaka multi-exchange area, northeast, northwest, southeast, and southwest. At the end of 2004, BTRC issued a total of 35 licenses to 17 private landline operators to run services in all except the central zone, which remains outside the licensing regime because of a court order. However, out of the 17 operators, only nine are currently providing a service in their licensing area. Altogether they have 150,000 customers.

Access to telephones has been much more limited in Bangladesh compared with other low-income countries, not only in the South Asia region but also in other parts of the world (World Bank, 2003). As late as 1998, the World Bank referred to Bangladesh’s telecommunications sector as “in the grip of a mismanaged state policy” (Richardson et al, 2000: 40). Restricted access to fixed-line connections, uncompetitive pricing and poor quality services – linked to the public monopoly in fixed lines, inefficiency of the BTTB phone network and an inadequate interconnection regime – have imposed high costs on the economy. These shortcomings have raised the cost of doing business, constrained economic activity and growth, and reduced consumer welfare. Because of its capacity limitations, BTTB has been unable to expand the coverage of its services to meet the rising demand. New applicants wait several years for fixed-line connections, while many potential applicants do not apply.

In August 2006, the government declared its intent to supply additional landlines to rural Bangladeshis, planning to provide 10 million telephone connections between 2004 and 2006. It is not yet clear how many of these telephones have been provided (United News of Bangladesh, 2 August 2006).
Mobile telephony

Bangladesh was renowned for its poor telecommunications services provision until the last decade. However, the mobile phone networks have quickly absorbed some of the demand for fixed-line telephony. Bangladesh liberalized the telecommunications sector in 1996, giving licenses to three private operators to provide mobile services. The sector has expanded rapidly: almost 80% of the total country is covered by the mobile phone network.

The number of mobile phone subscribers has registered growth of 135%, reaching around 22 million in 2006 (according to BTRC), adding more than 12 million customers in a single year. This is mainly because of continuous cuts in prices for connections and call tariffs in the past few years in the wake of stiff competition among operators. Mobile phone operators’ data show that the maximum call rate offered by most operators had come down to as low as Tk2 per minute in 2006 (Tk7 in 1997). As a result mobile teledensity has improved significantly to 15.8% in 2006 as compared with 6.7% in 2005.

Grameenphone dominates the market: its customer base is 10.76 million subscribers. The remaining four operators (CityCell, AKTel, Banglalink and Teletalk) have a total coverage of 11.04 million.

Despite phenomenal growth and massive price cuts, a large number of people still do not have access to mobile phones. With mobile phone penetration at only 15%, the market is underserved and rural people are yet to benefit from the service. Industry players have said that the number of mobile phone subscribers will top 50 million in the next three years, with around a 30-50% penetration rate, as start-up costs and call tariffs continue to fall, while competition continues to be fierce among operators (New Age Report, 16 January 2007).

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2 Mobile phones were first introduced to Bangladesh in 1992, when the government gave permission to Pacific Telecom Bangladesh Limited to operate a mobile phone service in CDMA technology under the brand name of Citycell. However, few people were able to use this because of high connection prices and call tariffs charged by the sole.

3 The government, for security reasons, does not allow operators to provide mobile services in three hill districts.

4 Bangladesh is currently in the top 10 mobile phone markets in the Asia Pacific region in terms of number of subscribers.
Despite high demand and BTTBs, limited fixed-phone coverage, the expansion of the network of private mobile phones has been hindered, owing to regulatory constraints, such as limited interconnection between mobile telephones and landline telephones. Private operators have expanded their market by introducing interconnection arrangements with each other. More than 90% of these mobile phones are only mobile-to-mobile phones and do not have interconnection facilities with BTTB phones.

**Broadcasting services**

Bangladesh broadcasting facilities can be broadly divided into two segments: public service broadcasts, such as Bangladesh Television (BTV) and Radio Bangladesh (Bangladesh Betar), and private-owned commercial broadcasters, such as satellite TV channels and FM radio.

**Television**

BTV, the state-owned television network, started broadcasting on 25 December 1964. BTV broadcasts from Dhaka and covers almost 100% of the country. It airs almost 15 hours of programming daily. A regional station located in Chittagong broadcasts local programs in the evening. In 2004, BTV started broadcasting worldwide 24 hours a day through its satellite-based branch, BTV World. It has relay stations in major cities. In regulatory terms, the government has full control over BTV, and it is directed and funded by the Ministry of Information. Although it has produced many award-winning programmes, it has also been criticized for being the mouthpiece of the ruling government.

Apart from BTV and BTV World, nine satellite television channels are now in operation in the private sector. These are ATN Bangla, Channel-i, NTV, Ekushey Television, Rtv, Bangla Vision, Boishakhi Television, STVus and Channel 1. More television channels are lining up to acquire licenses from the government. Satellite operators and cable service providers pay for a license from the Ministry of Information; satellite operators are allocated a frequency by the BTRC. The absence of any transparent and clear process of acquiring a license has led to politicization of the system. There is no plan to use frequencies for the public interest (e.g. education programming). There is no system for regulating the content of broadcasting and, in particular, for ensuring that it meets certain minimum standards in relation to regular programming and advertisements.

**Radio**

Radio is ready for further growth and is one of the best modes of sharing knowledge in Bangladesh. It is easily accessible by the people because of its affordability and low maintenance costs. Bangladesh Betar, a government-run station, broadcasts from Dhaka as well as 10 other cities. It operates on a mixture of shortwave, medium wave, and frequency module bandwidths. Bangladesh Betar programmes cover news, sports, agriculture, population, health and nutrition, and music. However, its popularity is declining because of deteriorating programming quality.

In 2006, the first two private FM stations – Radio Today and Radio Furti – were introduced in the Dhaka area, primarily providing music. Radio Amar 101 has also started test transmissions. These profit-based radio stations also provide traffic updates and information on market prices and exchange rates. Radio Today has three news bulletins a day. The stations are accessible to people living within 100km of Dhaka. The stations have plans to expand, and anticipate an FM radio revolution, similar to that of India, where in the past few years more than 250 stations have been launched across the country. In Bangladesh, cell phones equipped with FM features are available and are growing in popularity. A designated weather service channel and/or marine weather service channel is not yet available.

**Internet**

Internet remains elusive for most people. 75% of Bangladeshis live in rural areas, while 90% of internet users reside in cities (Nabi, 2006). Internet use is languishing at five per 1,000 people (0.5%), according to BASIS.

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5 The BBC also operates on an FM and broadcasts news in Bangla twice a day in addition to global programming.

6 Bangladesh Association of Software & Information Services.
Although computers are widely used in offices, businesses, educational institutions, homes and the field, their penetration rate is fewer than eight per 1,000 people (0.8%).

The sector is hampered by poor infrastructure facilities. Even connecting to the SEA-ME-WE-4 submarine cable in May 2006 did not improve the situation as anticipated because of inadequate bandwidth distribution and poor infrastructure on the part of BTTB and other ISPs. BTTB's underpowered bandwidth distribution gateway, more connections than capacity, dependency on dialup connections, and absence of a backup line are all holding back the cable's intended benefits.

End-user prices are still high but falling. Bandwidth prices have come down to more than 60% to Tk75,000 per month, from Tk300,000 when ISPs were buying from VSAT operators. Many ISPs have to keep their VSAT connection as backup since BTTB does not have any redundancy connectivity to complement the submarine cable in case of any disruption.

Despite these bottlenecks, software and IT services have been experiencing high growth in recent years. During the past five years, average yearly export growth has been around 60%, including more than 90% growth in more recent years, according to Bangladesh Bank. Over 100 software companies export different products and services to clients from the U.S., Japan, Denmark, Netherlands, the UK and some Middle East and ASEAN countries. According to a BTTB estimate, the domestic ICT market, currently estimated to be at around Tk11 billion, is experiencing high growth and is expected to reach Tk30 billion by 2008.

On 6 October 2006, the Bangladeshi government signed a MoU with U.S.-based AlwaysOn, a communications service provider. AlwaysOn intends to provide internet services to rural and urban areas in Bangladesh, initially covering 85% of the country (8 October 2006). It is not clear whether a similar policy will be undertaken to provide access to computers.

**Voice over internet protocol (VOIP)**

VOIP, or internet telephony, is one of the cheapest options for making or receiving overseas calls. Although the cabinet approved VOIP business in 2003, the High Court has barred government from issuing licenses without setting up VOIP exchanges to route and monitor voice traffic data.

The opening of the VOIP is necessary to lower the cost of international phone calls. A recent report of the Global System for Mobile Communication association (GSM) said that because of monopolization of the international gateway, telecoms investments as a percentage of GDP are 70% lower and call prices are two to three times higher than the average for developing countries.

### 3.3 Demand and accessibility

Accessibility of ICTs is highly skewed toward wealthy urban populations. There is growing concern that, owing to asymmetric sharing of information, marginalized people are further falling behind in terms of competing for jobs, market share, and common resources. Their livelihoods, as a result, become more vulnerable. Since the cost of access of many ICTs is still high, the majority of users of computers, internet, and mobile phones are from high and middle-income groups.

Distribution of households with access to telephone, mobile phones, computers, e-mail and electricity are presented in Table 4. In 2005, at the national level, 2.87% of households had access to fixed-line telephones, with 0.33% in rural areas and 10.36% in urban areas. The percentage of households with access to mobile phones at the national level was 11.29%; 6.05% in rural areas and 26.73% in urban areas. However, as noted previously, the recent growth of the mobile phone sector shows that accessibility of mobile phones at household level has increased.

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7 Note: there is a slight variation between BASIS data and government data, as shown below.
8 South East Asia, Middle East and Western Europe.
Government statistics for 2002-3 show that 27.3% of households owned a radio: 32.3% in urban areas and 25.7% in rural areas (BBS, 2004). According to an alternate estimate by the independent National Media Survey (NMS) in 2005, 32% of people owned radio (BNNRC, 2006). Of these, only 27.3% are in working order. The independent survey showed that 22.5% of people listened to the radio. Listening had declined significantly in urban areas because of rapid increases in television programming and the failure of the public radio to attract people. Dhaka-based Betar is the most popular radio station in the country, attracting 31.3%.

The household survey data show that only 19.1% of households were reported to have a TV at the national level. This is larger for urban households (42.9%) than for rural households (11.6%). NMS findings show that almost 41% of households own a television (78% in urban areas and 27% in rural areas). TV reaches about 87.9% and 55.5%, respectively. About 10.4% of households have cable network/dish connections. Only a quarter of households have satellite access. TV viewing figures rose to 64% in 2004, up from 42% in 1998 and 31% in 1995.

Table 4: Ownership of Communication Technologies by Household (%)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2000</th>
<th>2002-3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed line</td>
<td>Mobile phone</td>
<td>Computer</td>
</tr>
<tr>
<td>National</td>
<td>2.87</td>
<td>11.29</td>
<td>1.36</td>
</tr>
<tr>
<td>Rural</td>
<td>0.33</td>
<td>6.05</td>
<td>0.17</td>
</tr>
<tr>
<td>Urban</td>
<td>10.36</td>
<td>36.73</td>
<td>4.88</td>
</tr>
</tbody>
</table>


Only 1.36% of households had a computer at the national level in 2005, 0.17% at the rural level, and 4.88% at the urban level, according to government statistics. Internet facilities are limited to urban areas, where 0.81% of households have accessibility. The 2005 findings show that only 1.2% of people in urban areas have internet access. These data, however, differ from the BASIS data, as stated earlier.

One of the major constraints to using ICTs in rural areas is the lack of power. Approximately 83% of urban households have access to electricity; this is only 31% for rural households. Poor coverage in rural areas owes mainly to slow progress in government rural electrification activities over the last decade. Apart from electricity coverage, power failures have become a major concern in recent years, as the government has not increased its production of electricity in the past five years or so.

Concentration of income and distribution of accessibility of ICT show that only the rich can really access information technology. The poor face hindered access to ICTs for two main reasons. First, the public distribution system is inferior in the case of fixed-line telephony and electricity supply, where the state has the monopoly. Unabated corruption within the BTTB and the Electricity Board over the years has increased the cost of power and has resulted in a poor service. Second, mobile phone, computer and internet services are delivered under a private arrangement of limited scale. Without a government policy to address the urban bias and the high cost of these services, they will remain beyond the reach of poor households.

To increase accessibility for rural people, it is necessary to upscale electric facilities. Accessibility to the telephone should also be increased. In rural areas, broadband internet connections have not yet been developed. Without increasing internet connectivity, rural communities will be left behind.
4. Overview of Specific Cases

The analysis of ICT applications to rural livelihoods was conducted through a consultation process that included ICT providers and users.

4.1 Role of ICT services in rural livelihoods: providers' perspective

Providers consulted included NGOs, mobile phone operators, television channel operators, computer service providers and government organizations, such as the Agriculture Information Centre and the Planning Commission. In Bangladesh, private sector operators are the main providers of ICTs (mobile phones, computers and internet, television channels, radio, and fixed-line telephony on a limited scale), whereas the state controls the fixed-line telephony and two national TV channels and 10 radio centres. The government also formulates and implements ICT policy. The majority of Bangladeshi and international NGOs working with ICTs are developing community information centres to facilitate information transmittal to rural people. Some NGOs partner with private organizations or local government (see Appendix F).

Recognizing the role that information can play in improving the livelihoods of the poor, NGOs began to look at telecentres as a means of information sharing. In Bangladesh, telecentre development has been spearheaded by Grameenphone, Amader Gram and the Society for Economic and Basic Advancement (SEBA). Later, BRAC (the Bangladesh Rural Advancement Committee) set up community learning centres (Gono Kendra) throughout Bangladesh, and Grameenphone has set up a community information centre (GPCIC) in each upazilla (district subdivision). A D.Net project has stressed the importance of livelihoods content in local dialects and has developed a content compendium and tested the impact of this among villagers through Pallitathya Kendra (rural information centres) in four districts.

This NGO and private sector focus on telecentres drove the selection of providers for consultations. We felt it was important to examine the main arena of non-profit ICT programming. When applicable, we draw on consultations with NGOs not involved in telecentres (such as BNNRC), private sector providers, and government officials. During these consultations, seven policy issues were addressed:

- cost sharing,
- ensuring equitable access to information,
- utilization of local or appropriately localized content,
- building on existing systems,
- building capacity at local level,
- using realistic technologies, and
- building knowledge partnerships.

4.2 Characteristics, demography and geography of projects

Some projects are operated across the country whereas others focus on particular regions. BRAC, Grameen, Channel I, the government-owned Rural Development Academy (RDA) and the Agriculture Information Service have operations throughout Bangladesh. BNNRC, COAST and Dhaka Ahsania Mission (DAM) mainly target the coastal areas, disadvantaged/disaster areas, and river basins. Some organizations (Katalyst, RDRS - Rangpur Dinajpur Rural Service) focus on the deprived north and northwestern regions of the country.

Most projects are operated at upazilla or union level. The number of people using telecentres is between 400 and 1,000. However, the number of people who could access telecentres is generally quite high. For example, Pallitathya of D.Net operates in four districts, with a catchment population of 413,188. Grameen and BRAC are operating in almost all upazillas (there are 469 in Bangladesh). Around 8,000 users availed themselves of the services in the past year at Katalyst’s four rural information centres.
4.3 Building local-level capacity and assessing local needs

All the telecentre providers we spoke to had included local communities in initial processes to identify local needs and feasibility. The telecentres try to tailor service packages to the needs of local communities, and locals are trained to facilitate communication between the centre and the community. Locals communicate with the centre on a daily, weekly, monthly or quarterly basis, depending upon their needs.

Telecentres use participatory approaches with communities to identify information gaps in different areas. Since agriculture and fisheries are predominant forms of income generation in rural Bangladesh, most projects specialize in disseminating related information. Some organizations have started developing content to promote small and medium scale enterprises (SMEs) in rural areas. Some NGOs provide information related to social issues, including: health, education, legal, administrative, job market and skilled development information.

ICT service providers claim that content can enhance knowledge on economic and social issues. The telecentres’ approaches to information needs are extremely diverse. This diversity of content and services available suggests that there is not yet a consensus on what areas are priorities for future development of the model. Additional careful discussions with rural users could establish local priorities and help identify where content sharing among communities could occur. Below is a list of content and services provided by various telecentres. See Comment

- Access to livelihood information on agriculture, health, education, legal and human rights, non-farm economic activities.
- Market prices for farmers and fishermen, enabling market awareness.
- Producers have begun to participate directly in the market, thus reducing the role of middlemen;
- Dissemination of agriculture-related videos helps farmers use high-quality seeds and cultivation processes. 
  A rural farming community has access to new and innovative agricultural technology.
- SME ideas through the internet help people to open up new businesses (Katalyst).
- People do not have to travel over 30-35km to district headquarters to obtain information on education, health, jobs, government services, etc. Access to a mobile phone helpline helps villagers consult with experts such as doctors, agriculturists, lawyers, etc (Palliatathya Kendra).
- Students and teachers can find online information related to their examinations, admissions, results, etc.
- Users have access to forms for passports, death and birth certificates from government websites, etc.
- Unemployed young people can obtain information on jobs available in their area, not possible before.
- Unemployed young people no longer have to travel long distances to find out about jobs, saving time and money.
- The centre works as a directory of various service providers in major districts.
- As the centres are closer to the community, this has created new possibilities for them. Now, children are able to learn about computers and about acquiring training skills.
- People are able to talk to their relatives and friends abroad through video over the internet.

4.4 Choosing realistic technologies

The type of technology necessary depends upon the information needed and local capacities. For example, mobile phone and fixed-line telephony are effective for accessing expert advice. Computers are useful for offline livelihoods information, while the internet is important for online information, such as job market information, results of public examinations, etc. Radio and TV are helpful for learning about current affairs and weather. Print media are effective for current news. In some cases, face-to-face interaction is vital. In most cases in rural Bangladesh, the mobile phone is the best technology for providing information. Radio, TV, and print media are being used to update rural people about current affairs linked with their livelihoods.

The providers we spoke to stressed that the internet, combined with computing, is the best method of making information and communication systems available to rural communities. However, lack of access to electricity,
power interruptions and low skill and literacy levels hindered their current efficacy. Given structural constraints and high poverty levels, it is important to facilitate services to rural communities at the lowest possible cost. Audio and audiovisual programmes, such as community radio and terrestrial TV networks, are accessible to rural people with little formal education. Mobile phones have been successfully adopted throughout most of Bangladesh. Thus, at least in the short term, mobile phones and radios are the most appropriate technologies for rural areas around the country.

There are now several mobile phone and public switched telephone network (PSTN) companies in the country. Grameenphone (GP) is the pioneer, able to provide, at upazilla level, the newly launched EDGE Internet service to rural people. A number of regional and nationwide ISPs are working in Bangladesh. Using this technology, it will be possible in the near future to connect to the internet in areas which are more rural than the upazillas. However, providers believe that training facilities – formal and informal – urgently need to be stepped up among local facilitators and ICT users.

4.5 Constraints at the implementation stage

Service providers face problems during the implementation stage. They reported three impediments to service delivery:

1. Infrastructure bottlenecks. Problems with power supply and generation and inadequate opportunity to access fixed-line telephones have limited the usefulness of computers and the internet.
2. Lack of quality information. Service providers find it difficult to obtain appropriate information. In particular, there is a lack of data available at the field level.
3. Social barriers. Many villagers are not yet convinced that the information available will improve their incomes or livelihoods. Rural users also desire services that can show them how to use the available information to improve their incomes.

State interventions are required to remedy the infrastructure bottlenecks. Without government initiatives, it is very difficult to enhance power supply or the opportunity to access fixed-line phones in rural areas. Further, the government can fill some of the information gaps by providing an online national database system with correct and regularly updated information. Coordination among NGOs, donors and communities can also improve content. Speaking with rural community members will shed a light on information priorities. As content improves and telecentres establish themselves within the community, some social barriers will be overcome. This can be further achieved through awareness-building activities, such as issue-based camps to link villagers with service providers, training information workers to become efficient infomediaries, and providing relevant information which demonstrably improves livelihoods and incomes.

4.6 Sustainability

Most projects are administered by NGOs in association with international donor agencies. In some instances, NGOs develop partnerships with the private sector to access technological help and training. Some ICT providers reported that projects were being maintained through a mix of self funding, donor assistance and private sector financing. In some cases, projects develop their own mechanisms to generate additional funding, such as by providing commercial computing services.

Most of the centres are yet to be sustainable, with a few notable exceptions. Of GP’s 16 pilot CICs, about 70% appear to be financially viable. Katalyst’s rural information centres are profitable and local communities are accessing the benefits/services to improve their livelihoods.

For other telecentres, profitability may not be the appropriate criterion, as many of the stated missions are to maximise user welfare by increasing information access. The telecentre concept is new to rural areas, where

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9 GP provides the entrepreneur with an EDGE-enabled SIM to access the internet. Internet access is ensured through dedication of channels within the coverage of the concerned base station. GP provides training and technical support.
income opportunities are low and it is not yet viable to offer technological services at a price which would ensure profitability. Higher prices would discourage users. In many telecentres, prices are subsidized and profits cover only a portion of operation costs. Further, some of these services are offered free of charge to the poor. However, most expect to run profitably in the future, particularly once users’ incomes improve and telecentres see more demand for their services.

Most of the content provided by different organisations overlaps. Content sharing could lower development costs and meet the needs of local communities more broadly. Streamlining information provision across telecentres will also decrease the time spent by telecentres updating their content. However, proprietary content is an asset for telecentres, and there may be a conflict of interests in sharing costly information across different programmes. Finally, emphasis should be given to livelihoods skills development so that users can link ICTs with income generation.

4.7 Scope for expansion

All providers agreed that their projects had a visible impact on the livelihoods of rural users. For example, for simple medical treatment, rural people near the Pallitathya Kendra no longer need to go to the upazilla health complex. The information centre can contact a doctor on a user’s behalf via mobile phone. Pallitathya Kendra also provides soil testing and advises local farmers about what kind of fertilisers are best for their soil. GP has focused on entrepreneurship development by creating awareness about investment prospects at GPCICs. Prospective investors (entrepreneurs) are trained to use technology and to handle equipment. At the same time, to rouse interest within the user community and among beneficiaries, marketing and publicity drives are conducted. Adequate operation and management (O&M) support is obtained from a team of experts. Women are also now finding alternative sources of earnings.

There is wide agreement among providers that there is scope for further expansion of the projects. Providers stated that existing services could be replicated by: i) existing NGOs as social entrepreneurs; ii) microfinance institutions (MFIs) as an additional service to microcredit; iii) government through local government institutions; iv) local entrepreneurs as alternative business; and iv) the business community as a part of corporate social responsibility.

Currently, many projects are operating at limited scale and have a small number of users. Further, a large number of villagers are still deprived of their right to access information. To ensure ICT access for all, there are several means of expanding existing projects, including:

- increasing the number of users within communities and replicating the same methodology in new communities;
- increasing the number of service providers – since most service providers are located at upazilla level, these can be extended downwards; and
- developing capacity of the existing centres.

4.8 ICT in users’ perspectives

In the following two case studies, we examine how well the objectives of access, availability, and demand are can be met by different organizations, as against particular constraints and contexts in rural Bangladesh. In both cases, the organizations do not rely on a single form of ICT. Rather, they use multiple ICTs to improve both accessibility to and availability of information. In turn, integrating multiple forms of ICTs and creating localized content help to generate demand for ICT-driven services. Each of the organizations has differing goals for its clients. D.Net’s programme provides information relevant for income generation and livelihoods, but not the

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10 For many entrepreneurs, having invested about US$1,000, an enterprise breaks even after nine to 10 months. The popularity of the centres is growing. The support of GP in offering other related value-added services, such as flexi-load and GP public phones, digital photography, printing etc., helps improve GPCICs as a self-sustaining business initiative. On average, entrepreneurs make about US$300 per month from the CIC. In rural and semi-rural areas, this is a sizable income.
skills for users to learn how to find this information on their own. Youth Power in Social Action (YPSA) works to impart skills and social awareness to its clients, but is less equipped to answer specific livelihood questions. We argue that although these services target different user groups, increasing access to both of these services will have positive short-term and longer-term impacts on rural livelihoods.
5. D.Net’s Pallitathya Kendra and Helpline

5.1 Overview of Pallitathya Kendra (PK) and Nilphamari upazilla

Recognizing that the rural poor are often unaware of rights, unable to access information or cannot afford costly services, D.Net has developed a unique approach to improving access to relevant information for rural communities. It links target beneficiaries with information providers through a combination of mobile phones and computing. D.Net, in partnership with other organizations, government, universities and experts, has generated easy-to-understand Bangla content. This content is housed on D.Net’s internal website and is disseminated in softcopy form. Yet, content without accessibility can serve little purpose. D.Net has established rural information centres, termed Pallitathya Kendra (PK), and a helpline facilitated by a trained “infomediary” in each PK. Infomediaries use a mobile phone to contact the local PK office or Dhaka for answers to users’ questions. Given low literacy rates and the lack of widespread availability of computers or training, the infomediaries provide a critical link between the content and the users.\(^{11}\)

D.Net has established a sliding fee scale based on the timeliness of answers. Questions asked via mobile phone and answers given immediately by mobile phone are most expensive; answers given by mobile later are cheaper; answers given by letter are cheapest. Questions submitted by letter receive a free reply by letter.

<table>
<thead>
<tr>
<th>Table 5: ICT Service Type and Cost at PKs</th>
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<tbody>
<tr>
<td><strong>Name of the service</strong></td>
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<td>-------------------------------</td>
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<tr>
<td>Information service</td>
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<tr>
<td>Helpline</td>
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<tr>
<td>Soil test</td>
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<tr>
<td>Photography</td>
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<td>Computer compose</td>
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<tr>
<td>Email</td>
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<tr>
<td>Internet browsing</td>
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<td></td>
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<tr>
<td>Government form</td>
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<td></td>
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<tr>
<td>Diversification visa form (US)</td>
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</tbody>
</table>

\(^{11}\) The infomediaries are women hired from the community who can guide users through the process of finding answers to their questions. The infomediaries receive 16 days of training from D.Net’s Dhaka office. They are trained in basic computer literacy and learn about what resources are available to the PK and what resources are available at the Dhaka office. They also learn what questions cannot be answered over the phone (such as certain healthcare questions which require direct inspection). The Nilphamari infomediary thinks the training she received was sufficient and that being an infomediary was “easy” once she had received training. Outgoing and entrepreneurial, she clearly enjoys her job.
5.2 Goals of the project

D.Net has four pilot PKs throughout Bangladesh. The PK visited is located in Babrijhar village, Bangmari union, Nilphamari Sadar upazilla and was established in November 2005. It is 21km from the district town and the literacy rate is 29%. The infomediary travels by bicycle to surrounding villages. The physical infrastructure available in Nilphamari district varies seasonally. During irrigation periods (winter), a greater demand for electricity causes load shedding and loss of power to the PK. The local internet service can be erratic.

On D.Net’s internal website and offline, users can browse content on a variety of issues. Content is currently divided into laws and legal issues, education, health, agriculture, awareness raising, sustainable technology, rural employment generation, disaster management and other rural non-agricultural issues. The site seems to be well organized and designed with users in mind. For example, in the agriculture section, under the subcategory of crop diseases and pests, color photographs are displayed and users can match their pest or crop disease to those displayed on the computer. Furthermore, D.Net updates the site based on the questions asked by users. The majority of the content is the same for each PK. However, there is also localized content, such as local water quality issues.

D.Net’s Nilphamari PK also provides an array of other services. At the PK office, staff post weather reports, headlines from Bangla papers, government office contact numbers, tax rates and job announcements. They also test soil fertility, offer a weight and blood pressure machine, and take photographs and print them for villagers.

At present, the Nilphamari office covers the cost of maintenance of equipment, primarily funded by charging for access to internet, working on outsourced computer composition and taking photos. Charges for the helpline cover the cost of phone calls made, but do not cover the cost of the Dhaka office staff or the cost of generating content. Recognizing that recouping the cost of the Dhaka office from the four PK sites is currently untenable results in lower prices for users and, ultimately, greater service provision.

5.3 Discussion with users and findings

The number of users at the Nilphamari PK is still quite low, in part because it is a relatively new service. Approximately 350 users asked questions during 2006. In our focus group of 14 people, respondents most frequently requested information on health issues and legal issues and this information is the primary reason for visiting the PK. Women tend to ask the majority of health-related questions. Questions about legal issues are referred to the Abolombon project, another D.Net project, which provides open access to Bangla legal content on its webpage (www.abolombon.org) and on which a local advocate offers free legal advice two days a week at the PK. Additionally, infomediaries contact local legal aid organisations on behalf of their clients. The Abolombon project is quite popular, especially among women who previously had little access to legal services. Farmers were pleased with agricultural information available, but desired more, particularly prices of inputs and outputs.

Users stated that information on health, legal issues, education and agricultural issues provided by the helpline and the PK had improved their lives by reducing vulnerability and by enhancing existing livelihood strategies. Md Alauddin, a farmer of Babrijhar village said, “It was quite impossible for me to know the admission procedures on different universities. Pallitathaya Kendra provided information on university admission when my son got admitted to Dhaka University.” Unemployed rural men and women obtain information about different non-farm economic activities. The PK provides information about handicrafts or small-scale business (e.g. tea stalls, grocery shops, etc.) which can offer self-employment opportunities.

Members of the focus group would also like access to training, particularly for students in their community. Most respondents believe that computing skills will improve students’ employment opportunities. The Nilphamari PK could benefit from long-term skills development for its employees, with a goal of offering

12 For more detail (content itself is proprietary), see http://www.jeeon.com/pdf/Jeeon%20site%20map_english.pdf.
computer classes to interested local youth. Additionally, because of limited access to television programming, one farmer suggested that the PK could show videos on different agricultural innovations and ways to increase efficiency. Some of this material is already available from SAARC (South Asian Association Regional Cooperation) cooperative programming.

Users are strongly supportive of replication in other localities. They believe that the PK provides information for a broad group of users, from farmers to students to housewives. There was concern that the costs associated with the helpline discouraged poorer people in the community from using it. The helpline does offer a free service by letter, but the turnaround time can be too slow for time-sensitive questions regarding health or agriculture. Many respondents would like a faster service for the same or a lower price.

Although cost was a concern for respondents, overall the cost of using the PK and the helpline is still lower than that of many other forms of ICTs. When asked about other forms of ICTs, such as TV, computing, and internet access, most respondents said that they did not have access and that they were too costly. In addition to the PK, for many respondents, newspapers and TV were other popular means of gathering information. Radio was not as popular, in part because radio programming did not seem to provide information demanded by the population.

In Nilphamari, local government officials appreciate D.Net’s work but do not provide monetary or other forms of support. In our survey, many users said they had relied on local government officials for information before PK’s arrival. Collaborating with local and national government could provide D.Net’s users with additional content.

D.Net has plans to expand the helpline and establish other PKs in rural Bangladesh. One interesting option is that the helpline could be a standalone product in some communities, whereby an infomediary makes calls on behalf of users either to another district’s PK or to the Dhaka office.

The Bangla content generated by D.Net is its most valuable resource and is considered to be of high quality. D.Net has made its content for the Abolombon legal aid project available publicly online. Currently, the other Bangla content is only available to its four PKs. Proprietary ownership of content, such as this, while arguably important for D.Net’s sustainability, limits the impact of ICTs on rural livelihoods in Bangladesh. Making content available as a public good could help ensure the sustainability of rural ICT centres.
6. **YPSA’s Youth Community Multimedia Centre**

6.1 **Overview of YPSA and Sittakund municipal centre**

YPSA’s service delivery focuses on awareness raising and skills development. YPSA’s goal is to train youth to critically engage with social issues facing their communities and to raise awareness about the services available for local community members. YPSA provides computer training courses, media training, a community telecentre, local cable access television programming and ICTs for people living with disabilities. It is not an organization where individual farmers go to find out about cures to a crop disease. However, it is an organization where a documentary about crop disease could be created and shown on a local cable television channel.

YPSA’s Youth Community Multimedia Centre (YCMC) is located in Sittakund, a municipal centre in a sub-district of Chittagong district. Sittakund is 37km from Chittagong, with 10 smaller unions surrounding it. The vast majority of YPSA’s clients and volunteers are students who come to attend college or university in Sittakund. Approximately 40% are from unions outside of Sittakund. YPSA tries to minimise transportation costs incurred by students from rural areas by timing YPSA programmes so that students can attend them when they are in Sittakund for schooling or running other errands, such as going to the post office.

The electricity situation in Sittakund can be dire, with four to five hours each day without power. Clearly, this impacts YPSA’s trainings. The programme officer of YPSA’s Information and Communication Technologies for Development (ICT4D) unit, reports a growing frustration in the Sittakund community. Electricity shortages also hamper the functioning of YPSA’s two recently started rural knowledge centres (RKCs – telecentres), leaving them to rely on offline solutions. YPSA has also created soft copy versions of government documents which can be printed onsite.

6.2 **Goals of the project**

YPSA provides both hard and soft skills in its YCMC. In this case study, we focus on two aspects. First, YPSA offers eight concurrent sections during their popular two-month long computer class. Each section meets three times week. The class size is quite small (between four and seven students with five computers). Classes on operating and using multimedia, as well as on editing are also available. The cost of the two-month class is Tk1, 500. An innovative system allows those who cannot afford to pay to volunteer at the YPSA office while taking classes. In 2005, roughly 75% of their students could not afford to pay. Volunteers receive additional formal and informal training and attend YPSA rallies and seminars.

Second, recent graduates and current students of YPSA’s computer and multimedia courses use multimedia to present viewpoints on a variety of issues currently impacting the lives of Sittakund residents. They have written, directed, and produced videos and multimedia presentations on a wide range of topics, including the lives of tribal people, orphanages, people living with disabilities, showing how technology can improve lives, and adolescent reproductive health. The students also use forum theatre to advocate for governmental policy changes to community radio broadcasting laws.

YPSA’s programming, both live and pre-recorded, is broadcast on a dedicated local access cable television channel. The dialect of Bangla spoken in Sittakund differs from the dialect spoken in Dhaka, where most television shows are produced. As a result, YPSA is planning to generate programming in the local dialect.

Also important is YPSA’s training space, which has become a de facto community centre for local youth. YPSA is committed to keeping space non-gendered and non-prejudicial, allowing people from different religions, classes and genders to interact. Further, the YPSA training room is available for other organizations needing space. YPSA also has weekly entertainment programmes, such as films and music.
YPSA is pursuing sustainability for its Sittakund office while maintaining a commitment to providing services to those who cannot afford to pay for classes. YPSA offices house a small ICT centre with one computer, where community members can browse the web, make photocopies, etc. YPSA is hoping to expand this centre and use its profits to fund their programming. Currently, Sittakund has one other cyber cafe with two computers, but this is not considered to be a safe place for women.

6.3 Discussion with users and findings

The majority of the eight members of the focus group were students and/or YPSA volunteers. They considered students, like themselves, to be the primary beneficiaries of YPSA’s work. All of the respondents made use of a wide variety of ICTs to obtain information. The one exception was that most respondents do not regularly use the internet owing to high costs and low access. Roughly 35%-45% of YPSA’s clients are women. The dropout rate is high, particularly for women. In 2006, about 150 people began classes, and 110 finished.

Women have a higher dropout rate (of the 10 most recent volunteers, only three remain) because of opportunity costs and actual costs associated with not staying at home. Male users said that most families were supportive of the time they spent at YPSA. Some college students or recent graduates drop out of the programme upon finding a job. Focus group members believe that completing an YPSA computer training course improves their marketability, even for positions that do not have a computer-based component.

About half of the survey members are interested in further training so they can learn to browse the internet. However, the programme officer cautioned that a lack of Bangla content was limiting the usefulness of the internet for improving lives and livelihoods. This lack of content combined with high training and literacy requirements has directed YPSA’s focus towards other means of disseminating information, such as forum theatre and video, radio and television programming.

One focus group member, a Hindu priest, was taking the YPSA computer course so that he could teach ICT skills to the 26 children in the orphanage he runs. Although he felt that employment generation schemes rather than development of ICTs would be more beneficial for his charges, he also felt that it was a requirement for them to have basic exposure to various forms of ICT in order to have a sustainable future. He believed that unemployment was the major problem faced by Bangladesh, worrying that ICT education and training alone would not be able to generate development and that there also had to be complementary employment generation.

Another focus group member, having taken one of the classes, started his own banner sign company. He now is attending another YPSA computer class to expand his business.

YPSA’s trainings are preparing rural youth to be better able to use ICTs in their lives and to be more socially aware about issues facing their communities. YPSA is generating demand for ICTs and for information that can improve the lives of their immediate clients and local community members. YPSA volunteers’ skills seem high, but, without adequate access to relevant content, it is not clear if these skills can be utilized directly in improving rural incomes. Further, many students recognize that, while information is helpful for their livelihoods, they are not sure how to convert this into improved incomes or employment opportunities, which are their primary concern.
7. **Policy Analysis**

This section examines the roles of ICTs within livelihood strategies and policy objectives and ways to reach specific objectives, as well as the roles of key stakeholders.

7.1 **Roles of ICTs within livelihood strategies and policy objectives**

Information can be considered in two aspects: i) in terms of the time horizon and ii) in terms of content. Short-term information is important for decisionmaking in day-to-day activities, whereas long-term information relates to long-term capacity building, such as in education, training, technical support, etc. In addition, content can be divided into specific information and general information (see Figure 3). Specific information includes details on individual problems faced in agriculture (e.g. pests or crop diseases), fisheries, health or legal rights arenas. General information includes that on current affairs, government and official data, education, training and skills development, weather, market prices, yields, prevention of common diseases like HIV/AIDS, disaster management, etc. Specific information should be provided in indigenous form and can be accessed through social networks (CICs or PKs, for example). General information, on the other hand, is to be produced through formal procedures and can be mediated through formal structure and process.

**Figure 3: Information and Communication Process and Strategy to Minimize Vulnerability**

Combining the two aspects, the following matrix can be constructed to explore content development priorities.

**Matrix 1: Goals and Information Types in Livelihood Strategies**

<table>
<thead>
<tr>
<th></th>
<th><strong>Specific information</strong></th>
<th><strong>General information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term goals</strong></td>
<td>Information to link rural people with nearby rural market and social networks. Helps rural people generate their own income. Emergency specific information available, such as on health, markets. Strengthens short-term decision making.</td>
<td>Immediate and emergency day-to-day information mediated through informal/formal process/structure. Informs rural people about current affairs, weather forecasts, diseases, prices, yields, insecticides, etc. Strengthens short-term decision making.</td>
</tr>
<tr>
<td><strong>Long-term information</strong></td>
<td>For capacity building of rural poor. Strengthens social capital assets and extends reach of rural poor to more distant markets. Informs people on specific issues like agriculture, fisheries, SMEs, health, legal rights, etc. Strengthens long-term decision making.</td>
<td>To build up livelihood assets (human, financial, physical, natural). Informs on government/official data, training, technical support, skills development, banking, microfinance, disaster management, etc. Strengthens long-term decision making.</td>
</tr>
</tbody>
</table>
Accordingly, policy needs to be prioritized to achieve short-term and long-term objectives. Matrix 2 shows a policy framework identifying the application of appropriate technologies.

**Matrix 2: Policy Initiatives in Livelihood Strategies**

<table>
<thead>
<tr>
<th>Specific information</th>
<th>General information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term policy</strong></td>
<td><strong>General information</strong></td>
</tr>
<tr>
<td>• Setting up more rural information centres at all levels (union, village, thana).</td>
<td>• Priority area could be radio programming to disseminate general information.</td>
</tr>
<tr>
<td>• Telephone, especially mobiles, can be effective for immediate dissemination.</td>
<td>• Setting up community radio can also be effective.</td>
</tr>
<tr>
<td>• Computers can store content on specific information.</td>
<td>• Radio programming has to be information based on requirements of rural people, can be an effective vehicle.</td>
</tr>
<tr>
<td><strong>Long-term policy</strong></td>
<td><strong>Long-term policy</strong></td>
</tr>
<tr>
<td>As content becomes available, people develop the skills to use computing, and as access is improved, computer and internet can become useful sources for information.</td>
<td>• Television channels with special focus on rural areas.</td>
</tr>
<tr>
<td></td>
<td>• Continuation of radio development.</td>
</tr>
<tr>
<td></td>
<td>• Extension of internet services.</td>
</tr>
<tr>
<td></td>
<td>• A service similar to the USAID-funded FEWSNet should be developed to provide rural communities, local government and NGOs early warning on food shortages, prices spikes and dips and weather patterns.</td>
</tr>
<tr>
<td></td>
<td>• Continuation of technical support for training and skills development.</td>
</tr>
</tbody>
</table>

Evidence suggests that mobile telephony is currently the most effective strategy for rural villages. However, the cost is still very high, especially for the rural poor. In response, some providers offer subsidised prices, which raises concerns about their sustainability. As content is developed, computers can contend. This could be a valuable first step in introducing mass-scale computing and internet access. Providers have stressed that the internet and computers are the best method for replication in terms of ensuring effectiveness of an information and communication system among rural communities. In the longer run, as infrastructure improves and skills develop, computing will improve in terms of accessibility, demand and availability.

Audio and audiovisual programmes can motivate rural people. Community radio and a separate terrestrial TV network could be effective in facilitating information. Radio is cost effective in terms of affordability and maintenance. Though the popularity of radio is declining, it remains useful for disseminating current affairs information, weather forecasts, market data, etc. Private radio stations have received a good response in terms of entertainment, but informative programmes need to be developed. Community radio could disseminate social, health and cultural information through community programming in local languages. Rural people would be more inclined to trust such a source; as such, it would be useful in creating social awareness.

The internet and television are probably the best technologies for disseminating long-term specific and general information. As content becomes available, as people develop the skills to use computers, and as access is improved, priority should be given to ensuring access to computers and the internet among the rural poor. In the long run, emphasis should be given to setting up television channels with a special focus on rural areas (not urban-biased) to disseminate general information. Continuation of radio development and extension of internet services are other priority areas. In order to provide rural communities, local government and related NGOs with early warnings about food shortages, prices spikes, and dips and weather patterns, a service similar to USAID-funded FEWSNet (Famine Early Warning System Network) should be developed. Continued technical support for training/skills development should be prioritized. Matrix 3 looks at attaining specific policy objectives.

**Matrix 3: Actions in Livelihood Strategies**

<table>
<thead>
<tr>
<th>Specific information</th>
<th>General information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term action</strong></td>
<td><strong>General information</strong></td>
</tr>
<tr>
<td>• Emphasis needs to be given to developing and generating quality and trustworthy content: the poor not only lack access but also lack high quality and trustworthy information.</td>
<td>• Develop reliable content for radio programming.</td>
</tr>
<tr>
<td></td>
<td>• Develop infrastructure for radio, including community radio.</td>
</tr>
<tr>
<td></td>
<td>• Research and survey for developing needs based programming.</td>
</tr>
</tbody>
</table>
Develop methodology for content sharing among providers to avoid overlap.
- Develop mobile network in coastal areas.
- Examine sustainability of business model.
- Make technology available to the poor at lower cost.

| Long-term action | Infrastructure development for rural electrification and telecommunications.  
|                  | Ensure updates on internet, requires a great deal of monitoring and evaluation.  
|                  | Develop training institutions for computer learning.  |

| Long-term action | Infrastructure development for separate television network focusing on rural areas.  
|                  | Continued development of infrastructure for rural electrification and telecommunications.  
|                  | Develop content for rural programming.  
|                  | Develop vocational training institutions.  
|                  | Develop disaster management programme.  
|                  | Replicate microcredit services for all poor.  
|                  | Provide quality banking services to move beyond microcredit.  |

7.2 Roles of different stakeholders

Enhancing ICT access at the rural level will require heavy investments in infrastructure development (telecommunications, electrification, etc.), skills infrastructure to keep all the technology working, money to buy or access ICTs, usage skills for using the ICTs, and literacy skills to read the content.

**NGOs**

Some priority areas for NGO intervention and facilitation include:
- NGOs, in association with donor agencies, can develop micro-level organizations such as rural information centres and replicate these in villages across the country.
- NGOs can develop private partnership programmes or involve local government in facilitating technology development. For example, mobile telephony is successful so there is scope for NGOs to arrange partnerships with private operators to make the service available at a cheaper cost to the rural poor.
- NGOs can work together to develop uniform multi-focused content in consultation with experts, practitioners, academicians and researchers.
- NGOs can provide training support to the rural poor on how to access the technologies.
- NGOs can work on lobbying initiatives, such as those to develop a community radio programme.

**Government**

At the macro-level, government has to take the lead with donor support. Priority areas are:
- relating policy to ICT and infrastructure development and implementing this in the shortest possible time;
- carrying out infrastructure development while creating opportunities for the private sector and NGOs to facilitate services to the rural poor;
- developing a reliable national digitized database, updating it with quality information on a regular basis;
- advocating for rural-focused programming on TV and radio networks;
- Reinvigorating existing national vocational training institutes by providing training facilities; and
- Improving infrastructure.

**Donors**

Given limited government resources, donors can play a pivotal role in ensuring ICT improves livelihoods for the rural poor.
- Donors need to be integrated in providing resources and making use of ICTs that are available in rural areas.
- Donors can help in capacity building, both of government and of NGOs.
- Since a number of projects overlap, donors can take the lead in forming an alliance among ICT service providers to bring about uniformity in terms of content development and sharing.
Bibliography


Katalyst (No date) ‘Bringing Knowledge to Vegetable Farmers: Improving Embedded Information in the Distribution System’.


Appendix A: Questionnaires

Questionnaire for ICT service providers

A. General information
A1. Name
A2. Title/occupation
A3. Name of your organisation
A4. (i) Email address (ii) Telephone number
A5. In what rural ICT projects/programs is your organisation involved?
A6. What are the main economic activities in the implementation area?
    Such as: agriculture, fishing, SMEs. Please specify.
A7. What are the main demographic and geographic characteristics of the area involved in the project?

B. Characteristics and description of the project
B1. Broadly speaking, what is the project about?
B2. What are the benefits for rural adopters of this project?
B3. What information opportunity/gap is being addressed?
    i) Health information  ii) Education information  iii) Agricultural information  iv) Legal information
    v) Administrative information  vi) Job information  vii) Market price  viii) others, please specify
B4. How was this gap identified?
B5. Is the project based on an already existing community project or association?
    Yes ☐  No ☐
B6. If yes, then how did you learn about previous project?
B7. What alternative projects/policies existed before the project was implemented?
B8. Who administered the project?
    i) Local government  ii) Central government  iii) NGOs  iv) Private sector  v) Mixed combination
B9. If mixed, then what is the form of combination?

C. Actors
C1. Who are the targets of the services delivered?
    i) Agriculture and fisheries  ii) Small-scale business enterprises
    iii) Social issues (e.g. education and health)  iv) Local government
    v) NGOs  vi) Others (please describe)
C2. Is equitable access guaranteed for all users? Yes ☐  No ☐
C3. If not, what criteria are applied to select who will receive the service?
C4. Has your organization partnered with other organisations for the project? Yes ☐  No ☐
C5. If yes, then is the associating partner is from
    i). NGOs  ii) Government  iii) Private sector  iv) others (please specify……)
C6. How is the project funded?
    i) Self-funded  ii) Government  iii) International donor agencies  iv) International
    v) NGOs  v) Private sector
C7. Have you faced any cooperation challenges among actors? Yes ☐  No ☐
C8. If yes, please elaborate on the kind of challenges have you faced:
C9. How did you try to overcome them?
C10. Were local actors consulted prior to the project implementation?
C11. How have local actors been included in the project administration and evaluation?

D. Technology and services
D1. Which technology is used to deliver the ICT services?
    i) Radio  ii) TV  iii) Telephone/mobile  iv) Computer  v) Internet  vi) Print media
D2. How was the technology chosen?
D3. Why do you think this technology is most effective for delivering the particular service?
D4. Does the technology build on pre-existing systems? Yes ☐  No ☐
D5. Does the project utilise content locally generated or appropriately localised? Yes ☐  No ☐
D6. What is the scale of the initiative in terms of number of users?
    i) Less than 100  ii) 100-500  iii) 500-1,000  iv) 1,000 and above
D7. What geographic level does the service cover?
D8. Do you think that there is a scope for further expansion of the existing project?
   Yes  No

D9. If the above answer is yes, please specify why and how the project can be expanded further?

D10. What is the scope for further expansion?
   i) Increase the number of service providers
   ii) Increase the number of users within the communities
   iii) Increase access to new community
   iv) Others (please specify)

D11. Which mode of technology should get more priority for further expansion?
   i) Radio  ii) TV  iii) Telephone/mobile  iv) Computer  v) Internet  vi) Print media
   Explain why? _______________________________

D12. Are there any training or basic skill (e.g. literacy) requirements?  Yes  No

D13. Who do you think needs the training?
   i) Service users  ii) Service providers  iii) Both

D14. Are the training facilities available for the service users as well as providers under the existing project?
   Yes  No

D15. If yes, then in what form?
   i) Formal training e.g. through regular classes
   ii) Informal training e.g. through one-to-one correspondent basis as needed.
   iii) Other type _______________________________

D16. Who are the trainers?
   i) Local facilitators  ii) Hired from outside

D17. Is there a cost associated with using this technology? Yes  No

D18. How can access to this technology be increased?

E. Project sustainability

E1. How does the project work?

E2. What have been the financial (or livelihood) results?

E3. Is the project self-sustainable or profitable?  Yes  No

E4. If not, what are the obstacles for sustainability?

E5. What is the role for local leadership? Is local capacity being developed? If so, how?

E6. How can local leadership and/or local government be linked with project sustainability?

F. Results

F1. What was the expected impact before starting the project? Have the basic expectations been accomplished? (for identification of case study).

F2. Who is in charge of the project’s evaluation and monitoring?
   i) No formal monitoring or evaluation
   ii) Internal monitoring and evaluation
   iii) External monitoring and evaluation

F3. What indicators have been used to measure the success or failure of the project?
   i) Profitability  ii) Sustainability  iii) Number of users
   iv) Other

F4. Thus far, would you consider to the project to be a success or failure? Why?

F5. What are the most noticeable changes on the livelihoods of the service users?
   i) Income generation
   ii) Employment generation
   iii) Reducing information gap
   iv) Empowerment of women/reducing gender discrimination
   v) Better health or education facilities
   vi) Other (please specify)

F6. Have there been specific efforts to help special or minority groups (women, young, elder, etc.)?
   Yes  No

F7. If yes, what efforts have been made?

F8. What can be done to improve the long-run impact of the project?
F9. What aspects of the project would you have implemented differently, if you were to re-launch the project?

G. Final checklist: Which of the seven policy issues are addressed? (For internal use only)

1. Sharing costs
2. Ensuring equitable access
3. Utilizing local or appropriately localized content
4. Building on existing systems
5. Building capacity at local level
6. Using realistic technologies
7. Building knowledge partnerships

Questionnaire for ICT users

A. General information:
A1. Name
A2. Occupation
A3: Age
A4. Gender
A5. What rural ICT projects/programmes have you used?

A6. What forms of technology have you used? (circle all that apply)
  i) Radio   ii) TV   iii) Telephone   iv) Mobile   v) Internet   vi) Computer   vii) Print media

A8. For each form you haven’t used, why haven’t you used it?

<table>
<thead>
<tr>
<th>Type of technology</th>
<th>No access</th>
<th>Too costly</th>
<th>Don’t know how to use it</th>
<th>Don’t think it will be helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
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<td>Telephone</td>
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<td>Mobile</td>
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<td>Computer</td>
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<td>Internet</td>
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<tr>
<td>Print media</td>
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<td></td>
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</tr>
</tbody>
</table>

B. Characteristics and description of the project

B1. Approximately, when did you first use the services/project?
B2. Approximately, how often have you used the services/project?
B3. How did you learn about it? From… (circle all that apply)
  i) Family   ii) Friends/neighbours   iii) Teachers   iv) Government officials
  v) The NGO supporting the project   vi) Other NGOs   vii) Other (please specify)
B4. Why do you use this project/service? (i.e., How does this project impact your livelihood, e.g. income, access to information, enjoyment)?
B5. What additional ways do you think technology can improve your livelihood?

C. Actors

C1. Who can most benefit from these services? (circle all that apply)
  i) Agriculture and fisheries
  ii) Small-scale business enterprises
  iii) People with questions about social issues (e.g. education and health)
  iv) People with questions about local government
  v) Students
  vi) Others _______________________________
C2. Who do you know who also uses this service (e.g. wealthy, poor, old, young, men, women, etc.)?

C3. Can everyone access this service?
  i) Yes   ii) No
C4. If not, why not (i.e., what criteria are applied to select who will receive the service)?
C5. Have there been specific efforts to help special or minority groups (women, young, elder, etc.)?
  i) Yes   ii) No
C6. If yes, what efforts have been made?
C7. Did the organization talk to community members about their needs prior to implementing the project?
  i) Yes   ii) No
C8. Do members of your community work at the organization?
   i) Yes   ii) No
C9. If you have a problem or suggestion about the programme, could you tell someone at the organisation?
   i) Yes   ii) No
   a) If yes, who? _________________
C10. Has anyone asked you your opinion of the project?
   i) Yes   ii) No
C11. Should the project be expanded?
   i) Yes   ii) No
C12. If yes, how? (circle all that apply)
   i) Increase access to other community members
   ii) Provide the same project to other communities
   iii) Provide more training
   iv) Provide other services, for example ______________________________
   v) Other ______________________________
C13. If not, why not?
C14. Which mode of technology should get more priority for further expansion?
   i) Radio   ii) TV   iii) Telephone   iv) Mobile   v) Internet   vi) Print media

D. Project sustainability
D1. Is there a cost associated with using this technology?
   i) Yes   ii) No
D2a. If yes, what is it?
D2b. If not, how much would you be willing to pay to use this service?
   ____________________ Taka for ____________ minutes

E. Results
E1. Do you think the project has been a success or failure? Why?
E2. What are the most noticeable changes on the livelihoods of the service users?
   i) Income generation
   ii) Employment generation
   iii) Reducing information gap
   iv) Empowerment of women/reducing gender discrimination
   v) Better health or education facilities
   vi) Other ______________________________
E3. How can this project be improved?
E4. Do you think this is the service your community most needs?
   i) Yes   ii) No
E5. If not, what services would improve your community more?
## Appendix B: List of Interviewees

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Organization</th>
<th>Project goal</th>
<th>ICTs provided</th>
<th>Perceived benefits</th>
<th>Perceived challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICT service providers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGO respondents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHM Bazlur Rahman</td>
<td>BNNRC</td>
<td>To disseminate ICT knowledge for rural inhabitants and connect them with information highway</td>
<td>Laptop, PC, printer, mobile phone, TV</td>
<td>Connectivity through RKC, getting information and raising awareness</td>
<td>N/A</td>
</tr>
<tr>
<td>Mahmud Hasan</td>
<td>D.net</td>
<td>Research project aiming to understand impact of ICT-carried livelihood information on rural community</td>
<td>PC, printer, mobile phone, TV</td>
<td>Access to livelihood information, agriculture and non-farm economic activities, employment information, email, photography and soil testing</td>
<td>As a new concept they had to create awareness among villagers; mobilising service-providing institutions to provide quality service</td>
</tr>
<tr>
<td>Shahiduddin Akbar</td>
<td>Katalyst</td>
<td>Ensure access to business and social information; developing a sustainable model through addressing local needs or demand and supply</td>
<td>Laptop, PC, printer, mobile phone, TV</td>
<td>People receive updated information, access to relevant information and communication facilities</td>
<td>It is a complex process to convince different organisations, especially public, to work in cooperation</td>
</tr>
<tr>
<td>Atiq uz Zaman Khan</td>
<td>BRAC-PACE</td>
<td>To make children, adolescents, and adults familiar with ICTs and their various applications</td>
<td>Computer, content-based CD</td>
<td>Income and employment generation and empowerment of rural poor</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Respondent</strong></td>
<td><strong>Organization</strong></td>
<td><strong>Project goal</strong></td>
<td><strong>ICTs provided</strong></td>
<td><strong>Perceived benefits</strong></td>
<td><strong>Perceived challenges</strong></td>
</tr>
<tr>
<td><strong>AHM Sultanur Reza</strong></td>
<td><strong>GP</strong></td>
<td>Provide ICT service to rural people through telecentre with partnership of local entrepreneur</td>
<td>Laptop, PC, printer, mobile phone, TV</td>
<td>Income generation of rural people and reducing information gap</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Shykh Seraj  | Channel-i  | Bridging gap between farmers/rural people with government, policymakers and researchers to develop agriculture and rural livelihoods  | Satellite television and mobile phone  | Increasing awareness of the farmers; introduction of new innovations to farmers and other actors  | Lack of credibility of secondary data; programme relies more on field-level data

### Government respondents

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Organization</th>
<th>Project goal</th>
<th>ICTs provided</th>
<th>Perceived benefits</th>
<th>Perceived challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Abdur Rouf</td>
<td>Support to ICT Task Force, Ministry of Planning</td>
<td>Establishing ICT in different government organizations</td>
<td>Automation of different government organizations</td>
<td>Increase efficiency of government services and quick dissemination of public information</td>
<td>Inadequate ICT infrastructure and lack of skilled ICT officials</td>
</tr>
<tr>
<td>S M Kaiser Shikdar</td>
<td>Agriculture Information Services (AIS), Ministry of Planning</td>
<td>With Ministry of Agriculture to disseminate agriculture-related information to farmers</td>
<td>Print media, radio, television</td>
<td>Reducing information gap; rural farmers have access to new IT</td>
<td>N/A</td>
</tr>
<tr>
<td>AKM Zakaria</td>
<td>RDA</td>
<td>Broadening area of innovation by introducing innovations to women and farmers through video</td>
<td>Video slide demonstration</td>
<td>Increases yields of farmers</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### ICT service users

**Sitakunda, Chittagong**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Profession</th>
<th>Age/gender</th>
<th>ICTs used</th>
<th>Perceived benefits</th>
<th>Difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rezaul Karim Ridu</td>
<td>Student</td>
<td>17 M</td>
<td>Radio, TV, internet, mobile phone, computer newspaper</td>
<td>Increased knowledge on computer and video technology to help in future professional life</td>
<td>Using technology is costly; lack of training</td>
</tr>
<tr>
<td>Md. Jahirul Islam</td>
<td>Student</td>
<td>16 M</td>
<td>TV, mobile computer, newspaper</td>
<td>Training on video recording has created chance to earn</td>
<td>Transport cost, electricity cost</td>
</tr>
<tr>
<td>Srimot Bedehanond Brammachari</td>
<td>Priest</td>
<td>28 M</td>
<td>Computer, mobile</td>
<td>Being able to give ICT education to poor children</td>
<td></td>
</tr>
<tr>
<td>Sabuj Karmakar</td>
<td>Student</td>
<td>21 M</td>
<td>TV, mobile, computer, newspaper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanjay Chowdhury</td>
<td>Service</td>
<td>23 M</td>
<td>Radio, TV, internet + mobile phone, computer, newspaper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rahima Begum</td>
<td>NGO</td>
<td>33 F</td>
<td>Radio, TV, mobile phone, newspaper</td>
<td>Receiving Information</td>
<td>Rural people cannot understand what internet is and how to use it</td>
</tr>
<tr>
<td>Sweety Barua</td>
<td>Student</td>
<td>17 F</td>
<td>Radio, TV, telephone, mobile phone, computer, newspaper</td>
<td>Increase of knowledge that help her to do well in her study</td>
<td>Shortage of number of the computers</td>
</tr>
<tr>
<td>Respondent</td>
<td>Profession</td>
<td>Age/gender</td>
<td>ICTs used</td>
<td>Perceived benefits</td>
<td>Difficulties</td>
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<td>------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Md. Asadul Islam (Asad)</td>
<td>Student</td>
<td>14 M</td>
<td>Computer, internet</td>
<td>Information and computer training</td>
<td>Long time to get information through post</td>
</tr>
<tr>
<td>Md. Biplob Hossen</td>
<td>Student</td>
<td>18 M</td>
<td>Mobile, internet, computer, newspaper</td>
<td>Advice on education, health, agriculture</td>
<td>Mobile call charge, printing charge relatively high</td>
</tr>
<tr>
<td>Md. Faruk Shah</td>
<td>Student</td>
<td>15 M</td>
<td>Radio, TV, mobile, internet, computer, newspaper</td>
<td>Information on health, education</td>
<td>Service charge for students, mobile charge high, long time to print</td>
</tr>
<tr>
<td>Ms. Homayra Parvin</td>
<td>Student</td>
<td>15 F</td>
<td>Computer, newspaper</td>
<td>Computer learning and increased knowledge base</td>
<td>Project does not have computer learning option</td>
</tr>
<tr>
<td>Kamlia Begum</td>
<td>Housewife</td>
<td>25 F</td>
<td>Newspaper</td>
<td>Legal information on family law</td>
<td></td>
</tr>
<tr>
<td>Md. Shahidul Islam Chowdhury</td>
<td>Business</td>
<td>45 M</td>
<td>TV, mobile, newspaper</td>
<td>Business advisory service</td>
<td>Long time to get information</td>
</tr>
<tr>
<td>Md. Mominur Rahman</td>
<td>Student</td>
<td>26 F</td>
<td>Newspaper</td>
<td>Education and health-related information</td>
<td>Service charge is relatively high</td>
</tr>
<tr>
<td>Md. Jahedul Hoque Shah</td>
<td>Farmer</td>
<td>48 F</td>
<td>TV, mobile, newspaper</td>
<td>Education, health and job-related information</td>
<td>Information on health and education should be developed more</td>
</tr>
<tr>
<td>Md. Rahim Ali</td>
<td>Business</td>
<td>38 M</td>
<td>Radio, mobile, computer, newspaper</td>
<td>Getting fast information on agriculture</td>
<td>Need more information on fertilisers, seeds and pesticides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Profession</th>
<th>Age/gender</th>
<th>ICTs used</th>
<th>Perceived benefits</th>
<th>Difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Md. Abu Bakkar Siddik</td>
<td>Farmer</td>
<td>28 M</td>
<td>TV, computer, newspaper</td>
<td>Agriculture and health</td>
<td>Need more information</td>
</tr>
<tr>
<td>Md. Akhtaruzzaman Sarkar</td>
<td>Teacher</td>
<td>30 M</td>
<td>Mobile, computer, newspaper</td>
<td>Newspaper and information through computer</td>
<td>Needs photocopier</td>
</tr>
<tr>
<td>Md. Alauddin</td>
<td>Farmer</td>
<td>40 M</td>
<td>Mobile, computer</td>
<td>Learning computer skills and getting information</td>
<td>No benefits from agriculture information; needs equipment for testing pure fertilisers and pesticides; needs photocopier</td>
</tr>
<tr>
<td>Md. Hasmot Ali</td>
<td>Farmer</td>
<td>36 M</td>
<td>Internet</td>
<td>Legal information</td>
<td></td>
</tr>
<tr>
<td>Md. Aminur Rahman Sarkar</td>
<td>Business</td>
<td>38 M</td>
<td>TV, mobile, computer, newspaper</td>
<td>Computing, newspaper</td>
<td>Charge for mobile call is high; needs more publicity; needs reduced time for supplying health service</td>
</tr>
</tbody>
</table>
Appendix C: ICT Bangladesh Workshop Summary

Unnayan Onneshan, with the support of ODI and Infodev, organized a workshop titled Enhancing the Livelihoods of the Rural Poor: the Role of Information and Communication Technology, held on 15 February 2007 in Dhaka. The summary of the workshop follows.

Naved Chowdhury welcomed everyone and stated the objective of the workshop. The study examines how ICT impacts the lives of the rural poor in six different countries on three different continents. Attendees are from different sectors such as civil society, private sector, national organisations, policymaking circles and other organizations, and all work with or are interested in ICTs.

Monowar Mostafa, after introducing Unnayan Onneshan, an independent progressive think tank aimed at contributing to development through research, advocacy, solidarity and action at the local, national and global level, stated that technological changes have a potential to bring substantial changes in the lives and livelihoods of the rural poor. How ICTs can enhance rural livelihoods, especially those of the rural poor, has been discussed all over the world. However, there is some degree of skepticism about whether ICTs are appropriate tools for addressing the needs and challenges of the rural poor. Yet, even the poorest people in rural areas have information and communication needs. It is extremely important to exploit every possible practical use of ICTs for the benefit of the rural poor and their livelihoods.

This study has given attention on the following:

- The roles of key institution and intermediaries, governmental and non-governmental, that impact the livelihoods of the rural poor and how ICT can enhance their capacity and effectiveness;
- The linkage between specific interventions to enhance the livelihoods of the rural poor and broader priorities for growth and poverty reduction;
- The role of local government service delivery and how ICT can enhance its effectiveness;
- The role of ICT in increasing the empowerment and the voice of the rural poor in the decisionmaking that affects their lives and holding government officials accountable.

Naved Choudhury asked participants to introduce themselves. The participants also explained their work with ICTs and their interests. See below for the list of participants.

Paul Matthews then explained that this project was undertaken for Infodev – a multi-donor-funded project. This study has been carried out by ODI and IDS and includes six country studies. He defined the concept of livelihoods quite broadly as the way people realise their goals for themselves, family and friends. The livelihoods framework is just not about economic gains but also about access to social networks, natural resources, public infrastructure, human resources (skills, good health, confidence), and the way that people can influence policy.

He also proposed a broad conceptualisation of ICTs to include IT, broadcast technology (TV and radio), telecommunications and networking. This study follows on a previous study by ODI, FAO and DFID. According to a previous study, a successful ICT programme should:

- use realistic technology,
- build on realistic systems within the community,
- use localised content wherever possible,
- encourage equitable access to make sure that every one is included,
- build the capacity of local people and institutions,
- encourage knowledge partnerships, and
- share costs to make programming sustainable.
The overall goal of the study is to build a “knowledge map.” A knowledge map should encapsulate the state of our knowledge about ICTs and how they can enhance rural livelihoods. Summarising the state of our knowledge should not only include anecdotal examples but also be backed up by evidence. It should identify the areas on which more research and more resources need to be targeted.

There are three main sources of information: published literature, well documented practical project examples derived from the country needs assessment in six countries in three regions and donor interviews. Evidence is crucial to advocate for integration of mainstream ICTs in the development programmes. Previously, ICT projects have been technology driven but recently projects have learned from other development projects. New projects focus on facilitating participatory use of ICTs in development programmes. Some promising arenas focus on mobile telephony. Mobile telephony infrastructure is quite light, flexible and application independent. Further, people can use it wherever they need, thereby improving social networks and building social capital, which may also lead to increase in economic assets. Health information systems, microfinance and e-banking, increasing the outreach of financial service, land registration systems, and market information systems are all possible applications using mobile telephony. However these programmes remain in their very early stages.

Naved Chowdhury asked Iqbal Ahmed and Erin C Lentz to give presentations.

Response from the audience

Sultanur Reza of GPCIC said that today there are 481 GPCICs covering 390 upazillas of Bangladesh.

- Gender issues: He found that was very difficult for women to work freely in centres with males. Some facilities should be provided for women and girls. They are looking for women entrepreneurs to run the CICs.
- Content: Content is also very big issue and critical challenge. There are needs for localised content.
- Sustainability: As a business organization, their main aim is financial sustainability, then comes social sustainability. Once you have the first then you can go for the latter. So they have arranged other income-generating facilities within their CICs. This is a good blend of corporate and social responsibilities from the perspective of their organisation. They are offering public phone service at the lowest cost.
- Outreach: In order to attract rural people to their CICs and increase awareness among them, they have CIC ambassadors, employees of the company who encourage use by local people. The CIC ambassadors return to their home villages during the launching ceremony of the CICs to attract people towards the CICs. In order to make the CIC initiative successful, total community involvement is very important. The business model of Bangladesh has been well accepted abroad. He emphasised working together and avoiding duplication, networking to work together better.

Mr. Bari of Action Aid said that NGOs have a very good role to play as they are very close to the rural people. At present in Bangladesh only a few NGOs are addressing ICT issues: more should be included.

Mr. Keynan, UNESCO said that illiteracy is a big problem and most of these people are poor. According to latest statistics there are 52 million illiterate adults. Many are poor and female and live in rural areas.

- Literacy: ICT has great potential towards development of livelihoods in Bangladesh but this is not reflected in the different project. There is no initiative to promote adult literacy through ICTs. It is a pity that people go to ICT centres and have someone read the contents to them. Unless there is adult literacy, people will always be dependent on others regardless how much money has been spent. So literacy is the main issue and information is also a key issue in terms of other people’s need. UNESCO has done some studies and used ICT for literacy.
- Content: Also of importance is developing content based on local needs. UNESCO is interested in this.

Mr. Shahiduddin Akbar, Katalyst emphasised greater participation of government in providing ICT support to rural people.
• Role of government in India: In India, government provides a great deal of support to rural ICT projects. They call this community service centres, carried out mostly by government and to some extent the private sector.
• Bangladesh government: the Bangladeshi government is improving; some information has been seen about the Agriculture Information Centre. There are lots of areas where government can contribute substantially.

He asked Erin to inform him about the overall government approach towards ICT for development from the research.

Ms. Erin C Lentz said that we are talking about two types of government.
• Local government: local government supports rural information centres. At local level, there is scope for coordination between local government and rural information centres.
• Central government: there are ideas and interest in ICTs but not very clear guidelines on how to implement policies. A lack of funding hampers ICT policy implementation.

Dr. Shahidul Islam, AIS said that the Agriculture Ministry is engaged in development of rural livelihoods. He said that most of their ICT projects are at the inception phase.
• Obstacles to ICT efficacy
  o In the PRSP many things are addressed and there is no detailed strategy.
  o The ministry is hampered by a lack of basic infrastructure and manpower.
  o Many farmers are still using old technology in agriculture. Shifting towards modernized technology and dissemination of new technology is very important in coping with globalisation and the modern world. First priority should be enlightening farmers on the latest agricultural technology.
  o At present, the Bangladesh Agriculture Research Council has 400 technologies for reaching farmers. These need to be disseminated. Before, only the Agriculture Extension Department used to deliver these technologies but now many NGOs help disseminate agricultural information. Additional coordination and help by these NGOs should be taken. Lack of adequate manpower is a major limitation of the agriculture extension department. Only one agriculture extension worker has to address 1,000-1,500 farm families, whereas in the developed country this ratio is about one to 200. Salaries and other benefits for these workers are very low. So they should be well paid if we expect better efficiency from them.
• Content and partnerships
  o Knowledge gaps between the ministry and its clients, the farmers, should be minimized. For disseminating information, they currently use mass media and electronic media. However, access to electricity is limited for a substantial amount of people. He also stressed that only one terrestrial television channel cannot meet the needs of agricultural programming because it provides only 25 minutes of programming per week. Other private channels should develop these kinds of programmes. However, private sector programmes are very much profit-oriented.
  o He asked donors and NGOs and other supporting organisations to help with technical support. They have a lot of information and this needs to be disseminated.
  o In addition to television programming, they have five hours and 30 minutes weekly of radio programmes. They also have a multimedia projector facility to show cinema and training slides in the villages. They have much information on agriculture and some technical facilities. He welcomed any cooperation from other organisations in disseminating their information.

Erin C Lentz stressed the need for partnership between government and NGOs.
• She gave the example of YPSA, which has its own community information channel. This channel could broadcast some of the already available government-generated content.
• YPSA also develops programming in the local dialect.

Naved Chowhury invited everyone to join in the workshop. Then the participants were divided into two groups for discussion. Group I was facilitated by Naved Chowdhury while Group II was facilitated by Paul Matthews.
In the group discussion the participants were asked to answer three key questions. These were:
1. What do we know about how ICT programmes have enhanced rural livelihoods in Bangladesh?
2. How can we work within and around the constraints facing Bangladesh?
3. What do we need to know to ensure our efforts make life better for the rural poor?

**Q1. What do we know about how ICT programs have enhanced rural livelihoods in Bangladesh?**
In the group discussion, the participants discussed interesting programmes for disseminating information in rural areas through ICTs. For example, Ghat and AloKito Gram use ICT for agricultural diversification. There is also an entrepreneurship training programme run by D.net. Rankstel has a programme for the poor called 'MayerKotha', giving telephone connections at a subsidised price (Tk1,000, subsidised to Tk500 for the poor).

RDA, Bogra, has “Women to Women Expansion,” a research-based video documentary broadcast on BTV, looking at cost effectiveness and women’s accessibility. BTV has “Mati o Manush” an agriculture documentary. Sharing content with other private television channels free of charges could increase viewer numbers.

BNNRC has RKCs which provide information through content development, training and facilities. It also uses solar power in areas lacking electricity. Telecentre projects (based on a well built network with internet service) do local entrepreneurship development and capacity building. Site and entrepreneur selection are the two areas that must be discussed with the communities prior to establishing telecentres. D.net's PK has four telecentres in four districts across the country. Information should move door-to-door to provide information to the rural poor.

**Q2. How can we work within and around the constraints facing Bangladesh?**
Financial sustainability and outreach of call centres is quite weak and there is no proper marketing strategy. There is conflict between approaches. Some are profit-oriented and others are development-focused. There is some confusion as to whether donor money is being used to support for-profit ventures. Currently, some projects are unsustainable. What sorts of mechanisms are needed to improve sustainability?

Much of the evidence tends to be anecdotal. A long-term strategic study on how call centres can improve livelihoods of rural people is needed. User rates for centres are low. Increasing usage is a practical challenge. Another constraint is capacity building. A lot of centres work on content development but much of the content is very generic and overlaps with other already developed content. ICT providers need some specific types of capacity-building support.

Some innovative ideas such as establishing call centres in local sports clubs or in a marketplace were discussed. Social acceptance and accessibility for women and girls is necessary. All of these have important policy implications for both donors and government.

**Q3. What do we need to know our efforts make life better for the rural poor?**
The main issues identified were as follows:
1. The government has a lot of information. The government needs to digitize this information and cooperate with NGOs to disseminate. How can we encourage the government to digitise the information and build incentives for this? One solution is to develop public-private partnerships, including NGOs.
2. The localisation of content and technology is important for the success of projects.
3. The chance for community radio to use very local information at village and local level, in places like Zambia and Malawi. Community radio is one way to provide localised programming and content for local people.
4. Affordability for local people should be addressed.
5. Need to know the capabilities of the current structure before moving on to other structures.
6. Transfer of information from district and upazilla level to union council and thana level.

Rashed Al Mahmud Titumir of UO thanked the presenters, participants, ODI and Unnayan Onneshan for a successful workshop.
Appendix D: The Livelihoods Framework

The livelihoods approach has evolved principally as an analytical tool that seeks to provide a logically consistent means of thinking through the complex issues and actors that influence the lives of the poor (DFID, 1999). As the rural poor are exposed to vulnerability, within the livelihood framework they need to be endowed with certain assets or poverty reducing factors. The framework itself is circumscribed with institutional, social and political environment through which livelihood assets of financial, physical and human resources are being transpired. This environment influences the livelihood strategies determining the livelihood activities and outcomes that have direct and indirect impact on poor. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and future, while not undermining the natural resource base (Chambers and Conway, 1992).

The livelihoods approach has a number of key features and is underpinned by a set of principles that guide its application. It starts with an analysis of poor peoples’ lives that is fully involving and participatory. It recognizes multiple causes, multiple influences and multiple strategies for the reduction of poverty, and seeks to provide a model of change that can positively impact the lives of the poor, that is resilient to external shocks, and not over-dependent external intervention. Thus it recognizes that the poor have their own assets and strategies to cope with vulnerabilities, while also acknowledging the importance of the external structures that can transform the lives of poor.
The second important aspect of the livelihoods approach to making effective micro-macro links that can lead to the transformation of structures and possess that directly impact upon the lives of the poor (Schulpen and Gibon, 2002). For example, at the macro level, national or international governing institutions can enact policy to create trade, regulatory or market mechanisms that have the potential to favour or disfavour the rural poor; they can choose to provide the type of infrastructure and services that may assist or sideline the rural poor; or they can put in place forms of governance that may encourage or discourage political participation by groups that represent the rural poor. Similarly, at the meso-level, mediating organisations (extension services, NGOs, health and education systems, etc.) have the ability to design strategies and programmes that can either be responsive or non-responsive to the needs of the rural poor.

**The context of vulnerability and the role of information on the livelihoods framework**

To strategise the livelihoods framework, two things must be taken into account. Firstly, since the livelihoods framework advocates a people-centred approach, a “bottom-up” rather than “top-down” methodology needs to be followed. The methodologies associated with the framework require extracting data and assembling and communicating information in which the poor needs to be incorporated, thus, advocating for participatory methods. Secondly, the livelihoods approach is also centrally concerned with linking a conceptual understanding of the conditions of the poor with the practice of planning and managing livelihoods strategies.

To enhance the strength of the poor they need to be endowed with livelihood assets. Again, information is an important determinant and has a functional role in terms of acquiring and strengthening such assets. Assets should be viewed not as distinct entities, but as interdependent (Duncombe, 2006). As such, information can be considered as a resource that cuts across all forms of capital assets. The capital assets can be distinguished as social capital, human capital and other form of capital (financial, natural and physical including ICT infrastructure). Social capital describes the features of social organization that serve to coordinate actions between (market) actors. Social capital not only describes the infrastructure of social relations that serves to coordinate actions, but also the information that is transmitted between actors via their social networks (Granovetter, 1993). Human capital needs to be strengthened alongside social capital (e.g. through skills developments so that the rural poor can participate in local markets). Other forms of capital are less central to building the knowledge and capabilities of the rural poor. They are, however, essential inputs for the rural poor, who will require information concerning their availability and access (Duncombe and Heeks, 2002).
Appendix E: Interview Methodology

Owing to the small sample size, we approached the interviews as a means to fill gaps identified in the literature review as well as an opportunity to explore some of the successes and failures of ICT in Bangladesh.

We interviewed two main stakeholder groups, those who provide ICTs to the rural poor or use ICTs to provide other services to the rural poor, and those who live and work in rural poor communities. Having identified donors, practitioners, private sector members, and government officials and policymakers who implement and support ICT services or who use ICT services to enhance their work with the rural poor, we chose between three and five actors from each group.

Primarily, we used medium-length interviews for the provider stakeholders. The number of interviewees was 11. We also used focus groups composed of various provider stakeholders, to discuss their perceptions of how ICT has and can improve rural livelihoods as well as some of the challenges each stakeholder faces. By having a focused session with providers of ICT, we hoped to gain insight into the constraints and successes they experience and avenues for policy change.

To gain a better understanding of how ICTs impact different segments of the rural poor, we selected respondents based on gender, education and skills, age and profession (e.g. laborers, farmers, craftspeople and small traders). Our sampling technique was not intended to be statistically representative. Rather, we looked at members of historically underrepresented groups and individuals whose livelihoods have or could improve by means of ICTs. Our intention was to choose respondents who would be able to discuss ICTs’ impact on their lives.

We used a mixture of focus groups and medium-length interviews. We interviewed community leaders, members of the rural poor and local organisations in two different regions: Sitakunda of southeastern Bangladesh and Nilphamari of northern Bangladesh. The total number of interviewees among the user group was 20. Focus groups may be particularly well suited to promoting discussion of ICT among the rural poor and local community organizations.
Appendix F: Organizations Involved in Information Provision

BRAC-PACE: ICT in multipurpose community learning centres/Gonokendros

Gonokendros of BRAC are multipurpose community-learning centres established by BRAC’s post-primary continuing education programme. To make children, adolescents, youths and adults familiar with ICT and its various applications, BRAC initiated a pilot project in late 1999 by providing computers to its 10 union libraries. In December 2006, there were 336 Gonokendros spread all over the country, equipped with computers. These remain open four to six hours per day, six days a week. They provide materials including books, newspapers and magazines. Each has on average 400-500 members and is managed by a local committee. 48.15% of subscribers and members are female. The centres are located in spaces donated by the community. A part-time librarian (usually a woman) operates the centre. It has a target to become self-financing within two years through strong community involvement. Before the project began, through a needs based survey, the information gaps identified were in health, education and legal information. Affordable fees are charged to work towards sustainability. BRAC has also developed customised computer training packages for rural populations and arranged several ICT fairs to familiarise rural villagers with ICTs. So far, it has developed three software packages targeted at the specific needs of rural communities. It also uses a multimedia projector. Special attention is given to poor women, girls and disabled people by partially or fully subsidizing computer training for these groups. BRAC arranges about 12 days of residential basic computer training to the librarian for training to Gonokendros librarians. After completion of the training, libraries become eligible to act as an ICT trainer in the community. After four or five months, a three-day refresher programme is organised for librarians to share recent ICT activities as well as additional topics. It hosts educational, socio-cultural and sporting activities as well as skills development training courses for youth. It also has a separate arrangement for children.

D.Net: Pallitathya Kendra

D.Net initiated its Pallitathya Programme in 2003 with a view to understanding information needs from a village perspective. The idea was that access to livelihoods information and knowledge is a key area where ICT can help. It was perceived that access to information is an important economic resource and is part of the access to resources paradigm for poverty alleviation. This research programme aimed to develop a sustainable ICT-based model to address economic and social problems at the rural level arising out of lack of access to livelihoods information. D.Net has established four information centres across Bangladesh. In these, livelihoods information is provided for villagers. They use mobile internet services. Villagers can come to the centre and use the internet and get that necessary information. They have also developed software called Jeeon, giving different livelihoods information, such as on agriculture, education, health, laws, etc. People have to pay an affordable fee to obtain information. The members of the centres help them to get information. If the people are not able to get the necessary information from the centre, a member of the centre will call Dhaka. D.Net also publishes a newsletter featuring necessary information. D.Net has given training to its centre members.

GP: Community information centres (GPCIC)

GP has taken the initiative to establish a telecentre in each upazilla (GPCICs). This is a franchise model commercial venture. GP, since inception in 1997, has introduced the concept of the village phone, giving connectivity to rural people. Borrowers of the Grameen Bank were given connectivity through a mobile phone. Currently, about 300,000 village phone ladies operate throughout Bangladesh. Now they are establishing CICs in rural areas using GP's nationwide EDGE network to provide shared data access to villages and urban areas. GPCICs have become feasible owing to the launching of EDGE by GP in 2006. This facilitated internet connectivity over the entire GSM network of GP, which extends over 95% of the geographical area of the country. GPCICs have been established as local business units, owned and managed by a local entrepreneur. Start-up costs are US$1,000-1,400. Revenue targets are US$5-7 per day. People can get information on education, health, jobs, government services, etc. They now can access forms for passports and death and birth certificates from government websites. Some of the services offered in the CICs are internet browsing, email, video chatting with overseas relative and friends, passport scanning and transmission overseas for employment, results of examinations, market price information, e-government services, directory services, information on agriculture, legal affairs, small businesses, weather, computer training, digital photography, etc. So far (January
2007), GP has built 430 CICs all over rural Bangladesh. GP expects to launch about 500 CICs by the end of March 2007. The basic minimum requirement to run a CIC is a computer, a printer, a scanner, a web camera, an EDGE enabled modem.

**RDA (Bogra): Good Seed Initiative in South Asia**
The Good Seed Initiative is a RDA project in Bogra to introduce a new innovative technology in seed production to rural farmers and women. Using good seeds can raise production by as much as 10%. Video shows are held in villages to demonstrate how to preserve good seeds. The impact is positive on farmers exposed to the video demonstration. They adopt the technology very quickly. At present, there is a shortage of video programming for training on different agricultural issues, such as plant health. By giving training to producers by means of this type of video, the situation can be improved. The commentary must be in the local language.

**DAM: Gonokendros**
ICT is a crosscutting issue in DAM's whole programme. ICT activities are organized through the community resource centre or Gonokendro. This is an initiative to give access to information for all rural or urban slum communities. Gonokendros are meant to introduce capacity development to the young and adults for utilisation of ICTs such as computers which will help them to access the job market. Only five across the country are ICT-based, with an outreach area of 23 unions. These started their activities with traditional tools for sharing knowledge and information. They provide different information useful for the improvement of livelihoods, through books and newspapers, etc. The five centres have started giving computer-based interactive learning lessons but they do not yet have an internet facility. Every centre has its own management committee of community people. DAM provides training to develop the management capacity. Centres are linked with other service providers. The project is being funded by donor agencies. Now, DAM is seriously considering upscaling these centres by integrating ICTs, following the rural ICT centre model. DAM also has a plan to collaborate with other organisations in developing digital content useful for the improvement of rural livelihoods.

**Ghat: Rural ICT Centre**
The RIC is run by DEN (Digital Equity Network) with its own investment and support from Katalyst, a multi-donor consortium working in Bangladesh. They established four RICs in 2006 located in three different upazilla, headquartered in Bogra district. RICs provide a physical infrastructure with basic ICT facilities (phone, computers, printer, scanner, internet connectivity, digital camera, etc.) Their target is to ensure access to business and social information, developing a sustainable model by addressing local need. The focus of this model is to meet the information and advisory service needs of SMEs in rural Bangladesh. RICs disseminate business information on poultry, agriculture, fisheries and other non-farm rural activities dominating the relevant upazilla. They arrange customised advisory services on specific rural needs. They also provide various social, health-related, education, development and government information. The plan is develop an economically viable tool. They provide training for both service providers and users through regular classes and group demonstrations.

**YPSA: Youth Community Multimedia Center (YCMC)**
YPSA has launched its YCMC in Sitakunda upazilla of Chittagong. They offer computer training, internet browsing, digital video camera, audio recorder, cassette playback, cable TV, cable radio, DVDs, etc. They also disseminate useful information in the community by loud speaker and bulletin board. The centre has a dialup internet connection. The YCMC also disseminates information through a cable network, called 'minicasting'. The target group is local youth, for education and enhancement of personal capacity. The local community participates in management and administration through an autonomous body and intervenes in decision making. In outreach, they work with traditional media such as street theatre and group meetings. These traditional communication tools are used for information dissemination and raising awareness on various issues. They also arrange weekly film shows and other cultural activities. The project is sponsored by UNESCO. The YMCA charge for commercial computer training, printing and video training for financial sustainability.

**Practical Action: Rural Technology Centre (RTC)**
Practical Action, a development organization, established RTCs in two different places in 2006. RTCs make available affordable and appropriate technologies for accessing information and communication services. They
provide a local needs-based service. Essential agro-processing equipment is kept in the RTC for demonstration and local use at an affordable price. They also teach them how to use such equipment.

**BEFS: Amader Gram**

Amader Gram is an initiative of the Bangladesh Friendship Education Society (BEFS). The project is mostly centred and based on village society and it is conceived as a social innovation. It collects, generates, analyses, collates and uses many socioeconomic data. The statistical department of the Bangladeshi government does not have any regular mechanism to collect and preserve data on villages. Although in some upazilla, the government has some branches of the statistical department, but these have only one officer and most of the time do not have any ICT facilities. In Amader Gram, data are collected and kept for future use, including on microcredit activities, training facilities, primary education, etc. The project has set up a village information and learning centre with computers, TVs, etc. It maintains cooperation with local elected bodies and government officials. Researchers, officials and other stakeholders can access the data. The project also creates resource manpower through skills development training, particularly for the unemployed, youth groups and adolescent girls, in ICT uses, data collection, compilation, analysis. It gives special attention to school teachers and youths. The project is managed in southwest Bangladesh, and four other sub-centres have been established in different locations. In another component, 'Technology-based Community Learning Centres', people can learn about new technologies.

**BNNRC**

BNNRC is a national networking body of NGOs working for the free flow of information and equitable and affordable access to ICTs among remote and marginalised people. They work in the coastal area to raise the livelihoods of rural people. So far, they have established nine rural ICT centres in nine coastal and hill districts with the cooperation of different local NGOs and sponsored by donors. They provide mobile phones, computers, internet, and laminating, printing and other ICT-related services. Service delivery is among NGO group members and community people, with local actors involved in monitoring. The project works on a cost-sharing basis with the local community or NGOs. There are provisions for formal and informal training for both service providers and users. In the future, BNNRC has a plan to popularise community radio and is now lobbying the government for a license for community radio, at least on a pilot basis. In Sitakunda, in collaboration with YPSA, BNNRC telecasts a programme through the cable network.

**Bangladesh Computer Council**

Bangladesh Computer Council, a government body, is the apex body of ICT policy implementation in Bangladesh. Its main objective of BCC is to ensure effective application and expansion of the use of IT. BCC provides an advisory and training service to government ministries and organisations and autonomous bodies. BCC is entrusted with matters related to computerisation. It also encourages the use and application of computers and IT for the socioeconomic development of the country, the development of IT infrastructure in various sectors of the economy, and the improvement of standards in computer education, training and professionalism. BCC collects, analyses and disseminates information on IT. Currently, it is running a project on improving ICT infrastructure in Bangladesh; another project deals with generating high-level ICT manpower.

**Ministry of Agriculture: Agriculture Information Service**

This department is responsible for disseminating agriculture-related information to farmers and other stakeholders. It utilises print and electronic media and internet to disseminate this, regularly publishing newsletters and sponsoring radio and TV programmes. At the moment, the government is attempting to strengthen this department towards modernising its service.

**Channel-i: Hridoye Mati o Manush (TV programme on agriculture issues)**

*Hridoye Mati o Manush* (Caring for Land and People) is a TV programme on agriculture and rural livelihoods. The programme is telecast every week at prime time on Channel-i, a satellite channel. Various issues are dealt with, including farmers' problems, new innovations and technologies, fisheries, poultry, livestock, etc. The programme also addresses policy issues and interviews various stakeholders. It regularly presents field-level data by interviewing farmers and other actors. It is trying to bridge gaps in knowledge and information between the field level and government, policymakers and other stakeholders.
COAST Bangladesh
COAST is an NGO working in the coastal belt of Bangladesh to promote the livelihoods of coastal people, providing basic needs, such as education, IT, and other services. It has established a coastal rural knowledge centre (CRKC) on the remote islands of Kutubdia (Cox’s Bazar district) and Charfassion (Bhola district) to ensure ICT facilities at local level. The CRKC provides an opportunity to students and rural youths to be access technology in a location yet to receive electricity and represents a knowledge centre for students and professionals. With the introduction of internet, rural youths and students will be able to access IT. So far, COAST has provided one laptop, one mobile set with GPRS connection, six solar home systems (300wp) with converter and one technical staff member.