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SECOND WORKSHOP ON RURAL COMUNICATIONS IN DEVELOPING COUNTRIES

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"Economic Impact of Rural Communications in Developing Countries"

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Workshop on Rural Communications in Developing Countries
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LECTURE 1

ECONOMIC IMPACT OF RURAL COMMUNICATIONS IN DEVELOPING COUNTRIES

by Jean Jipguep
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I. Missing Link and Rural Telecommunications

1. A most promising way how to meet the universal objective of easy access to telecommunications facilities for the whole mankind by early 21st century is to foster the development of rural telecommunications, which serve a majority of the populations in the developing countries. In average, the rural main line density today is lower than 0.01 per 100 inhabitants, with large areas of territories without any telephone and the alternative of having to travel several hours to find one, and perhaps even more to find a working one.

2. Rural population is very dispersed and remote villages may be several hundred kilometers from the nearest town or telephone. Only sound broadcasting , and in some cases, satellite and/or terrestrial TV broadcasting services are available to these remote areas. Radio and television broadcasting are opening the way to bring or enhance the education of training programmes as well as promoting cultural development and entertainment. The planning of broadcasting services in general is therefore extremely important dimension of integrated rural development.

3. Various Value-Added services, which could be provided on a community basis, may facilitate the introduction of a multitude of small industries such as cottage industry, animal husbandry and animal product processing and fishing. They can also support improvement of health programme and, more generally, promote an overall economic growth.

4. A potential difficulty toward a large scale of Rural Telecommunications development is a market and not technology or lack of money! It is true that the cost of providing rural telecommunications is higher than in urban areas, but new technologies are making rural telecommunications more cost-effective. But market, that can bear the cost is still not there and many countries need to change their policies to create more attractive investment climate.

5. Many developing countries (LDC) have invested heavily in modern satellite communications ground stations, microwave analogue and digital radio relay links as well as into international switching centres. Unfortunately, much of this expensive equipment is under-utilized due to the low number of connected telephone subscribers as well as the poor quality of local networks.

II. New technologies / new perspectives

6. The traditional approach in reaching rural areas using copper cables would be far too slow! Wireless communications offer new ways of providing rural telecommunications services that can reduce costs and increase the speed of service delivery. Modern technologies sould provide fix and mobile cellular radio, radio paging, VSAT terminals and future satellite Personal Communications Systems. In many developing countries, mobile cellular radio became a rapid way of bypassing the long waiting lists and shortage of residential lines. New digital technology available on the market increases the volume of subscribers that can be given access to the networks.

7. Some studies indicate that rural telecommunications could be profitable, especially if the traffic is aggregated and the revenue from incoming calls reinvested. The appearance of LEO-s with world-wide coverage is announcing evolutionary change by the end of the century. GLOBALSTAR predicts that they will reduce the costs down to 30 cents/minutes with a terminal cost of US$ 750. For the next generation of satellite systems even more staggering cuts in costs are predicted.

8. Through such perspective, it would seem fair that sufficient resources are allocated to rural telecommunications in order to raise the living standard of rural population. It would contribute to the reduction of migration, thus alleviating the problems associated with growing urbanizations.

III. Rural Telecommunications status

9. There are a number of possible measurements for gauging rural telecommunication development. These include the percentage of main lines in rural areas, the percentage of main lines in the largest city compared to the rest of the country and the number of localities with telephone service.

10. The number of main lines in rural areas would make comparisons with the rural population fairly straightforward. Fairness would dictate that rural telephone lines should match the rural population. Also, rural telecommunications areas are not always defined in the same way as a rural population area. Using an indicator such as the percentage of main lines in the largest city is more comparable since the definition is straight-forward. The number of localities with telephone service may be a more realistic indicator in countries where shared community telephones is a more achievable near-term goal than individual service.

IV. Rural Telecommunications policy

11. One reason for which Rural telecommunications are not better developed is the assumption that Rural Telecommunications are not profitable. And there is a common belief that rural market cannot afford telecommunication services. With an average density of just over one telephone line per 100 people, where millions of people are waiting for a telephone line and/or service of around five and a half years, telecommunication operators already have their hands full and rural telecommunications risk to end up low on the list of priorities.

12. Recent developments are eroding the myth that rural telecommunications are not cost-effective. There are a number of new technical approaches to rural telecommunications that claim to reduce costs. Revenue per subscriber in rural areas is often higher than residential urban areas because once a telephone is installed in a rural area, it is heavily used. Furthermore, usage is almost entirely long distance since there are few if any other local subscribers to call. And long distance calls generate more revenue than local calls.

13. The need for rural telecommunications should not only be analyzed from a strict business point of view as there are significant but hard to measure benefits to the overall economy. The convergence of computing, broadcasting and telecommunications will result in a new communications era which goes beyond basic voice telephony into data, text and image services such as high-speed database access, distance learning and videoconferencing. Rural service will need to be redefined to include access to these multimedia information services. One of the most persuasive arguments for the development of advanced information infrastructure and services is their ability to provide multimedia information services to isolated areas which could dramatically narrow the information gap between urban and rural.

V. Telecommunication environment

14. A liberalized telecommunication environment can assist rural telecommunication development by reducing prices, increasing supply, and introducing contractual social obligations. There is ample evidence from countries that have introduced competition that prices are reduced. Privatization and competition are growing, often before nascent regulatory authorities have been able to establish operator obligations for rural telecommunications. A number of countries have licensed the lucrative cellular service to private (and often foreign) investors without imposing any obligation on them to contribute to provide full geographical coverage. In countries that have privatized their operators, high income for shareholders may be difficult to reconcile with rural telecommunications development.

15. Therefore, one of the priorities for governments is to adopt appropriate policies to encourage rural telecommunication service providers. Three policy directives have emerged that can be adopted to spur rural telecommunications:

- Altering constraints on incumbent operators. This might include allowing operators to keep more of their earnings for reinvestment in rural areas. Operators should also be encouraged to adopt decentralized structures with local operating units covering rural areas. A local unit is in closer contact with rural users and better positioned to adopt cost effective and practical solutions.
- Providing concessions for rural areas. Allowing private companies or local community associations to provide rural service through revenue sharing arrangements with incumbent operators.
- Allowing new operators. For example, new local operators could be grated licenses in rural areas or operators with licenses in lucrative areas could be obligated to also provide service in rural areas.

16. Rural operators should be more attuned to the needs and problems for rural communications and thus in a better position to provide cost-effective solutions.

VI. Requirements for investment

17. Of course, investment in telecommunications development must be weighted against overall needs and priorities in complementary economic branches (roads, railways, water supply and electrification). However, access to the information is becoming a driving force without which the overall development would loose its dynamism.

18. Individual entrepreneurs, cooperatives and small local enterprises need market information, such as current prices and expected demand for their products and services (e.g. agricultural products, fish and seafood, handicrafts, natural resources, tourism and transport). They also need to reach the markets and their potential customers with marketing information. Furthermore, access to government services, such as registration and records for property ownership and transactions, and to timely information about taxes and subsidies, etc. , is required for competitive business to develop in rural areas.

VII. Recommendations for adequate and affordable Rural Telecommunications Infrastructure.

- Lift current restrictions on increased competition in the telecommunications industry including long distance telephone, local telephone and cable television services as well as manufacturing and other communications related services.
- Protect rural communities from potential negative effects from competition which may result in reduced capital investments in rural telecommunications through appropriate timing of local competition and universal service safeguards.
- Bring down long distance rates through increased competition and extended local calling areas.
- Protect universal service funds and broaden the base of contributors to universal service to include all providers of telecommunications services.
- Create a new definition of basic telephone service for all consumers that evolves over time to take advantage of new technologies.
- Support infrastructure sharing between larger and smaller local telephone companies in order to allow rural customers access to advanced telecommunication services.
- Provide incentives for local telephone companies to invest in rural telecommunications infrastructure through alternative state regulations.

- Include telecommunications strategies as a component within comprehensive, locally based economic development plans which are crated in partnership with regional development agencies.
- Create opportunities for better communications and interaction between telecommunications companies and economic development professionals.
- Better educated rural leaders in government, education, and key industries about telecommunications technologies and applications include the creation and funding of telecommunications strategies as an integral part of existing federal rural development programmes.

VIII. ITU Integrated Rural Telecommunications Programme

19. The ITU, responsible for fostering telecommunication development world-wide, has a rural telecommunication programme with two central concepts. The first is that rural telecommunication policies should be integrated with other important rural needs such as agriculture, education, transportation and health care in government development plans and policies. An efficient telecommunications infrastructure can help support other sectors of the rural economy and should not be considered in isolation. The second concept is that group telecommunication access is a more affordable near-term goal. The Buenos Aires Action Plan (BAAP) programme calls for the provision of community telecentres in strategic locations that are equipped to offer not only basic voice telephony but also telematic services and support. The telecentres would be the entrance ramps to the global information superhighways.

20. Proposed actions :

- Develop appropriate national policy guidelines
- Coordination with other UN specialized agencies at international level in the promotion of integrated rural development.
- Participate in long-term planning of integrated rural development at regional and national levels.
- Planning of rural networks (e.g. satellite, cellular radio, fibre optics).
- Implementation of networks (providing access to global networks)
- Provision of terminal equipment
- Evaluation of pilot project
- Promotion of the Community Telecentre concept and services.

21. From a rural economic development perspective, we see four goals that need to be achieved:

- Comparable Service Delivery: The telecommunications infrastructure in rural communities should support services that are comparable in quality, availability, and cost to those provided by urban infrastructure.
- Community Preparation: Rural communities should be familiar with the types of telecommunications services av. ailable in their community, and have the skills to plan for, implement, and evaluate new services and equipment effectively.
- Access to Funding and Financing: Rural communities should have access to adequate capital financing and other forms of funding for telecommunications and services.
- Economic Development Strategy: In each rural community, telecommunications-related development strategies should be integrated with the larger economic development strategies of the community and region.

22. The challenge to prepare rural communities to use telecommunications technologies effectively is just as formidable. New partnerships are needed that will improve communication among telecommunications providers and policy makers, economic development professionals, and rural communities. New ways must be explored to inform potential customers about telecommunications applications, and give them the skills to deploy those applications effectively.

1) Create a new directory on the C:\ drive

e.g. PRESENTA

2) Copy all the contents of both diskettes in the newly created directory on C:

3) Run PPTVIEW.EXE (From Windows)

& open the presentation

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LECTURE 2

ECONOMIC IMPACT OF RURAL COMMUNICATIONS IN DEVELOPING COUNTRIES

by Jean Jipguep
Chairman, ITU-Telecom Board

I. Telecommunications as a generator for sustainable development

1. Radical changes have affected telecommunications since 1985 (Arusha Declaration). No longer is the concept of telecommunication limited to the telephone. It now encompasses new branches such as computing, telematics, remote sensing, transmission of images by satellite, etc.

Mindful of the extent to which telecommunications may contribute to economic, social and cultural development particularly in developing countries, it is appropriate to develop and implement a strategy for the introduction of reforms to step up the expansion of telecommunication networks and enhance the services they provide.

2. Examples might include :

- Projects to promote rural telecommunications that can assist in providing access to the education and culture;
- Projects to use telecommunications as a support in small-scale job creation programmes or in the establishment of new enterprises and community projects;
- Projects for the construction and operation of primary health care centres for the local population;
- Building up the integrated rural development what would mean new schools, public libraries, youth centres and cinemas.

Lastly, leaving aside the beneficial effects of telecommunications for these activities, sustainable development will above all curb the rural exodus and stabilize the population.

II. Investment / Network financing

3. Comparisons of investment performance can help to highlight the level of commitment to improving the telecommunications infrastructure, especially where there is still monopoly service provision. One of the most useful indicators is **investment as a percentage of revenue**. *[the total annual investment in telecommunications, divided by the total annual revenue from telecommunications-related activities, expressed as a percentage (for the LCD's, the average is around 33 per cent).]*

4. A second indicator which has great relevance for countries undertaking a major round of network investment is **average investment cost per new line added**. This is calculated by estimating the total value of capital investment during a certain period and then dividing by the number of new lines added during the same period. *[For the LCD's, the average expenditure is around US$ 4 300./ per new line added). As a general rule of thumb, if a country is paying more than US$ 1 500./ per new network connection, then it is paying too much.]*

5. A third indicator of network investment is **investment per line**. This is calculated by dividing the total value of investment by the total number of lines installed (i.e. not just the number of new lines added in the last year). Closely related to this is the level of **investment per capita** which is calculated by dividing the total value of investment by the total number of inhabitants in the country. *[Again this indicator is biased towards those networks which have already achieved a high level of penetration. Over the world as a whole, the average is around US$ 25 per inhabitant,*

but in the LDCs it is below US$ 1 per inhabitant per year. Only two LCD's, Cape Verde and the Gambia, invest more than US$ 10 per capita per year.]

6. A fifth investment indicator is investment as a percentage of **Gross Fixed Capital Formation (GFCF).** This is calculated by dividing the total level of investment in telecommunications by the total investment within the economy in all forms of capital expenditure. This indicates the level of commitment to telecommunications in competition for funds with other capital investment projects such as roads, railways, housing etc. *[At a global level, telecommunications contributes around 2.6 per cent of GFCF, but in the low income countries, it is lower at 1.8 per cent, suggesting that spending projects more closely related with basic human development -- such as clean water, sanitation, building schools and hospitals - take priority.]*

III. Traditional sources of Network Financing

Internally-Generated Revenues

7. The most significant form of network financing has traditionally been internally generated funds. One could argue that this is the *only* form of network financing because most other schemes are based upon the repayment of funds at some time in the future. According to the estimates from the World Bank, in the 1980s around 60 per cent of the needs for investment in the developing countries were met by internal revenue generation, with the rest coming from bilateral and commercial credits (25%), governments (5%), private sector financing (5%) and multilateral lending institutions (5%).

8. Internally-generated funds come from two main sources:

- **Retained earnings**, which is the margin left over on operating surplus once all moneys due to third parties have been paid (tax, transfer to government treasury, payment of dividends to shareholders, payment of accounting rate settlements, repayment of interest on loans etc)
- Provisions for **depreciation**, which may be defined as the expected devaluation of capital assets insofar as this is regarded as an item of current expenditure. It covers the financial charges made in the year for the loss of value of installed equipment.

Government lending

9. Governments have played an important role in financing the development of the public telecommunications infrastructure, especially in those countries where the PTO is publicly owned. Indeed, in some countries where there is no clear separation between the accounts of the PTO and the accounts of the State, it could be argued that *all* telecommunications investment comes from the State. Indeed, this aid is diminishing as governments are becoming aware that telecommunications is a highly profitable business.

Multilateral development agencies

10. The multilateral development agencies have played a major role in funding telecommunications investment projects, particularly in the LCD's, because telecommunications is perceived to be a vital part of the national infrastructure within the framework of integrated rural development together with transport/energy/water infrastructure construction projects. The actual value of multilateral lending (around 5 per cent of total investment spending in developing countries) is actually quite modest, but its importance is much greater since these funds can be used to leverage other funds. Loans from the development agencies are usually offered with favourable terms such as low interest rates and long repayment periods.

The major lending institutions are:

- African Development Bank (AFDB)
- Asian Development Bank (AsDB)
- European Bank for Reconstruction and Development (EBRD)
- European Investment Bank (EIB)

- Inter-American Development Bank (IDB)
- International Bank for Reconstruction and Development (IBRD) -- The World Bank.

IV. New Forms of Network Financing

Private Sector participation

11. According to figures from The World Bank, during the 1980s private sector investment provided just 5 per cent of overall funding for telecommunication investment projects in developing countries. In the early 1990s the picture is quite different. The spread of privatization programmes to developing countries, the issue of new operator licenses particularly for mobile communications and relaxation on the restrictions on borrowing by state-owned enterprises have contributed to a rise of the private sector participation to some 40 per cent of total investment requirements.

12. Privatisation in itself does not necessarily imply that there will be an increase in the availability of funds for investment. However, in virtually every case recorded so far, this has been the actual outcome. Privatisation can provide funds for investment in a number of ways:

- Through a **share offering**, by which money is raised based on the sale of assets by the government. In some cases, the government may decide to keep the money raised or to use it for some other non-telecom related activity.
- Through a **debt-release scheme**, whereby the government, in preparing the operator for privatisation, will agree to release the new operator from some of its debt burden.
- Through a **debt-for-equity swap**, whereby the creditors of the privatized operators, such as banks, the government, or the multilateral development agencies will agree to accept shares in the new company in return for release of debt ;
- Through a sale to a **strategic partner**, often but not always a foreign PTO, who will agree be given the opportunity to buy a share in the new company, generally a minority share, in return for a commitment to invest in new infrastructure ;
- Through the **hiving-off or sale of certain support activities,** without sale of the full company in order to raise capital for investment (e.g. installation and maintenance, catering, billing)

13. All of these options listed above involve some form of sale of the PTO, or part of its activities. However, private sector active participation may be further encouraged in following ways

- through a management contract (e.g., Cable & Wireless in Botswana);
- through a joint venture to develop a particular technology or to enter a particular market (e.g Nepal's plans to develop new services as a joint venture between the NTC and a foreign partner)
- through the award of a mobile license to a privately-owned contractor (e.g., Millicom in Ghana);
- through the issue of Build-Operate-Transfer concessions (e.g., Shinawatra Group in Thailand);
- by permitting local initiatives (e.g., community enterprises in Poland and Hungary);
- by licensing competitors in the main fixed link network (e.g., Capital TELECOM in Ghana).

Some or all of these different projects may be undertaken at the same time as privatization, or they can be used as an alternative means of introducing private sector participation into the national telecommunications industry.

Private financing

14. Private financing can be introduced into telecommunications without the need for any change of ownership or any issue of shares. The international venture capital market is now sufficiently educated in the virtues of investing in telecommunications to ensure that there is sufficient capital to fund most worth projects.

Thanks to the creativity of financiers, there are as many different financing options as there are projects to finance. Some of those which have been used in the telecommunications sector include:

- **Subscriber bonds**, whereby the potential subscriber purchases a bond which is ensured against the assets of the company, which is usually redeemable at the end of a relatively short period (up to 5 years) with a telephone connection.
- **Bonds, debentures or options**, usually of longer term duration such as ten to twenty years, that yield a certain amount of interest, usually at a fixed rate, and can be redeemed upon termination or resold before termination.
- **Financing for a discrete project or service**, with accounts which are separate from those of the rest of the company, and which will have a separately identifiable cash flow. The potential investors will be repaid according to the eventual level of success of the project.
- **Joint venture financing**, whereby some or all of the participants contribute the assets that they will eventually own. An example of this is the IRIDIUM project to construct a network of Personal Communications Mobile Satellite Services (PC-MSS) to provide anywhere-to-anywhere telephone service via LEO-s by the early next century.

Concessions

15. One form of network financing which has grown enormously in popularity is the award of concessions to companies to construct facilities. As with project financing, there are many different sub-options. For instance:

- The concession may be awarded as part of a **competitive tender** or the concessionaire may be appointed;
- The concession may be awarded to an individual company or to a **consortium**;
- The concession may be **exclusive** or may be one of many awarded to offer the same service;
- The concession may be **open-ended** or may be based on the completion of a specific project or the provision of a certain amount of infrastructure (e.g. up to 1 million new lines);
- The concession may involve purely local investors or may include **foreign investment**, perhaps up to a certain limit;
- The concessionaire may be allowed to build, own and operate **(BOO)** the infrastructure, to build, own and eventually transfer ownership to the state or the public operator at the end of the concession period (**BOT**) or may be required to build, transfer ownership, but then retain the right to operate the infrastructure for a given period (**BTO**).

V. Integrating the Telecommunications Into Economic Development Activities

16. There are a number of state agencies that support economic development programmes, including the Departments of Agriculture, Commerce, Defense and Health and Human Services. All agencies involved in rural development programmes should consider telecommunications planning and coordination as an economic development strategy, and funding for strategic planning, telecommunications equipment and services should be part of their programmes.

17. While there are probably many ways to help rural communities prepare for the information age, the focus is on economic development planning and programmes. Using telecommunication as an economic development tool will require partnerships among communities, telecomm service providers, and economic development professionals. These partnerships will make it easier to prepare rural communities to use telecommunications facilities effectively, and will improve the understanding of the role of telecommunications in economic development.

Economic Development Strategies in Rural Areas

18. From an economic development perspective, telecommunications infrastructure and telecommunications operating potential are two of the many factors that will help determine the competitiveness of a rural community. The quality of businesses, schools, hospitals, local governments, and the environment are all critical factors in rural economic development. Without a solid foundation and a strategy that addresses both economic and social issues, economic development cannot be self-sustaining.

19. One reason that telecommunications is receiving so much attention from those involved in economic development is that it supports such a variety of development strategies. Efforts for upgrading the telecommunications infrastructure and preparing rural communities to use that infrastructure effectively, perfectly fit within any of larger development strategies, from business retention and expansion to international marketing and business attraction.

20. A key to success of telecommunications-related strategies is the degree to which they are linked to a larger program for comprehensive economic development in a particular rural region. Failure to develop comprehensive development strategies can lead to piecemeal activities that drain the energy and resources of rural communities and leave citizens actually further behind their urban counterparts.

21. However, local communities in most rural areas do not have the necessary technical knowledge to put together comprehensive development plans in general, or information technology plans in particular. Rural governing bodies typically focus on more traditional infrastructure needs, such as roads, schools, fire/medical facilities, water and sewage. Many rural jurisdictions are hard pressed to meet even these basic needs, and do not have the staff or resources to undertake a broad-based economic development program.

22. Because regional development organizations have a great deal of experience with infrastructure planning, and because they have well-developed professional relations with national assistance programmes, they are in a good position to integrate telecommunications strategies within ongoing economic development planning. Existing programmes provide funds to regional development organizations for such strategic planning and technical assistance. Using these funds, regional organizations could work with rural communities, for example, to help aggregate demand for a particular set of services, creating a market that telecommunications providers could then serve profitably.

Rural Communities and Telecommunications Applications

23. Both economic development organizations and telecommunications servicce providers should undertake programmes that would help people understand telecommunications technologies and their applications. These could include demonstration projects funding to schools, hospitals and governments for telecommunications-based projects, educational programmes in schools, universities, and community service organizations.

24. In addition, special programmes should be created for industry-specific audiences. Many rural communities rely on one or two major industries for most of their employment. By targeting these industries and setting up programmes on telecommunications innovations, leaders can help assure the economic stability of their community. Because telecommunications can support both manufacturing and service-oriented businesses, such programmes may help local communities diversify their economies into the service-oriented segments of their traditional agriculture, manufacturing, and extraction industries.

25. Finally, telecommunications providers themselves must improve their education and marketing efforts in rural communities. In a telecommunications marketplace based on competition, consumers will have to articulate their demand for new products and services, but they cannot do this if they do not understand the products and services that are available. It is primarily up to the telecommunications service providers to educate their customers, just like in any other high-tech product line.

For small rural telephone companies, this is a matter of survival: if their communities are not competitive and economically stable, their own businesses may suffer soon. For large telephone companies, the rural commitment may be more difficult to make, because much of their attention is focused on their urban markets. However, if large telephone companies do not begin to educate and market new services to their rural customers now, they will soon find competition eroding those markets, just like they now find in urban areas.

VI. Conclusion

26. Telecommunications has significant potential to contribute to economic development in rural areas of developing countries. Action is required by different players in a number of jurisdictions and industries. As an association of regional development organizations, we see ITU role as a facilitator of partnerships that could help make telecommunications opportunities a reality. We are calling upon telecommunications policy makers, the telecommunications industry, and economic development professionals to help achieve these goals. We look forward to working with all interested parties to refine our analysis and goals, and to begin making the changes that will help keep rural communities competitive.

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