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# CHINA'S RURAL DEVELOPMENT MIRACLE

WITH INTERNATIONAL COMPARISONS

Papers presented at an  
International Symposium  
held at Beijing, China

25-29 October, 1987

Edited by  
John W. Longworth

International Association of Agricultural Economists  
in association with  
Australian International Development Assistance Bureau  
and published by  
University of Queensland Press

## RURAL DEVELOPMENT: THE LESSONS OF ISRAEL AND IMPLICATIONS FOR CHINA

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### INTRODUCTION

The paper tries to adapt some of the basic lessons of early agricultural growth and rural development in Israel to the Chinese problems of today. A brief description of agricultural growth and rural development in Israel is followed by a discussion of two general principles: first, the so-called principle of 'optimal mixes' and second, the role of social and individual values in economic growth. These general principles form the basis for the so-called 'mixed system', which combines both the free market school and the planned economy.

A planning methodology is proposed for the various levels of decision making in China: national (sub-national, provincial); regional (prefecture, Xian); and local (communes and the network of production units, such as farms, industrial enterprises, economic and social service units, etc.). This is an 'up-down' and 'down-up' system, and the specific methodology for each level is outlined as well as the process of coordination or dialogue between them.

The approach presented in this paper derives from the basic problems which confronted Israeli society at the beginning of the 1950s as a result of mass immigration from Afro-Asian countries. At that time, whole communities were transferred to Israel from small villages and remote hamlets, where their ancestors had lived for hundreds of years. They brought with them the traditional way of life and tribal patterns moulded by a subsistence farming economy. Israeli 'old timers', most of whom hailed from Europe, tried to solve the settlement problems of the newcomers by applying approaches that had been tried and previously found successful in Israel: the kibbutz, the 'collective moshav' and the moshav communities. However, it quickly became apparent that past experience was inadequate.

In 1955, an innovative planning and implementation model was devised for the Lakhish Region, and ten years later it was quite clear that the regional approach applied in this area was indeed a success. Thus, a new way for solving the basic economic, social and civic problems of a rural traditional population had started to evolve. As the impact of the Lakhish regional plan unfolded, the methods

involved were applied to other rural regions in Israel, reorientating the whole structure of rural development at the national, regional and local levels.

In 1963 the Settlement Study Centre was established in Rehovot, Israel, with the specific aim of trying to distinguish between phenomena which are uniquely Israeli and those that could be applied to other countries. A group of professionals began to develop an approach which has since been applied in some 45 developing countries in Africa, Asia and Latin America. At the same time, an extensive research project was launched by the Twentieth Century Fund to investigate problems of rural development. In the decade that followed a practical methodology was developed and refined and the strategy streamlined, enabling the present approach to cope with the myriad problems of rural areas in the diversity of situations that comprise the developing countries.

The present paper is based on my personal experience and the knowledge I have accumulated in Israel and in developing countries during many years of active participation in development planning. It also draws heavily from previous publications of mine.

## THE ISRAELI EXPERIENCE

### *Growth of agriculture*

When the new state of Israel was born, agricultural production was almost at a standstill. Both the traditional Arab peasantry and many of the more modern Jewish farms were heavily damaged and even totally destroyed. The young Israeli government had to face and decide upon some basic strategic problems.

The first was a problem of priority. In those days it was taken for granted that industry should be the leading activity for all developing countries and that agriculture will follow automatically without any direct intervention. Fortunately, this approach was not adopted by Israeli decision makers, who placed agricultural reconstruction and growth at the head of the national priorities. Very soon it became evident that this cannot be achieved without the industrialization of areas and spheres to which agriculture is linked. It was also immediately obvious that improved services (social, civic and economic) are required to educate and train the major part of the population which was settled in agricultural villages, or else no economic growth in the proper sense of the word would occur.

It was decided that land, the main vehicle for rural (and urban) development, should remain the property of the nation, and be leased to users for specific periods of time (from 49 to 99 years) with a binding contract which will assure the users the full benefits of their input and labour on one hand, and allow state control over contractual use and future land reforms on the other. This approach proved to be a powerful instrument of and incentive for development.

The state continued to allocate the means of production, land, water, production quotas and certain investments according to the principle of equal income opportunity, and delegated the power to make decisions concerning farm and village organization to the farmers. The far-reaching goal of these principles was to close the gap between rural and urban average incomes and to replace the rigid, permanent physical fragmentation of land and water with adjustable economic yardsticks (income and investment). The very socialist first government of Israel assumed from the very beginning that market supply and demand as

well as competition would be decisive factors in the efficiency of all units of production, within the general management of the abovementioned principles by the state. Table 1 summarizes the growth of agriculture in Israel over a period of 25 years (1950–1975). The figures in Table 1 clearly indicate that:

Total agricultural product increased eight times, an average annual growth rate of 9%.

Growth was due mainly to know-how and investments and to an increase in irrigated areas, but not to an increase in cultivated area either per unit of product or per capita.

Income per family grew 7.5 times, a rate similar to the increase in production.

The general trend of production development in Israel was towards livestock products, fruits and vegetables rather than increased grain production. Israeli food supply therefore depends on grain imports, but the economics of agriculture compensates for that.

*Table 1*  
*Indices of Agricultural Growth in Israel 1950–1975 (1950=100)*

Criterion	1955	1960	1965	1970	1975
Total cultivated area	153	170	168	175	179
Irrigated area	238	349	402	464	519
Water consumption in agriculture	230	321	332	406	372
Total production	190	320	475	605	827
Grains	139	109	336	186	366
Industrial crops	100	1103	1357	1172	1323
Field crops	215	372	480	672	806
Vegetables and potatoes	221	340	560	690	830
Citrus fruits	170	233	315	526	557
Other fruits	202	511	1030	1250	1560
Livestock products	180	277	496	650	880
Agricultural exports, value of exported fresh products	201	371	509	762	1630
Labour productivity in agriculture	120	200	350	450	670

Source: Statistical Abstract of Israel 1976, 1978. Central Bureau of Statistics No.27,29.

During the period described the composition of agricultural production in Israel underwent a profound transformation. The main production in the thirties was grain, wheat and pulses for the population (Arab and Jewish) and barley and sorghum for animal feed. In the early years after the establishment of the state the young government conducted an animated discussion about the basic strategy for future agricultural production. One school maintained that Israel should develop advanced technologies to increase grain production for full self-sufficiency, and that irrigation methods should be mainly adapted for that purpose.

This school argued that such an approach was absolutely essential for reasons of security and economic stability. The other school of thought, in which the author played a leading part, tried to prove by means of economic calculations that a physical autarky will lead to an economy of permanent low income due to the fact that even if most cultivated areas could be placed under irrigation, 2 mu per capita will never be sufficient for the production of grains, and of the richer crops on which higher income is based, especially animal products. It was finally decided that the strategy should be guided by farm types that will ensure the highest production values for the farmers on one hand, and per unit of land and water on the other. This, of course, led to the creation of an agriculture sector based on commercial exchange, in which Israel buys the bulk of its grain requirements in the world market. Today, Israel buys some 400 kg of grain per capita, of which 90 kg is wheat and the rest is fodder grains.

This approach led eventually to highly intensive and very productive agriculture, which in 1975 provided 78.5% of the total demand for agricultural products and exported 35.7% of its total production, two thirds of it direct exports (fruits, vegetables, flowers, cotton etc.) and one third in manufactured foodstuffs.

### *Village organization*

From the very beginning there existed four basic forms of community organization: kibbutz, collective village, moshav cooperative village and private farming.

#### The kibbutz

Kibbutz is the first form of collective settlement ever to be established in Israel. The means of production—soil, water, agricultural production and other branches of production—are owned or maintained cooperatively by all members of the kibbutz who work the soil or participate in other productive branches, such as industry, crafts and tourism, in a collective manner. Day-to-day work arrangements for members are determined by a special committee. In return for their work, kibbutz members receive all their needs—food, clothing, housing, various services, education, culture, etc. Collective consumer services include the communal dining hall, culture centres, collective warehouses for supplies etc. Education of children is also collective. In most kibbutzim, children live in special collective children's houses. Major decisions concerning administration, direction of development, guidelines for provision of services, etc. are made by the general assembly, which is the highest authority in the kibbutz. Daily administration is in the hands of a small secretariat, as well as committees formed for the various branches and for important issues.

The principal characteristics of kibbutz economy were an ever increasing production output and the integration of non-agricultural branches, such as industry and tourism. Originally, agriculture was the only productive branch in the kibbutz, but in 1975, for example, 21% of all kibbutz workers were employed in industry and construction. If we consider that only one half of the kibbutz workforce is employed in productive branches and the other half in services, we can see that more than one-third of the productive workers in kibbutzim are employed in industry and less than two-thirds in agriculture. Changes in dimensions and economies of kibbutzim were accompanied by changes in organization patterns: the number of workers in services and the number of branch commit-

tees has increased significantly. There is a trend towards increasing professional and branch specialization on the one hand, and towards regional, inter-kibbutz cooperation in the ownership of various factories on the other.

### Collective village (moshav shitufi)

The productive economy and services in a collective village are collectively owned by the society. Soil, water and farm branches are not divided up among the farmers. Farmers work the collective land in accordance with a predetermined work plan. Income from agriculture and other sources, such as tourism or crafts, is equally divided among the agricultural families. A certain percentage of the income is kept by the collective to finance services and reinvest in the settlement. But whereas producing branches are owned and operated collectively, households are private in the moshav shitufi. Each family lives separately, maintains its own household and arranges its budget individually. Thus, the productive sector of the moshav shitufi resembles that of the kibbutz, while the consumer sector resembles that of the moshav.

### The moshav

The moshav is a cooperative village of 60 to 100 families of farmers run by a cooperative society. Allocation of land differs in each moshav, according to location and farm type, but is generally equal within each moshav. Each family maintains its own plot and works the land individually, except in cases where branches are cultivated collectively or treated by the organization, and cases in which the farmer employs hired labour for limited periods when he is unable to do all the work himself. The degree of cooperation varies from moshav to moshav, but all moshavim do their supply and marketing through the cooperative society. Supplies from the cooperative society include both consumer goods and agricultural means of production. Members of moshavim may purchase their daily needs, such as foodstuffs and housewares, at the moshav grocery. The supply warehouse provides members with seeds, fertilizers, insecticides and simple tools. Sale of produce is generally effected by the cooperative society, which markets produce to the large marketing organizations, such as 'Tnuva'.

Facilities required for storage and marketing of produce, such as warehouses, refrigerators and dairies, are generally located at the region and maintained by the cooperative society. Every landowner within a moshav has an account with the bookkeeping department of his village, in which he is debited for any items purchased through the collective at the grocery or supply warehouse and credited for all produce marketed through the society.

In addition to its economic function, the moshav society provides municipal functions and supplies social services, such as culture and entertainment. The highest authority in the moshav is the general assembly, which meets on a regular basis. The assembly elects a council of 15 to 20 members which is responsible for municipal and collective economic activities. The assembly also elects a moshav committee of 5 to 7 people, which deals with the day-to-day administration of the settlement. The committee is aided by a number of branch committees and committees dealing with major topics—agriculture, culture, education, etc. In addition to the families that work in agriculture, each moshav may have a number of families that earn their income from communal work or work in non-

agricultural professions—bookkeepers, secretaries, metal workers, electricians, etc. Most non-agricultural families maintain small supplementary plots.

### The moshava

The moshava is based on private ownership of land and other means of production by the settlers. Farm work and marketing of produce is carried out independently, although there is a trend toward organized marketing. Since the establishment of the State, virtually no new moshavot have been established in Israel, and several of the veteran moshavot are no longer defined as such. Their agricultural character has gradually disappeared due to the development of new sources of income, such as crafts, industry and services.

It is rather interesting to follow the relative preponderance of the four forms of village organization with economic growth. The data in Table 2 reflect the preference of settlers, because government support was equal for all forms and the overall increase in efficiency of production was almost equal. Certain branches, however, grew more rapidly in the collective forms, while others developed in the family farm and private type.

*Table 2*  
*Proportion of Israeli Villages of Each Type*

	1950	1975
	(%)	(%)
Kibbutz	50	35
Collective village	5	5
Moshav	30	54
Private farms	15	6

### *Rural development*

Rural development in Israel was directed from its inception by two basic policy motivations. First, there was the need for population dispersion and a stable situation along the borders mainly for reasons of geopolitical security. Second, there was a need to ensure that the level of income in rural areas is more or less equal to that of large urban centers, in order to attract people to settle permanently in rural zones. These directives were the main reason for the development of rural regional development policy, which spurred the creation of planning methodologies and suitable organizations for their implementation.

The first fully-fledged regional development started in 1955 in the Lakhish Region. It was based on a regional town (Kiryat Gat) and included about 50 villages (mainly, but not exclusively, of the moshav type). The main thrust was rural industrialization in tandem with agriculture, and an active supporting system which enhanced the network of economic services (market supply, credit, extension, research, etc.) and social services (specifically education and health). The services were based on a regional cooperative in which the communities participated actively with appropriate, general, on-the-spot support at the regional level.



Rural development policy and regional development planning methodologies have had considerable influence on national policies and shaped to a great extent the public opinion in Israeli society at large. Based on the lessons of Israel and taking into account the vast experience which the Settlement Study Center (SSC) has accumulated in rural development through dealing with more than 50 countries in the developing world, we shall try to summarize and adapt these lessons to the special situation prevailing in China as we see it today.

## GENERAL PRINCIPLES

Looking back today at the process of economic growth in the rural areas of Israel, and learning from the lessons of other successful cases, I think we were guided by two general principles: the principle of 'Optimal Mix' and the principle of development and values.

### *The principle of 'Optimal Mix'*

Economic growth is dependent on the proportion of resources (both public and private) allocated for development projects. We assume that there is likely to be a certain ratio of government investment and organization to private initiative in investments and organization that will optimize the results of projects as expressed in the rate of economic growth. We call this ratio the 'Optimal Mix'.

The rates of the optimal mix for the country as a whole (as expressed by national averages) are not dependent on the potential quantity or nature of the resources available to the society. The potential amount of natural resources can determine the rate of economic growth, and it accounts for the ability of a rich country to pass more speedily from one stage to another along the scale of economic growth. But the quantities of the resources do not affect the optimal mix of investments for a particular development situation. A high rate of population growth tends to impede the country's capacity for ascending the ladder of economic growth, but it appears that the population size does not change the ratio of the optimal mix for investments at any given phase of economic growth.

Getting out of the traditional subsistence economy involves adequate government incentives which are necessary for the full mobilization of private initiatives in all parts of the country.

The optimal mix of investments at each of the three decision-making levels (national, regional and local) will be different. As economic growth occurs, the differences between metropolitan areas and rural regions diminish and are destined finally to disappear. At that phase the optimal mix for the three levels will be more or less equal, but only then.

Each of the growth phases requires a different mix. In the 'basic needs' phase, at a time when capital accumulation is the result of a multitude of minuscule investments, the main stress is on full and effective employment of the labour force. The 'social competition' phase is marked by a need for a better balance between labour and capital, especially since sectoral shifts are inevitable due to a decrease in the use of labour by the agriculture sector. I have tried to calculate the magnitude of the optimal mixes in the book *New Roads to Development*, and I believe that the figures presented there can be useful guidelines for people involved in the planning and directing of development programs.

*Development and values*

I maintain that development differs from economic growth in that it should recognize and deal with fulfilment of needs and aspirations of the individual which are not the outcome of the production system nor are they directly connected with it, and which we designate as 'values'. Values (as distinct from instincts) are needs that originate from the intellectual capacity of humans. As humans became aware of the world surrounding them they developed more than instinctive reactions to it, and their intellectual awareness translated these into emotional reactions and expressed them in daily attitudes. Although human behaviour is motivated both by instincts and by intellectual values, it is important to distinguish between the two non-economic relations of human beings to their surroundings.

Unfortunately, the term 'value' is used very liberally and assumes a different meaning in each discipline. In this paper the term 'values' denotes individual needs other than those which depend on the economic system. We therefore define the concept of development as economic growth and the nature of the system of values.

We distinguish between two kinds, or two 'families', of values: basic values and social values.

Basic values are the needs of individuals to be at peace with themselves and with the inner meaning of life. In the simplest terms it depends on two inborn emotions: the sense of continuity and the sense of belonging. Continuity makes the individual an inseparable link in the chain of generations, rooted in the past and continuing into the future, and provides an emotional link that makes it possible to view life as more than a transitory episode. The feeling of continuity stems from the framework of the family in its broadest sense, that is, the emotional aspects of the family and not necessarily the family as a social, economic, or organizational institution. The family has undergone profound modifications as a result of economic growth; nevertheless, it remains the source of continuity. The individual's sense of belonging emanates from the depth of his or her internal emotional structure; he or she enjoys the tranquility that rises from the explicit understanding of a personal mission in life.

Social values are values that determine relations between the individual and the society in which he or she lives. Social values can be theocentric and ancient in their origins, or they may be atheistic and derived from recent sources. Hence they apply only to individuals of a particular society. Whether implicit or explicit, social values are interwoven into a social pact that governs the relations between a society and the individuals that comprise it. Sometimes the social pact assumes the form of written constitutions, state ideologies, or national creeds. In other cases, social pacts are unwritten but nonetheless present and authoritative. They may exist at the village, tribal, national, or international level. They constitute boundaries of social life that spell out society's and the individual's rights and responsibilities to each other.

Social pacts are symbolized by a variety of instruments, ranging from national anthems, flags and public ceremonies to other expressions of patriotism or civic pride. They go under a variety of names and labels and have been widely studied by political and other social scientists. Development specialists, however, have not recognized the importance of social pacts and do not know how to use or

change them for the purpose of facilitating socioeconomic changes. And yet social pacts are fundamentally important to the development process and therefore to development planning.

## RURAL DEVELOPMENT STRATEGIES FOR CHINA

Rural development, as I conceived it, is based on clearly defined strategies and a certain planning methodology delineating the sequence of activities leading to subsequent implementation. While the details of methods and structure of plans and execution vary from place to place according to the specific conditions prevailing in each locality, the overall strategy is basically a universal one, applicable to all the countries which are at a certain level of economic growth.

The proposed strategies are based on three basic assumptions: (a) that agricultural growth is the key to rural development; (b) that the development of agriculture requires concomitant development of the secondary and tertiary sectors; and (c) that social forces play an important role in agricultural development. Since agricultural production is carried out by a multitude of individual producers, their willingness and ability to participate in any programme of change is a crucial factor.

### *Agricultural production strategy*

Chinese agriculture today is characterized by the domination of grain production. The ratio between the three main branches, namely: grain production; industrial crops and fodder; intensive crops and animal husbandry, is 8:1:1 or, 1,500, 185, 180 million mu (in estimated round figures), respectively. Based on information submitted by Chinese participants in the IAAE/CAAE/CAASS symposium, Dr. Israel Prion of the Settlement Study Centre calculated possible future trends for the strategy of agricultural development in China for the year 2000.

1. Average grain production per mu, which increased at an annual rate of 4.9%, will continue to increase at an average rate of 3% until the end of the century. In the year 2000 the average grain yield per mu may thus be 385 kg.
2. Added value per mu will increase from 92 yuan per mu in 1985 to 156 yuan in 2000 (in fixed prices).
3. Added value in the other two branches will increase at a rate of 4.5%.
4. Demand for livestock feed will increase to 30% of total grain production in 2000; per capita demand for grains will thus reach 570 kg—400 kg for direct human consumption and 170 kg for animal feed.
5. Total cultivated area will increase by 100 million mu, to a total of 1,925 million mu.

Based on those assumptions, and taking into account FAO predictions for the international prices, three alternatives were projected. Alternative A assumes that local production will supply all the grains needed, and therefore will need 77% of the total cultivated area. Alternative B assumes that the ratio between the three main branches of Chinese agriculture will change to 6:2:2, by importing 125

million tons of grains to satisfy the national demand. Alternative C assumes that all the grains for human consumption will be produced locally and 170 million tons of feed grain will be needed for livestock.

Table 3 shows the basic structure of Chinese agriculture at the end of this century, taking into account the three alternatives.

**Table 3**  
*The Projected Structure of Chinese Agriculture in 2000*

Agricultural production strategy (main branches)	Annual growth rate 1985 to 2000		Added value		Cultivated area	
	Per mu	Per branch	Per mu	Yuan (billion)	%	mu (million)
<i>Alternative A</i>						
Grains	3.6	3.7	156	230.9	77.0	1480
Indus.crops & fodder	4.5	5.8	476	105.9	11.5	222.5
Intensive crops & livestock	4.5	6.0	397	88.3	11.5	222.5
Total	4.2	4.6	220.8	425.1	100.0	1925
<i>Alternative B</i>						
Grains	3.6	2.0	156	180.2	60	1155
Indus.crops & fodder	4.5	9.7	476	183.3	20	385
Intensive crops & livestock	4.5	9.9	397	152.8	20	385
Total	5.6	6.0	268.2	516.3	100	1925
<i>Alternative C</i>						
Grains	3.6	1.2	156	161.9	54	1038
Indus.crops & fodder	4.5	10.8	476	211.3	23	444
Intensive crops & livestock	4.5	11.0	397	176.7	23	445
Total	6.0	6.4	285.7	549.9	100	1925

Sources: Chen Jiyuan: "China's Transfer of Surplus Agricultural Labour Force". (See paper 22 in this volume)

Mei Fangquan: "Changing Economic Structure in Rural China to the Year 2000". (See paper 19 in this volume)

*The Economist*: "A Survey of China's Economy" (August 1987).

1985 FAO *Production Yearbook* (Food and Agriculture Organization of the United Nations, Rome 1986).

1985 FAO *Trade Yearbook*, Vol. 39 (Food and Agriculture Organization of the United Nations, Rome 1986).

Even as a rough estimate, Table 3 indicates clearly that the ratio between the three main agricultural branches is a decisive factor in future agricultural growth and in the average income of the farmer. This is particularly true if the plan for transferring 200 million people from the agricultural to the urban sector is

implemented, and 100 million mu are added to the cultivated area. Under such conditions, the average land quota per agricultural worker will increase from 5.2 mu to 8 mu. The only source for increased income in agriculture is therefore the intensification of crop growing. A shift from total self-sufficiency to importing a certain amount of grains may have far-reaching effects on the future life style of the Chinese population.

Alternatives B and C will double the agricultural GNP while the income of the average farmer could increase 2.5 and 3.5 times, respectively.

This, however, is not the whole picture, because the shift of emphasis from grain production to other branches has a considerable multiplier effect on the secondary and tertiary sectors for obvious reasons, and thus increases the possibilities of creating non-agriculture employment throughout the rural areas of China. This would fit practically into the general policy of moving one-fourth of the labour force out of agriculture at the end of the century. It is evident from Table 3 that Chinese policy makers are required to make a far-reaching decision about the course of future agricultural development in the country. Israeli policy makers faced the same problem in the early 1950s since the cultivable area (irrigated and rainfed) in Israel would permanently remain at slightly over 2 mu per capita. Therefore, they had to choose between grain self-sufficiency which was the traditional trend of agricultural production, and conditions dictated by considerations of a security nature. As already stated, the decision was to diversify agriculture as quickly as possible, thus allowing for a growing dependence on grain imports. The adoption of this basic strategy was a major factor in the success of Israeli agriculture, and I firmly believe that China should adopt the same approach. Quick transformation of agricultural diversification should be accompanied by rural industrialization and dispersed urbanization. It also requires a flexible institutional set-up, which can coordinate the simultaneous formulation of programmes on three levels—national, regional and local, taking into account flexible government intervention according to local conditions and the encouragement of private initiative in the three economic sectors.

### *Growth without migration*

The history of developed countries shows that economic growth has always been accompanied by migration of individuals and communities from one location to another. The first Industrial Revolution heralded the development of new technologies, which increased the production capacity of labour and attracted workers to new occupations which often involved a change of location. The transfer of labour from agriculture to industry and services created a mass migration from the villages, and resulted in an increasingly urbanized society and in the growth of the big cities.

It appears, that migration in search of employment is at the root of what is negative in human society today: it has brought about social and economic division in the developing world; it has disrupted the link between agriculture and industry in the developing countries, and slowed down their growth; it has widened the income gap within the poor nations; and it has engendered nihilism and permissiveness in the rich nations, disrupting the family unit and endangering its very existence. Since this process began, however, circumstances have changed radically. The number of industries which can be organized efficiently on a

regional basis is steadily increasing. Energy can be efficiently generated and distributed. The art of planning in both the industry and the service sectors is advancing rapidly, and fresh avenues of approach to the basic problems of human settlement and spatial organization have opened up.

Recent technological developments have made the separation of occupational mobility from geographical mobility a feasible goal. These developments are concentrated in four areas: energy, transportation, communications and construction.

**Energy.** The energy crisis has had a direct impact on economic growth because it is firmly linked to an increasing consumption of energy per capita. The best reservoir of energy from natural sources (oil, coal, wood) has shrunk dramatically, but people have bent their minds and their technology to finding the cheapest and the most readily available alternative forms of energy. I believe that the crisis will be solved and new cheap artificial energy will soon be available. Any forecast of developments for the next twenty years should therefore be based on this assumption. Moreover, whatever the future sources of energy, the fact remains that the transportation of energy over large distances at decreasing costs is developing fast.

**Transportation.** The solution to the energy problem will be accompanied by a long term solution to the problem of transport and haulage, in terms of both efficiency and their impact on the quality of life. Thus, it may become as easy to transport materials and equipment to the workforce as it now is to transport the workforce to the workplace.

**Communications.** The most dramatic changes are undoubtedly taking place in communications. The radical changes of the past twenty years, particularly mini-computers, laser beams and the phenomenal improvements made possible by satellites, show that communication technology will spark far-reaching changes. The need to congregate in large business centres will be dramatically lessened.

**Construction.** Major advances have been made in construction, including the use of new local building materials that make it possible to suit structures to the special requirements of humans and nature.

In view of these new perspectives one cannot but ask: is it possible to conceive a society which enjoys economic growth and advances in technology and scientific development without forcing the individual to migrate from place to place in search of these benefits, a society in which the basic structures (family and community) are preserved?

There is a specific spatial distribution for the various production units (such as farms, industrial enterprises, schools, health services and households) that is suitable to the nature and requirements of each development situation. However, the physical layout suitable for one stage of economic growth is often inadequate for later stages. One of the major problems of physical development planning is therefore the adaptation of a rigid system of physical elements to the dynamic flow of changes inherent in the development process. Special importance is thus attached to the search for models of physical planning which give a degree of flexibility to the spatial layout and permit its adaptation to future requirements without great loss in investment or legal difficulties.

This goal can be achieved by trying to follow the basic principle of allowing, as far as possible, the labour force to be fully employed within the region of

birth. Development planning and projects at the local, regional and national levels should be geared to this purpose.

### *Rural industrialization*

The introduction of industries into rural areas has a double purpose: First, to spur the process of farm diversification by creating a market for agricultural products—raw material for processing and perishable foodstuff for consumption by industrial workers—and by the provision of inputs; and second, to provide employment. So far, industrialization in developing countries has not produced the expected results, mainly because it imitated the process which has taken place in the affluent countries.

The introduction of sophisticated capital-intensive and labour-saving industrial facilities into developing countries created the undesirable modern phenomenon of 'dualism'. To be successful, the introduction of industry requires adaptation to the conditions prevailing in a specific locale, and adherence to three criteria, as follows:

**Parallelism at the technological level.** The level of production technology is one of the most important factors determining the economic results of any rural development program. For each rural area, there is a certain level of technology which is suitable to the particular economic conditions, and to the general economic situation of the country. This level refers to all sectors of the economy. A proper balance between the levels of technology used in agriculture, industry or services is an essential element of the integrated rural development approach.

**Compatibility in the exchange of specific inputs and outputs.** The general framework of input-output relationships determined on the national level is often inadequate to the conditions prevailing in a particular rural area. In the planning of rural industrialization, an adequate relationship between the sectors, which is compatible with the requirements of other sectors in that particular area, should be taken into account.

**Location of industries** is of prime importance and should be considered from the viewpoint of both the industrial requirements *per se*, and the general spatial distribution of other activities.

These three criteria are necessary to determine the profiles of the most adequate industrial enterprises for each locality. In general, industrial enterprises that can be integrated into rural areas are classified into three principal categories: processing, coordinated and neutral. These do not include the various economic services, such as sorting sheds, packing stations, cold storage etc., which are included in the supporting system.

Processing industries transform primary agricultural products into finished products for consumption. The processing can consist of a single stage, like sugar refining, or involve a number of stages, like the cotton industry.

Coordinated industries fit into the work schedule of the farms, so that members of the farmer's family can be employed in them in addition to their work on the farm. Such industries are suggested mainly for marginal areas, where a farming population cannot achieve an adequate standard of living from agricul-

ture alone, and must seek additional income from other sources. Naturally, such enterprises cannot be located far from the village, and their nature and size are, therefore, limited. Their existence, however, enables the farmers to liquidate unprofitable branches that serve only to balance the annual work schedule, and to concentrate on the more profitable crops, with industry providing the balancing factor.

The neutral, or footloose, industries have no direct connection with local agriculture, and their main purpose is to absorb surplus manpower. They include most of the labour-intensive operations that are not unique to rural areas, but provide an important input for their development, such as light industries (jewellery, plastics and simple tools).

But the planning of industrial plants encounters major inherent difficulties. Most, if not all, industrial plants offered by international agencies are based on advanced technology suitable to the conditions prevailing in affluent countries, but poor countries need industrial enterprises which are based on a level of technology suitable to their present economic level. The demand for industrial plants, in all branches of processing and manufacturing, which could be established in rural areas according to the principles described above, is very high, especially in major Asian countries (China, India, Indonesia, Bangladesh, Pakistan and the Philippines). There is, therefore, a pressing need to join forces and prepare a programme for the establishment of such industrial plants and their necessary supporting systems (i.e. tool making, spare parts, engineering guidance etc.).

### *Development and urbanization*

The developing countries neither can nor should copy the territorial patterns of population distribution which exist today in developed countries, since such patterns do not suit their requirements for economic development. Even in developed countries doubts have arisen about their suitability for the needs of society. A different approach is needed for urban-rural relationships in developing countries, which will suit the conditions prevailing in them and be capable of accelerating the process of development, especially in the early critical stages.

At the onset of urbanization in developed countries, the increased concentration of population was essential for technological and organizational reasons. Occupational mobility was, therefore, linked to geographical mobility and led to mass migration from rural areas to the big cities. The city was the focus of economic expansion and social change. Today, technological and organizational potentials facilitate the divisions—at least to some extent—between occupational and geographical mobility.

There is nothing today to prevent the decentralization of urbanization into comparatively small towns widely distributed throughout the country. Energy can be transported over large distances at relatively low costs; many kinds of industry do not require special conditions that exist only in big cities; and infrastructure can be constructed using relatively quick and cheap methods.

Urban decentralization is not merely possible. For the developing countries it is essential. In order to speed up the process of development, a system of rural towns based on a hierarchy of functions is needed. Without such a system, it



becomes almost impossible to set up the supporting services and the industrial structure necessary for the development of agriculture.

Rural towns fulfil three main functions of the development process in developing countries. First, they provide the basis for activating the supporting system necessary for the transition from a closed economic structure to one capable of producing increasing varieties and quantities of produce for the market. Such a framework depends upon professional workers and entrepreneurs, such as planners, agricultural instructors, engineers, technicians, teachers and doctors. Since these people are usually not prepared to live in the village, they require an urban center where they can find acceptable services and amenities.

Second, rural towns can serve as an appropriate location for industries required for the development of rural regions. Less capital-intensive industries do not have to be located in the big cities. They can be dispersed throughout the rural areas and centered in rural towns, where they can contribute to the development of the interrelations between agriculture and industry.

There is no need for large-scale investment. Industrial enterprises combined with improvements in agricultural production can close the economic cycle which is vital for the development process in developing countries. Closing the cycle by joining industry and agriculture in the early stages of the development process can be a practical possibility only if the appropriate industrial enterprises are dispersed throughout the rural areas, mostly in small urban centres. However, the feasibility of different types of industry must be carefully examined in the light of the special conditions prevailing in each region.

Third, rural towns can bring urban culture to the countryside and hasten the process of modernization. The proximity of the town provides the farmer with greater prospects. He can find markets for his produce, better services, and an alternative source of nearby employment should he wish to leave agricultural work.

Those who leave their farms are able to maintain contact with their home villages since the distance between the rural town and country is not great. If they wish, they can even continue to live in the village and work in the town.

## **MULTI-LEVEL INTEGRATED DEVELOPMENT**

Development is a process of change that occurs in a human society and affects it as a whole, and each of the individuals in it. The study of this process is conducted by various methods and at different levels. For the purpose of our study we have defined three levels of decision making: national, regional and local. The national level represents the whole country and the national economy is the sum of the economies of the nation's metropolitan cities and towns, the villages, the countryside and the wilderness. In the case of China this level could (or should) be divided into two: the level of the Republic Federation and the level of the Provinces. The regional level corresponds to the Prefectures and/or Counties (Xians). The local level includes rural towns and villages, namely the communes and their units of production in the three economic sectors.

The process of development at levels other than the local is presented as a continuous gradual process. The process of development at the local level is perceived as a discontinuous process, or 'leap' phenomenon, because changes in units of production occur when new technological innovations are introduced and

thus are abrupt. These facts have been known to scholars of development for some time, but no attempt was made until recently to understand the whole picture, or to compare the nature of development at the various levels and to draw comparative conclusions. Moreover, the methodologies evolved for the analysis and planning of development are different at each level.

### *Planning at the national level*

Development planning at the national level is the integrated result of three planning activities: The merging of regional plans into one programme; the formulation of plans for the metropolitan areas; the formulation and planning of 'national projects' and determination of their best spatial location.

Let us discuss the planning of national projects first. We call these projects of development 'national' because they are of great importance and affect all (or most) of the country's regions. Decisions about them and their detailed planning are made at the national level, where they can be planned in the most effective manner and may involve each of the main economic sectors. They may relate to the government only, to the private sector only or to a combination of the two.

Following are examples of national projects in the three economic sectors:

Physical infrastructure: national power plants, nationwide highways, railroads, harbours, international airports, international communication systems, satellites, etc.

Service sector: universities, national research centres, health research institutes, specific research institutions, ministries, army, police headquarters, etc.

Industrial sector: mines and oil fields, heavy industries (steel, chemistry, industrial equipment), hi-tec industries.

Agricultural sector: mainly agricultural exports or new kinds of agriculture.

The national planning team should deal with the process of decision making for the national projects and determine the details of their size, physical, economic and manpower structure, and also their location. The regions in which a national project has been located should be included in the region's planning. The integration of all regional plans into the national program could be elaborated using a relatively simple inter-regional input-output model. Such a model has been developed recently by D. Freeman at the Settlement Study Centre and is being tested in practice. The national development plan thus consists of three components: national projects, metropolitan plans and the integration of all regional (non-metropolitan) plans.

### *Planning at the regional level*

We regard regional development planning as the result of an ongoing dialogue between the regional and local levels on one hand, and between the regional and the national level on the other. Such dialogues take into account the three economic sectors (agriculture, industry and services); examine the economic, social, spatial and institutional aspects of the development process; and formulate a general plan. The end result of this process is a concrete plan of activities that takes the form of regional development projects. A similar process is undertaken

by both the national planning authority and regional planning teams, so that national and regional development plans are the outcome of planning both 'from above' and 'from below'.

The requisites for successful planning described above dictate a planning methodology capable of meeting them. For this purpose we have evolved a 'cross-function' planning concept, which merges two planning activities: vertical and horizontal.

The cross-function planning concept aims to accomplish three goals. First, to design a plan for the optimal utilization of the region's natural and human resources, and formulate projects of regional scope, (intra-regional planning). Second, to be an operational part of the national programme, thus taking into account the objectives and constraints of national development planning (planning 'from above' and participation in inter-regional planning). Third, to guide and direct the activities of production units within the region while taking into account their needs and profitability (planning 'from below' based on local micro-planning).

In order to accomplish these three tasks, the Settlement Study Centre (SSC) planning teams have developed in the last decade a methodology based on actual experience in the field. The SSC methodology consists of four models for regional planning: macro-regional growth model; macro-regional agricultural model; macro-regional industrial model; and macro-regional services model.

Macro planning constitutes the primary step in integrated rural development planning. It is at this stage that the overall objectives of development and the model of economic growth are defined for the regions, which are treated as distinct socioeconomic units in the national context. Macro planning leaves a quantitative mark on the overall policies of development by designating its specific targets in terms of population groups, economically active population, value added per capita for the region and for each economic sector. Likewise, it determines the extent to which and manner in which the national and regional development plans and programmes should be coordinated, and serves as a frame of reference for the verification of estimates made in detailed sectoral plans. On the basis of directives from the first approximation of the national programme on one hand, and the analysis made in the diagnosis of the region on the other, the regional planning team formulates various proposals of possible strategic alternatives for the regional development of both.

#### *Planning at the local level*

Planning at the local level deals with the development of production units, or as they are generally called—the firms. It takes the form of projects for implementation which include: economic profitability, organization of production, employment and manpower, location and physical set-up, investments and financial sources, etc. It generally assumes the commonly known framework of 'feasibility analysis'.

Regional plans thus indicate the general foreseeable trends for the three economic sectors within which detailed micro planning should be undertaken. It is at this level that the specific non-quantifiable human and natural factors have a particular effect on the development process, and therefore should be taken into account in the planning procedure and methodology. The stage is now set for

detailed planning of the three sectors in the rural region under consideration. This requires an intimate knowledge of local conditions in the area.

## CONCLUSIONS

The approach outlined in this paper is *action-oriented* in the sense that it coordinates policy, investment and manpower programming between the local and the regional level on the one hand, and the programs and plans at the national level on the other. It points to concrete projects for implementation. It is *comprehensive* in the sense that it takes into account all the relevant sectors of the economy in the national space and uses the interrelationships to identify and exploit the linkages and the external effects within each. It is also *democratic* in the sense that it insists on active local participation. It represents an effective instrument for the practical harnessing of both public resources and private initiatives for the benefit of the masses.

This is why I believe that the proposed approach has the potential to become a powerful, practical and proficient tool for whoever is ready to use it. The only essential condition required for using it is awareness and understanding of the situation which exists in the poor countries. The situation is intolerable and must be changed without delay. This change cannot be achieved by easy ways or by shortcuts. It demands that policy makers not only understand and wish well, but also that they adopt resolute and determined policies for development of the poor areas on the one hand, and overcome the entrenched interests of some groups when necessary, on the other.