

## EDITORIAL INTRODUCTION

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The potential for information and communication technologies (ICTs) to impact positively on the lives of the rural poor in a variety of ways is now being widely recognized. However, a number of social scientists are questioning this popularly held belief particularly in the context of some countries.<sup>1/</sup> This issue of *Regional Development Dialogue (RDD)* with the theme, "ICTs for Human Security in Local Development" is a timely effort by the United Nations Centre for Regional Development (UNCRD) to contribute to this debate in a meaningful way.

The volume contains eleven articles of which five deal with rural telecentre projects. Two case studies from Japan describe efforts to connect one rural and one urban community, respectively, while one article deals with different technology options to provide connectivity in rural areas. Three articles discuss critical factors in implementing ICT applications. Accompanying each article, one or more independent commentaries examine the article critically in order to provide new insights. In some cases, these comments present a divergent opinion on the issues discussed in the article.

Recognition of the potential of ICTs comes from a few successful pilot applications in a number of developing countries around the world. An attempt has been made in this *RDD*, to present the achievements of some of these successful pilot projects and to critically examine the implementation issues arising therefrom. These pilot projects demonstrate that access to useful information can benefit the poor in improving the quality of their produce or services, obtaining a better price, and enabling them to market their produce/services beyond the confines of their immediate neighbourhood. Other pilot projects indicate the capacity of ICTs to connect communities and provide two-way communication channels between the communities and government bodies at both local and national levels. Such communication enables governments to formulate development plans with the full participation of the community. One of the problems of planning in many developing countries is its top-down approach, which fails to incorporate the real needs of local communities. Two-way communication can also bring more accountability to the functioning of government. There is significant leakage of funds during the execution of development projects through collusion between government officials and contractors who implement the schemes. If governments were to share information such as names of contractors, promised deliverables, or due dates of completion, it would enable citizen watchdog committees to monitor the implementation process.

Many e-government applications have shown the efficiency with which services can be delivered to the rural poor.<sup>27</sup> Often, the costs paid by poor citizens in availing themselves of government services is large even though explicitly the services are made available free of charge. These costs include expenses incurred in making numerous visits to government offices, losses in wages, payment of bribes, and the costs of delay. In a few striking examples of e-government, services have been delivered on-line, cutting the processing time from several days to a few minutes. Cost of bribes, wage losses, and number of visits to government offices are all minimized. The poor perceive so much value-addition through electronic delivery of services that they do not mind paying an explicit service fee as in the BHOOMI project of on-line delivery of land titles in Karnataka, India.<sup>28</sup>

Even as these examples suggest the potential impact of ICTs they also indicate the difficulties in harnessing these impacts. Recent studies indicate that many of the applications that are deemed to be successful on anecdotal evidence are, in practice, only partially successful.<sup>29</sup> There is a need to evaluate these projects so that the real extent of their impact can be understood, and the factors inhibiting impact can be identified. There has been a tendency to recognize success prematurely, which in some ways jeopardizes the future sustainability of these projects. Early recognition blinds the project managers to possible shortcomings, which remain unattended and can lead to failures.

There is another danger in the creation of hype around ICTs. Today, the issue of the digital divide has gained prominence. There is significant concern within multilateral organizations and the developed world as to how this divide can be bridged. This concern is being translated into action programmes which are likely to pour large amounts of funds into creating infrastructure enabling more people to have access to ICTs in the developing countries. However, if we fail to recognize the fact that access is a necessary, but not the only, condition for creating impact then much of this funding will be wasted. Many of the articles included in this volume of *RDD* point to other conditions which must also be prevalent for ICTs to be exploited fully.

We begin with an article entitled "Letter to Aunt Ofelia: Seven Proposals for Human Development Using New ICTs" by Ricardo Gómez and Benjamín Casadiego, which presents these factors as a comprehensive list. The insights provided in this article are based on a workshop which distilled the wisdom of nearly three dozen experts in this field. Many of these insights are echoed in other articles contained in this *RDD*. These seven insights appear to be commonsensical and even simplistic to the casual reader, however, any reader who has dirtied his/her hands in implementing an ICT project in rural areas will immediately recognize their value. Simple as they appear, often projects have ignored the basics. We need to evolve project monitoring and implementation methodologies which can ensure that each project is consciously evaluated according to the yardsticks listed in the seven insights, viz., offer concrete solutions; move forward at the pace of the community; learn from mistakes; localize globalized communication; work with a gender perspective; let people speak with their own voice; and generate new knowledge. Commenting on the article, Mike Jensen also feels that these suggestions on designing good community ICT projects are very wise and goes on to propose other potential uses of the Internet — for example, exploiting the Internet to build a service industry based on information technology (IT) — and identifies the conditions necessary for promoting such uses.

The next four articles present the gains from ICT use in four different rural settings in India. The case study on the National Dairy Development Board (NDDB) by Haribandhu Panda and the study of the Warana Wired Village Project (WVP) by D. P. Bobde, Amitav Deb, and R. R. Rane both demonstrate that when the application delivers concrete solutions (measurable benefits) to farmers in an activity which is their primary source of livelihood, the payoffs can be rapid. The NDDB application serves to reduce time and increase transparency, while enabling immediate payment for milk collected from farmers. The technology used — an electronic weighbridge and a semiautomatic fat tester linked to a personal computer (PC) is simple and appropriate. In their comment, Ted F. Tschang and Junko Hirai draw useful lessons from the article, pointing out that systems that have very clear business or personal uses are the ones for which rural populations are generally willing to pay. They argue that innovations in ICT use can happen if the implementers combine a top-down approach with participatory design. They raise an interesting issue regarding the size of rural telecentres and opine that the scale of investments required to maintain a larger telecentre of the type needed to service the 100 farmers who visit milk collection centres, will be insupportable. Grant Boyle, also commenting, agrees that the dairy information systems kiosk (DISK) project needs to be more demand-driven. He also notes that a systematic assessment is needed of the areas in which the project can be useful and where it cannot be useful.

The NDDB application has spread to 4,000 locations because small private sector companies have been involved. However, the experiment to deliver dairy farming knowledge and services by connecting the PCs at the milk collection centre to the Internet has not been particularly successful. First, the application does not provide a solution to an existing problem as it is more focused on demonstrating potential opportunities. The amount of spadework necessary to create awareness among users about such opportunities is considerable. Also the changes that are necessary to exploit the full potential require the involvement of many more people at different hierarchical levels of the dairy farming system — a condition that has yet to be met.

In the WVP example the level of investment is large and the scale of the project ambitious. It also leads us to a similar conclusion. The component that has been successful is the planning of the crushing programme — an area where the need for improvement was apparent. However there is very little data in the article to show that other components such as rural kiosks are being used for any other purposes on a significant scale. Once again the spadework necessary to assess the felt needs of the rural community and then the design of content that will meet the evolving needs is missing. In spite of a three-year implementation period, the pilot project has still not been replicated elsewhere. Ila Patel, in her comment, also questions the claims made in the WVP article. She points out that the assertion that the project has benefited the poor is based on anecdotal information and not on any factual information or empirical evidence. Examples of applications and benefits are mentioned in the article without detailed substantiation. According to Patel, the article advocates ICTs as a panacea for rural development — a perspective with which she is not in agreement.

“Evaluating the Impacts of the Gyandoot Project”, the title of the next article, by Naveen Prakash, describes an experiment in which thirty-nine kiosks are expected to deliver a wide range of services to the rural population in a backward district. It seems that the experiment has begun to falter after an initial period of success. The article highlights

the benefits delivered during this early period of success. Recent studies indicate that the activity level at the kiosks has declined and the long-term viability of the kiosks is in serious doubt.<sup>57</sup> Brij Kothari's comment offers a critical examination of the claims made in the article. The comments are of particular interest because Kothari makes them on the basis of a personal visit to nine kiosks to obtain firsthand experience. His comments confirm what many other reports have indicated — that the Gyandoot Project is losing some of its sheen. Often, when individual champions implement projects, the projects fail to survive beyond the tenure of the champion. Kothari's comments and other evaluations also highlight the problem of poor supporting infrastructure in rural areas and the large investments that may be needed to overcome this handicap, making the projects unviable. Coupled with the problem of infrastructure is the perception of inadequate value delivered by the project. Filing an application for a service from the Gyandoot centres does eliminate one visit to the local government office but because of the lack of automation at the back end, the actual delivery of service takes an unacceptably long time, is prone to delay and bribery, and negates any advantage of electronic communication.

The fourth article, again from India, entitled "Expanding the Village Knowledge Centres in Pondicherry" emphasizes the evolving nature of needs as the actual outcomes can turn out to be different from the expected outcomes. The authors, S. Senthilkumaran and Subbiah Arunachalam, explain that the knowledge centres were initially established to provide weather information to fishermen but women have come forward to seek additional information on such items as vegetable prices, pre- and post-natal care, and employment opportunities. Ricardo Ramírez and Dan Pellerin, in their comment, attribute the success of the project, to a large extent, to the role of intermediaries and the innovative combination of ICTs with existing and proven community media, such as the public address system, newspapers, radio, and simple word-of-mouth. There is a strong message for replicating such experiences on a wider scale. The success of replication would require that volunteers (intermediaries) are identified and a process of bottom-up planning is used to understand the needs of the communities.

The next article discusses multifunctional telecentres but in two different settings — Senegal and Uganda. "The Case Study of Acacia Telecentres: Trade Point Senegal and Uganda" by Florence E. Etta and Ramata Aw Thioune, with Edith Adera, highlights many issues relevant to the discussion of sustainability of multipurpose telecentres. As has been argued by other researchers, investment in ICTs will have to be supported by investments in other infrastructure in order to realize the full potential of ICTs.<sup>67</sup> The Senegal case points out that farmers were unable to reap the full benefits of quicker access to information about markets because of the lack of adequate storage capacity for their farm produce. As in the article on the Pondicherry case, the value delivered by the telecentres depended on the role of intermediaries in repackaging information downloaded from Internet sources to meet specific needs of the communities. The experience of telecentres in Uganda suggests that impacts on the marginalized groups of the very poor and the young are limited. Often telecentres are used by younger people and entrepreneurs from small and medium-sized enterprises (SMEs). The Ugandan experience also emphasizes that the actual use can be quite different from the expected use, suggesting that uses evolve over time. It is therefore necessary for the project managers to encourage the people to speak in their own voice to understand the evolving needs. Bashiru Mohamed Koroma's comment on the article

argues for greater involvement of women as partners and useful participants when social experiments such as the Acacia telecentres are implemented.

Training in IT was a major revenue earner for the telecentres in Uganda. The demand for training is often fuelled by a perception that employment opportunities will be plentiful for trained personnel. The use of IT as a vehicle for training is also significant as was demonstrated by the CD ROM which contained ideas as to how women can earn income. The article observes that charging a fee for providing high quality information is difficult in an environment where citizens are used to getting poor quality information from government sources at no cost. Perhaps the time required for citizens to realize the value of better quality information is longer than what most people have anticipated.

The next two articles focus on the use of ICTs to promote communication among communities. These experiments, both carried out in Japan, a country highly advanced in technology and its use, may not be replicable in a developing country environment. However, the lessons drawn by the authors have a universal applicability. The cases illustrate that for communities to adapt to newer methods of communication, a process of consultation and participation with the community is required, specifically in the design and implementation of the project. Even in an environment which has a greater readiness to adopt technology, the process is slow and does not always lead to all the desired benefits.

Specifically, the article on Yamato City Government's efforts as detailed by Teruhiko Yoshimura, is a well-documented study that provides useful insights for implementing e-democracy projects (participation of citizens in civic affairs) in developing countries. Andre Sorensen's commentary puts the experiment in perspective, identifying many other community development initiatives undertaken at the local level in Japan. It thus dispels the notion that Yamato City was in any way a unique experiment. Sorensen argues for a more participatory process in building such systems than has been the case in examples such as Yamato City where initiative has largely originated from the top. The city's experiment illustrates an interesting use of electronic cash to promote barter, which helps in building a community. It also illustrates the potential uses of "smart cards" and raises the interesting issue of commuters/populations which migrate daily and the manner in which participation can be encouraged from such populations. As is pointed out by Sorensen, it would have been useful if some evaluation of the impact of the experiment had been presented in Yoshimura's article.

The article on digitizing isolated communities, by Yuki Gooneratne, provides some insight into how projects intended to bridge the digital divide can be designed and implemented. Data on costs indicate the levels of investment and subsidy which are needed for serious efforts to bridge the divide, even in countries where the initial state is fairly evolved. Investments will need to be subsidized by the state. However, communities can be asked to pay for operating costs to make these projects sustainable. Adequate investments can ensure good quality infrastructure which is robust. Contributions by communities can pay for maintenance. Otherwise, as in projects such as Gyandoot and NDDB, operational sustainability can be jeopardized because of poor infrastructure. The article highlights the fact that efforts to build communities are central to any use of the Internet to produce value for the citizens. The article records interesting impacts on development and depopulation and documents the trials of some practical and some outlandish ideas about uses of technology such as telemedicine, crop monitoring, and

movement sensors. Use of public facilities to include the excluded, such as the elderly, is important even in resource-rich societies. The article also highlights the fact that considerable efforts are needed in education, awareness-building, and content creation and still the success may be only partial. The fact that very elderly citizens were still not on board illustrates how much time is needed — a point emphasized in the first article of this *RDD*. Kenji Oya's comments on Gooneratne's article identify the major gain from the project as being the integration of disadvantaged citizens into the community. He highlights the potential which ICTs have of bringing back the confidence and dynamism to communities which may have lost them because of migration or other reasons.

The next article, "Building a Wireless Bridge over the Digital Divide," by Benjamin D. Huffman, discusses technology and cost implications in the context of establishing rural telecentres. The article discusses technology choices for taking telecommunication access and the Internet to the rural areas. Comparison of costs and capabilities of various technology options are discussed. Some examples of the locations where such technologies are deployed are also provided. The author draws no conclusion as to the situation in which each of the technologies would be appropriate. This is left to the implementers who can best match the local needs with the capabilities of different technologies. Three different comments accompany this article. Jeffrey James regrets the absence of a discussion on mobile phones in the article, despite the fact that this particular form of communication technology is providing connectivity in the rural areas of many developing countries. He would have liked to have seen some discussion on the outcome of these projects, a point also made by Rekha Jain in her comment. She would have liked the article to have discussed the factors that drove the use of a particular technology in the Indian experiences included in the article. Michael L. Best discusses each technology covered by the author, elaborating in some detail but still not making it any simpler for the uninitiated to clearly understand the implications of choosing any of the technologies described.

The last two articles present no specific case studies but they do identify some factors that can contribute to successful implementation of ICT projects. The article on e-government, by Subhash C. Bhatnagar, distills experience from several successful applications of electronic service delivery to suggest a national-level vision and strategy and a project-level implementation approach for building e-government applications. Commenting on the article, Josefa S. Edralin points out that it is often more difficult to implement ICTs in the government sector (as compared to the private sector) because of the peculiar nature of government bureaucracy, which would rather play safe than innovate and/or make changes. She identifies several difficulties that have been faced by some developing countries in implementing ICTs in government.

The final article of this *RDD* "Imparting Training to the Intermediaries Bridging the Digital Divide" is by Devyani Mani and identifies the variety of roles that intermediaries need to play for the success of ICT use in development. The article focuses on the nature of training programmes which need to be organized to train such intermediaries. Peter Ballantyne's comment identifies two kinds of intermediaries — sponsors, who often promote ICT projects from a long distance, and "infomediaries" who are in direct contact with citizens in delivering information and services. He argues that training is needed for both types of intermediaries. In addition to training, he proposes mechanisms to connect such intermediaries for the exchange of ideas and lessons. He argues for a training package

that will cover an understanding of development problems and building skills in partnership- and relationship-building.

The role of ICTs in providing security to the poor is multifaceted. Creation of multifunctional telecentres in rural areas can provide avenues for employment, become a means of training in new vocations, and a source of information for key economic and social activities of the community. The use of ICTs within government systems can improve the delivery of services to the poor. So far, most of the evidence on positive impacts of ICTs on rural poverty has been purely anecdotal. It is not sufficient for constructing explanatory models and is certainly inadequate for defining prescriptions. As an example, the sustainability of existing telecentres needs to be established before large-scale investments are made to replicate such telecentres in different countries of the world. It is perhaps too early to prescribe a model for these telecentres, e.g., large or small or single function versus multifunctions. Sustainability depends on technology, which determines the cost of operation and the perception of value delivered through a variety of services.

This issue of *RDD* contains many articles which highlight the potential value that can be delivered to rural communities and also embraces discussion of technologies and factors that can contribute to successful implementation. But more systematic evaluation studies need to be conducted to establish the gains made from the use of ICTs in rural areas. These gains need to be assessed from the perspective of the intended beneficiaries. Only when a large set of well-documented evaluations are available to researchers can any kind of models be constructed. In addition, more case study research is needed which situates ICT pilot projects in their sociocultural contexts to facilitate understanding of the processes of change being promoted by their use.

In the absence of this systematic documentation and analysis the jury is still out on the question of how much social and economic impact ICTs can create on the lives of poor people. What seems to be clear is that use of ICTs should not be driven through a technological "push". They should form an integral part of a multifaceted reform initiative that aims at empowering the poor in a variety of ways. Ideally, they should be driven through the active participation of the community which they intend to serve.

## NOTES

- 1/ Saith Ashwani, "ICTs and Poverty Alleviation: Hope or Hype?" (Paper presented at the International Seminar on ICTs and Indian Development, Bangalore, 9-11 December 2002).
- 2/ See following examples: "Mandals online in Andhra Pradesh." Available from [www1.worldbank.org/publicsector/egov/apmandalscs.htm](http://www1.worldbank.org/publicsector/egov/apmandalscs.htm); accessed 2002; see also "Village information kiosks for the Warana cooperatives in India." Available from [www1.worldbank.org/publicsector/egov/warna.htm](http://www1.worldbank.org/publicsector/egov/warna.htm); accessed 2002; and "Empowering dairy farmers through dairy information and services kiosks." Available from [www1.worldbank.org/publicsector/egov/diskcs.htm](http://www1.worldbank.org/publicsector/egov/diskcs.htm); accessed 2002.
- 3/ See the case study entitled "Bhoomi: Online Delivery of Land Titles in Karnataka, India." Available from [www1.worldbank.org/publicsector/egov/Bhoomi\\_cs.htm](http://www1.worldbank.org/publicsector/egov/Bhoomi_cs.htm); accessed 2002.
- 4/ T. T. Sreekumar, "Civil Society and ICT-Based Models of Rural Change: History, Rhetoric and Practice?" (Paper presented at the International Seminar on ICTs and Indian Development, Bangalore, 9-11 December 2002).
- 5/ See "Quantifying Costs and Benefits of E-government Applications." Available from [www1.worldbank.org/publicsector/bnpp/gksp1.htm](http://www1.worldbank.org/publicsector/bnpp/gksp1.htm); accessed 2002.
- 6/ S. Dewan and L. K. Kraemer, *Information Technology and Productivity: Evidence from Country Level Data* (Irvine, CA: Center for Research on IT and Organizations, University of California, 1998).