



ICTS FOR THE POOREST OF THE RURAL POOR

Now, and how?

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Information and communication technologies (ICTs) are proving to be critical tools in rural development: social services, income-generating activities, and governance. However, rural people, especially the poorest of the poor, in India are still neglected. Efforts need to concentrate on reducing access costs, creation of enabling environment, developing key technologies, development of relevant local languages content, joint efforts by public and private agencies, developing supporting infrastructure such as roads and power, dedicated venture capital fund, encouraging mass e-literacy, and leading of ICT initiatives by women and other underprivileged groups.

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WHAT ARE ICTS: THE DEVELOPMENT CONTEXT?

In the 1950s and 1960s, information and communication technologies (ICTs) such as TV and radio were tools for mass information dissemination and inducing behavioral change. Participatory forms included community radio, especially in Latin America. Telephone remained an urban communication tool for the rich and privileged. Soon, the unidirectional, preachy approach towards communication was found to be inadequate. In 1970s, there was a shift towards social marketing and entertainment-education in communication. TV serials or *telenovelas* were used to communicate social messages and induce behavioral change. Stress was on geographically and culturally localized content and culture.

The 1990s and the beginning of this century saw some critical developments in ICTs in rural areas of developing countries. Computers and software applications, telephones and the Internet began to be increasingly accepted as tools in development. In one instance, rural women entrepreneurs led the charge by taking a loan from the Grameen Bank to purchase a mobile telephone handset and phone connection [1], providing pay phone facilities. "The consumer surplus from a single phone call to Dhaka, a call that replaces the physical trip to the city, ranges from 2.64 percent to 9.8 percent of the mean monthly household income. The cost of a trip to the city ranges from 2 to 8 times the cost of a single phone call, meaning real savings for poor rural people of between 132 to 490

Taka (US\$ 2.70 to US\$ 10) for individual calls”.[\[2\]](#)

The possibilities available for communicating and interacting with the outside world became fundamental to measure the progress of any community or society. The focus was not just on communication that leads to development (known as development communication) but also on developments that lead to communication (seen as an indicator of development, transparency and human rights).

THE NEED FOR ICTS

Castells speaks of the Fourth World as made of those countries, regions and communities that are left out of the information age.[\[3\]](#) This is further supported by Pieterse, who observes: “either the South (or a portion of it) enters the democratic-technological-scientific race, invests heavily in R&D, and endure the ‘information economy’ metamorphosis, or it becomes unimportant, unexploited, and unexploitable” [\[4\]](#).

Rural poor people can benefit as much, if not more, from ICTs as the rich in urban areas. Wherever they have been provided quality access, it has helped to raise incomes, allowing a better flow of information, higher participation in the national/global economy, and better governance. “Rural areas without access to telephony in Botswana and Zimbabwe generate significantly less off-farm income than areas with a telephone” [\[5\]](#). Video recording of government work by local youth in Andhra Pradesh, India has everyone on their toes. The results are clear: better utilization of development funds, better facilities for villages, multiplication of successful initiatives, learning for the policymakers, and empowerment for the communities, which get to have an effective say in their own development.

ICTs possess the wherewithal to address several vulnerabilities that the poor face: natural disasters, food insecurity and ill-health. Their proper application as part of a disaster warning and control system would have saved thousands of lives lost due to the Super Cyclone in Orissa, India in November 1999, and again during the tsunami disaster in December 2004. In Orissa, amateur ham radio operators often made the difference between life and death by keeping open communication channels. In Pondicherry, India, local communities download local weather from a US satellite and announce it through loudspeakers in the community. No lives have been lost at sea since this initiative began. During the recent tsunami disaster, no lives were lost in the village of Nallavadu, Pondicherry, India: all due to a single phone call: a local resident, Vijayakumar, visiting Singapore, heard of the tsunami hitting the Indonesian shores, called his sister, and the whole village moved to safer areas outside the tsunami’s reach.

BENEFITS OF ICTS

Fishermen in Kerala sell their produce while still at sea by using cell phones. Also, having a communication device makes them feel safer. A computerized information system has made possible instant payment to milk producer farmers by the dairy cooperatives, while providing more value-added services. Under the Teledoc Project of the Jiva Institute, New Delhi, mobile phone toting healthcare workers feed data about patients through to doctors at a central clinic, who analyze it and prescribe treatment. Additionally, a website, www.teledoc.org, has been created. Farmers in the Indian state of Punjab can access the latest agricultural produce prices through their cell phones; prices are updated thrice a day. Citizens in Andhra Pradesh, India can visit any e-Seva centre to pay a variety of bills, transact with the government, buy insurance, access information on market rates, etc. Electronic voting machines in India have practically wiped out the fraud, corruption and other malpractices prevalent earlier.

ICTs empower communities in developing countries to take their point of views to the living rooms of citizens of developed countries: from Southern citizens and NGOs to the Northern NGOs and media, who then reach out to the concerned citizens in developed countries. “The case of the use of the internet by Zapatistas in Chiapas illustrates this point [6]”.

When combined with other critical services or dovetailed as a platform for other needs and services, the spin-offs from ICTs are many and multifaceted.

Financial spin-offs

E-education becomes cheaper and more accessible to the rural poor.

Distance education obviates the need to open more higher education institutes.

Critical assistance in marketing of produce, crafts and services by the rural poor; access to contemporary designs, tastes of markets, experiences of competitors, knowledge about markets and opportunities, and future trends.

Superior and cost-effective access to healthcare; reduced illness days and higher productivity.

Higher efficiency and profits in the product/service cycle, as shown by *e-Choupal*, can be obtained while reducing transactions costs

Information about job and employment opportunities, livelihood solutions, etc.

More cost-effective governance and efficient use of development funds, as information and monitoring levels increase.

Social spin-offs

Better access to healthcare.

Government at the doorsteps of the rural citizens through E-government and E-governance.

More inclusive and participatory democracy.

More effective development solutions/initiatives and targeted social spending by the government and other development agencies/organizations.

Easier and cheaper mass access to higher/vocational education; reduced migration to cities for the purpose of higher education.

Enhanced transparency in the working of the government and other institutions and thus reduced corruption (Corruption = Monopoly + Discretion – Transparency^[7]).

Increased peace dividend (less social strife) in troubled areas as transparency increases and there is little or no scope for censorship by the government.

ICTs have the potential to enhance employment opportunities for the mentally and physically challenged persons^[8].

INDIA: URBAN GROWTH AND RURAL STAGNATION

India's poor still get a raw deal. Their children suffer from malnutrition, diarrhea remains a big killer, they have little or no access even to micro-credit, natural calamities such as floods and droughts take a large number of lives, and primary education eludes a large percentage of rural children, especially the girl children. This situation contrasts with other relevant facts: today, Indian exports from the IT industry are over US \$ 10 billion a year, amounting to nearly 20% of total exports; in fact, they are expected to touch US \$ 50 billion by the year 2007. India is one of the three countries (the other two are the USA and Japan) to have built supercomputers on their own. Not only does India have one of the world's largest domestic satellite communication systems; it also launches satellites and has the largest set of remote sensing satellites in the world.

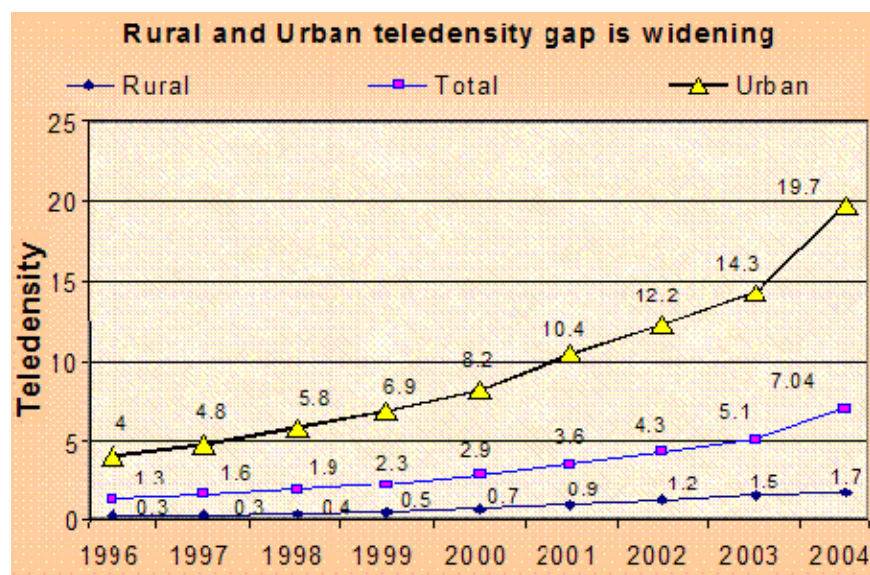
Notably, at the end of March 2005, the total number of telephone connections went over 98 million, with the share of mobile connections at 53%. In terms of growth, the total number of telephone connections grew at 29% during the year, while the mobile telephony growth was 55%. Tele-density stood at 9.08, an increase of 1.91 over the last one year. Compare this with a tele-density increase of just 1.92 over 50 years from 1948-98. India offers the cheapest mobile phone tariffs in the world.

Yet, ICTs seem to elude most of the rural citizens, especially the poorest of the poor. There is a kitty of over US\$ 500 million which is accrued by telephone companies to contribute towards rural connectivity, and yet no step has been taken to utilize this pile of cash. Claim is made that over half a million of the nearly 600,000 Indian villages have been connected by village public telephones (VPTs). However, over 100,000 of these are based on old technology that prevents these lines from being used for data transfer. Many of these VPTs do not function. Private telephone operators are way behind schedule in installing the required number of rural

telephone connections. Rural ICT initiatives and businesses are being ignored, while urban areas are receiving quality services. As Jhunjhunwala & Ramamurthi suggest, “The only plausible reason for this attitude is that URGENT matters are being handled ahead of the IMPORTANT ones, and the innovative approaches have not yet caught the imagination. A more cynical reason suggested at times is that approaches that make the rural connectivity a profitable business, would take away the subsidies that the operators hope to claim using the bogey of loss-making rural connections” [9].

Most rural homes cannot afford TVs or pay monthly cable TV subscription rates. To promote community viewing of television, the government provided each *Panchayat* (local self-government) with a TV. But very soon this TV practically became the private property of an influential member of the village. Rural men may watch films in theatres, but this medium remains inaccessible for most rural women due to social constraints. Folk artistes, once very common among the villages, are a dying breed. In fact, they seem to now find their way to the cities to perform in expensive hotels and at exclusive venues for the benefit of the cash-rich but culturally-poor urban families.

Figure 1: Widening gap between rural and urban areas [10]



Source: Indian Telecommunication Statistics 2004, DOT & TRAI Telecom Service Performance Indicators, June 2004

DIGITAL DIVIDE: CHALLENGES AHEAD

In brief, the challenge to provide ICTs to rural Indians, involves the following aspects [11].

It is a market of 750 million people, or more than 70% of India's population.

It is a country with 1682 languages [12].

Literacy rates are just over 50% for men and even lower for women; they could be only 5%–10% for the poorest of the poor, tribal populations and women in many areas.

Literacy rates are low, but the population is rich in traditional knowledge and skills.

Oral tradition is stronger than the written culture.

There is a great diversity in terms of culture, traditions, beliefs and practices.

Infrastructure and governance are poor.

Keniston talks of four kinds of digital divides [13], all of which are applicable to rural India: a divide between the rich or privileged and the poor or underprivileged; a digital divide due to linguistic and cultural barriers, with little content or software available in local languages or relevant to rural needs; a digital gap between the rich and poor areas; and the fourth is the starkest: the difference between the high incomes of elite, successful information technology professionals and those of the poor in rural areas.

LOTS DONE, LITTLE ACHIEVED

Given the opportunity, rural citizens can be part of the global markets and economy. The rural market for ICTs is huge and growing in India.

According to estimates by Drishtee.com, a provider of rural ICT services, the total rural India's gross domestic product is nearly six trillion rupees (over US \$130 billion). The total market for e-governance and other ICT-based services is over Rupees 550,000 per year per village. So, while the revenue for a service provider would be of this range, the accrued savings to each village would be about rupees 1.5 million per year. Multiply these figures by 600,000, the total number of villages in India, and both the revenue earned by a service provider and the savings for the rural communities are huge. They come to over US \$7 billion and US \$20 billion respectively. If one were to consider the market demand for hardware and other auxiliary sectors involved in providing these services, it would be in the range of US \$100-150 billion.

Yet, only 10,000 of the over 600,000 villages have seen some internet-based ICT for development initiatives, most of which have important ingredients missing: social focus, community-driven, need-based and local initiative. The key features are:

Most of them are financially dependent upon some external source of funding for survival, be it government, bilateral or multilateral aid agencies, foundations, or the private sector.

Their business strategy has been primarily focusing on certain type of transactions: related to land and agriculture or the provision of government services.

They are mostly undertaken by the private sector with the intention of making them financially sustainable and profitable

Few have the empowerment of the socially and economically underprivileged groups as an objective.

E-governance is limited to e-government or e-services.

Little participation is granted to the beneficiaries in decision-making or the design of the initiatives.

Few cater to the needs of the poorest of the poor; Drishtee [14], for example, does not even consider the lowest 25% income-wise as its clients.

Benefits for women in such initiatives are scarce, and little effort is made to encourage the use of services by women. Part of the problem is that most kiosks are operated by men, which discourages women from using them, given the social milieu in most parts of India. Also, content and services are more geared towards the needs of men rather than those of women.

Most initiatives suffer from problems such as power cuts or lack of adequate power, and low-quality connectivity.

LESSONS LEARNT

Manifold needs, multiple solutions

Like urban audiences, the rural audience has manifold needs that may require multiple ICT platforms to be met. Depending upon the community's needs, its resources and accompanying infrastructure, and the type of information required, the appropriate set of ICT solutions must be employed. For a country with such diversity as India, a uniform solution may not be possible.

Supporting infrastructure matters!

Adequate power and roads will have a direct impact on cutting costs for the service providers and make the ICT services more affordable to the poor. Like ICTs, roads are another form of connectivity that is vital for the rural areas. They ensure that an ill person can receive medical care, expectant mothers can reach a hospital to ensure a safe delivery, farmers can access markets to sell their produce, children are able to commute to school, and machines can reach the village to drill for a well to provide drinking water. The government finds it easier to monitor development activities. According to a report [15], government expenditure on roads in India was found to have the largest impact on poverty reduction, as well as a significant impact on productivity growth in rural areas. If this is the impact that road connectivity has on rural development and poverty alleviation, then connectivity via ICTs is bound to have a similar or larger impact.

Demand driven!

Little thought and research is carried out to find out what services and products are most desired and needed by the poorest of the poor. Are social concerns such as barriers for women to access services at kiosks being operated by men ever considered? Don't financial independence and sustainability imply involving a larger part of the population rather than some select sections of society? Lie puts it appropriately: "it is not the information or the hardware that should guide the questions. Instead, 'participatory problem statements' and 'community needs' should be among the guiding principles in the formulation of questions" [16]. Only when thinking regarding ICTs goes beyond technology to incorporate cultural dimensions, local knowledge and skills, trust in the community, ownership by the community, and leadership by the beneficiaries, the initiatives do succeed.

Focus on youth

As with most emerging technologies and applications, the youth are the biggest users of ICTs, be it telephony, computing, Internet or TV. In an experiment in a low-income neighborhood, the results of providing unsupervised but free Internet access to children were truly amazing. Without any guidance or training, many children figured out how to surf the net. The younger kids were more adept, without any differences between boys and girls. "Within three months of opening up of the Internet kiosk, they were able to browse the Internet, download songs, go to cartoon sites, work on MS Paint" [17]. With the youth and children willing and wanting to be part of the ICT revolution, and their capacity to absorb these technologies very quickly, a policy that encourages ICTs use among this group would be very beneficial. Further, it would ensure that tomorrow's decision-making generation is ICT-savvy.

WHAT CAN THE GOVERNMENT DO?

Policy changes

There are a number of decisions that the government could take, which would not only make ICTs more affordable but also more available and accessible to the rural poor:

Recognition of rural service providers as an entity separate from state-wide or circle-wide service providers, allowing these small operators to provide ICTs such as Internet and telephony.

Simple procedure to grant licenses to provide ICTs in rural areas on the line of cable TV service providers. In Indiabig is not necessarily better, given the diversity and the disinclination of large operators to enter rural/remote areas.

Zero license fees for operators providing ICTs in rural areas.

Zero frequency charges for the usage of wireless technologies for rural service providers.

Access of subsidies to rural service providers which are available to large

service providers

Zero revenue share to be given to the government.

Regulatory environment

The environment in India encourages private sector participation by setting up a level playing field for all operators and entities, while the rights of consumers are guarded. However, not enough initiative is taken to provide ICTs in rural areas. "Government involvement can represent the common interest of social good, but lessons learned show that the public sector will not likely offer the promise of growth and new opportunities that private entities could bring to the table. Furthermore, the resources necessary to expand telecommunications infrastructure to underserved areas can only be achieved by spurring private sector investment and entrepreneurship" [18].

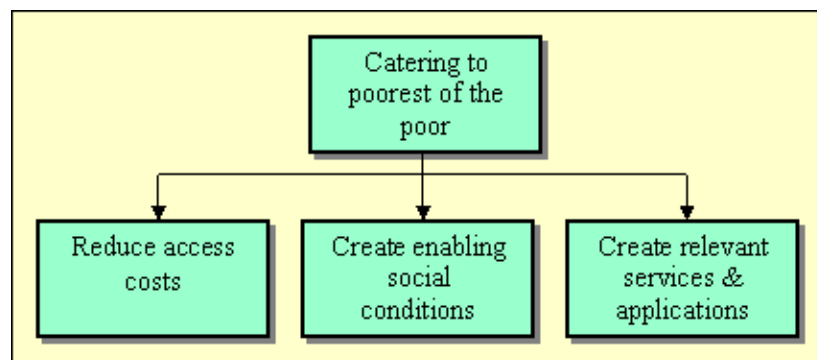
Enforce USO regime

What is universal access? It may be defined as the ability of each person to communicate with other persons and connect to information and services at an affordable price. It may also include the provision of this connectivity through multiple channels such as voice, text or picture messaging, emails, Internet, radio, transfer of data, audiovisuals and print material. Two more concepts could be added here: services that are need-based and enhance the quality of life of the user/community. The government and regulator have failed in enforcing the universal service obligation (USO) by the public and private service providers. Huge funds lie unutilized while millions of opportunities are lost everyday by the poor.

KEY SOLUTIONS

Catering to poorest of the poor

A three-pronged strategy would enable the participation of the poorest of the poor and other underprivileged groups in the information economy:



1. Reduction in

access costs through technological, policy and market developments, enabling them to afford the services and applications provided

2. Creation of conducive social conditions that enable access to these services. This may mean insuring that they are part of the decision-

making process right from the beginning, women-operated kiosks, and social mobilization to include them and inform them of the potential benefits and their roles/responsibilities in the process.

3. Creation of services and applications that meet their needs, such as education, livelihood solutions, health services, micro-credit, social empowerment and drinking water.

There are several other actions that will further enable their participating and deriving benefits from ICTs:

Service providers working with women self-help groups to mobilize and involve women, including them as entrepreneurs to provide ICTs-related services.

Involvement of local NGOs and other community-based organizations that work in the interests of these vulnerable sections of society.

More focus on non-textual applications, given low literacy levels.

Initial focus on e-education and e-literacy.

Linking ICTs to job prospects and enhancing earning capacities.

Providing information on government programs and benefits for the poor, acting as sources of complete, credible and correct information.

Use of soft communication techniques such as folk theatre and radio programs to reach out to the poorest of the poor and other underprivileged groups who tend to avoid village-level meetings or are silent, non-participating spectators in the proceedings.

Facilitating micro-credit to those who require it from banks or other credible financial institutions.

Multifaceted partnerships and utilization of synergies

“ICTs can be of use in reducing the digital divide if only we commit to the goal the same intelligence and imagination that has gone into creating the technologies themselves” [19]. Thus, the solution lies not only in provision by the government but in joint efforts, as the telecom revolution has shown: government to provide the right policy framework and enabling environment, and public sectors companies to provide the impetus; corporate sector to provide capital, initiative, innovation, and products and services. Efforts should be towards cheaper access, broader access, supporting infrastructure such as roads and power, community-demand driven products and services, enhanced usage of ICTs for delivery of government services, innovation, synergy among various ICTs such as Internet, TV, radio, films and telephone. For example, in Punjab, the cell phone was available before the Internet kiosks provided by Drishtee.com, and therefore no farmer used these kiosks for accessing market information: they got it faster and cheaper via the cell phone.

From global to local

The Indian IT industry is global in nature and scope, but has paid insufficient attention to local needs and priorities. It will be a big challenge for the Indian IT industry to wake up to India's problems and employ its resources towards reducing them.

While initiatives such as the NASSCOM Foundation [20] are already underway, not much seems to have been done or achieved. Part of the problem and challenge lies in the fact that the IT needs of the rich nations which are the main clients of Indian software companies are very different from those of poor, even middle-class, Indians. Therefore, there is little synergy that can come about between their current work/expertise and the needs of India. It will take a special effort and orientation for these companies to start catering to the local needs and markets.

Develop key technological solutions

Given the unique nature of problems in the provision of affordable access to ICTs in rural India, technological innovations too are required to solve the problem. How to ensure power to run the ICT devices and networks? Should the grid system be improved or standalone generation sets (operated by diesel, kerosene, biogas, natural gas, sunlight) be devised that provide cheap yet dependable power?

There is also the issue of connectivity. Even basic phone lines have not reached a large number of villages. Many rural connections are technologically inferior and do not have the ability to carry data. Nearly half the Internet kiosks operated by the Janmitra project in the Jhalawar District of Rajasthan have closed down due to bad connectivity [21]. The Gyandoot Project in Dhar, Madhya Pradesh - the Stockholm Challenge IT Award winner of 2000-, initially faced the same problem of very poor dial-up connectivity [22]. Being a showcase project of the government, the telecommunications department upgraded the infrastructure. However, they may not do the same for all initiatives in all areas. Another area of focus to ensure quality affordable services is low bit-rate applications such as *iSee* [23].

E-literacy for the masses

While a large part of providing access to ICTs to the poor may involve hardware, entrepreneurship and content/application development, it is equally important that the rural poor feel familiar with ICTs, are able to use them for their own purposes and for self-development, and contribute to influencing future development of hardware and software solutions. All this may not be possible if the kiosk operator is the only one with IT skills, or if a phone remains a strange device for them. Familiarity with the use of ICTs and accompanying devices would also spur a demand for such services, bring about more innovation and consumer-oriented services, and provide higher revenue to service providers. In this sense, lessons could be learnt from the *Akshaya* initiative of mass e-learning carried out in the Malappuram District of Kerala, India.

Achieve financial sustainability

Identification of killer applications (that is, those which will provide a basic level of revenue to ICT providers) will be critical for the success of rural ICT initiatives. Many such initiatives exist: Bhoomi[24] in Karnataka state, produce procurement in e-Choupal[25], and e-literacy in Kerala. The identification and success of any killer application will vary from place to place and provider to provider, as they depend upon the local socio-economic milieu, the strengths of the service provider and the availability of competing services.

Allow radio to go community!

Community radio stations should be allowed to operate freely as true community radio rather than the current setting, in which only select educational organizations are allowed to set up what they call a community radio station. The exorbitant licensing fee of Rs. 50000 and the requirement of making available to the government the tapes covering the last six months of broadcasting should be done away with; and the process of provision of licenses be streamlined and made completely transparent.

Encourage open source programming

“Open source is taking off because buying and upgrading proprietary software is expensive” [26]. This is truer in the case of developing countries where labor costs are lower than in developed countries. The total cost of ownership (TCO) linked with software includes running, operation and maintenance costs that depend directly on the cost of labor employed. Another expense is licensing fee for the software. For developing countries, given low labor costs, the licensing fee forms a significantly high part of the TCO.

What could also be associated with open source software is the development of the Universal Networking Language. This would enable any person to put up data and information in any recognized language on a website, and through the Universal Networking Language another person anywhere else could view it in another language of his/her choice. Such a development would do away with the dominance of English websites or the inability of non-English speakers to access most of the information on the net.

Venture Capital Fund to support rural ICT initiatives

At a workshop was held at the Indian Institute of Management, Ahmedabad, India, in February 2004, on the topic “Scaling up ICTs for Poverty Alleviation in India”, the idea of setting up a venture capital fund to promote ICTs in rural areas arose.

It would provide support to plug institutional voids in scaling up worthwhile ICT projects such as: creation of appropriate content that is perceived to be valuable by rural clients, especially customization of

different local context; training and mentoring of entrepreneurs, and building management capability to scale up; and research in technology, which will help reduce cost of power and connectivity. In this fund, financial returns would be viewed alongside with social returns. Appropriate relevance would be given to factors such as social equity, gender equality, education, health, focus on poorest (socially and economically) stakeholders, remote locations, and development of community resources like water management.

[1] www.grameenphone.com

[2] *ibid.*

[3] Castells (2000: Volume III), page 164

[4] Pieterse (2002), page 46-47

[5] World Bank (2002)

[6] Lie (2002)

[7] Dataquest (2003)

[8] Punani (2000)

[9] Jhunjhunwala & Ramamurthi (2004)

[10] Consultation Paper of Growth of Telecom Services in Rural India: The Way Forward, Telecom Regulatory Authority of India, October 27 2004 (www.trai.gov.in)

[11] Idea from personal conversation with Osama Manzar, an expert in Internet economy of India. (osama_manzar@yahoo.com).

[12] Sachs (2000), page 137

[13] Keniston (2004)

[14] www.drishtee.com

[15] Fan et. al. (1999)

[16] Lie (2002)

[17] www.niitholeinthewall.com

[18] Schware (2003)

[19] Keniston (2004), page 35 (quote by Michael Dertouzos)

[20] www.nasscom.org

[21] Personal observation

[22] The Hindustan Times (HT), New Delhi, 02 November 2000. HT is one of the largest English language daily in India.

[23] <http://isee.enmail.com>

[24] www.revedept-01.kar.nic.in/Bhoomi/Importance.htm & www1.worldbank.org/publicsector/egov/bhoomi_cs.htm

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