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Generating Demand For New Communication Technologies
In Rural Areas: Challenges Facing Asia And The Pacific

By

Monte Cassim
Seminar on "The Impact of New Telecommunications Technology on Rural Society in Asia and the Pacific", Jakarta, Indonesia, 13-14 September 1993

GENERATING DEMAND FOR NEW COMMUNICATION TECHNOLOGIES IN RURAL AREAS: CHALLENGES FACING ASIA AND THE PACIFIC

Monte Cassim
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Summary

The paper approaches the impacts of new telecommunications technologies in Asia and the Pacific from the perspective of the prospects they offer for rural development. It tries first to identify the salient features which have characterized rural development in the region and the major trends in the development of the telecommunications sector. Based upon this understanding, it tries to see the prospects offered to rural societies in the coming years. The conclusions drawn are that a pro-active, rather than a passive or reactive approach is required, and possible policy prescriptions are outlined.

The introductory section of the paper observes that over the past thirty years the share of urban population in the region has grown from around 20 per cent to about 30 per cent. Possibly because in absolute numbers this share is globally of great significance, much debate has taken place on the impending urban revolution and most national governments have been advised to prepare for this eventuality. The stance in this paper is diametrically opposite. It asks, instead, why has the region been able to continue to absorb as much people as it did in the rural areas over the past three decades? Rural population decline in this populous part of the world has been much slower than in either African or Latin American countries over the same period of time. Is there some element of significance to development in the rural areas of Asia and the Pacific which we have overlooked, and can this be strengthened further? What are the prospects offered to such rural areas by new telecommunications technologies? This is the fundamental stance of the paper.

The second section briefly reviews the significance of the production-oriented perspective from which rural development has been promoted. Execution has centred around projects and much technocratic endeavour has gone into integrating rural development projects. Despite these efforts, holistic integration has rarely, if ever, been achieved. This production oriented approach is not without its own merits. Goals have been simple to define, and production targets achieved through technocratic and technological inputs. Overall output and land productivity have increased, and it is to the credit of the region that the threats of rural famine have receded into the distance in Asia and the Pacific. However, the paper asks, will this happy state of affairs continue ad infinitum? The view taken is that the technocratic approach has ignored many supporting factors and, in particular, the concept of what must remain "common" and what may be mobilized for "private" profit. This comes from an understanding of:

(1) The political economy of rural development;
(2) the sociocultural heritage of rural settlements; and
(3) the ecological/environmental attributes of rural areas.
Both governments and rural societies in Asia and the Pacific have implicitly understood this thus far and this, the paper argues, is why it has been possible to raise the absorptive capacity of rural areas in the region. However, like all things implicit, it is fragile and the understanding may well be submerged by the forces of change, particularly those of privatization and deregulation - the twin pillars of the advocates of "efficiency" in development. If we are to bring "equity" back into the development debate, perhaps it is now time to make these three factors and their contributions more explicit. Can the new telecommunications technologies help to further this understanding, and what modalities should be adopted?

In view of the challenge posed to telecommunications by the above question, the third section of the paper briefly reviews the major trends and developments in the telecommunications sector. Tracing its origins as a "common good", the paper notes that the monopolistic arrangements for its management bear some parallel to the way in which feudal landlords managed vast tracts of rural land. A combination of the inefficiencies arising from these management systems, and the technological breakthroughs which have contributed to breaking down the "protected domains" of telecommunications carriers have led to the current debate on deregulation and/or privatization. The "efficiency" advocates are currently leading the pack in regard to telecommunications policy worldwide and the trend is probably irreversible. The challenge however, as in rural development, lies in how to bring "equity" back into the argument. This is of critical importance if the promise of the telematics revolution, to small businesses, remote rural communities and other such hitherto disadvantaged social groups or places is to be realized. The reality, however, is that those who are in the best position to avail themselves of the benefits of the new telecommunications technologies are the large multinational corporations, large metropolitan centres and dense megalopolitan corridors, with adequate levels of service demand.

Against this background the fourth and concluding section of the paper suggests policy prescriptions which would may help reconcile the "efficiency-equity" debate and, in consequence, enable rural societies to take advantage of the development in the telecommunications sector. Given the significance of the Integrated Services Digital Network (ISDN), Open Systems Interconnections (OSI), and the two major transmission technologies of satellite and fiber optics transmission in gaining access to a wide variety of user services, some retention of public subsidies to ensure "fair access to all" is argued for. At the same time, however, in recognition of the need to provide internationally competitive services without being submerged by debilitating deficits, it is suggested that policy prescriptions work towards increasing telecommunications demand levels through increasing the development potential and, consequently, the investment repayment capacities of rural areas.

Two programmes of the United Nations Centre for Regional Development are described in this context. One of them, currently being implemented, is the Centre's Business Information and Support Services (BISS) programme, which works towards strengthening the regional economic base, particularly in the nonmetropolitan regions. The other, currently under investigation, is a distance learning system to strengthen the regional planning techniques and management capacities of local government officials, which in broader application can be extended to enhance the lives and livelihoods of people in remote rural, areas. These are just two of a myriad of potential programmes which could create a happy marriage of the technological prowess of the telecommunications sector and the accumulated wisdom of rural societies in the Asia-Pacific region, building upon their inherent strengths and heritage.
GENERATING DEMAND FOR NEW TELECOMMUNICATION TECHNOLOGIES IN RURAL AREAS:
CHALLENGES FACING ASIA AND THE PACIFIC

Monte Cassim
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I. Introduction

How can we realize the promise of the advantages offered by the advanced telecommunications infrastructure to rural development in the countries of the Asia-Pacific region? This is the central question underlying this paper. It hopes to seek pro-active policy prescriptions, rather than passive or reactive responses. Let us commence, however, with an attempt to see the significance of rural development in the region and the salient features which have characterized this process of development.

No discussion about rural development today can ignore corollary trends in urban development. Over the past thirty years, the share of urban population in the Asia-Pacific region has grown from around 20 per cent to about 30 per cent. Possibly because in absolute numbers this share is globally of great significance, much debate has taken place on the impending urban revolution and most national governments have been advised to prepare for this eventuality. The stance in this paper is diametrically opposite. It asks, instead, why has the region been able to continue to absorb as much people as it did in the rural areas over the past three decades? Rural population decline in this populous part of the world has been much slower than in either African or Latin American countries over the same period of time. Is there some element of significance to development in the rural areas of Asia and the Pacific which we have overlooked, and can this be strengthened further? What are the prospects offered to such rural areas by new telecommunications technologies? This is the fundamental stance of the paper.

II. Rural Development: A Review of Current Practice

The magnitude of the rural development problem is probably what propelled the Asia-Pacific region into action. With well over half of the world's population, and a far smaller share of the world's area of arable land, the region adopted a technocratic approach, which was production-oriented. "Innovative" factor inputs and technology diffusion, addressed at the rural peasant base, was the modus operandi. The "Green Revolution" programmes epitomise this approach. The project/programme-based approach prevailed as setting the lead for the diffusion of technology too. The result, although one may be critical with hindsight, did pull the region out of the threat of famine and malnutrition. Overall food and agriculture production has increased in the region much faster than population growth, and this is particularly noticeable in a comparison with African countries, where the man:land ratio is much lower.

Let us look a little more closely at how this has been achieved. We shall for the present, leave from consideration the export-oriented "enclave-like" plantation sector based on large land holdings since, in most instances,
it may not bear direct relation to the rural settlement culture. We shall, instead, focus on the agricultural activities closely associated with smallholder producers, most of whom are engaged in the food crop sector. Food production increase in the Asia-Pacific region has relied, in most instances, on the endeavours of the traditional peasantry. There are even instances where these smallholders have contributed to staving off decline in the plantation sector, as capital moves out of the less profitable areas of production. Malaysia's rubber industry is a case in point. Today, Malaysia retains her position in the world rubber market, not because of large capital investments, but due to the unceasing efforts of 500,000 smallholder households. These smallholders, who sustain the lives and livelihoods of two million persons, account for 70 per cent of Malaysia's annual rubber output.

Thus, in this paper we shall focus our attention on the traditional rural settlements, where often agricultural activities prevail on small holdings. For these settlements, field-based agricultural extension officers, who have an implicit understanding of the political economy, the heritage of empirical wisdom and culture of rural settlements, have been the bearers of new technologies and farm management practices. This understanding has not, however, been an explicit component of rural development policy. This is where the author fears, the technocratic approach adopted may in the coming years, run into problems. Rural development policies, with their project/programme bias, have been much narrower in focus. Goals in these programmes have been defined rather simply, in terms of production targets, and achieved through technocratic and technological inputs. Overall output and land productivity have increased, and, as observed earlier, it is to the credit of the region that the threat of rural famine have receded into the distance. However, will this happy state of affairs continue ad infinitum?

The early agriculture development projects, often designed against a background of large multisectoral programmes, gave way to rural development programmes, which hopefully should have been more sensitive to local community and cultural needs. This, however, was not where the emphasis lay. The stress was more on integrating the different sectoral entities, represented by a variety of government agencies. These integrated rural development programmes often saw integration as an organizational problem, and a lot of bureaucratic effort was expended. Actual integration may have worked better with true community participation, where rural society's empirical wisdom and cultural heritage could have been drawn from to meet development goals. But this was not the case in most instances, largely because full participation would have involved a measure of empowerment to local communities, which governments of the region at the time were somewhat reluctant to grant. The result was a situation where implicit recognition of rural society's strengths and its polity's needs was relegated to the efforts of field extension workers in these programmes.

Traditional rural societies had a holistic understanding of the settlement culture they were living in and contributing to, and of the environment around them from which they drew their sustenance. This is what current day projects/programmes lack. Rural development projects and programmes do not acknowledge this explicitly, but it is an implicit understanding of this which has enabled the absorptive capacities of rural areas in Asia and the Pacific region to remain high. It is staggering to note that in Indonesia, with a population of 180 million people, only some 20 million live in metropolitan and large urban areas. What we often fail to ask what is it that enables 160 million people to continue to live in small cities and rural areas? This is true not just for Indonesia, but also for other countries in the region.
How do we unearth the underlying strengths of rural communities in Asia and the Pacific region, and bring them to the forefront of policy dialogue? It is difficult to say that advanced telecommunications will provide the answer to this if we passively stand by and watch. However, if policy makers recognize the value of this gold mine at their feet, with a pro-active stance, things could change considerably. What are these invaluable resources that rural communities possess? As we noted before, the technocratic approach has ignored many supporting factors and, in particular, the concept of what must remain "common" and what may be mobilized for "private" profit. This comes from an understanding of: (1) The political economy of rural development; (2) the sociocultural heritage of rural settlements; and (3) ecological/environmental attributes of rural areas.

Appreciating the political economy of rural development involves an understanding of the power balance between the forces of political and economic strength. Let me illustrate this with an example from traditional (prcolonial) Sri Lankan rural society. Here, the village was the smallest unit of autonomous government. It was autonomous because it had a resource catchment of land and water as the foundations of its economic activities. The village economy rested on the efficient as well as equitable utilization of these resources. The institution through which this was done was through a system of checks and balances among three centres of power, viz: that of the "velvidane" or "water keeper" of the village, the village headman, and the people of the village.

The maintenance and distribution of the water resources were the responsibility of the "Velvidane", the "water keeper" of the village, who was appointed by the village headman. He would be what is known today as a technocrat. His salary was a share of the village's output of produce from the fields he supplied water to. Thus, he had a vested interest in maximizing output. However, if in the process of maximizing this "private profit", the result was a level of inequity that the village people resented, even though the overall output of the village had increased considerably, they could pressurize the village headman, whom they had elected through a council of elders, to remove the "velvidane". If the headman wished to remove the "velvidane" from office, he could do so at any time. However, if he did so unjustly, the headman could well be removed from office under pressure by the people. Thus, the political economy of the rural settlement at the time was one in which there was a delicate, often dynamic balance between efficiency and equity.

This was the Sri Lanka that was colonized in its entirety by the British. The first thing the British did was to remove the "velvidane", whom they purportedly saw as an unnecessary functionary. The system of balances and checks in the political economy crumbled, the economic base of the community was weakened and, soon, village headmen were coopted to the colonizer's cause. Sri Lankan villages were never the same again. Even after Independence, when successive Sri Lankan governments invested heavily in resurrecting and expanding the nation's irrigation infrastructure, the approach adopted was a technocratic and managerial one. The policies adopted display little understanding of the political economy of rural settlements.

As mentioned earlier in the case of Sri Lanka, political autonomy at the village level rested on the efficient and equitable management of the village's catchment of resources. Some of the resources in this catchment could be mobilized for "private" profit, but a significant part was seen as "common" to all members of the village. This sharing of a common resource can be seen in the feudal villages of Sri Lanka, in the Kampung lands of Malaysia,
the "zaisan-ku" (resource/property catchment area) of Japanese rural communities, the Boston Commons, European waterways, in tribal ownership, nomadic practices and in many other instances as well. It is what Ivan Illich, 1983, calls "that part of the environment which lay beyond their own thresholds and outside of their possessions, to which however, they had recognizable claims of usage (not to produce commodities but to provide for the subsistence of their households)". The "common" was necessary for the community's survival, necessary for different groups in different ways. However, in a strict economic sense, the "common" was not perceived as scarce.

The management of the "common", coupled with the equity mechanisms in the political economy, provided the basic ethic for the management of ecological and environmental resources in the broader sense. Today the concept has been revived on a global scale in regard to the management of the deep ocean, Antarctica, outer space, and the like. Drawing out this ethic by studying a variety of practices in traditional rural society may well be helpful if we are to take contemporary rural development beyond its current confines of the technocratic perspective. It will also help us keep development practice within the boundaries of what is ecologically sustainable. The major difference between societies then and now is the vast distance between the resource base, its custodians, and the global outreach of its producers and consumers. This distance between resource base, producer and consumer is compounded by anonymity, with the "invisible hand" of the free market determining what goes where, and how it is used. Much of this has been made possible by revolutionary changes in logistics (transport) and telematics (computers and telecommunications).

The logistics and telematic revolution has also been the driving force behind a consumer ethic which is worrying the world today in terms of its environmental compatibility, and the sustainability of the global resource base. Can the same strengths of modern logistical systems and, particularly in this paper, advanced telecommunications system, come up with an alternative? One way might be to carefully document the positive lessons we can learn from traditional rural wisdom.

Unfortunately, in most rural communities, this wisdom is not explicit, codified and recorded for open debate and discussion. It is often shrouded in a complex web of customs, ceremonies and practices, intricately woven into the lifestyles of these communities. In such a situation, an external force, such as "modernization", or "industrialization" could well lead to the loss of this empirical body of knowledge, built up over centuries as part of a community's social/cultural heritage. A classic example of this neglect can be seen in the basic formal education we impart to children in rural communities. Formal school systems in the rural areas of developing countries are often far removed from the realities of rural life. With school attendance between the hours of, say 8:00 a.m. and 3:00 p.m., disrupting the time when rural children may learn much from rural practice by working with their elders. Is there any reason why an urban school and a rural school should operate on similar timetables, apart from the convenience it may offer to those who proffer the education.

Pedagogical progress is the basis of many formal education systems. How can we devise integrated curricula which train students in mental and manual skills, studies the social and the material environment, and which incorporates more activity-oriented heuristic learning methods into didactic pedagogy? These are some of the challenges that advanced telecommunications could take on in assisting rural development. Distance learning systems, and education systems which dissolve the distinction between formal, non-formal
and informal education, school-going and permanent/continuous (lifelong) education, are likely to be needed. How can advanced telecommunications respond to this call?

Thus, the "modernization" of rural settlements on ethics and values rooted in urban practices needs to be questioned. This means that the importance of taking rural development beyond its current project/programme focus must be emphasized. This would lead to a recognition of agriculture as going beyond agricultural production, or even agribusiness. It involves a holistic understanding of the entirety of rural settlement culture, its empirical wisdom, its strengths and its weaknesses, particularly in relation to the equilibrium between the forces of political and economic power. Both governments and rural societies in Asia and the Pacific have, I believe, implicitly understood this and drawn from its strengths. This is why it has been possible to raise the absorptive capacity of rural areas in the region. However, like all things implicit, it is fragile and the understanding may well be submerged by the forces of change, such as those of privatization and deregulation - the twin pillars of the advocates of "efficiency" in development.

Can the new telecommunications technologies help to further our understanding and appreciation of rural settlements, and in devising or executing policies to help in their development? This question will be taken up once more, after a brief review of exactly what advanced telecommunications have to offer.

III. The Promise of Advanced Telecommunications

In this section, let us briefly look at what the new telecommunication technologies are comprised of, the significance of trends in the telecommunications sector as a whole, and the promise they offer for the development of rural societies in Asia and the Pacific.

What is commonly referred to as the new, or advanced, telecommunications technologies comprise of three broad categories of equipment, viz: (1) Public switching equipment; (2) terminals, or end-point equipment; and (3) transmission equipment.

Public switching equipment, which represents about 30 per cent of system costs, connects terminals to one another and coordinates the entire telecommunications network. With switching costs coming down, the electronic digital switching systems from IDN through to ISDN, have begun to spread into the developing countries, particularly since the late 1970s. In an OECD study, Antonelli, 1991, shows that the rates and extent of diffusion are faster in the developing and newly industrializing countries than in many of the OECD countries, where 90 per cent of switching equipment is manufactured. He shows that the latecomers did not have to worry about continuing and expensive investments in the existing electromechanical systems which prevailed in the richer countries. In any event, falling costs were matched by a revolution in end-point equipment, which also worked to the advantage of the late developers.

In the era of electromechanical switching, a few selected telecommunications carriers and firms affiliated to them dominated switching equipment production and the market, and the terminal itself was a relatively simple telephone, or relatively expensive telegraphic equipment. The change...
to electronic switching since the 1970s broke down the vertical integration that had characterized telecommunications equipment manufacturing up to the time. In addition, terminals have really proliferated over the last decade and a half. Today, this end-point equipment includes telephones, facsimiles, modems, computers, private branch exchanges, and the like, driving up demand for telecommunications services even in the developing nations. The fact that many newly industrializing and developing countries now also have the capability to manufacture such end-point equipment has also been a contributory factor. Open Systems Interconnections (OSI) and standardization of Operating System (OS) software will further enhance the position of end-point equipment manufacturers, who have become a powerful force, influencing the telecommunications sector as a whole. Their pressures for improved services by the telecommunications carriers was largely influential in breaking down the monopolies that controlled the sector.

There has also been radical developments in transmission equipment. This comes principally from two new media, fibre optics and satellite transmission. Fibre optics may be viewed as an evolutionary development of the sector, but satellite transmission is truly radical. The latter allows for a great deal of experimentation, at relatively low transmission cost, and is perhaps most suitable in the short term. But as the service matures, demand levels rise and reliability requirements become more stringent, there may be no option but to lay the more costly optical fibre links in the long run. By this time, however, the economics of investing in the service concerned should be clear. In any event, what is important is that the volume of information that can be transmitted now, and the distances that can be reached are truly vast, thanks to these transmission technologies. This has raised the call for new telecommunications software and communications standards for high speed data transmission (such as electronic mail and value added network services) and for broadband transmission (e.g: cable and pay TV, teleshopping and banking services).

The transformation in the telecommunications industry itself, particularly in the production of telecommunications equipment and the markets for them, have brought about much of the promise of the telecommunications revolution to hitherto disadvantaged groups. ISDNs offer to small businesses the advantages that were hitherto only available to large multinationals with access to private branch exchanges (PBXs) or local area networks (LANs). The realization of the promise lies in whether network economies of scale, spread over large geographic territory, can substitute for agglomeration economies of scale, with their vast concentration of resources around a few selected territories, popularly referred to as the global city phenomenon. This is critical in our discussion as to how rural societies can take advantage of advanced telecommunications. There is one area of concern that threatens this promise, and it too comes from the current structural transformation the telecommunications sector is undergoing. This originates in the breakdown of telecommunications carrier monopolies.

Telecommunications carriers were undoubtedly monopolistic in the past. However, with the right to exercise this monopolistic control came also the responsibility to guarantee universal access. This was often coupled with national ownership and, in the more enlightened countries (such as Canada among the early developers and Malaysia among the late developers), regional development goals. Pricing policy in this era was often one where value of service pricing was coupled with system-wide price averaging. Public subsidies also went into the pot, in order to ensure that universal access was attainable. Thus, telecommunications infrastructure was seen as a "common" good and, possibly because the range of telecommunication services were limited in
the past, the service too was treated more or less in the same spirit. However, with the telematics revolution bringing about a major transformation in the industry, a wide range of telecommunications services are now available to the end-user. Many of these, such as VAN, cable/pay-TV, etc. were service areas which were perceived as profitable and pressures went up to allow new players to join the game. The deregulation of the telecommunications sector was imminent.

If the old telecommunications monopolies were to hold on to their captive suppliers, protected markets and guaranteed subsidies, critics argued quite justifiably that the result would be a grossly inefficient system, which is unresponsive to market demand, fails to acknowledge true cost, and is in the end inequitable. The inability to recover costs and over-reliance on public subsidies to cover rising deficits has disastrous consequences on the original mandate of the carrier to ensure universal access. Thus, if rising costs and revenue shortfalls prevent service expansion to ensure universal access, where then is the justification for the carrier to enjoy its protected, monopolistic domain? Even in countries like Canada (home to Alexander Graham Bell) and the USA, where telecommunications history is long and the service sophisticated, common carriers and their affiliated suppliers found their protected domains crumbling under this combination of external siege, caused by technological breakthroughs, and internal erosion, through the hardening of managerial arteries that comes from long years of working under protective tariffs and regulatory regimes.

Briefly tracing this history in United States, the landmark was the "Hush-a-phone" decision (1956), which set the precedent for non-telephone equipment attachments to telephone company networks. This was followed by the "Carterfone" decision (1968), which enabled a small firm, Carter Electronics, to link its mobile radio equipment to the giant carrier AT&T's standard telephone equipment. This ushered in the 1970s, where technological developments lead to a blurring of the distinction between computers and telecommunications, leading to the birth of the term "telematics" to cover both. In any event, the computer industry, representing the data processing end of the telematics system was unregulated, and companies like IBM worked towards making sure that they were not tapped by any untoward regulation. This competitive environment was extended further when the Federal Communications Agency (FCC), the watchdog agency, allowed non-telephone companies to apply for satellite licences (FCC, Computer Inquiry One) in the 1970s. By the early 1980s deregulation of customer premises equipment (FCC, Computer Enquiry Two) permitted common carriers to benefit from the industry's transformation as well, allowing them to engage in new kinds of telecommunications services.

Between the end of World War II and the early 1980s, these decisions transformed US telecommunications from a regulated industry to a competitive one. The key players among the early developers, viz. the USA, Canada and European countries, all experienced similar forces of transformation, leading to the current debate on deregulation and privatization. At the core of this debate on "equity vs. efficiency", we find once more, as we discussed in Section II of this paper, the question as to what should be "common" and what should be allowed for "private profit"? This is of critical importance to rural development, where lower densities of demand could result in services to these areas being sidelined. The "efficiency" advocates are currently leading the pack in regard to telecommunications policy worldwide and the trend is probably irreversible. The challenge, however, lies in how to bring "equity" back into the argument.

This is of critical importance if the promise of the telematics
revolution, to small businesses, remote rural communities and other such hitherto disadvantaged social groups or places is to be realized. The reality, however, is that those who are in the best position to avail themselves of the benefits of the new telecommunications technologies are the large multinational corporations, large metropolitan centres and dense megalopolitan corridors, with adequate levels of service demand. What then should our policy prescriptions be? This question, which is of critical importance to this seminar and to developing countries hoping to use telecommunications as the means to "leapfrog" into advanced technologies and services, is taken up in the next, concluding session of this paper.

IV. Policy Prescriptions

As for telecommunications policy, if rural development and small business is to benefit from it, there is no doubt that the guarantee of "basic universal access" be maintained. What is "basic" needs to be defined, but given the current state-of-the-art, it would refer to access to ISDN. The whole range of current and future promise lies on access to this electronic switching system. To take advantage of this, public telecommunications infrastructure investment would have to go into the trunk transmission line, a "common" at the national level. International investment, through institutional arrangements such as INTELSAT, PEACESAT, INMARSAT, etc. should ensure that satellite orbitals are also also "common", ensuring that transborder data flows (TBDF) are not hampered. The "private profit" component can come at the "non-basic" service level at the end-point terminals. This is facilitated by packet switching possibilities on ISDN, where the pricing can depend on the size of the information packet consumed, rather than by minute or month as in the past.

As mentioned earlier, what is "basic" will have to be periodically redefined and the institutional arrangements for this are important. Drawing from McPhail's (1987) analysis of the North American and European experience, the author favours the establishment of a pro-active, forward-looking advisory/regulatory agency, which would consider matters holistically, rather than leaving things unregulated and resorting to the judiciary, whose decisions are likely to be narrower in scope, likely to fall back on precedent, and activated only in reaction to a claim filed by a plaintiff.

In regard to rural development policy, an attitudinal stance must be made clear from the very outset, even though it might take advantage of the benefits that could come from the telecommunications policy recommended above. It must recognize that fundamentally, rural development policy content is what will determine the future of rural societies, and not telecommunications policy. Rural development policy prescriptions which will lead to increasing telecommunications demand levels through raising the development potential and, consequently, the investment repayment capacities of rural areas are recommended. Recounting what has been discussed in Sections II and III above, following three policy domains are suggested as investment vehicles for enhancing rural telecommunications demand:

(1) National/Regional Policy Making Data Base Development: To the existing statistical data base of national censuses and regional/local surveys, add a geographic information base which includes information about the settlement culture of rural areas. This could lead to the development of advanced personal computer-based GIS systems, which are economical to use and maintain, and are sensitive to rural needs.
(2) Regional/Rural Enterprise Development: A programme, somewhat akin to UNCRD's Business Information and Support Systems (BISS) programme, currently about to commence implementation in eight Asian countries (including Indonesia). BISS aims to strengthen the rural/ regional economic base by providing improved access (national and international) to risk-mitigating information, markets, investment and technology. In particular, the establishment of Regional Consulting Units (RCU) as suggested in the BISS guidelines, may be helpful. The Regional Data-Base (RD-Base) the RCU manage could be integrated into (1) above.

(3) Rural Human Resource Development: Distance learning systems which are sensitive to rural needs and, yet, can also stimulate the participation of the rural population in economic and social activities that go beyond the narrow confines of rural society, will also work towards increasing the development potential of rural society. Currently, UNCRD is investigating the prospects for a distance learning system to strengthen the regional planning techniques and management capacities of local government officials (BAPPEDEA Level II). Broader applications of such programmes could lead to more universal learning systems.

All the above development programmes can benefit from access to the telecommunications network. Such programmes should be designed with a view towards generating the initial threshold of demand which would justify providing advanced telecommunications access to rural areas. To be sure, some level of public subsidy may be necessary, at least in the initial stages. However, the demand component financed by the above programmes could bring these subsidies down to manageable levels. Hopefully, with the enhanced development potential, the economic activities generated in these localities could well take rural societies in the Asia-Pacific on the road to self-reliance. Such happy marriages, of the technological prowess of the telecommunications sector and the accumulated wisdom of rural societies in the Asia-Pacific region, are what rural development policy makers should focus their efforts upon if they are to realize the promise of advanced telecommunications to rural societies.
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