

HUMAN, POLITICAL, AND INSTITUTIONAL CONSIDERATIONS IN INTERNATIONAL AGRICULTURAL DEVELOPMENT

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The theme chosen for this Symposium was "Technical and Non-technical Components of Agricultural Development." "You can't have one without the other," as the old song puts it. Oddly enough, though, when analysts discuss "the resource base for agricultural production," all too often they limit their entries to land, water, and energy and forget to include human resources. They neglect, with equal frequency, the political and institutional factors which condition the effectiveness of all these resources. Resource productivity is decisively affected in reality, of course, by the extent to which human minds, human organizational capabilities, and human determination can be mobilized for common ends.

In no way do I intend to downgrade the importance of technology by highlighting the role of nontechnical factors. The record of the past 30 years or so indicates, on the contrary, that improved technology is a prerequisite for increased food production. I am most familiar, because of my own experience with the technology of the Green Revolution which produced the high-yielding wheat and rice cultivars resulting in the dramatic increases in yields in India, Pakistan, the Philippines, Indonesia, and numerous other countries throughout the developing world.

Moreover, I believe we have only begun to meet the technological challenge in agriculture. The world is still far short of the technology needed to meet rising demands for food despite popular opinion to the contrary. The fact is the so-called "miracle seeds" are appropriate only for the most favorable physical, economic, and biological conditions. The next technological challenge is to develop superior technology to overcome an array of physical and biological production constraints which continue to limit food production in areas where millions of the world's most impoverished people live.

However, the "Green Revolution" has another lesson to teach in addition to the role of improved technology. This complementary lesson concerns the indispensable role that nontechnical factors play in bringing technology to fruition. The new cultivars performed markedly less well than had been expected when the new technology was placed in the hands of most farmers. Yields in production went up, but at the rate of a mere 3% to 5% annually, rather than at the rate of 10% to 20% or more that had been predicted. This gap was attributable in some measure to continuing technical problems, but the larger source of the problem lay in social, economic, political, and institutional difficulties that were not as simple to resolve.

These nontechnical factors can be looked at both from the point of view of the individual farm family, and from a broader national perspective as well. New technologies, in the farmer's view, may imply a higher degree of risk than seems advisable, or may require a larger cash outlay than is affordable. Or, they may require changes in social practices, or a new level of understanding, or dependable supplies of inputs that are all beyond the power of the technician to automatically bring about. Small farmers under the circumstances that now prevail in most poor countries, even with appropriate and available technology, can grow more food on their own small plots only if they are willing to work longer hours, if they are able to borrow money at high interest rates and, often, only if they also are prepared to turn over a large percentage of any increase they may achieve to their landlord who has not shared the initial risk. It may be hard, under these conditions, for farmers to decide which is better—success or failure. This set of problems will not be resolved

overnight, for their roots lie deep in well-established traditions, attitudes, practices, and vested economic interests.

These sociological factors at the national level are both reflected in and reinforced by national policies which concern what might be called the "social infrastructure" of rural development. These policies influence such sensitive social and economic matters as the extension of credit to small farmers, allocation of land and water rights, farm prices, trade and tax problems, and training of human resources at all levels. To summarize, we must take into account a surprisingly large number of factors in assessing the human, political, and institutional considerations which affect rural development overseas. I would like to single out 3 of these factors for further discussion, because of the especially important impact they have on the prospects for agricultural development. These are the importance of training human resources and of effective institutions, and the need for appropriate government policies.

The importance of human resources and institutions

The importance of developing human resources to increase agricultural productivity has long been recognized within our own country. The Morrill Act of 1860 established the U.S. system of land grant colleges, which formed the nucleus of a widely dispersed yet well-integrated system of research, extension, and teaching. This system also perpetuates the human resources base (that is to say, the pool of trained men and women) for all branches of the U.S. agricultural production system, from farms, to experiment stations, to research labs, to state and federal agencies.

So, too, in the developing nations, it is the *human* resource base—at least as much as the quality or quantity of available *physical* and other *biological* resources—that will make the difference between scarcity and plenty.

This reality has been rediscovered many times over by both the donors and recipients of foreign assistance. Officials from the Agency for International Development (AID) and other donor agencies commonly speak of a "lack of absorptive capacity" in countries where agricultural projects that looked promising on paper failed for lack of enough people with the requisite training to implement the plans. Even with the best of intentions and commitment, adequate financial resources, and a favorable natural resource base, no government can effectively use large amounts of money to expand agricultural productivity unless it has built up a corresponding depth of human and institutional resources.

Conversely, we have also rediscovered many times over that when investments have been made in fostering human capabilities, at the professional or managerial levels on down through the farm level itself, undreamed of agricultural productivity can be released.

India and Indonesia: case histories

I would like to take a moment to describe 2 illustrative cases where human and institutional development have had a tremendous payoff in terms of agricultural productivity. These cases also demonstrate the essential supporting role that external assistance can play in the realm of human resource development. First, I refer to the collaboration between India and a number of American universities, shortly after India won her independence in 1947. Six of our own land grant universities, at India's request, and with funding provided through U.S. technical assistance contracts, undertook a massive 20-year institutional building effort that resulted in the establishment of 9 new agricultural universities in India. More than 300 staff members from the 6 U.S. universities accepted assignments in India, while more than 1000 Indian faculty members and graduate

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students studied in the United States between 1952 and 1972. The dramatic advances of recent years in India's agricultural production could not have been made, according to leading Indian agriculturalists and educators, without this long-term training and institution-building campaign.

The story of one such institution, the University of Agricultural Sciences of Karnataka (formerly Mysore), demonstrates this process in microcosm. The staff of Karnataka, in close collaboration with agriculturists from the University of Tennessee, took what began as an organizational shambles and turned it into a set of integrated research, teaching, and extension programs which provided tremendous resources for development. Producers and consumers throughout the region soon began to benefit from the results. These efforts eventually led to a doubling of food production by the state, made the state a net food exporter, and enabled Karnataka State to rank first in India in the nutritional levels achieved by the population. Moreover, all of this was accomplished primarily in areas of marginal rainfall and on small farms.

The success of India's universities was complemented by those of the Indian Council for Agricultural Research (ICAR) which coordinates agricultural research for the whole of India. Among the more successful efforts of ICAR has been the establishment and implementation of all Indian coordinated trials for crop improvement, soil management, etc. These efforts have been influential in maximizing the exchange of information and plant materials from state to state, and between Indian and overseas organizations. ICAR is one of the more effective national research organizations in the developing countries.

The agricultural revolution which has taken place in Indonesia in the past 2 decades is a second case for institutional and human resource development. Indonesia emerged as an independent nation after World War II with a shockingly inadequately trained and educated work force. Furthermore, social and political upheavals prior to 1967 curtailed effective human resource development. In no sector were the inadequacies more serious than in agriculture.

U.S. universities were called upon once again to help. A consortium of mid-west institutions—Midwestern Universities Consortium for International Agriculture (MUCIA)—were invited to help develop Indonesian universities and institutes to educate and train Indonesians in agriculture and related fields. The results were phenomenal. Not only were the numbers of BS degree holders greatly increased, but hundreds of students were also sent to the U.S. for postgraduate studies. Soon, well-qualified Indonesians were able to take over university and government posts which had been held temporarily by expatriate nationals. Direction of university and government research programs is now clearly in the hands of Indonesians. The expatriate staff that remains serves in an advisory capacity.

Universities were not the only institutions developed to accelerate agricultural development in Indonesia. The Central Research Institute for Agriculture, located at Bagor, focused on research on food crops including vegetables. Later, the entire agricultural research effort was combined in a new Agency for Agricultural Research and Development. Comparable organizations have been set up to deal with extension, credit, and input supplies.

But merely calling attention to institutions by name does not tell the real story as to what has happened in agricultural development in Indonesia. I have personally witnessed a virtual revolution in the production of one crop, rice, over a period of 10 or 12 years. Most of the research on rice was being implemented under the general direction of expatriates when I first went to Indonesia in 1973. Young, inexperienced college graduates and some employees with only technical school training were doing the field and laboratory work. Dozens of potential leaders were engaged in overseas postgraduate studies, mainly in the United States. Rice production in Indonesia was about 14 million metric tons, and the improved, short-statured varieties were mostly from the International Rice Research Institute (IRRI).

This situation changed drastically during the 1970s. If you visit Indonesia today, you will find confident and capable PhDs in charge of research, not only in rice but in other crops as well. And they are not in charge in name only but are effectively planning and implementing their own programs. They continue to cooperate with

IRRI and other international and regional institutions but do so as true partners, not as recipients of technical assistance.

Indonesian rice production records attest to the effectiveness of this strengthened program. Some 12 million tons of rice were being produced in 1970. This was considerably less than was being consumed and forced the importation of rice from the United States, Thailand, and elsewhere. Indonesian rice production increased to about 22 million metric tons by 1981, essentially equal to the country's consumption level. Indonesia is self-sufficient in rice for the first time in recent history. This remarkable achievement is due not only to Indonesia's close cooperation with IRRI and other national rice research programs, but also to the educated and trained person-power that has been developed and to the effective institutions that are able to deal efficiently with problems of production and marketing of food products. Efforts are being made to duplicate the success in rice for other crops. Vegetables and edible legumes are among crops on which focus is being placed.

Agricultural extension

In all countries of the world, however, including our own, when the desired result is higher agricultural productivity, what takes place in classrooms and labs is only the beginning. The results must be transmitted to the farmers who must ultimately put new technology to use.

The World Bank has developed a form of extension service adapted specifically for the developing nations, using an approach which puts great weight on careful training and supervision of field workers. The results in terms of increased productivity have been extremely gratifying. For instance, this system was introduced in West Bengal in 1975 and helped to raise the proportion of land area planted with high-yielding wheat and paddy rice cultivars from less than 2% to 40% in a single year. This system has obtained similarly excellent results with other crops in other countries, as measured not only by higher yields but also by significant increases in the net profits earned by large and small farmers alike.

Moreover, it becomes clear that this is an unusually cost-effective investment when the costs of providing such agricultural extension services are considered. The World Bank calculates that the costs come to about one dollar per hectare per year. Benefits are estimated to be 0.5 to one ton of rice, worth about \$60 to \$120 per hectare. The benefits would be higher still where more than one crop is grown in a year. The cost of the farmers themselves is very small indeed, for the extension services usually focus on improvements in basic agricultural practices (such as proper seed selection, seed bed preparation, better cultivation, and weeding) which require more labor but little cash, are equally productive on small as well as on large farms, and bring sure results.

In even broader terms, not just agricultural extension but the education of rural populations in general has also been shown to have a marked impact on agricultural productivity. This connection should not be surprising if we stop to think about it for a moment. The purpose of an elementary education, after all, is to help people to obtain, assimilate, evaluate, and use information, to apply appropriate new methods, to improve their health and nutrition, and to assess the returns of past activities and the risks of future ones. The annual output of farmers who had completed 4 years of primary schooling was on the average 13.2% more than that of those who had not been to school, where agricultural inputs required for improved farming techniques were available, according to a World Bank study. The increase in farm production resulting from additional schooling was smaller but still substantial in the absence of agricultural inputs.

The rate of return on the investment in elementary education has been excellent, as in the case of extension services. For example, Bank-sponsored studies that compare the increase in production resulting from education with the cost of that education (in Korea, Malaysia, and Thailand, for example) found rates of return comparing very favorable with investments in other sectors.

These studies quantitatively confirm the central message of our accumulated experience both at home and overseas. This message is that the development of human resources—or, as economists often put it, "building up human capital"—is an exceptionally effective

strategy for promoting economic growth in general, and agricultural productivity in particular. In the long run, investing in people is as economically efficient as it is socially equitable.

Private sector

Too often, consideration of human resources and institutions in development is assumed to be confined to the public sector. Public sector institutions in most countries must be relied upon to help institute new activities and to remove production and marketing constraints; however, there is growing recognition that in the long run, it is the private sector which will determine the extent of agricultural production. This sector is generally more efficient in providing inputs such as chemicals and credit and in marketing the agricultural produce. AID recognizes the importance of the private sector and is initiating pilot programs to encourage small, private agricultural enterprises in the developing countries. These efforts will complement those relating to universities and government agencies.

The need for appropriate government policies

The third factor is the need for appropriate government policies. Improved technologies and trained agriculturalists can increase food production only if government policies on many issues make it both possible and profitable for farmers to grow more food and for the food to be distributed and marketed. For example, no matter how available, appropriate, and productive a particular technology may be, local farmers will not bother to use that technology unless food prices are set high enough to allow a decent profit on the surplus produced.

These farmers also need access to credit; they need adequate roads to bring their produce to market; they need reliable supplies of adaptive, productive cultivars that they can afford to purchase or grow themselves, fertilizers, and pesticides; and they need facilities to store their surplus crop so that they are not forced to "sell cheap and buy dear." Government policies have a strong bearing on each of these aspects of a developing country's food system, and positive policies produce tangible results.

For example, the ratio between the price of agricultural inputs and the price of grain in Japan, Taiwan, and Korea encourages farmers to produce more food. Many other Asian countries have not followed that practice, however, making it unprofitable for their farmers to utilize fertilizers, pesticides, and other yield-increasing inputs. Similarly, Niger has been able to reach self-sufficiency in grain production while neighboring Mali, with the same climate and more cultivable land, suffers annual food deficits. The major difference is the higher price that the government of Niger offers its peasant farmers for their produce.

But local capabilities for agricultural planning and policy analysis are frequently inadequate to the task, even in those countries where the government is fully committed to boosting food production and improving the quality of rural life. National policy makers need a

better understanding of the complex interrelationships among domestic food needs, supplies, and prices; agricultural technology, income, and employment; food consumption, private sector activities, and public policies.

Unfortunately, prevailing policies which discriminate against the agricultural sector or which favor the affluent few at the expense of the numerous poor, reflect long-standing traditions, attitudes, and vested economic interests. Promoting an alternative framework within which the development process can operate more effectively and equitably will require time, dedication, and a high level of competence in policy design and implementation.

It will also require sincere efforts to understand and respond to the needs of national political leaders, as well as of low-income people. We would all like to help the poor people of the world, but we must recognize that those poor people are represented and helped by leaders. One of our jobs, therefore, is to educate the leaders to see that they themselves will gain by bringing about policy changes that will help the farmers. More specifically, this means helping political officials to perceive more accurately their own long-term interest in averting recurrent food crises and overcoming malnutrition. Support from the international community can be very helpful in this process. For this reason, we at AID are working, through our missions in developing countries, to engage members of local governments in a dialogue designed to improve the policy environment for equitable development.

Conclusion

I conclude by emphasizing my own optimism regarding humanity's collective ability to build a sustainable world food system. Science and technology, when fostered by supportive public policies and implemented by trained agriculturalists and an educated rural populace, can transform rural landscapes and living conditions. This optimistic view is borne out by a backward glance at how far we have come in the recent past.

Let us remember that the very issue that preoccupies us today—how to meet unprecedented growth in worldwide demand for food—is itself the result of extraordinary progress in bringing millions of people beyond the subsistence level that characterized their parent's lives. We have managed to avert the Malthusian disasters that have been predicted over the years despite periodic food crisis and the persistence of malnutrition in too many areas of the world. We have seen, in a more positive sense, far-reaching changes occur in countries that were once labeled as prone to famine. The experiences of Japan, India, China, Korea, and even Bangladesh have forced the world to realize that no nation, no people, not even a single village, is predestined to hunger. Our challenge in the coming years is to extend still further the benefits of agricultural development. The rate of success will be critically influenced by sensitive attention to the human factor, in the transfer of technology, the training of people, and the formulation of appropriate national policies.