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AGRICULTURAL DEVELOPMENT PLAN AND POLICIES

IN

THE MEKONG BASIN

by

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RURAL DEVELOPMENT PLAN AND POLICIES IN
THE MEKONG BASIN -- "AN OVERVIEW"

by

Chamlong Tohtong

I. INTRODUCTION

Development of agriculture in the lower Mekong basin is necessary, negatively stated, to prevent the standard of living of the inhabitants of this region from falling as a result of diminishing returns to farmers. The argument for this would be that unless agriculture, which employs about 80 percent of the people and provides almost 100 percent of their food, is made to grow at an accelerated pace and at a sufficiently high rate, the continuously increasing demand for food will soon exceed the supply.

As of 1970, the total population of the Khmer Republic, Laos, Thailand and the Republic of Viet-Nam stood at about 64 million of which about 30 million lived in the basin areas. The estimated food crop requirement for the basin population including consumption and its share in export is of the order of 12.7 million tons[1/], while production is about 12.3 million tons which is slightly below the demand. According to the projection made by the Mekong Committee[2/], by the year 1990, the food crop requirement would go up to about 25.2 million tons while the production, assuming no additional irrigation, would be only 20.9 million tons, leaving a deficit of 4.3 million tons. In the year 2000, the requirement would increase to 37.0 million tons and the production would be as low as 27.1 million tons, causing a deficit of 9.9 million tons[3/].

Positively stated, agricultural development is needed to raise the standard of living of the people in the basin to a point where hunger, poverty, malnutrition and the like can be eliminated. Whether standard of living is expressed in dollars or in calories of food consumed, the fact remains that the level of living is very low among farming

/population

1/ In terms of unmillied paddy equivalent of all crops

2/ Report on the Indicative Basin Plan, 1970, Mekong Committee

3/ Indicative Basin Plan pp. IV-17. Only the Mekong Secretariat's average estimates are cited here, for illustrative purposes.

population. The rural socio-economic surveys so far conducted in various parts of the basin indicate that the annual average per capita income of the farmers is less than $100. Although the available statistics may not be sufficient to prove it, there is little doubt that the already wide gap in per capita income between rural and urban areas, is further widening.

II. THE PROBLEMS

The projected deficiency of food supplies mentioned above is obviously the result of interplay of two main factors, demand and supply. On the demand side, for the population of about 64 million, the average annual rate of growth for the immediate future should be moderate to high; based on statistics for the period 1963-1968 the rate has been estimated at 2.2 for the Khmer Republic, 2.4 for Laos, 3.1 for Thailand and 2.6 for the Republic of Viet-Nam. Up to now, there is no sign of any downward change in the trend of population growth; in just a little more than three decades, the demand for food supplies would be at least double of what it is today, assuming that there will be no substantial increase in the per caput consumption of food.

The prospect of supply catching up with the increasing food demand is not bright. The Khmer Republic and Laos, being relatively less populated, still have some cultivable land left and therefore may be able to increase their food production by expanding the cultivated area for some time, once peace is restored. On the other hand, North-east Thailand and the delta areas of Viet-Nam, being more densely populated than the above two countries, are running out of cultivable land for expansion. In North-east Thailand where soils are among the poorest in the basin, the population pressure has already resulted in the uneconomic, some times illegal utilization of marginal and sub-marginal lands by squatter-farmers. It has probably reached the point where the forest reserves and watershed areas are in real danger of being ruthlessly destroyed as a result of rapid, extensive and uncontrollable squatting. In the Viet-Nam delta, on the other hand, the annual flood from the Mekong river and the intrusion of the sea water are natural obstacles

/and constraints

and constraints which force the farmers to work harder on the existing land. This is probably why the rice yield there, of about 2 tons/ha on an average, is the highest in the basin.

The imminent shortage of arable land for cultivation is especially true of rice which is the staple food of the people and which grows best in the lowland areas. This, however, may be less true of upland areas where generally fibre crops such as kenaf or non-staple food crops such as cassava are grown. The following table summarizes the present and potential cropping areas for the whole basin:

Lower Mekong Basin
Cultivable Area Potential
(in 1000 ha)

Region	Paddy only		Upland crop	
	Potentially cultivable	Present use	Cropping potential	Presently cropped
Khmer Republic	3,500	3,100	580	400
Laos	900	750	210	80
N.E. Thailand	3,400	3,150	965	600
Viet-Nam Delta	1,780	1,720	450	200
Total	9,580	8,720	2,205	1,280

Source: Lower Mekong Basin, Report by Consultants, Sir Alexander Gibb and Partners, Dec. 1970, IBRD, pp. 102

The reason why in the past the pressure from population increase merely resulted in a rapid expansion of cultivated land is not difficult to find. A few decades ago when unoccupied arable land was still abundant, the landless farmers most of whom were poorly educated and possessed no particular skill except in rice farming had little difficulty in finding for themselves free land for cultivation. As long as land was

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still plentiful, this was the concern of neither the agricultural planners nor the politicians, because it was politically the most expedient way to solve the problem. The Mekong countries have therefore been complacent about the way the increasing food demand was met without any planning effort. In the fifties and sixties, Thailand was very much in this situation while the other three Indochinese countries apparently remained too involved in their liberation wars to have the time to pay any serious attention to their economic and agricultural problems. In any case, it would be correct to say that there has been no planned effort to prevent the increased farming population from just spilling over into the marginal land and to intensify agriculture as a means to solving the problem.

III. KEY ELEMENTS OF THE PHYSICAL AND SOCIAL ENVIRONMENT

The interesting question is that even if the Governments of the Mekong countries were to have planned for an intensification and diversification of agriculture as a long-term solution for their agricultural problems, to what extent a country like Thailand (used as example because it is the only country that has had no war, and therefore could afford the planning) could have accomplished the objectives: Looking at the development in hindsight, the answer seems to be that not much could be accomplished, for the following reasons.

First, as far as the cropping pattern is concerned, it was unlikely that there would have been much change. Most of the lowland areas would have been sown to wet-season rice anyway because the rainfall pattern, the terrain, the soils, and above all the demand for rice as a staple food would have made rice farming which was, and still is, the only kind of farming the farmers could choose. In other words, if the land was flooded up to the knee for months in every rainy season without any effective drainage, only paddy rice could survive.

Second, there was no technological base at the farmers' level to sustain any agricultural intensification and diversification programme on a regional or national basis. The average Thai farmer today with four years of schooling is not much better educated than he was twenty or thirty years ago when he had no schooling at all. No doubt, the officials

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in the employ of the agencies in charge of agriculture might be relatively much better educated and trained, but their technical knowhow and experience in commercial agriculture, as distinct from subsistence agriculture, have been too inadequate to convince the subsistence farmers that they should abandon their paddy rice monoculture. Of course, there are even now many agriculturists working as planners, technicians and extension workers who have considerable practical experience in modern, commercial, intensive agriculture, and the capability to solve specific, technical problems relating to plant disease or pest, the improvement of poor soils, the breeding of new varieties of crops, and so on. As a matter of fact, at the individual level, Thailand might be having agriculturists and agricultural economists who are as good as in any other Asian country; but taken as a group, they do not appear to have the capability to reorganize or restructure the agricultural sector on a commercial basis, even in areas where the natural environment does not present any obstacle. Ironically enough, in certain areas of Thailand where maize, sugar cane or horticultural crops have been developed commercially and successfully, the initiative does not seem to have come from the agricultural planners at all. Those farmers took their own initiative.

Third, as borne out by the history of agriculture of the past 20 years or so, the introduction of modern agricultural technology into a traditional subsistence-agriculture society without necessary changes in the social organization at the farmers level, has run the risk of finding the technology incompatible with, and eventually rejected by the society. For example,if ten farmers with small farms adjacent to one another along an irrigation channel decided to grow four or five different crops including paddy which requires a good deal of water and peanut or soybean which requires but little and only periodic watering, there was going to be quite a conflict of interest on the issue of the amount of water required, the frequency and duration of watering and so on. Likewise, if the cotton growers in a village were not well organized in respect of synchronizing the spraying of insecticides, the result would be that the pest is not easily eradicated and the efforts are wasted. Neither the politician nor the agricultural planner is likely to foresee the importance and the

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necessity to initiate a plan for social adjustment to cope with situations which are likely to develop. They just would assume and hope that social adjustments would take place as a matter of course. As a result, agricultural innovations would be readily adopted only when their adoption did not create social problems, as is the case with the use of farm tractors in paddy fields in Central Thailand or low-lift pumps in Viet-Nam delta. A farmer can drive his tractor a thousand times around his field, or pump as much water from the canal as he wants without prejudicing the interests of his neighbour.

IV. THE MEKONG APPROACH TO AGRICULTURAL DEVELOPMENT

1. The provision of irrigation, flood control and drainage

The principle underlying the Mekong approach to agricultural development can be simply stated as one of increasing efficiency by means of water control. In a paradoxical situation, as in the Mekong basin, where there is scarcity of water in the midst of its over-abundance, no other development projects could be more sensible than those which would store water during its abundance for use at times of scarcity, or would divert water from where it is plentiful to areas where it is badly needed for agricultural, domestic or industrial purposes. With such projects, it would be possible not only to irrigate cultivable areas which has suitable terrain and elevation, and therefore to raise crops twice or thrice annually, but also to mitigate the flood hazard in several areas, and decrease the crop and other damage that now occur annually.

The framework for Mekong water resource development provides for several mainstream and tributary water storage reservoirs. Some of these have been designed for irrigation purposes alone, while others are of a multi-purpose nature. The main tributary irrigation projects already constructed or now under construction, are listed in the tables below.

Project	Irrigable area (ha)	Construction year		Expected year of completion
		Started	Completed	
North-east Thailand*				
Nam Pong	53,000	1965	-	1976
Lam Pao	62,000	1963	-	1975
Lam Pra Plerng	13,000	1963	1970	-
Lam Takong	33,600	1964	1969	-
Lam Dom Noi	24,000	1969	-	1976
Nam Oon	32,000	1967	-	1976
Laos and the Khmer Republic*				
Nam Ngum	105,000	1970	-	-
Prek Thnot	35,000	1970	-	-

Several other tributary irrigation type projects, especially in Laos, Khmer Republic and Viet-Nam are still in various stages of investigation. Their investigation and implementation could be accelerated if peace is restored in those countries.

In addition to these Mekong tributary projects, there are many other smaller projects, especially in North-east Thailand and Laos, designed primarily for flood control in some areas during the rainy season, and secondarily for irrigation in others. Those projects which are located in North-east Thailand, numbering about 150, are currently being reviewed in connection with the establishment of the pioneer agricultural projects within the basin.

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* All these projects in Thailand were constructed by the Thai Government with varying degrees of support from the Mekong Committee. The Prek Thnot project in the Khmer Republic was initiated, planned and financed with active participation of the Mekong Committee; for the Nam Ngum project in Laos, the Mekong Committee was closely involved in all stages of development ever since the project was first conceived.

While the Mekong Committee has not been the direct agnecy for implementation of every tributary project, it has the major responsibility to initiate, investigate and plan the mainstem projects which are of an international character. As is well known, the Mekong river, one of the largest in the world, as such has not yet been harnessed for power or irrigation. There are more than ten potential sites on the main river where dams can be built (see river profile), some with storage capacity for irrigation. Two of the mainstream projects for which studies and investigations have been brought up to the implementation stage are the Pa Mong and the Sambor multi-purpose projects.

The Pa Mong dam is located about 25 km upstream of Vientiane. It has a large storage capacity which can be even further expanded, if linked with the Nam Lik tributary project in Laos with the dam at 250 m. above the sea level, to a total of 107,400 million m^3, of which about 82,000 million m^3 would be available as effective storage for power generation, irrigation and flood control. In addition to its capacity to generate 4800 MW of hydro power, it can irrigate a total of 2,000,000 ha of land, mostly in North-east Thailand.

The Sambor dam is run-of-the-river type, located just below Kratie in the Khmer Republic. It has a storage capacity of 10,000 million m^3 of which 2,050 million m^3 would be effective. As an isolated project, it has the power capacity of 875 MW and the irrigation capacity of 34,000 ha. But if planned and operated in conjunction with Pa Mong, the capacities would be increased to 3,000 MW and 621,000 ha respectively.

In terms of the irrigating capacity, the Pa Mong project would rank among the highest in the world. Relative to the existing irrigation projects in North-east Thailand, it will be roughly ten times as big as all the existing projects put together. Besides the obvious advantages from the point of view of increased agricultural production, it can generate large blocs of electric power which nowadays has become very expensive. In fact, both the Pa Mong and Sambor dam can easily pay for themselves from the sale of electric power, resulting in virtually no cost of dam construction to be charged against the irrigation benefits.

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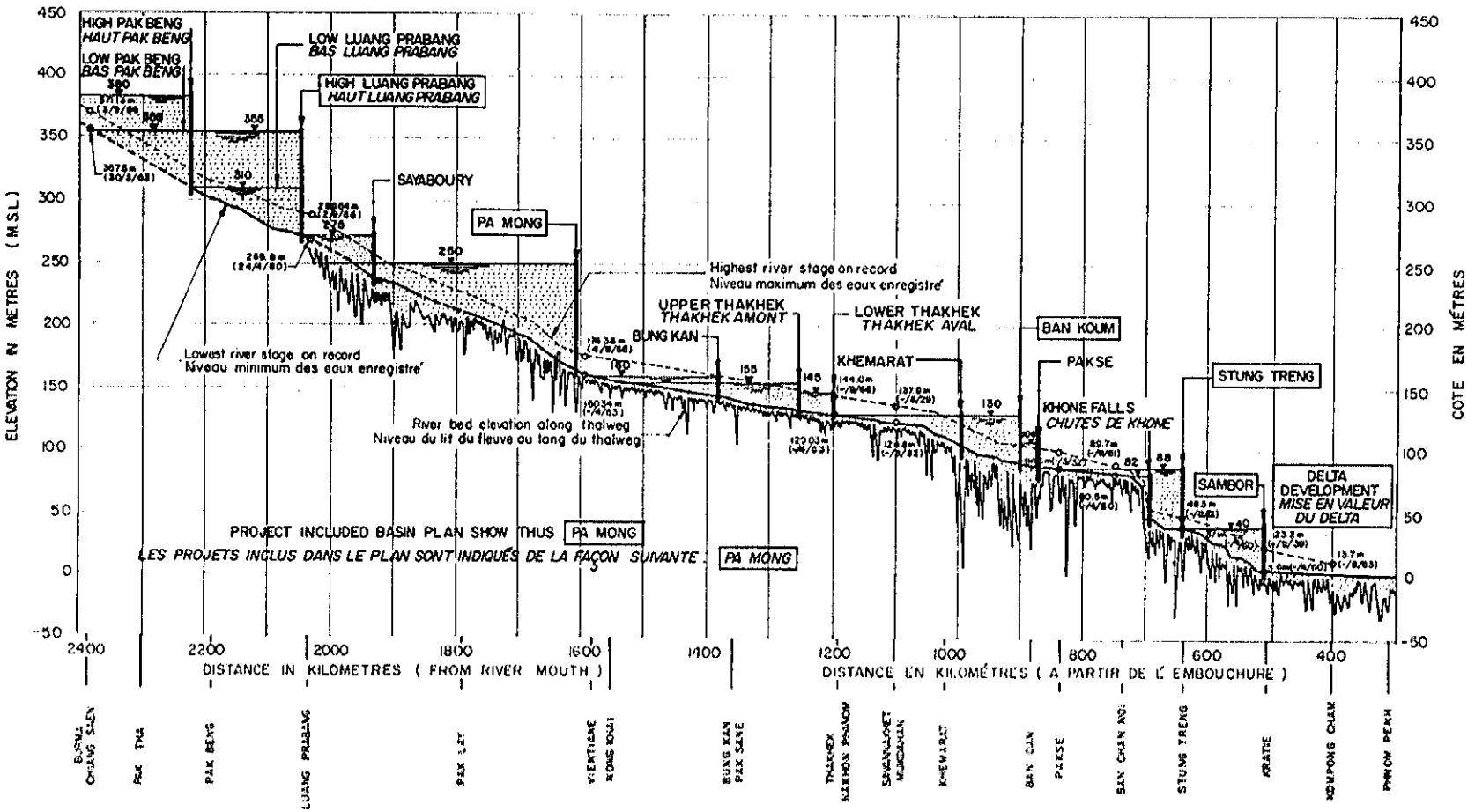
FIG. V-2 LOWER MEKONG RIVER PROFILE SHOWING POSSIBLE MAINSTEM PROJECTS.

MEKONG INFERIEUR PROFIL MONTRANT LES PROJETS DU COURS PRINCIPAL POSSIBLES



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In the opinion of the Mekong Secretariat, the only way to assure long-term increase in the agricultural production of the Mekong basin without destroying natural capital assests beyond what some of these countries already have is to concentrate on an intensive on-farm development with irrigation (and salinity control and flood control for the Viet-Nam Delta) and by the integration of livestock and fishery in the farming system. According to the Mekong Committee's estimate, the increase in irrigated area for double cropping which would be required to meet the anticipated demands for agricultural produce up to the year 2000 should be as in the table shown below. For details concerning tributary and mainstream irrigation projects and their proposed construction years which form the basis of the estimate of increase in irrigation area, the reader may consult the Report on Indicative Basin Plan.

Increase in irrigated land area (double crop)
required to meet the anticipated demands for agricultural produce[a/]
1971-2000 accumulative to end of each year

Year ending	Khmer Republic	Laos	Northeast Thailand	Republic of Viet-Nam	Total
1965 (base year)	0	0	0	0	0
1970	15.5	5.0	43.0	16.0	79.5
1975	35.0	12.5	92.5	34.0	174.0
1980	78.0	20.0	187.0	81.5	366.5
1985	132.0	28.5	283.0	130.0	573.5
1990	208.5	38.5	420.5	206.5	874.0
1995	324.0	51.5	600.0	322.5	1,298.0
2000	508.5	84.5	877.0	477.5	1,947.5

Source: Report on Indicative Basin Plan, 1970, Committee for the Coordination of Investigations of the Lower Mekong Basin, Table V-1, p. V-6

a/ Agricultural produce includes rice (paddy), maize, peanut, soybean, mungbean, sesame, fruit, vegetables, potatoes and sugar cane.

2. The pioneer agricultural development projects

The Mekong basin is a heterogeneous area covering quite a variety of natural conditions, covering the mountainous and valley areas in Northern and North-eastern Laos, the rolling terrain of the Khorat Plateau in North-eastern Thailand, and the flood plain of the Khmer and Viet-Nam delta. A programme of intensification of agriculture therefore has to be translated to a number of operational goals such as flood control for some areas, irrigation and drainage for others, and salinity control for still other areas. For most of these types of land areas, the Mekong Committee has sponsored an agricultural experimentation and demonstration programme in the form of stations established not so much to enhance the knowledge concerning the biological aspects of tropical agriculture as to experiment with crops which are already known, under irrigated conditions. Through the Mekong Committee, 5 such stations have so far been set up, 1 in Laos at Hat Dok Keo near Vientiane, 1 in North-east Thailand at Kalasin, 2 in the Khmer Republic, at Battambang and Prek Thnot, and 1 in Viet-Nam at Eak Mat.

We are now well aware that it is not enough to know that it is possible to grow another crop of soybean after rice with irrigation, or that a certain amount of chemical fertilizer per ha could double the yield of a certain crop, although considerable knowledge of that type has been gained through the work of the experimental stations: it is equally important to be able to translate what has been demonstrated as a biological success into an agro-economic reality. In other words, the agricultural technology, once tested and proved in the experimental plots, has to be "transplanted" in the farmers' own fields. This is the intention of the other major aspect of the Mekong Committee's programme, the agricultural pioneer projects in the Mekong Basin. The plan of operation for these projects, states the aim thus:

> "As the implementation of a programme of pioneer agricultural projects is intended to generate information essential to the efficient planning and implementation of agricultural development in the Lower Mekong Basin, each project shall be designed to

/constitute

constitute an appropriate project model which deals with physical, economic and organizational problems likely to be encountered in the implementation of full-scale agricultural development projects."

So far, the following pioneer agricultural projects have been identified for detailed preparation under the above-mentioned programme:

Khmer Republic

Project	Area(ha)
Muk Kampoul	2,200
Bovel	4,000
Prek Thnot	5,000

Laos

Project	Area(ha)
Casier Sud	3,200
Se Bang Fai	(under consideration)

Thailand

Project	Area(ha)
Pump irrigation along Mekong (5 stations)	2,500
Tank irrigation	3,400
Rainfed crop improvement	(under consideration)

Republic of Viet-Nam

Project	Area(ha)
Caisan	13,350
Tiep Nhut	10,000, for irrigation
	15,000, for intensive farming
Go Cong	6,300

/The pioneer

The pioneer agricultural project is considered to be a major step between the "labolatory" experiment and large-scale, real-life development projects. Unlike the experimental farms which are concerned primarily with biological aspects of agriculture, the pioneer farms are much larger in area, each encompassing hundreds or thousands of individual farmers who, under proper expert guidance, are supposed to utilize their land more "rationally". For instance, the cropping pattern would be changed from the tradition-oriented rice farming to other crops depending on the suitability of the soil, climate or market demand, or the same land may be cultivated twice or thrice a year instead of just once. In this way, it is hoped that land resources could be more intensively utilized with irrigation and other complementary agricultural facilities. On the other hand, lands which are too poor or too uneconomic to be cultivated or which are in the watershed areas, could be barred from exploitation.

Whether or not the new agricultural development strategy will work under prevailing socio-economic conditions we do not know and have no way of knowing until it has been tried out. In other words, it is the economic and social feasibility of what is biologically feasible that is being studied. It should not come as a surprise to those who are familiar with the Mekong basin if, for instance, it turns out that most farmers still prefer to grow rice on the land which is better suited to growing other more valuable crops. It is also probable that some farmers value their leisure time during summer months more than they do the monetary profit from the second crop. The interaction between the "transplanted" or "foreign" element on the one hand and the "body", which in this case is the socio-economic or cultural system, on the other, is too complex and tricky to be predicted with any analytical tool that we have. It would be baffling as well to try to draw conclusions from the experience gained in areas where the culture is different. The testing has to be done right in the same area where the development is planned to take place.

V. THE ORGANIZATIONAL PROBLEMS OF THE INTENSIFICATION AND DIVERSIFICATION OF AGRICULTURE IN THE MEKONG BASIN

In its simplest terms, the intensification and diversification of agriculture is to make the farmer work more efficiently on his land, at the same time making him feel free to grow whatever suits his natural endowment, so that his income, and hopefully his standard of living, could be maximized. The organizational problems involved in achieving such an objective would be those of modifying the social system of the traditional farming society so as to suit new technology. A social system can be modified only if all, or at least a large majority, agree. For instance, if out of a total of 100 farm holdings, only five want irrigation from a canal for a second crop during dry season, the water losses due to seepage, evaporation and other factors are going to be so great compared to the benefit to be received, so that an irrigation official would not think it worthwhile to supply the water. Even if a sufficiently large number of farmers do want to grow a second crop, an understanding or agreement should be reached as to what kind of crop they should grow so that one farmer's operation will not affect another's in any way (e.g. one farmer draining the water into his neighbour's plots). On the other hand, if too many farmers want to grow a second crop at the same time, still another kind of understanding is necessary regarding the sharing of water because otherwise there may not be enough water for everybody.

Unfortunately, the experience of the Mekong countries in this respect points to the urgent need for an improvement. Progress in many irrigation project areas has been slow due to the fact that the farmers have not been able to co-operate with one another. Such a situation not only renders the scheme inoperative, but it may also lead to other troubles. For instance, at the Kalasin experimental and demonstration farm in North-east Thailand, lack of interest in multiple cropping during the first few years of operation lead to a lack of maintenance of the distribution system. By the time the farmers began to realize the gain from multiple cropping, a good part of the water delivery system were no longer in serviceable conditions.

/Related to

Related to the above-mentioned problems is the need for an organization and institutionalization of the marketing and transportation. The uncertainty of market for farm products is well known. This, together with the absence of a well-organized, dependable marketing and transportation system, has resulted in the farmer's reluctance to grow anything other than what his family consumes which in most cases is rice. The repercussion of this is that the farmer may try to grow a crop which is not the most suitable to the soil and climate conditions. This situation is especially true of the marginal farmers whose farms are located on upland and less fertile areas.

Other organizational problems have to do with authorities in charge of the agricultural development programme, arising mainly from the fact that there are different government agencies in charge of different aspects of the programme: irrigation, soil conservation and land-use, agronomy, co-operatives and farmers organization, eduction, transportation, etc. Each of these is the prerogative of a separate agency with separate work plan and financing. Field co-ordination which is absolutely essential for any intensive agricultural development programme becomes difficult to achieve. Synchronization of the supply of farm inputs and services has to be ensured if maximum results from the programme are to be achieved. In this respect, Laos has made a major stride by setting up the Agency for the Development of the Vientiane Plain with responsibility for co-ordinating the work of various government agencies operating within the same geographical area.

VI. CONCLUSION

The paramount problem concerning rural development in the lower Mekong basin is that of reorienting agriculture in such a manner as to steadily increase its productivity, firstly for the purpose of meeting the food and other requirements of the growing population and secondly with a view to raising the level of living of the people as quickly as possible. Efforts towards this objective will be needed at least until the population growth comes under control.

Increase in agricultural production through expansion of cultivated area, as in the past, cannot be expected to provide a satisfactory answer to the problem, owing to the obvious limitations on the availability of total arable land. Planned agricultural development aiming at a more and more intensive and efficient exploitation of the available land resources seems to be the main recourse. Irrigation, drainage, flood control as also modern technology, organized rural institutions for market research, credit financing and the like are obviously among the known measures that could achieve large scale increases in agricultural production. In order for these measures to be fully utilized, the aims, outlook, methods and practices of the rural farming community should undergo a major change-over from the traditional farming system. While such change should take place as rapidly as possible, it has to be rather gradual effected through well planned schemes providing for on-the-spot demonstrations and reasonably large-sized orientation projects, backed by local research and application of knowledge relevant to local conditions. Provision of an infrastructure for agricultural development alone is not sufficient, but arrangements for assistance and guidance in various forms that would give confidence to farmers and put them safely along a new direction are essential.

The Mekong Committee's experimental stations, demonstration farms and pioneer agricultural projects are some of the measures taken in this regard. The population pressure in some of the Mekong countries calls for the need to intensify these activities so as to create a real impact

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on the millions of farmers. Such responsibilities are far beyond the capacity of the Mekong Committee to fulfill. It is therefore inevitable that the riparian governments themselves bear a larger part of such responsibilities. It is hoped that those seemingly promising possibilities, spearheaded by the Mekong Committee's efforts, would be further explored by those whose common goal is to work for the betterment of the farming population.