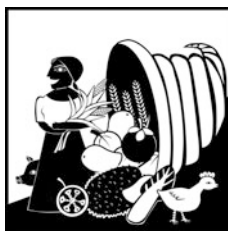


Proposition 26

Past Visions of Rural Asia's Future

In a Word Strategic efforts to effect change are constantly challenged by emerging forces about which there is little advance knowledge. For constructive action, it is useful to look at the past to gain a perspective on the present; but, it is even more profitable to revisit past visions of the future from an interpretation of the present. The concepts of change over time, context, causality, contingency, and complexity help make sense.



Picturing the 2010s by Way of the 1960s

In 1967, ADB conducted a first Asian Agricultural Survey in recognition of the fact that the agricultural sector was the mainstay of the economies of most of the developing countries of Asia and the Pacific. In the wake of the Green Revolution,¹ the survey was planned as an economic and technical study of ADB's developing member

¹The term "Green Revolution" refers to a series of research, development, and technology transfer initiatives that, beginning in Mexico in the 1940s, aimed to increase agricultural production worldwide, most markedly in the 1950s–1970s. Specifically, researchers developed high-yielding varieties of wheat, maize, and rice that produced a large output when combined with fertilizers and pesticides. (The yield of major plantation crops, e.g., rubber, oil palm, tea, and coconut, was also raised.)

countries and took as its focus of concern the issues surrounding the modernization of regional agriculture through the application of science and technology.

Optimism is a strategy for making a better future. Because unless you believe that the future can be better, you are unlikely to step up and take responsibility for making it so.

—Noam Chomsky

In 1976, ADB undertook a second Asian Agricultural Survey because agricultural development during the late 1960s and early 1970s was slower than had been anticipated and institutional constraints and shortages of resources and inputs had emerged as a barrier to faster development. That survey looked at social, economic, and institutional factors as well as the interrelationships between agriculture and other sectors of the economy. Its intellectual underpinnings were nevertheless akin to those of the first in that the survey team also believed that intensifying production would lead to agricultural development; the only difference was that it intended to pay more attention to the presumed obstacles to such development.

These *Knowledge Solutions* reproduce a memorandum the author drafted in 1996 to make the case for a third survey, 20 years after the second and in an altogether very different context. The objective was to catalyze attention and action to address rural development concerns over the following decade: food security still featured high on the agenda but the challenges were, increasingly, deemed to be socioeconomic and environmental. A new study of rural Asia was launched in 1998 (ADB 2000–2001).²

Box. Memorandum on the Working Group on Rural Asia Update—Themes and Arguments

Development Revisited

Over the last two decades, an economic transformation has occurred in much of rural Asia: large parts of the region have made remarkable progress with substantial gains in food security, per capita income, quality of life, and poverty reduction. Yet, rural Asia remains home to more than 700 million people living in poverty. What with continuing population growth and the damage being inflicted on the environment, it is necessary to adopt a more sensitive attitude that moves away from an agricultural commodity focus. Approaches are required that, among others, meet the nutritional needs of

²The six volumes that made up the study were *Beyond the Green Revolution—An Overview* (2000), *Transforming the Rural Asian Economy: The Unfinished Revolution* (2000), *Growth and Sustainability of Agriculture in Asia* (2000), *Rural Financial Markets in Asia: Policies Paradigms, and Performance* (2000), *The Quality of Life in Rural Asia* (2001), and *The Evolving Roles of the State, Private, and Local Actors in Rural Asia* (2001).

people qualitatively and quantitatively while providing other agricultural products; reduce the vulnerability of agriculture to adverse natural and socioeconomic factors; promote durable employment, sufficient income, and decent living and working conditions for rural communities; preserve, enhance, and develop rural amenities; enable communities to care for their own environments; and satisfy the demand for natural capital in keeping with the Earth's carrying capacity. Such approaches are best developed from an interdisciplinary perspective that embraces knowledge, values, social organization, technology, and the natural resource base.

Economy

... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.

—John Maynard Keynes

Like other policies, economic policy is shaped not only by events but also by the prevailing intellectual environment. Following the successful reconstruction of Western Europe after the Second World War, hopes for rapid development were extravagantly high and political leaders and professional development economists alike saw underdevelopment as a temporary and primarily material problem to be solved by increasing investment in capital goods to promote industrial development. An important factor in this endeavor was development assistance.

Until the late 1960s, therefore, economic growth was the sole aim of economic policy. It was also widely believed that the spread of welfare would automatically follow growth through the trickle-down effect and, accordingly, need not be considered in the formulation or implementation of economic policy. Although economic growth did improve the lot of the poor in many developing countries, however, it became apparent that the distribution of welfare in a society depends more on the structure of the economy, which does not necessarily change as a result of favorable growth rates.

Environmental degradation is an iatrogenic disease induced by economic physicians who treat the basic malady of unlimited wants by prescribing unlimited growth. We experience environmental degradation in the form of increased scarcity of clean air, pure water, relaxed moments, etc. But the only way the growthmania paradigm knows to deal with scarcity is to recommend growth. Yet one certainly does not cure a treatment-induced disease by increasing the treatment dosage.

—Herman Daly

Despite a mounting debt burden and the first oil crisis (1973–1974), which saw the price of raw materials fall, economic growth in developing countries was nevertheless still favorable throughout the 1970s. However, skepticism about growth as the sole measure of development mounted in developed countries because of growing poverty, unemployment, and income inequality. The growth objective was therefore joined by increased employment, redistribution of welfare, and the satisfaction of basic needs. These ideas, however, were not well received in developing countries because they threatened to divert attention from the perceived need to reduce inequalities between countries, and from the developed countries' joint responsibility in this enterprise. At the end of the decade, moreover, the second oil crisis (1979–1980) provoked a deep economic recession in developed countries and a further drop in the demand for raw materials, which had already been in structural decline as a result of technological advances, stemming from greater efficiency and recovery of used products, and the emergence of substitutes. Many countries experienced swingeing adjustment programs. More people than perhaps ever before suffered falling standards of living because of the forced reductions in government spending, elimination of food subsidies, devaluations, and privatizations.

The 1980s were overshadowed by the debt crisis and structural adjustments but also witnessed a reassessment of the market mechanism and the role of the private sector, and important steps towards the liberalization of the world economy. East and South-East Asian countries were the only developing countries able to achieve more rapid growth than that experienced in the 1960s, largely because they managed to stabilize their economies (low inflation, realistic exchange rates, control of government spending), implemented adjustment programs, and therefore attracted more development assistance. Because of the retreat of central planning in the 1980s and the apparent success of East Asian countries, there is now a desire for less government control, financial sector liberalization, more private enterprise, more autonomy for government-owned enterprises, and more reliance on competition.

The breaching of the Berlin Wall on 9 November 1989 symbolized the end of the Cold War. With the fading of the political dividing lines in the world, this current has changed the intellectual environment for economic policy. There are now signs of a world order geared to economic performance, and of a division splitting the South and the East into front runners, those of intermediate pace, and stragglers. The front runners are those countries whose economies feature high levels of technical innovation in products and production processes, and in methods of organizing production, distribution, and marketing. Those of intermediate pace are the countries whose economies will certainly not lead the field, but which will have sufficient comparative advantages in certain sectors to derive a measure of benefit from their activities. The stragglers are those countries whose economies do not have enough inherent vitality to stay the pace. With the end of the Cold War, the political relevance of the latter has waned and they are being left more to their own devices.

To complicate this problem, however, there is ample evidence to suggest that development does not work when attention is focused exclusively, or even primarily, on economies. Until the 1990s, the reigning worldview that economic growth deserves highest priority because it is connected with the provision of basic needs went almost entirely unchallenged. Not only was it assumed that the development of economies should be the central preoccupation of public policy, but most corporations, governments, and international institutions exerted all their efforts to this end: societal goals became synonymous with economic goals, e.g., material production and consumption, investment, productivity, growth, and profit. Those favoring societal goals now contend that culture, defined as the total way of life of a people or society, should be the focus of future developmental activity because it is concerned with the entire spectrum of human needs, as well as mankind's relationship with the environment.

Some of the less appealing consequences of the Western economic miracle are also condemned. They include pollution and destruction of the global ecosystem; exploitation and exhaustion of renewable and nonrenewable resources; and satisfaction of the materialistic demands of the few at the expense of the many. Not only is the environment increasingly polluted and incapable of generating the resources required to support a rapidly expanding population, but the economic system as a whole fosters the interests of a small group of countries to the detriment of others. Thus, despite the appreciable gains that have been achieved in industry, agriculture, commerce, health, education, and technology as a result of placing economics and economies at the center of public policy and decision-making, these accomplishments have been offset by the numerous inequalities, inequities, and injustices which exist in income distribution, as well as by the colossal damage being inflicted on the environment.

Society

Unlike plagues of the dark ages or contemporary diseases we do not understand, the modern plague of overpopulation is soluble by means we have discovered and with resources we possess. What is lacking is not sufficient knowledge of the solution but universal consciousness of the gravity of the problem and education of the billions who are its victim.

—Martin Luther King, Jr.

Mortality started to decline in Europe and North America about two hundred years ago. In the developing countries, enormous reductions in child mortality occurred between 1960 and 1990, mainly through the prevention of infectious diseases but also through improved nutrition. The factors that have been important in the decline of mortality are income growth, improvements in medical technology, and public health programs combined with the spread

of knowledge about health. However, death control without birth control has sparked a population explosion.

Two hundred years ago, there were about one billion people on earth. The second billion was added over the next 130 years; the third in 35 years; the fourth in 15 years; and the fifth in just 10 years. The population of the world, now at 5.7 billion, is expected to reach 6.3 billion in 2000. Each year, it increases by almost 100 million. It was once forecast that the world population would settle at about 10.2 billion by 2100; this estimate has now been revised to 12 billion. More than 90% of this growth is occurring in developing countries, where death rates have been falling without commensurate declines in birth rates, and much of the population increase will be in cities, as it has been in the past.

The age structure of population in developing countries also gives ground for deep concern. This population contains more children who have yet to reproduce than it does adults (the mean proportion of the population under 16 years of age in developing countries ranges from 40 to 50%). With age structures so heavily skewed toward the young, the obvious conclusion would be that, when these children move up to reproductive age, the population will grow rapidly. Without birth control and with low death rates for children, this will be true. Moreover, the age structure of the population provides a measure of the economic impact of the population. The dependency ratio, the ratio of people over 65 and under 15 years of age to the rest of the population, indicates the proportion of the population that contributes little to the economy and must be supported. A high dependency ratio is a fearful burden on the economy. It is now increasing in most countries.

The worldwide economic slowdown experienced since the late 1970s and population growth mean that incomes have declined in many countries. More than one billion people, or one fifth of the world's population, live in poverty. Between 700 and 800 million are in Asia and about 500 million of them live in absolute poverty. It is now accepted that economic growth is by itself not enough for reducing poverty. Governments must also promote employment and offer poor people the opportunity to acquire skills, health, and the information they require to improve their lives. The proportion of people living in poverty can be reduced if there is, among others, broad-based economic growth; a firm government commitment to reduce poverty; an institutional capacity to design and follow through on appropriate policies and programs; good public sector management that minimizes unproductive expenditures; and a strengthening of essential services, e.g., primary education and vocational training, preventive health care, family planning, nutrition, clean water, sanitation, and rural infrastructure. None of these are easy to achieve.

Population growth adds to the need for employment and livelihoods, which exerts additional direct pressure on the environment. It also increases the demand for food, drinking water, and sewage and solid waste disposal, as well as for some energy-intensive products and services such as

transportation. To the extent that per capita incomes rise and practices remain unchanged, such demand will be exacerbated. Excessive demand for natural resources from a rapidly increasing population leads directly to environmental degradation as economic, social, and political systems fail to keep pace with demands. In rural areas, inequitable land distribution obliges the poor to survive on marginal lands, causing erosion and other environmental problems. To survive, the poor tend to use the resource base to derive the quickest benefit: this is an action forced on them by poverty that can only be rationalized if our understanding is located in the concerns of the poor.

One way or another, population growth will slow down because many developing countries simply cannot sustain their escalating numbers. It will happen through family planning and development, or by famine, disease, and war brought about by collapsing economies. The risk to future generations would be less and the options would be greater if population growth were to cease sooner rather than later. The longer population growth continues, the more committed all countries become to a particular set of problems: more rapid depletion of resources; greater pressures on the environment; more dependence on continued rapid technological development to solve these problems; fewer options; and perhaps continued postponement of the resolution of other problems, including those resulting from past growth. The sooner population growth ceases, the more time humanity has to redress the mistakes of past growth, the more resources it has to implement solutions, and the more options it has to decide how it wants to live in the future.

Environment

Here is your country. Cherish these natural wonders, cherish the natural resources, cherish the history and romance as a sacred heritage, for your children and your children's children. Do not let selfish men or greedy interests skin your country of its beauty, its riches or its romance.

—Theodore Roosevelt

Until recently, it was thought that developing countries could postpone environmental improvements while awaiting economic growth. Better understanding of the complex linkages between the environment and economic growth now underscore the urgent need to devise new approaches for dealing with the former in order not to derail the latter. This need has been intensified by increasing environmental degradation in even the wealthiest of developing countries and by the realization that the well-being of developed countries can be significantly affected by activities in the developing world. The fear is that continued population growth and economic growth, along with the energy-intensive and materials-intensive consumption patterns they bring, will aggravate environmental degradation in developing countries.

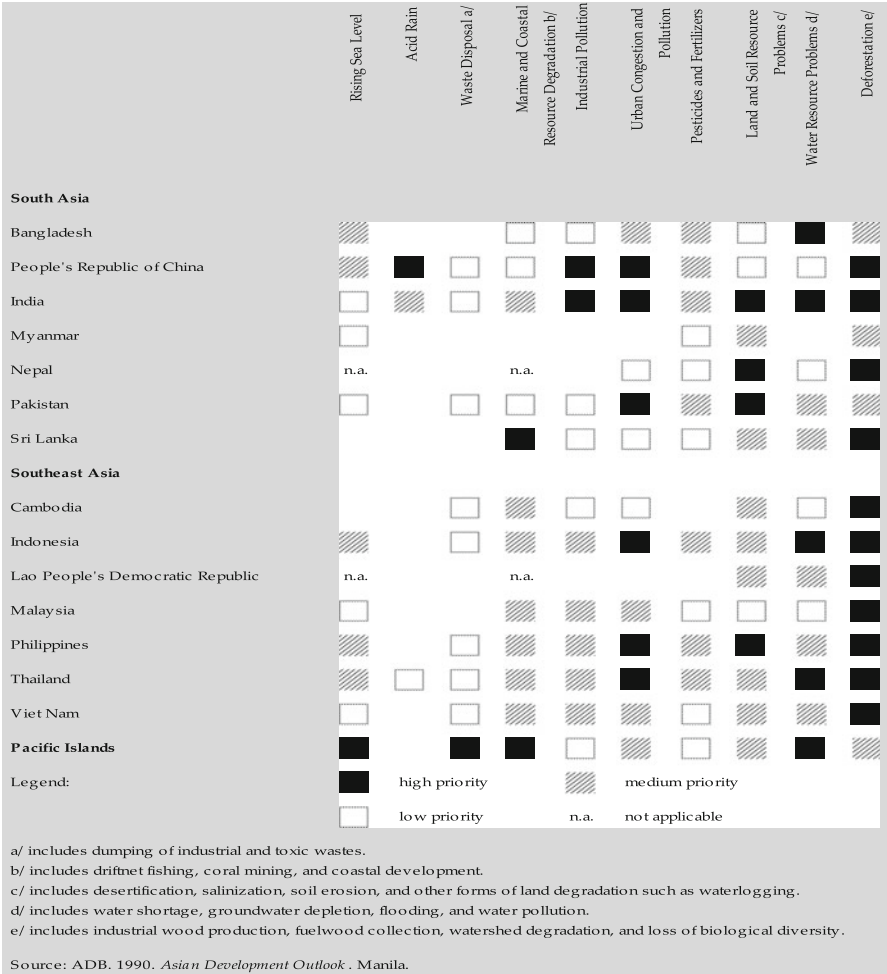


Fig. 26.1 Relative significance of resource and environmental issues in selected developing member countries of ADB

As a remedy to life in society I would suggest the big city. Nowadays, it is the only desert within our means.

—Albert Camus

There is a basis for such fear, although environmental problems should not be viewed solely through the lens of the developed countries’ preoccupations. The Asian and Pacific region contains the world’s fastest growing and most dynamic economies. The unprecedented growth of the region is expected to

continue. However, growth rates though high are derived from low levels of per capita income, so that demand for goods and services will continue to grow, and the rapid industrialization of the region is said to be one of the dirtiest ever. Continuing high population growth rates are exerting great pressure on the environment. Poverty is rampant and more than two thirds of the world's 1.2 billion people living in poverty reside in the region. Urbanization and industrialization, resulting in high levels of pollution, also create other adverse environmental and social impacts. Policy and market failures are many. Institutions are weak and absorptive capacities uncertain. By the end of the twentieth century, the Asian and Pacific region will contain 12 of the world's 21 megacities.

The relative importance assigned to resource and environmental issues in selected developing member countries of the Bank is presented in Fig. 26.1. Although environmental problems were once considered to be limited to those resulting from urbanization and industrialization, the figure reveals they now include air and water pollution; land degradation; soil erosion; desertification; deforestation; loss of biological diversity; greenhouse gas emissions, which contribute to global warming; acid rain; urban pollution; and toxic and hazardous wastes.

Interactions between the environment, population growth, and economies have continual, complex, and multiple feedback mechanisms that are difficult to identify and understand. This has implications on the balance of actions to resolve problems. Uncertainty centers on how physical processes will respond to human intervention, how people will react, and how institutions will change in response to policy initiatives. Because the environment can no longer be looked upon as an area of marginal concern best addressed by the expertise of natural scientists, social scientists now find themselves called upon to provide both an analysis and prescriptions for environmental problems. Economics, once again, makes strong claims for its abilities to contribute to the environmental policy debate.

From an economic perspective, nature performs three main functions. First, the environment is a resource base comprising renewable and nonrenewable resources. It provides the economy with both raw materials, which are transformed into consumer products by the production process, and energy, which fuels this transformation. Ultimately, all these raw materials and energy are discharged into the environment as waste products. From this, it follows that the environment also acts as a waste sink, which refers to the environment's regulating or stabilizing function, including its capacity to process waste products. Last, the environment also serves as an amenity base whose services, e.g., recreational facilities, flow to individuals without the intermediation of productive activity.

We are being made aware that the organization of society on the principle of private profit, as well as public destruction, is leading both to the deformation of humanity by unregulated industrialism, and to the exhaustion of natural resources, and that a good deal of our material progress is a progress for which succeeding generations may have to pay dearly.

—T.S. Eliot

On the basis of this model, economics promises and often delivers predictions to policy-makers aimed at environmental management. However, it ignores the environment's primary function as a life support system; ascribes little or no value to the three economic functions it recognizes; allows substitution between natural and produced capital even though the former is multifunctional and sometimes irreplaceable; provides no guidelines for approaches to environmental uncertainty; and cannot answer questions regarding the equity of resource use across people and through time (intra-generational and intergenerational equity objectives). If, as generally agreed, sustainable development is economic development that endures over the long run; economics must resolve these issues before it can really help society to attain the goal of sustainability.

Economic frameworks and methods, however, are founded upon an a priori commitment to a particular model of human nature and social behavior. At the close of the twentieth century, the traditional growth ethos that inspired and sustained developed countries for several centuries, and which most developing countries have sought to emulate, has become counter-productive. The planet's physical endowment does not accommodate this expansionist worldview. Instead, it is experiencing negative growth, resource domination, environmental degradation, and species elimination. In short, society and the environment are experiencing forms of development that can no longer be sustained. It is therefore worth examining the underlying social commitments that determine the way we use the environment and the cumulative social impacts of individual choices.

Agriculture

During the 1950s and the 1960s, extreme interest in the development of industry naturally led to the neglect of agriculture. Although agriculture was the mainstay of the majority of developing countries, accounted for the major share of their national product, and employed the bulk of their labor force, rural areas were considered to be no more than sources of labor and a few primary products and markets for industrial goods. Investment in agriculture was low and government funds earmarked for the sector went primarily to the

more modern farms producing for export and to parastatal enterprises. Foreign currency earnings from the export of agricultural products served to finance industrial investment in and around the towns. Excessive duties on exports of agricultural products did not lead to reinvestment in agriculture and overvalued exchange rates made the import of agricultural products financially attractive. Having once exported food, many developing countries became net importers. The low regard in which the agricultural sector was held was due, *inter alia*, to the urban bias of policy-makers and professionals in the developing countries and to an incorrect assessment of the opportunities for increasing agricultural production, which only began to emerge in the 1960s, initially through the Green Revolution. It was reinforced by the early concentration of development assistance on infrastructure and energy, and by the domination which engineers and economists exerted in multilateral development banks and aid agencies.

The word agriculture, after all, does not mean “agriscience,” much less “agribusiness”. It means “cultivation of land”. And cultivation is at the root of the sense both of culture and of cult. The ideas of tillage and worship are thus joined in culture. And these words all come from an Indo-European root meaning both “to revolve” and “to dwell”. To live, to survive on the earth, to care for the soil, and to worship, all are bound at the root to the idea of a cycle. It is only by understanding the cultural complexity and largeness of the concept of agriculture that we can see the threatening diminishments implied by the term “agribusiness”.

—Wendell Berry

The paradigm underlying the Green Revolution held that the first step in agricultural development was intensification of agriculture; the resulting increased productivity would supply labor and capital for initiation of other industries. Two key components of the Green Revolution directly reflect the industrial model. They are (i) the priority given to increasing production; and (ii) a belief in the neutrality of technology. The dominant assumption underlying the first component was that increases in production are the best way to solve the problems of hunger. The second key component in the Green Revolution involved a belief that the high-yielding varieties developed for wheat, maize, and rice were economically, socially, and politically neutral. Hence, the Green Revolution had a strongly technocratic element and there never was any intention to modify the economic, social, and political structures that maintain inequality of incomes and access to resources.

The impact of the Green Revolution is well documented. Agriculture became increasingly productive in many developing countries with crop yields increasing as much as three-fold. These yield increases have been attained through the use of large amounts of inorganic fertilizers and

pesticides. However, these dramatic increases in crop productivity have been accompanied in many instances by environmental degradation (soil erosion, pollution by pesticides, salinization), social problems (elimination of the family farm, concentration of land, resources and production, growth of agribusiness and its domination over farm production, change in rural/urban migration patterns) and by excessive use of natural resources. They have also led to a shrinking farm population, much larger farms and fields, and the production of a very restricted number of crops, often grown in monoculture or biculture. Moreover, the transfer-of-technology approach embodied in the Green Revolution has not worked well outside irrigated areas and is confined to about one fifth of all farmland in the Asian and Pacific region. The remaining areas are mainly rainfed, undulating areas found in hinterlands, mountains, hills, wetlands and the semi-arid, sub-humid, and humid tropics. In these areas, there has been a deepening crisis, with populations rising, land holdings becoming smaller, environments degrading, and per capita food production remaining static or declining. In the Asian and Pacific region, about 1 billion people depend on such agriculture.

To a large extent, rural life was also rearranged to suit the new technology. While the Green Revolution was underway, every aspect of agriculture and rural life was reassessed. Social institutions in rural areas were assessed in terms of their contribution, or presumed contribution since evidence was not always at hand, to agricultural productivity. At best, agricultural development occurred in spite of these social institutions; at worst, agricultural development required changes in these institutions since they were commonly thought to hold back development. A panoply of modern rural institutions was also created to provide technological packages; they were chiefly concerned with marketing, credit, the supply of agricultural inputs (seed and fertilizer), and extension advice. The small farmers who failed to take advantage of these institutions were characterized as resistant to agricultural change.

It is now finally realized, though, that one of the most important areas of difference between agriculture and the industrial model lies in the great contextual variability of agriculture (where climate, weather, soil, topography, resources, cultural, social, and institutional variations all profoundly affect its viability) as opposed to industry, where the universalism and rationalism of modern science and technology encourage blueprint approaches whereby local variation can be fitted, although not easily, to the design. It is, belatedly, accepted that the contemporary challenges of agriculture in developing countries are not technical since development projects emphasizing capital-intensive, high-input technologies (mechanization, agrochemicals, imported seeds) are in many instances proving ecologically unsound and

socially inequitable by mostly benefiting a small portion of the local populations. The challenges are, increasingly, socioeconomic and environmental. Thus, in the 1990s, rural development includes two new but crucial dimensions: the ecological management of agricultural resources; and the empowerment of rural communities into actors of their own development.

Intersectoral Constraints, Imperatives, and Linkages

If you ask an economist what's driven economic growth, it's been major advances in things that mattered—the mechanization of farming, mass manufacturing, things like that. The problem is, our society is not organized around doing that.

—Larry Page

Poor living conditions and impoverishment, the importance of a certain level of food provision and of agriculture in general, the imperative of providing employment for growing numbers of people, and the need to stem the exodus to the cities all explain why concern for rural areas needs to occupy a central place in the theory and practice of development. For most of the poorer developing member countries of the Bank, agriculture is the principal means of livelihood for the majority of the population although its contribution to gross national product and exports is declining in importance. For many small farmers, it is a way of life. It plays a crucial role in ensuring food security and, if neglected, compromises the main natural resources upon which these countries depend. Of all the economic sectors, agriculture alone can simultaneously contribute to the achievement of all of the Bank's strategic development objectives, e.g., reducing poverty, supporting human development, protecting the environment, improving the status of women, and promoting economic growth. To develop an effective strategy aimed at overcoming obstacles to progress in its developing member countries, the Bank must act more decidedly in the agricultural sector. However, the background against which social, political, and economic action must be based is extremely complex and transcends sectoral boundaries. It relates, *inter alia*, to food production (including land resources), water resources, and forest and energy resources. The Bank first needs to come to grips with such intersectoral constraints, imperatives, and linkages in a coexistent and mutually supporting manner. All the while, its understanding of interrelationships should also be founded on recognition that development is sustained by economic ideology rather than resources.

Food Production

The total population in the Asian and Pacific region is projected to grow from 2.6 billion in 1985 to 3.4 billion in 2000 and 4.4 billion by 2025. This

growth assumes that the current annual growth rate of about 2.1% will slow to 1.9% by 2000 and fall further to 1.1% by 2025. Despite lower population growth rates, however, an additional 350 million and 1.5 billion people will have to be fed by 2000 and 2025, respectively, bearing in mind that approximately 50% of the current population are still below the poverty line and more than 300 million are chronically malnourished. According to the Food and Agriculture Organization, food production is projected to increase at 3% per annum to 2000, slightly below demand, thus making the region a net importer of food. Import requirements will become more substantial or average food intake will decline if assumed food production increases are not realized.

The key constraint on the supply of food meeting demand is reduced availability of arable land. Cropping intensities already average 108% and there is little room for expansion, especially when losses of arable land to urbanization and degradation are taken into account. Sizable land reserves now exist only in Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, and Myanmar. Apart from problems of land availability as such, much land in South and South-East Asia, estimated at 85%, is affected by shallow and poor soils, steep topography, low water holding capacity or impeded drainage, or seasonal drought and flooding. Moreover, land degradation continues and substantial parts of arable land in Bangladesh, the People's Republic of China, India, Nepal, Pakistan, and Thailand are affected by water and wind erosion, salinity, or flooding.

Irrigated areas are by far the most productive with an output several times higher than non-irrigated areas due to double or even triple cropping and higher yields per crop. This has been a major factor behind the Green Revolution together with high-yielding varieties and inputs of fertilizer and other chemicals. However, irrigation has not been without problems due to faulty design and management leading to waterlogging, salinity build-up, and decline in soil fertility. Moreover, even high-yielding varieties developed for favorable conditions appear to have reached a yield plateau and raising yield levels will require further strategic breeding.

Whether food requirements scenarios turn out to have been conservative or exaggerated, the additional output required will in any case be so large that a major part of the incremental requirements will have to be met from irrigated land and rainfed land under favorable production conditions. This can, hopefully, be done by closing the yield gap still available in the fields of inefficient farm operators and possibly through new plant types or hybrids with still higher yield potentials. There can be no doubt, however, that irrigation investment, through rehabilitation and improvement of existing schemes and new irrigation development, will have to play a major role.

Water Resources

Water has no taste, no color, no odor; it cannot be defined, art relished while ever mysterious. Not necessary to life, but rather life itself. It fills us with a gratification that exceeds the delight of the senses.

—Antoine de Saint-Exupéry

The capacity to control water supplies for human purposes has increased markedly. But as water development has expanded, the opportunities for adding to water supplies have declined, the economic and environmental costs of new supplies have risen sharply, and the threats to supplies from pollution and groundwater depletion have mounted. Demand for water has continued to grow with increases in population and incomes. Yet, despite this rising demand and the increasing scarcity of supplies, fresh water is commonly treated as a free resource.

By far the largest use is irrigation, which commonly accounts for about 70% of all water withdrawals. Generous subsidies and institutions that ignored some of the costs associated with agricultural water use fostered the growth of irrigation throughout the world until the 1980s. In the Asian and Pacific region, the area of land irrigated increased from about 85 million hectares in 1966 to about 137 million hectares in 1991, an overall increase of about 60%. However, rising water costs, high government debt burdens, loss of arable land to urbanization, increasing competition for scarce water supplies, and growing awareness of environmental problems are forcing some previously irrigated lands out of production. Many developing member countries of the Bank now experience water shortages.

The demands for water and the services it provides will continue to grow in the future. As water becomes increasingly scarce, however, pressures will mount to develop additional supplies, to improve management of existing water supplies, and to transfer water from agriculture to other uses. In the short term, this underscores the need to use prices as a mechanism to achieve appropriate water allocations and to ensure efficiency. However, since the provision of irrigation and drinking water also follows social inequalities, it will be important not to reinforce inequalities in distribution during the ensuing reallocation of water resources, and to strive to reduce them.

Forests and Energy Resources

What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another.

—Mahatma Gandhi

Tropical deforestation is now a pressing environmental and developmental issue. Loss of tropical forests diminishes biological diversity, contributes to climate change by releasing stored carbon into the atmosphere, and often results in serious land degradation, sometimes rendering land unfit for future agriculture. Of the three tropical regions, Asia's rate of deforestation is the highest (1.2% per annum over the period 1981–1990), followed by Latin America (0.9%), and Africa (0.8%). Incentives to cut trees will remain strong.

Of special concern is the fuelwood crisis: fuelwood accounts for a large proportion of all energy consumption in many Asian countries. Even in countries with large industrial sectors, fuelwood dominates the life of rural inhabitants. For example, wood accounts for only a third of India's total energy consumption but, together with dung and crop wastes, meets over 90% of rural dwellers' energy requirements.

According to the United Nations, measures that need to be taken if the fuelwood crisis is to be resolved include a fivefold increase in current levels of tree planting, improvement of fuelwood distribution networks, and the adoption of better conversion technologies. At the same time, however, there must be a pragmatic realization that societies are dynamic. Remaining forests will not, therefore, remain intact. Attempts to solve forest problems cannot succeed if they remain confined to the simple trade-off between "deforestation" and "saving the forest", since forests can and should perform a variety of economic, social, and environmental functions. With some exceptions, forests must be used, not merely preserved or liquidated. Accordingly, decisions regarding which forests are to be used, by whom, how, and when will greatly influence forestry resources in the twenty-first century.

Building Blocks for a Strategy

There are distinct polarities between the traditional goals of modern, or economic, agriculture, and the new social and ecological goals to be set. The strategic development objectives of the Bank are relevant to the challenges of the 1990s and beyond but the Bank needs to equip itself with the conceptual framework necessary to redirect its interventions in agriculture. This requires a different perspective on the issues at hand, new objectives for agricultural development, and the elaboration of fresh approaches and instruments. It is also necessary to enrich our store of knowledge in several areas.

A Perspective

Culture

Six needs, common to all people at all times and in all places, can be identified. They are (i) the need to make a living; (ii) the need for social organization; (iii) the need for law and order; (iv) the need for knowledge and learning; (v) the need for aesthetic expression; and

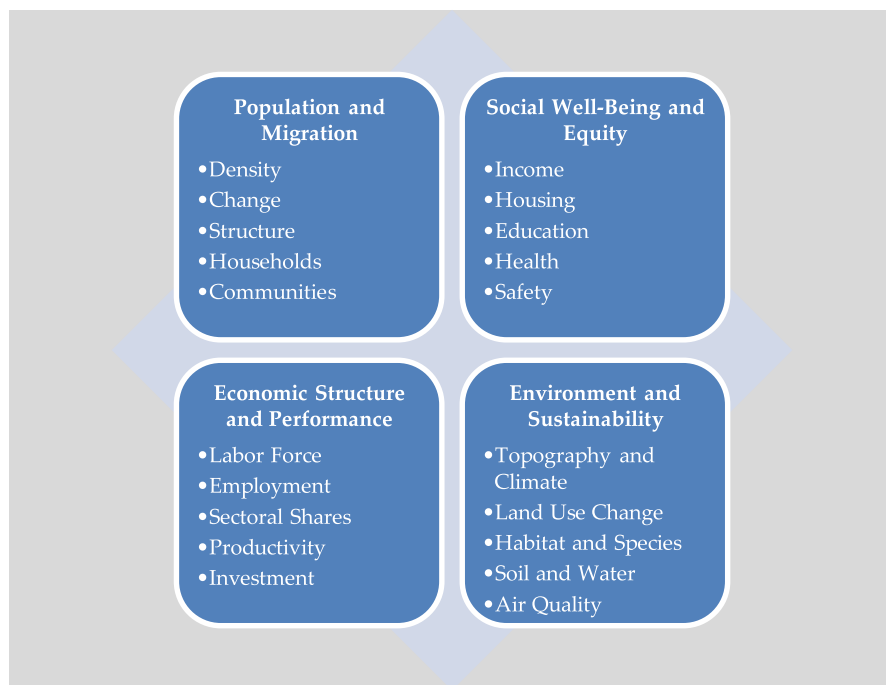


Fig. 26.2 Rural indicators: a basic set. *Source* Author

(vi) the need for normative and metaphysical expression. These cultural segments can be correlated with five areas that together make up a system of mutual vulnerability or, conversely, can become one of mutual sustainability. They are (i) the environment; (ii) the economy; (iii) the society; (iv) the polity; and (v) the culture. Culture is defined to include science and technology, values, goals, religion and philosophy, aesthetics, and patterns of behavior. This holistic perspective, englobing all six needs, does not lend itself to easy action. But there is considerable value in using this kind of approach to view societies as systems, with all segments of the pattern interlinked and interacting. Also, by focusing on the totality and innate worth of a given society, we can minimize the ethnocentric bias that results from our own cultural conditioning, a bias to which those from Western countries have been all too prone.

Culture is the widening of the mind and of the spirit.

—Jawaharlal Nehru

By paying simultaneous attention to all six needs, cultural theory makes it possible to focus attention directly on the whole as well as the parts, contexts as well as contents, values and value systems, and especially strategic relationships between key variables, countries, blocs of countries, and human beings and the natural environment. It allows informed choices and intelligent decisions to be made about the future. Schafer (1994) has explained that shifting attention from economies to cultures in this holistic sense could yield a number of theoretical, conceptual, and practical benefits which should be seized and exploited in the future. According to him, it would to begin enable us to deal more effectively with complexity and fragmentation because the emphasis would be on systems rather than parts of systems. Second, it would confirm the fact that the principal object and ultimate purpose of all development is to build cultures, not economies. Third, it would also help to ensure that economies are properly contextualized, and pointed in the right direction. The reason for this is clear and unambiguous: rather than functioning as self-governing entities, economies would be constrained and enriched by the larger cultures and cultural contexts in which they are situated.

Rural Development

It follows that focusing attention on cultures can provide a useful perspective on rural development and can help to illuminate the codes, maps, values, value systems, and worldviews held by large percentages of the world population. Rural development is a complex, multisectoral concept. Partly because previous attempts were not properly contextualized and were simply aimed at the fulfillment of economic needs at the expense of non-economic needs, the experience of development assistance to rural development has often been disappointing, particularly in the case of integrated rural development projects. In many instances, the latter were divorced from the grass roots, or were too short-lived or complicated to be sustainable after project completion. On the whole, therefore, the main beneficiaries of integrated development projects have not been the poorest farmers, but those best able to exploit market opportunities. Benefits have also tended to be concentrated in provincial towns, rather than deprived rural areas, and confined to improvements in rural infrastructure which came about in uncoordinated fashion. However, integrated multisectoral programs are often the cheapest and most cost-effective approach for reaching a large number of low-income families. Recognition of the need to incorporate the macro components of culture into rural development projects can answer many of the criticisms leveled at integrated rural development

projects if a decision is taken to extend political and economic support to the rural areas.

Rural conditions and trends can only be described by using a comprehensive set of rural indicators. Figure 26.2 presents a simplified set of rural indicators with which to gauge four main rural development concerns. These are demographic, economic, social, and environmental. Increasingly, Bank interventions for rural development will have to be based on detailed analyses of rural problems and perspectives to complement the information contained in basic sets of rural indicators, and to more fully reflect the many dimensions of development of significance to the developing member countries of the Bank. This will require an awareness of both the technical side of agriculture and cultural dimensions at various levels within rural society, e.g., the household, the village, and the regional levels. An approach which considers the system as a whole will provide the perspective required. It is, however, only the first step: it is also necessary to fully understand and actively promote sustainable agricultural systems since they are immediately concerned with livelihood.

From Agriculture to Sustainable Food Systems

The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.

—Rachel Carson

Most of the successful breakthroughs in productivity since the Green Revolution have occurred in resource-rich areas and involve intensive use of irrigation water and modern inputs such as fertilizers, pesticides, and improved seeds. These areas are by far the most productive areas, with an output several times higher than non-irrigated areas due to double or even triple cropping and higher yields per crop. However, high-yielding varieties developed for favorable conditions appear to have reached a yield plateau and irrigation has not been without problems. On the other hand, a large share of the Asian and Pacific region's growing population lives in resource-poor areas with agricultural potential but limited and unreliable rainfall as well as fragile soils. The land in these areas is often degraded and deforested. Outmigration, where possible, will only transfer poverty and population pressures to already congested urban areas and rural areas with better natural resources and is not a long-term option. Failure to stabilize agricultural and natural ecosystems within resource-poor areas will accelerate degradation of natural resources and increase poverty, food insecurity, and malnutrition.

Promoting sustainable agricultural systems in these areas is therefore the only viable way of preserving livelihoods and requires a distinct set of policies, technologies, and investments embodied in the proper cultural setting.

Yet one need not be forced into the debilitating debate between agriculturalists and environmentalists over the meaning of sustainable agriculture in high and low potential areas. In some regions, agriculturalists are justified to argue for a higher use of modern inputs. In others, a lower use of modern inputs is required and it is more appropriate to preserve traditional farming techniques suited to the local environment and the circumstances of resource-poor farmers. In other regions still, neither group is entirely correct. The key to moving the argument forward is to recast it in a region-specific and politically aware form that emphasizes the vastly different circumstances of farmers in different parts of the Asian and Pacific region. Conceiving of different agroecological zones, each with a different sustainable potential, effectively removes the somewhat artificial and recent distinction between resource-rich and resource-poor areas.

To the extent possible, agriculture must conform to the principles of (i) ecological efficiency; (ii) use of complementary technology; (iii) no unnecessary use of animals; and (iv) embodiment in a proper cultural setting. Increasingly, it is recognized that indigenous systems of food (and fiber) production are not irrelevant or detrimental to development. They can provide workable models of how to achieve sustainability and a greater measure of equality without doing irreparable damage to the environment.

According to Dahlberg (1994), transition from modern agricultural production to sustainable food systems is a critical element of sustainability. He notes that most societies are now facing global limits and the resulting collisions threaten the life-supporting capabilities of the biosphere, which in turn threatens societies. The same applies to modern agricultural production, which endangers societies mainly through linkages between fossil fuel use and global climate change; the explosion of livestock populations; loss of cultural and biological diversity; and the growth of income inequality.

To move from modern agricultural production to sustainable food systems, we need to (i) restructure and decolonize agriculture, forestry, and fisheries; (ii) maintain and enhance indigenous and traditional food systems; and (iii) build regenerative, localized food systems. To restructure and decolonize agricultural regimes, it is necessary to internalize the social and environmental costs of modern agricultural production. It is also essential to rethink the nature of trade, restructure trade regimes, and broaden the types of negotiators involved in trade policy. Other measures include changes to social

frameworks, including property rights and political and tax reforms. Indigenous and traditional food systems are also reservoirs of both cultural and biological diversity. Their maintenance depends on developing a greater appreciation of their values, and finding ways to institutionalize systems approaches to agriculture and natural resources research, and to policy making. However, work on indigenous and traditional food systems is still limited and more information must be gathered about their cultural, social, economic, and ecological dimensions. Greater self-reliance must also be built at all levels. This requires a shift from economic and production criteria and, *inter alia*, a move toward bioregionalism, landscape ecology, and urban agriculture.

An Approach

There is this hope, I cannot promise you whether or when it will be realized—that the mechanistic paradigm, with all its implications in science as well as in society and our own private life, will be replaced by an organismic or systems paradigm that will offer new pathways for our presently schizophrenic and self-destructive civilization.

—Ludwig von Bertalanffy

Increasingly, planning, development and management of water resources is decentralized to an appropriate level responding to basin boundaries. Similarly, there is a need to approach rural communities at an intermediate level between farm systems approaches and the macroeconomic analysis that now considers the world as a global village. Ecoregions may be considered as systems with well-defined boundaries within which farms and other elements and their interactions take place. They should form the basis of investigations under the third Asian Agricultural Survey (AAS-III). The intention, however, should not simply be to maximize agricultural production based on ecoregional studies that explore possibilities at the regional level. This is because agroecosystems are not strictly determined by biotic or environmental agents and social factors such as a collapse in market prices or a change in land tenure can disrupt agricultural systems as decisively as drought, pest outbreak or soil erosion. The perspective of AAS-III should therefore incorporate ideas about a more environmentally and socially sensitive approach to agriculture that moves away from an agricultural commodity focus and considers agricultural systems as human artifacts.

There is a need to approach rural communities at an intermediate level between farm systems approaches and macroeconomic analysis. Agroecological regions should form the basis of investigations under AAS-III

to explore options for development and present a menu of strategic decisions. Attempts to enhance the sustainability of agriculture must move beyond simply addressing production constraints and must give careful attention to the underlying causes of unsustainability. This requires an understanding of the biophysical and socioeconomic interactions from a systems perspective in each major agroecological region. These comprise (i) drylands and areas of uncertain rainfall; (ii) hill and mountain areas; (iii) humid lands; and (iv) irrigated lands.

The studies carried out under AAS-III would assess the socioeconomic importance of each agroecological region, identify the main indicators of unsustainability, formulate strategic options and propose strategic objectives. The agricultural and natural ecosystems defined by each region include (i) pastoral systems; (ii) extractive systems, e.g., forestry; and (iii) exploitative systems, e.g., irrigated agriculture and cropping on marginal lands. The strategic options formulated and the strategic objectives proposed would relate to the agricultural systems relevant to each region.

The Challenge

Your corn is ripe today; mine will be so tomorrow. 'Tis profitable for us both, that I should labor with you today, and that you should aid me tomorrow. I have no kindness for you, and know you have as little for me. I will not, therefore, take any pains upon your account; and should I labor with you upon my own account, in expectation of a return, I know I should be disappointed, and that I should in vain depend upon your gratitude. Here then I leave you to labor alone; You treat me in the same manner. The seasons change; and both of us lose our harvests for want of mutual confidence and security.

—David Hume

Based on such an approach, the challenge would be to propose in each case interventions that (i) reduce the vulnerability of the agricultural sector to adverse natural and socioeconomic factors and other risks, and strengthen self-reliance; (ii) maintain and where possible enhance the productive capacity of renewable resources, without disrupting the functioning of basic ecological cycles and natural balances, destroying the sociocultural attributes of rural communities, or polluting the environment; (iii) meet the basic nutritional requirements of rural communities qualitatively and quantitatively while providing a number of other agricultural products; and (iv) promote durable employment, sufficient income, and decent living and working conditions for all those engaged in agricultural production.

After Conway (1985), these criteria suggest that agricultural systems should be assessed on the basis of four properties: (i) productivity (measured in terms of yield or net income); (ii) stability of yield or net income; (iii) sustainability of yield or net income; and (iv) equitability in terms of income distribution. The properties are applicable in any of the four major agroecological zones and relate to the propensity of an agricultural system to withstand collapse under stress. It should be noted, however, that the four properties per se do not suggest what trade-offs should be made between characteristics when a choice is available or who should make trade-off judgments. However, an ex-ante assessment of rural conditions and trends using a cultural perspective should facilitate this exercise.

Agriculture and Natural Resources Research

It has become appallingly obvious that our technology has exceeded our humanity.

—Albert Einstein

The lessons of the Green Revolution demonstrate that technology alone cannot ensure sustainable development but also that agriculture and natural resources research has a role to play. Future research on high potential areas should be aimed at higher yields per hectare, at less cost, and in such a way as to conserve and not degrade natural resources and the environment. Such research should also take into account the socioeconomic phenomena that attend the release of new technology. Future research on areas with relatively lower potential should be aimed at higher yields per hectare, at very low cost, while making maximal use of indigenous resources, e.g., physical, biological, and human, on a sustainable basis. In addition, there is also greater scope for research that specifically focuses on poverty reduction, as well as on natural resources and environmental protection.

Poverty Reduction

A substantial segment of the Asia and Pacific region's population remains in poverty and more than half is found in the rural areas. As such, an important focus of agriculture and natural resources research needs to be on rural development. Rural development projects have often failed in the past but new research and new participatory approaches give hope that appropriate technology and methods can be found to promote successful development.

Technical change can have a positive impact on the poor and greater efforts must be exerted to harness technical change in effective ways to reduce

poverty. Accordingly, an agenda for agriculture and natural resources research that addresses poverty reduction in rural environments would, for instance, include (i) examining ways to attain each region's agroclimatic potential; (ii) redesigning crops and foods consumed by the poor to improve nutrients and dietary components; (iii) focusing major efforts on subsistence farmers, where most of the gains will be retained within the family; and (iv) targeting impacts by gender to ensure maximum effectiveness. While the targeting of agriculture and natural resources research carries risks, targeted research in the past has yielded positive outcomes. Moreover, the alternative of continuing growth-oriented agriculture and natural resources research of the more traditional variety has its own risks in that there is a growing concern that the resulting growth will not bring corresponding gains in the incomes of the poor.

In such research efforts, socioeconomic issues cannot be considered secondary to technical issues, and agriculture and natural resources research for poverty reduction would also include analyzing farming and natural resource exploitation systems in their complexity. In particular, research into the multidisciplinary social dimensions of these systems, whether crops, livestock, forestry and agroforestry, or fisheries, including gender-specific organization in different systems, provides scope for poverty reduction.

Natural Resources and Environmental Protection

But the sun itself, however beneficent, generally, was less kind to Coketown than hard frost, and rarely looked intently into any of its closer regions without engendering more death than life. So does the eye of Heaven itself become an evil eye, when incapable or sordid hands are interposed between it and the thing it looks upon to bless.

—Charles Dickens

The desire for food security has left its mark on the environment, sometimes permanently. Natural assets such as agricultural land, and surface and ground waters are being degraded. Degradation includes water and wind erosion, loss of soil nutrients, salinization, acidification, pollution, compaction, water logging, and subsidence. Most of these, but not all, result from inappropriate agricultural practices. Other natural assets which contribute to food security, such as forest lands and wildlife habitats, are being lost at unprecedented rates.

Given the present state of knowledge, the supplies of energy, land, water, climate, and genetic resources are insufficient to meet present and future

demands at acceptable economic and environmental costs. The implication is that meeting demands must be achieved by increasing the productivity of natural assets and rationalizing their use. This calls for a substantial increase in the body of knowledge and agriculture and natural resources research will have to focus more on technologies and practices that are less dependent on irrigation and fossil fuels and more environmentally benign than those in use at present.

Gaps in fundamental knowledge which must be filled through agriculture and natural resources research include the scale and causes of land degradation; the potential of tropical forests for renewing themselves and supporting sustainable production; the potential effect of climate change; and technologies for renewable energy. Of certain interest to the Asian and Pacific region is research for agricultural intensification to reduce the pressure on forests. For example, opportunities for maintaining productivity on deforested land and so reducing pressures for additional forest conversion include continuous crop rotation, legume-based pastures, and agroforestry.

I would rather trust a woman's instinct than a man's reason.

—Stanley Baldwin

While there have been reservations concerning the effectiveness of targeting agriculture and natural resources research to contribute to rural development, such targeting can be effective within a relatively new framework of conceptual approaches that has been working in recent years. Some of the more important principles are:

- (i) *Local Communities* Competing demands for the dwindling stock of natural resources call for a careful consideration of alternative uses and appropriate economic pricing of resources. The clarification of ownership rights is often a key prerequisite for effective resource management. Accordingly, efforts should be made to use designs and technologies that acknowledge the role of local communities as the de facto owners and the only potentially effective managers of the scarce resources.
- (ii) *Indigenous Technical Knowledge* Farmers possess an accumulated and mostly unwritten fund of knowledge concerning, for example, plants, soils, climate, seasons, and pests. This knowledge remains largely untapped and is largely ignored by formal research systems and conventional approaches to research. It has been ignored to the detriment of more rapid progress in solving the problems of resource-poor farmers in difficult environments. Greater recognition of indigenous technical knowledge in adaptive, farmer first, and farming systems approaches to agriculture and natural resources research should be encouraged.

- (iii) *Gender and Development* Agriculture and natural resources research to develop more effective farming systems in difficult resource environments should not be undertaken without the full involvement of farmers, who are the key to the adoption of new approaches. In this context, interaction with farmers involving steps such as on-farm trials and feedback between farmers and research stations should incorporate the role, needs, and objectives of women as full partners in finding solutions for farming systems. There is a strong need to take gender into account in research policy and to encourage research initiatives to improve farming systems that incorporate the role of women.
- (iv) *Market Information* There is a need to promote agriculture and natural resources research that has a sound basis relative to market needs. Incorporation of up-to-date market information can reduce the failure rate of new technologies, and enhance the efficiency of the research process.

Other Areas for Investigation

Other important areas for research and investigation include (i) new approaches to alternative agriculture in low-income countries; (ii) rapid urbanization and rural-urban linkages; (iii) challenges for sustaining the natural resource base while meeting future food demand; (iv) degradation and depletion of natural resources; (v) technological options and requirements for sustainable agriculture and rural development; (vi) indigenous and traditional food systems; (vii) bioregionalism, landscape ecology, and urban agriculture; (viii) social frameworks, including property rights and the political and tax environment; and (ix) the future of public agricultural organizations. One output from AAS-III would be the definition of strategic options for sustainable agriculture and rural development in major agroecosystems.

Fiscal Constraints, Capital Markets, and the Need for Rationalization

The role of the Bank, however, needs to be seen in the broader context of fiscal constraints in the donor countries and the rapid development of capital markets. The relatively recent expansion of capital markets means that funds are increasingly available to borrowers from sources other than the multilateral development banks. For a long time, of course, sizable bilateral assistance in the form of grants and loans has been available from the aid agencies of such countries as the United States and Japan. Because of its bilateral nature, however, such assistance has been extended according to the distinctive frameworks drawn by each donor country. Nevertheless, although bilateral assistance should not be neglected, the general ease with which private sector capital can be mobilized by borrowers is such that funds available from capital markets now dwarf multilateral development bank lending.

In the face of capital market development and the fiscal constraints associated with aid fatigue, the multilateral development banks must come to terms with the fact that the leverage they once enjoyed is rapidly decreasing and that they cannot, if they ever did, intervene across the board. In a similar vein, it goes without saying that the effectiveness of policy dialog, which has become an important Bank tool as reflected in the importance of program and sector lending in the Bank's portfolio, is directly related to the volume of the Bank's lending to any country and its relative importance.

The greatest evil that fortune can bring to men is to endow them with feeble resources and yet to make them ambitious.

—Marquis de Vauvenargues

The trends outlined above have deep implications for all the multilateral development banks. To continue to play a significant role, the Bank needs to rationalize its activities in the Asian and Pacific region. It may be trying to do too many things without the resources necessary. It has not established a recognized expertise in any particular area, though it has qualified and experienced staff in many. It must, first of all, assess those areas where it can have a truly catalytic role. This calls for reexamination of the sectors in which it is active and limitation of Bank interventions in sectors or subsectors where its activities are not crucial.

Source Author. 1996. Unpublished.

References

- ADB (2000–2001) A study of rural Asia. Manila
 Conway G (1985) Agroecosystem analysis. *Agricultural Administration* 20(1):31–55
 Dahlberg K (1994) A transition from agriculture to regenerative food systems. *Futures* 26(2):170–179
 Schafer DP (October 1994) Cultures and economies: irresistible forces encounter immovable objects. *Futures* 26(8):830–845

Further Reading

- ADB (2010) ADB: reflections and beyond. Manila

The opinions expressed in this chapter are those of the author(s) and do not necessarily reflect the views of the Asian Development Bank, its Board of Directors, or the countries they represent.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 3.0 IGO license (<http://creativecommons.org/licenses/by-nc/3.0/igo/>) which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the Asian Development Bank, provide a link to the Creative Commons license and indicate if changes were made.

Any dispute related to the use of the works of the Asian Development Bank that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the Asian Development Bank's name for any purpose other than for attribution, and the use of the Asian Development Bank's logo, shall be subject to a separate written license agreement between the Asian Development Bank and the user and is not authorized as part of this CC-IGO license. Note that the link provided above includes additional terms and conditions of the license.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

