

# **Mobile Telecommunications and Development : The Role of Public-Private Partnership in India**

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# Content

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- ❑ Rural-urban Divide In Teledensity
  - ❑ Public Partnership Model Including Creation Of Universal Service Obligation Fund
  - ❑ Some Illustrations Of Rural Empowerment Using Mobile Telecommunication
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# India Poised



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- **An ascending economic trajectory, continuously rising foreign exchange reserves**
  - **Reduced rate of inflation**
  - **Global recognition of the technological competence  
Energy of 540 million youth**
  - **Umbilical connectivity of 20 million people of indian origin in various parts of the planet**
  - **The interest shown by many developed countries to invest in india's engineers and scientists including setting up of new r&d centers.**
  - **The distinction between the public and the private sectors and the illusory primacy of one over the other is vanishing**
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# India Poised

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- As per a report titled *From the Ganges to the Thames*, Indian foreign direct investment in Britain is second only to that of the United States and Indian FDI project in Europe has increased from just 5 to 119 during the period 1997 to 2004.
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# Pattern Of Economic Development



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## Sectoral share of gross domestic product

- ❖ Contribution of agriculture to India's GDP has reduced from 39% to 22% during the period 1979 to 2004.
- ❖ During the same period contribution of manufacturing sector has moved from 24% to 27%.
- ❖ And the contribution from the services sector has increased from 37% to 51%.

## Change in the employment pattern

- ❖ The percentage of people employed in agriculture has come down from 64% to 54%.
  - ❖ The percentage of people employed in manufacturing has gone up from 15% to 19% and
  - ❖ In the service sector it has gone from 20% to 27%.
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# Major Challenge Ahead

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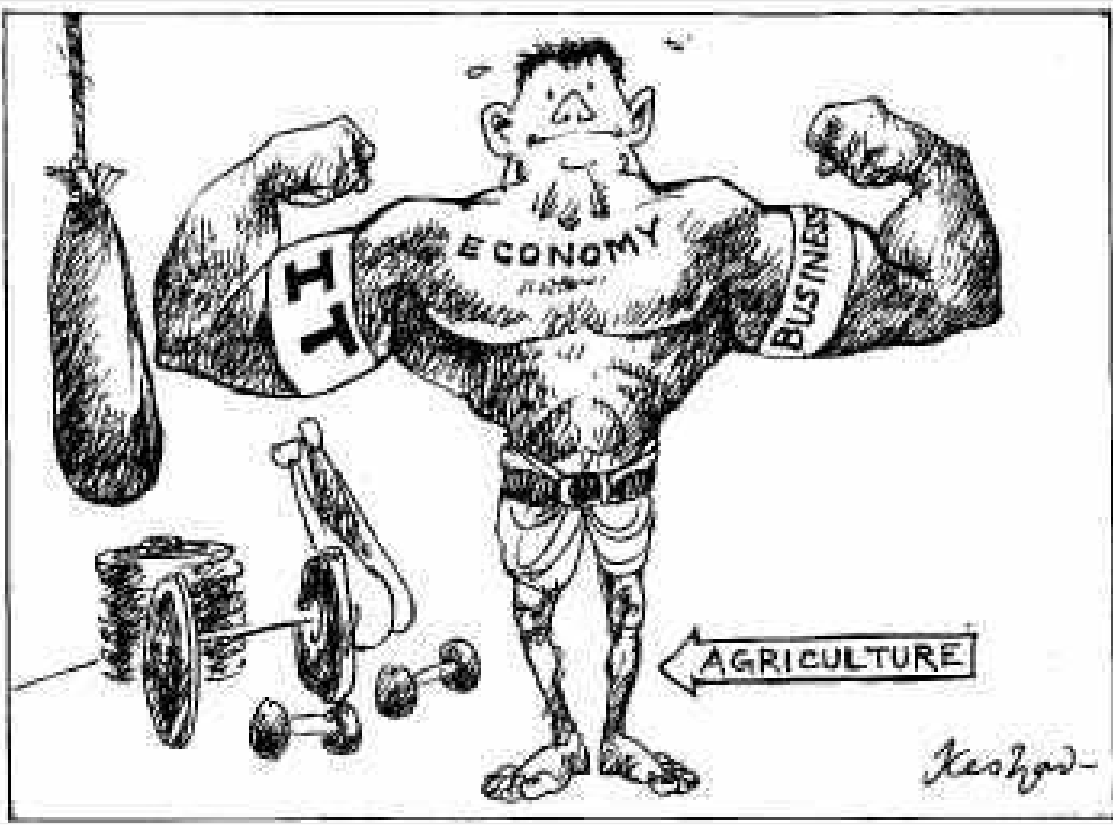
Assuming that this trend has to continue, by 2020 India's employment pattern should aim at 44% in agriculture, 21% in manufacturing and 35% in service sectors. The displacement of 10% people from agriculture sector has to be facilitated through skill enabling for undertaking value added tasks in the rural enterprises so that migration to urban area is reduced. Otherwise.....

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# 50 years down the line...This is how India would look....

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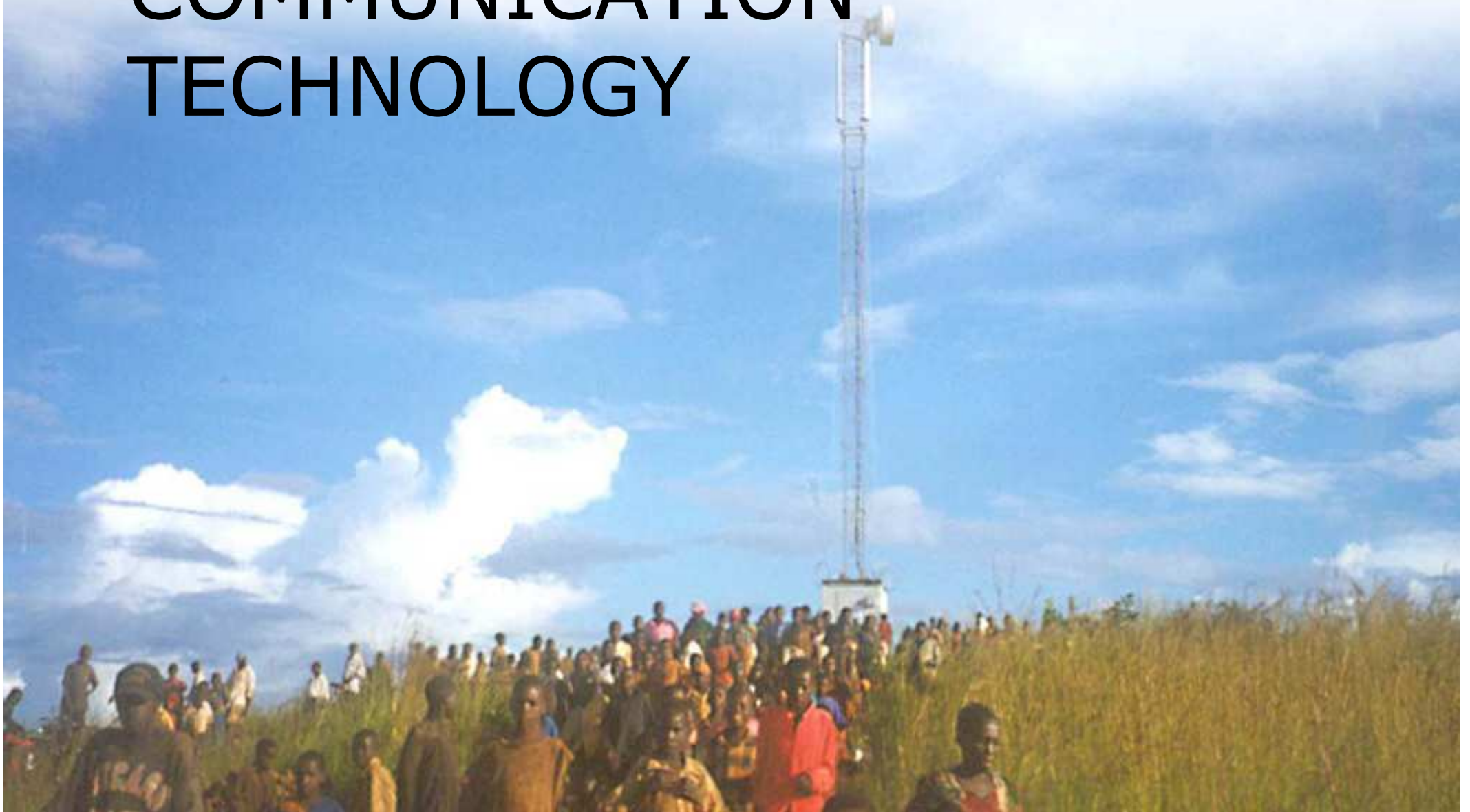


# Role of The Government: Rural Development



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- ❑ Promote Policy-Making for Poverty Reduction
  - ❑ Assist in Strengthening Community Capacity
  - ❑ Promote Knowledge sharing
  - ❑ Facilitate Developing Local Content in Local Languages
  - ❑ Promote Sustainability
  - ❑ Develop and Promote Innovative Models and Frameworks
  - ❑ Promote Appropriate Technology
  - ❑ Assist in Building Trust and Partnerships
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# INFORMATION AND COMMUNICATION TECHNOLOGY



# World Telecommunication Development Report 2002



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A recent empirical study by the International Telecommunication Union provides striking evidence of how the cell phone has contributed to narrowing the century-old gap in telephone usage between highly developed and less developed countries. It shows that in 2001 about 100 nations (among them many African) had more mobile than landline phones in service and that cell phone technology is far more potent than computer technology in connecting less privileged populations to the sphere of digitalized information. (World Telecommunication Development Report 2002).

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# Can ICT Cure Poverty And Lead to Development ?

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- The complex web of causes and consequences of poverty, coupled with variation in the regional and local context and social setting in which it is found, indicates that poverty reduction with ICTs does not lend itself to blueprint solutions. Nevertheless, there are certain common characteristics within existing poverty reduction initiatives using ICT that point to the beginnings of a of good practices.
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# Capturing the Impact of Communications on Growth

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- Better communications networks
    - Create better information flow
    - Widens markets
    - Lowers transaction costs.
    - Substitutes for costly physical transport
    - Higher income
  - *Information and Communication Technologies (ICT) for Development*: A vision that carries a broad mandate—allowing billions of people access to services as important and varied as
    - health care
    - Education
    - Financial and governmental services
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# Growth In Subscribers And Teledensity



## India

Year	Population (in Million)	Subscribers (in Million)	Teledensity (per 100 persons)	Teledensity (Urban)	Teledensity (Rural)
1991	846	5.1	0.6	1.6	0.1
1995	915	9.8	1.1	↓	↓
1999	980	22.8	2.2	6	0.4
2002	1046	44.9	4.3	↓	↓
2004	1088	76.2	7.0	↓	↓
2006	1132	139.7	12.3	30	1.9
Oct.'06		176.8	16.0	~43	~2.2

## China

Year	Population (in Million)	Subscribers (in Million)	Teledensity (per 100 persons)	Teledensity (Urban)	Teledensity (Rural)
2006	1300	819	63	~100	~35

*Considering Rural population at 60%*

# Mobile Telecommunication Leads The Way

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- The overall teledensity rose to 18% in February 2007 from 17.45% in January 2007 and from 12.18% as on February 28, 2006. As a result, the total number of telephones in the country crossed more than 203 million, as against a total of 196.7 million as on January 31, 2007, i.e. a growth of 3.2%.
  - Almost the entire growth registered during the month was in the wireless segment - with GSM contributing 4.88 million and CDMA contributing 1.35 million, respectively. There was a marginal increase of about 67 thousand subscribers in the fixed line segment as compared to 6.23 millions mobile subscribers.
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# Bottom Of Pyramid (BOP) : Problem Areas

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- ❑ Over 200 million telephone users and 7 million subscriber addition a month may paint a rosy picture, but the telecom boom is yet to ring loud in rural India. Believe it or not, 82% people at the bottom of pyramid (BoP) in India use someone else's phone.
  - ❑ Only 9% people in India use own mobile phones and an equal percentage use their household fixed line phone, according to a yet-to-be-released study 'Teleuse on a Shoestring' by a Sri Lanka-based non-profit research organisation LIRNEasia.
  - ❑ About 71% Indians at BOP go to public booths to make a call, as against 35% in Pakistan, 30% in Sri Lanka, 8% in Philippines and 7% in Thailand. In Thailand, 73% people use their own mobile phone, against 21% in Pakistan and 17% in Sri Lanka.
  - ❑ "The higher-than-other-countries percentage of non-owner telephone users in India showed there was a real problem these people faced in getting connected. They could afford \$5 a month for the services, but the difficulty was with the cost of getting connected and coverage.
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# Challenges Ahead

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- ❑ About 60 per cent of the population is presently covered with *Mobile Telephony in Rural India* leaving almost half a billion people who are not covered.
  - ❑ the network that is standing has its weaknesses
  - ❑ In many places the network base stations have a long distance between them that developed country mobile phones are not designed to support. Hence, the signal will be weak and not able to provide the full service that is expected.
  - ❑ In worse cases, the phone might not pick up the signal at all.
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# Indian Telecom : Capability Profile



	Products	Potential to compete with the West
1.	Backbone Network - Optical Networks and Switching	Difficult Difficult
2.	Terabit Packet Switches, Routers	Difficult
3.	Access products Access Switches and Routers Wireless Access – Mobile Fixed DSL Access Cable Access Fiber Access	Yes Yes Yes Yes Yes
4.	Subscriber Terminals and Devices including PC	Difficult, mostly a manufacturing issue
5.	Enterprise networks and Devices	Yes
6.	Application Products Multimedia	Yes Yes
7.	Components Optical and VLSI fabrication VLSI design	Very difficult Yes



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# ■ Solution?

**Public Private Partnerships**

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# Public Private Partnerships

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- Today policymakers increasingly recognize that public private partnerships in infrastructure offer the most promise for developing infrastructure and improving services.
  - Public-Private-Partnership or PPP is a mode of implementing government in partnership with the private sector.
  - Public-Private-Partnership (PPP) provides an opportunity for private sector participation in financing, designing, construction and operation & maintenance of public sector programmes and projects.
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# Public Private Partnerships

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- The term private in PPP encompasses all non-government agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations. PPP, moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them.
  - *Essentially, the shift in emphasis is from services directly, to service management and coordination.*
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# UNIVERSAL SERVICES OBLIGATION Fund: WAY FORWARD

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- ❑ Funded through Universal Access Levy charged @ 5% of Revenue of telecom service providers.
  - ❑ Levy amount credited to Consolidated Fund of India and made available to USOF after due appropriation by Parliament.
  - ❑ Indian Telegraph Rules amended to provide for scope and administration of the Fund.
  - ❑ Competitive bidding process followed for disbursement of subsidy from the Fund.
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# Cooperative Efforts Among Telecom Service Providers With Least Regulatory Intervention

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- Sharing the process of infrastructure development
    1. Passive infrastructure (physical sites, towers and power supply)
    2. Active infrastructure (antenna systems, cables and transmission system)
    3. Backhaul (core infrastructure involving switches and networking)
  - "JOINT WORKING GROUPS" in each district, headed by District Magistrates, to take spot decisions about critical infrastructure bottlenecks such as mobile tower. Local bodies should grant permission to set up towers in notified sites on condition of sharing by at least three service providers.
  - The passive infrastructure has to be created within one year from the date of registration with the fund administrator. No subsidy shall be paid if the newly erected tower is not shared.
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# Universal Service Obligation Fund



- ❑ Rural telephony is loss-making, so it was expected that operators would ask for a subsidy from the fund, which has a corpus of over Rs 7500 crore.
- ❑ The government has asked telecom companies and infrastructure providers to bid for building the towers for which it had earmarked a benchmark subsidy for each tower.
- ❑ State-owned BSNL the highest bidder in 63 of the 81 clusters and has offered to build the towers at 20 per cent of the benchmark subsidy. In other words, it has asked for one-fifth of the subsidy.
- ❑ On the other hand in 15 other clusters, Bharti Airtel the leading company with an offer to pay a "negative subsidy" of Rs 15,000-20,000 per tower annually, while in four clusters Reliance Communications has offered to operate services by paying Rs 100 annually for each tower.



# The Rural Story

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- Sunil Mittal, Anil Ambani and now Arun Sarin leading Vodafone's march to India may be the fiercest of rivals in the telecom battlefield but there's one thing that all telecom bosses agree on.
  - **It is the farmers in rural India and fishermen in distant shores, who will drive the next phase of growth for telecom.**
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# The Rural Story

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Some Illustrations....



# Mobile Telecommunication: Helping The Farmers

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- As agriculture is a fragile business, the time perspective is very important in transmitting and receiving information.
  - *Fixed telephone is not sufficient as the farmer must be available to receive calls and able to make calls all day when he's out in the field.*
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# Morarka Foundation Project

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- ❑ In Nawalgarh, Rajasthan, most farmers are a part of a project conducted by the Morarka Foundation in Jaipur, Rajasthan to empower farmers.
  - ❑ In the Morarka Foundation project, other means of communications have been tried, such as fixed telephone and PCO systems, but nothing has been satisfying to the time perspective.
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# The Benefits

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- ❑ To get advices on crops and animals
  - ❑ Get instant help at unexpected events
  - ❑ To be reached by clients and others
  - ❑ Provided with alerts on public health issues such as polio camps
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# Wireless Soil Helpers: The TCS Way

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- ❑ This system under development will use soil sensors to monitor moisture content and salinity. The data will be transferred to a central server via a mobile phone so the data is linked to a particular farmer. Experts can then access specific data and advise the farmer on the kinds of crops that are ideally suited to his or her patch of land.
  - ❑ This will increase productivity, something that's lacking today because farmers have little access to experts
  - ❑ Another application based on BREW (binary runtime environment for wireless) the technology for wireless applications development, device configuration, and game development pioneered by Qualcomm relates to weather forecasting for farmers. Once again, a GPS-based system will assist a remote expert in giving accurate advice about sowing and related activities.
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# Pesticide Advice

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- Yet another application aims for the appropriate and minimum use of pesticides. Farmers will take pictures of crops and transmit them to an expert who has the above data. The correct dosage of pesticides can then be prescribed.
  - The new systems will help farmers bring their farmland back to health.
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# The Fisherman Saga

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## Large Changes in Fish Marketing



Fisherman decides the market for his catch by directly communicating with the buyers and takes his trailer in the area where he gets the best returns

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# Women Self Help Group

## Mahakalasm SHG Federations

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### **Tapan S. Parikh**

SHGs are

- ❑ Microfinance Group
  - ❑ semiformal, community-owned financial Cooperatives
  - ❑ Usually include 15 to 30 members,
  - ❑ Almost always women
  - ❑ Each member contributes a fixed amount of money at regularly scheduled monthly or weekly meetings
  - ❑ The group lends this community capital to members for education, health care, buying agricultural inputs, starting a business, and so on.
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# Self-help Group Members Reviewing Notes In Rural Tamil Nadu India



**A Prospective User Entering  
Camform Data Using The Mobile  
Phone's Alphanumeric Keypad.**



# Women Self Help Group Mahakalasm SHG Federations

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- Using Mobile Phones for Secure Distributed Document Processing
  - Uses a mobile phone as a primary data-capture and entry device in a document-processing system using a camera equipped mobile device using the CAM framework.
  - Transfers the data to a server using CamShell—a phonescannable scripting language that can encode a user interface along with processing and routing instructions within paper documents to maintain safe and secure records fostering greater trust, bringing in more and more women into the folds of saving culture
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# Center For Knowledge Societies (CKS) Study On Impact Of Mobile Communication

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The research is based on detailed ethnography and participant observation among communities living in three rural areas of India

- ❑ Badaun in the state of Uttar Pradesh
- ❑ Satara in the state of Maharashtra and
- ❑ Chittradura in the state of Karnataka
- ❑ One urban area, Bangalore

Researchers met with small business owners, farmers, home owners and others to understand how mobile communication has already transformed their daily lives and the further potential of mobile communications to enhance livelihoods.

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# Center for Knowledge Societies (CKS) Report (NOKIA)



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- The report identifies seven service areas that could be transformed for rural communities by mobile communications
    - Transport - Finding cost-effective, reliable, and safe ways to transport goods and services to market is a major problem for small businesses in rural communities. Public transport is not available in 45% of villages in India, and only 1% of Indian households own a vehicle. Mobile communication could be used to create and co-ordinate car sharing schemes amongst villages, and provide real-time information about public transport services and the ability to make request stops.
  
    - Micro-commerce - Small businesses in rural areas often have to travel significant distances to markets or other places they can distribute their goods, and cannot make arrangements in advance with buyers or other sellers. Mobile phones could significantly change the logistical issues faced by rural traders and home entrepreneurs, by affording mobile-based ordering systems, delivery requests, and the ability to make more reliable and advance arrangements with business partners or clients
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# Center for Knowledge Societies (CKS) Report (NOKIA)

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- - Finance - Mobile phones are already being used in rural areas as a tool for financial transactions by swapping airtime for goods and services. Efforts are on to encourages mobile networks and financial services institutions to work together to test and develop new financial services in this area.
  - - Healthcare - New mobile services in this area could better connect rural communities, creating networks to share and discuss health information and advice.
  - Governance - Accessing information about public services remains a major challenge for many rural communities. Mobile phones provide a new platform through which rural communities will be able to access government information and services, using text, data, and audio browsing techniques.
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# Center for Knowledge Societies (CKS) Report (NOKIA)

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- - Education Mobile phones could serve as an essential means for children to become connected to one another for educational and peer-learning activities. These are particularly important for communities that are either nomadic or transitional on account of displacements due to a natural disaster or for other reasons.
  
  - Infotainment - While the mainstream entertainment industry is already well aware of the emerging potential of mobile media, there are also many opportunities for local, peer-to-peer content to be created and distributed, affording new cultural and economic opportunities to rural communities.
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# Voice SMS

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- ❑ SENDING text messages on the mobile is as easy as blinking for millions of people, but for illiterate Indian villagers, it's like learning quantum physics.
  - ❑ Unable to write or read English, they cannot send an SMS. Even those who may have a rudimentary grasp of the language struggle to type out a message.
  - ❑ Some companies such as Nokia provide keyboards with the Hindi alphabet rather than English, but you still need to be literate in Hindi to be able to text something — and millions of Indians in the countryside are not literate.
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# Voice SMS

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- ❑ The solution is called Voice SMS. It is just like leaving a message on an answering machine. The caller dials a short code followed by the mobile number of the person being called and records a message.
  - ❑ The other party will receive an SMS displaying the number of the person who sent the voice message. On keying in the same code, they can hear the short — 30-60 second — message.
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# Rural Empowerment

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One major impact of the cell phone stems from its capacity to include partly illiterate mass populations in less developed countries in the southern hemisphere, who will never have the means to buy a computer and who hitherto were not even connected to the traditional networks of landline phones. India virtually redefines the cell phone, extending it from a mere voice device to a multi-function, media-rich ubiquitous personal productivity and entertainment tool. In rural areas, it will also be used as an access point for healthcare and education.

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# Summing Up

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- State government needs to integrate their telecom regulatory, tax and rural development policies, and do more to incentivize and support the roll out mobile services across the country, using the PPP model.
- The mobile industry needs to understand the social impact of mobile connectivity in rural communities and make it as accessible as possible to them. This does not only mean lower prices and costs of ownership, to really make a contribution to development they will also need to localise the mobile experience with relevant applications and services. Many of these will be innovated at a grass roots level and it is important for the mobile industry to work at this level to deliver real improvements.

Non-governmental organisations have an important role to play in working with state agencies to define the needs of rural communities and together develop new ways to deliver a wide range of different social and welfare services. To do this they also need to work much more closely with the mobile industry to understand and test the technological possibilities.

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Thank You.

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