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APPROACHES TO RURAL DEVELOPMENT IN TAIWAN  
(A Case Study)

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The author is solely responsible for the errors, if any, still remaining in the study.

## TABLE OF CONTENTS

	Page
I INTRODUCTION .....	1
II THE BACKGROUND AND THE PROBLEM .....	6
Physical Background .....	6
Effect of Natural Conditions on Agriculture ...	7
Historical Background of Agricultural Development .....	7
Post War Difficulties, Rehabilitation and Reconstruction .....	10
III THE SPECIFIC UNDERTAKINGS FOR RURAL DEVELOPMENT ..	15
Joint Commission on Rural Reconstruction .....	15
Origin and Early History .....	15
The Philosophy .....	17
The Organization of JCRR .....	18
The Functional Role and Position of JCRR ...	19
The Budget, Projects and Programs .....	20
JCRR and Agricultural Planning .....	27
The Special Features of JCRR .....	28
Jointness .....	28
Sponsoring Agency Approach to Aid Allocation .....	30
The Farmers' Associations .....	33
Origin and Historical Background .....	33
Structure and Organization .....	36
The Village Agricultural Units .....	37
The Township Association .....	37

	Page
County/City Association .....	38
Provincial Farmers' Association .....	38
Township Farmers' Associations: Its Functions, Programs and Finance .....	39
Relationship Between Government Agencies and FA's .....	41
The Government's Role in Relation to FA's .	43
Finances .....	44
Joint Revolving Fund .....	45
Development of Local Action Programs .....	46
Result Demonstrations .....	47
To Sum Up .....	49
Land Reform Program .....	50
The Background .....	51
The Land Reforms .....	55
The Results and Effects of Land Reform Program .....	58
Agricultural Research, Education and Extension .....	62
Research and Education .....	62
Extension .....	64
The Four Year Economic Plans and the Agricultural Plans .....	67
The General Economic Plans .....	67
The Agricultural Plans .....	68
The Technology of Agricultural Planning ...	70
United States Aid .....	71

	Page
IV THE OVERALL ACHIEVEMENTS .....	73
Economic .....	73
Social and Other .....	75
V TAIWAN'S AGRICULTURAL DEVELOPMENT MODEL .....	84
A Discussion on Selected Development Models in the Context of Taiwan's Experiences .....	84
The Relevance of Taiwan's Experiences to Other Developing Countries .....	91
The JCRR Model .....	92
The Land Reform Program .....	94
Farmers' Associations .....	96
Taiwan Approach to the Application of Technology and Development of Infrastructure.	98
The Political Environment and Foreign Aid ...	99
BIBLIOGRAPHY .....	102

# APPROACHES TO RURAL DEVELOPMENT IN TAIWAN

## I. Introduction

The purpose of this paper is not to inquire into the role of agricultural sector in the economic growth of Taiwan. That has been done by many in the past. Rather, the main purpose of this paper is to review and discuss a few institutional approaches to agricultural and rural development on Taiwan which are considered to have played more significant roles, viz. the Joint Commission on Rural Reconstruction, the Farmers' Associations, Land Reform Program, Research and Education and the Four Year Economic Plans. An attempt also will be made to identify the effects of these institutions on the socio-economic life of the people in the rural Taiwan.

Agricultural and rural development has been a subject for study and discussion among those who have focused their attention and resources for the economic development of the emerging nations in Asia, Africa and Latin America. There have been several attempts and approaches to the problem. There is a growing consensus among economists regarding the vital importance of agricultural and rural development in developing countries for the fact that many of these countries are predominantly rural and agricultural. Abundant is the literature dealing with developmental strategies for under-developed countries and the role of agriculture in total

economic development. Still there is no satisfactory explanation of why some countries at one time or another have emerged into and sustained the cumulative growth process while others have failed. Experiences of different countries that have launched a process of development are being carefully analyzed and factors responsible for growth and development are being identified; these factors include both economic and non-economic. Countries which have lagged behind in their attempts are being encouraged to learn and adapt from the experiences of those which have shown substantial progress. Japan has been, quite for some time, often quoted as an example of sustained economic growth for which its agricultural development strategy is considered to be a major factor. Another country which is fast approaching the level of Japan is its one-time colony, Taiwan.

Taiwan's strategies for development and their relevance for other countries are under scrutiny and consideration by developmental agencies, particularly United States Agency for International Development. Some of the techniques of production are being recommended for adoption in other developing countries. For example, the two rice varieties of Taiwan, viz. Tainan and Taichung are under experimentation and adaptation in the rice-growing areas of India. The Joint

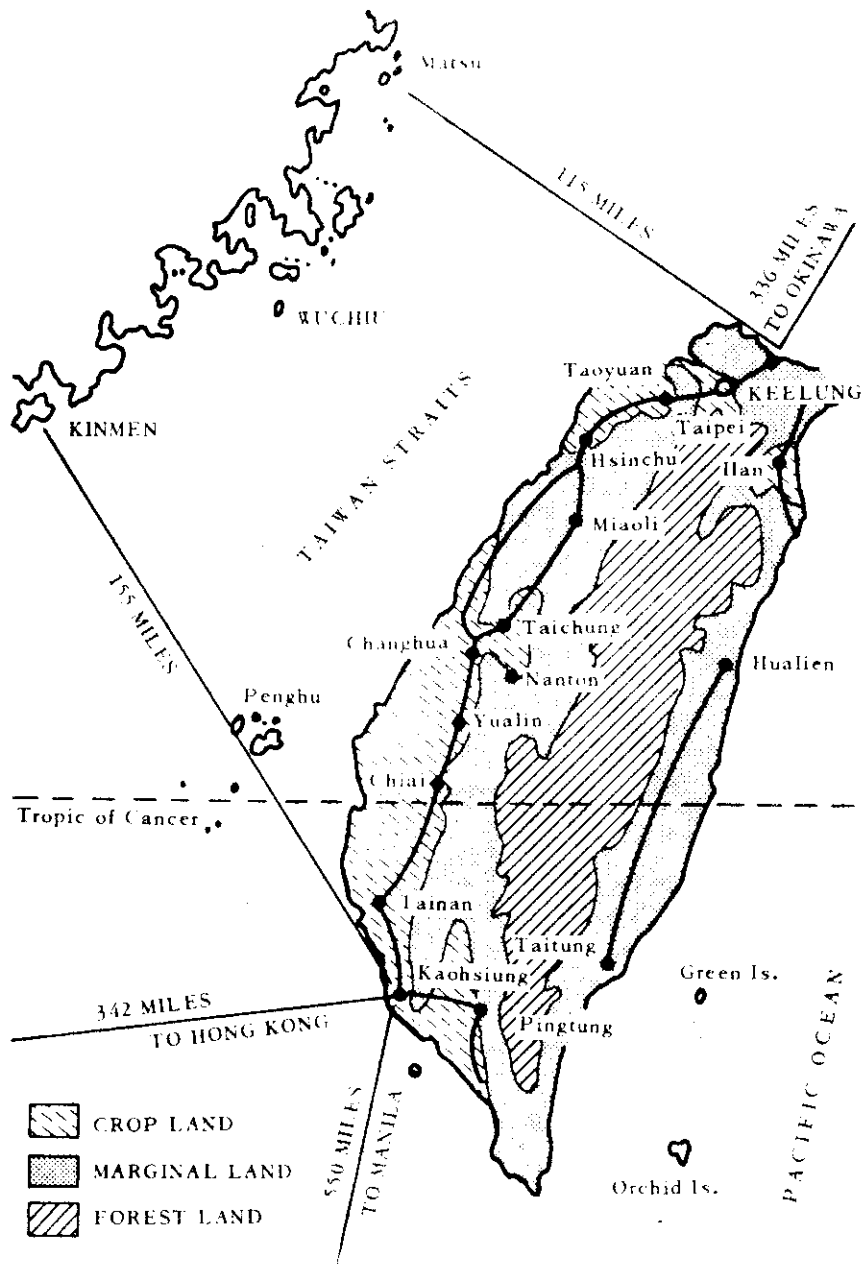


Commission on Rural Reconstruction, the U.S. - China Joint agency for rural development in Taiwan, is highly commended in its achievements and therefore being considered for transplantation in other countries by AID. "National income measured in real terms has increased at a yearly rate of 7.6 percent since 1952. Per capita income has increased at a yearly rate of 4.2 percent. These high growth rates have been achieved despite rapid population growth, limited natural resources, and large expenditures for defense."

(1, page 1) Studies show that these achievements have been possible mainly due to the successful approaches accepted and implemented for agricultural and rural development.

According to the gross output index as compiled in the study undertaken by Yhi-Min Ho, farm output of Taiwan increased at an annual rate of 8.57 percent during 1945 and 1960, while the pre-war growth rate was 2.6 percent; and agricultural output accounted on the average, for about 30 to 33 percent of the net national income. (5, page 29) Though industrial development boosted up the exports of nonagricultural products in recent years, still agricultural products, including processed items, contributed more than 60 percent of the value of all exports in 1965. (1, page 24) Agriculture provides a major source of raw materials for industries as well as the provision of the basic food for the population. Agricultural

processing industries share the large part of the industrial operation and provide the major source of nonfarm employment.



Source: Christensen, R.P. Taiwan's Agricultural Development: Its Relevance for Developing Countries Today. USDA, ERS, Foreign Development and Trade Division, 1968. Page 6.

## II. The Background And The Problem

### A. Physical Background

Like most of the other Asian countries, Taiwan is a tropical country. Its natural resources are still not fully developed and the economy is predominantly agricultural. The tropic of Cancer cuts the island across the middle. It lies in the path of typhoons which come in the Summer and Autumn and are capable of doing extensive material damage. On the average, 3 - 4 such storms have swept over the island annually since 1897. (20, page 10)

It lies opposite the province of Fukien on the Chinese Mainland, from which it is separated by the Taiwan straight. It is bounded by the East China Sea in the North, the South China Sea in the Southwest and the Pacific Ocean on the East. The island has a total area of 13,836 sq. miles with a length of 240 miles and maximum width of 90 miles from west to east. Many small islands, numbering 78, are scattered around the main island. (20, page 2)

Taiwan has a warm temperature with heavy rainfalls and frequent strong winds, long and hot summers but short and mild winters. Crops can be grown all the year round except in high mountain areas where freezing temperature sometimes occurs. On the plains the annual mean temperature is 21.7°

to 24.5°C. With an increase in altitude, the temperature drops at a rate of about 0.5°C per 100 meters. The average rainfall in the important agricultural regions of Taiwan ranges from 1,763 to 3,042 mm. which is sufficient for crop production. (20, page 6)

#### B. Effect of Natural Conditions on Agriculture

Taiwan has a variety of climates in different regions due to its different altitudes and as a result, different kinds of crops are grown. The climate on the plains has facilitated the cultivation of various crops such as rice, sweet potato, corn, soybeans and peanuts. Three or four crops can be grown on the same piece of land. Multiple cropping and inter-cropping are two special characteristics of Taiwan's agriculture. Heavy rainfall on the mountains necessitated the construction of reservoirs for both irrigation and flood control. Soil conservation became necessary to check soil erosion caused by torrential rains. Though the natural conditions of Taiwan offer many opportunities they also demand a high level of technology and intensive operations for the successful development of agriculture. (1, page 7 and 20, page 25-26)

#### C. Historical Background of Agricultural Development

During the past centuries when Taiwan was part of Chinese empire there were sporadic attempts at agricultural

development. But a systematic and universal approach to the problem of agricultural development began only after Taiwan was ceded to Japan in 1895. From 1910 to 1939, Japan paid special attention to rice production by the improvement of irrigation, drainage, flood control, application of chemical fertilizers, improvement of crop varieties and cultural methods, development of railway transportation, establishment of farmers' associations with warehouse and milling facilities, and development of farm credit. The production of rice, sweet potato, pineapples, and bananas steadily increased during this period. The index of crop production shows that during the period between 1900 and 1940, total rice production increased by about 4 times and sweet potato by about  $7\frac{1}{2}$  times. The area of these two food crops also increased remarkably - rice area from 325,653 hectares to 638,622 hectares and sweet potato from 39,855 hectares to 132,472 hectares. (20, page 29 and 30) But this higher production did not contribute to the welfare of Taiwanese since the objective of Japan in producing more food was to export it to Japan for the consumption of Japanese people. After 1932, as rice production in Japan proper and the importation of rice from Korea was increased, Japan no longer needed large amounts of rice from Taiwan. So they shifted the emphasis to sugar cane production for which Japan was the principal market. The Japanese also developed

pineapple, banana, and tea production on Taiwan, largely for export to Japan. "In general, they used Taiwan as a source from which to obtain raw materials and in return sent Taiwan clothing, utensils, fertilizers, and other manufactured articles. Since Taiwan was a granary for Japan and a market for its industrial products, Japan encouraged the agricultural development of Taiwan. As a result, Taiwan's economy was a typically colonial one, largely dependent upon Japan." (20, page 31)

But, during World War II, a sharp deterioration of food production occurred. "Japan again encouraged rice production in order to supply the Japanese army and people. At the same time, a strict control was imposed on the consumption of rice by the Taiwanese." (20, page 31) Government took almost complete control over the production, processing and supply of rice and introduced food rationing. Farmers were required to turn over the whole quantity, except the quantity allotted for seed and their own ration, to the government at government prices. Farmers could hardly make a living and were reluctant to increase production because of the compulsory sale at official prices. The situation deteriorated further as a result of labor shortage caused by the army draft and of the shortage of chemical fertilizers in Japan. Production decreased to 604,000 metric tons of brown rice in 1945 - the amount required to meet the people's minimum consumption was 857,000 tons. (20, page 31) This was the situation when

Chinese National government took over Taiwan in the fall of 1945. But when Japan withdrew in 1945 after 50 years of colonial rule, they left behind a farm population familiar with modern techniques of production with facilities of irrigation, credit, drainage and conservation, etc.

Also during the war, all the important sectors of the Formosan economy were shifted to war efforts. Production equipment which had no military use deteriorated for lack of adequate maintenance. The war also caused extensive damage to transportation and productive facilities due to bombing by the Allied forces.

#### D. Post War Difficulties, Rehabilitation and Reconstruction

During their administration, the Japanese used their own nationals for all top administrative and technical positions in government as well as industry and as a result few Taiwanese were prepared to assume executive responsibility after the Japanese left. Taiwanese were also deprived of the opportunities for higher education and for development of local leadership. This handicapped Taiwanese ability to compete with Japanese in holding important positions during Japanese rule and also to replace the Japanese officials after their departure. The Japanese technicians were evacuated hastily to Japan; only a few of them were retrained. But these few who were retained did not receive the cooperation



from the Taiwanese. The new regime, instead of using the natives to replace the Japanese, attempted to fill the vacancies with mainlanders.

Fred W. Riggs has observed the situation on Taiwan at this period as follows: "The new rulers, unsure of their tenure and oriented to mainland conditions, seemed concerned chiefly with extracting as rapidly as possible maximum profits with which to retire to mainland. Nepotism, corruption and inefficiency brought the Formosan economy almost to the point of total collapse. . . . . Many Formosans became hostile to the mainlanders and attempted to sabotage and cheat their new rulers in retaliation for the disgraceful exploitation to which their land was being subjected. Their efforts intensified the anti-Formosan sentiment on the part of the Chinese and further contributed to the breakdown of the Formosan economy." (17, page 64)

But with the change in the provincial regime, establishment of the Chinese National Government in Taipei and provision of American aid, things started changing and a new era in the history of Taiwan emerged. The Chinese technical experts quickly restored many of the industrial plants such as "hydraulic power plants, fertilizer plants, sugar mills, pineapple canning factories, and tea-processing plants, which either had been bombed by American airplanes or had suffered deterioration during the war." The irrigation systems and

the dikes for flood control were gradually repaired. "The production of rice, sugar, sweet potatoes, and other crops steadily increased during the years between 1946 and 1948." "Rice production in Taiwan increased to 843,000 metric tons of brown rice in 1946 and 1,010,000 metric tons in 1948, but it was still below the pre-war production of the late 1930's." (20, page 32)

The Chinese Nationalist Government which moved to Taipei in December, 1949 after the Communist victory on the mainland had to face new problems and challenges along with the then existing local problems of Taiwan. Chiang Kai-shek's government regarded itself at war with the Chinese communist regime and placed the highest priority on building up its military capabilities. The population of Taiwan suddenly expanded from 6,807,601 in 1948 to 7,555,588 in 1950, not including the 600,000 men in the armed forces. (20, page 32) Government had to incur a huge expenditure for military establishments and find food to maintain the military force as well as the expanding population." An unfavorable balance of international payments occurred year after year from 1949 to 1953 "due to" increased government expenditures and a sharp rise in demand for foreign exchange for the procurement of the capital goods needed in industrial development."

The new government became determined to face these challenges and to overcome them through a policy of social and

economic rehabilitation of Taiwan. It "laid special emphasis on increased food production; but because of a shortage of foreign exchange only a limited amount of chemical fertilizer was available for rice and sugar crops." "Rice production in 1950 set a record exceeding the high yields of 1937-39 and leaving a surplus for export to Japan in exchange for fertilizer." (Ibid) Several institutional changes were also initiated in order to accelerate the process of development particularly in the rural sector. The Joint Commission on Rural Reconstruction, a U.S. - China joint agency, which was inaugurated in 1948 at Nanking was shifted to Taipei in 1949 and this commission assumed a major responsibility in reorganizing rural institutions and introducing programs for agricultural and rural development. A land reform program was formulated and introduced to reorganize the land tenure conditions and to provide incentives to the cultivating farmers. The Farmers' Associations were democratized with powers and responsibilities assigned to them under a new law enacted for the purpose. Both general and vocational education for rural population and research institutions concentrating on farm problems at local levels were encouraged and developed with the active cooperation of the Farmers' Associations and technical assistance from the JCRR. All these various programs were integrated together under a general economic plan which included, as its part,

an agricultural development plan for the rural sector. With the technical and financial aid from the United States, the Chinese Nationalist government initiated its First Four Year Plan in November, 1952.

These various institutional approaches that were launched for the rural reconstruction of Taiwan will be discussed in the next section.

### III. The Specific Undertakings For Rural Development

This section includes a review and discussion of certain specific undertakings. These are the Joint Commission on Rural Reconstruction, Farmers' Associations, Land Reform Program, Research & Education and the Four Year Economic Plans which are considered to have been playing vital roles in agricultural and rural development on Taiwan. The discussion will cover the organization, functions and the possible contributions of each of these undertakings. Since all of them have been sponsored by the government, government's role will naturally be reflected at the appropriate contexts.

#### A. Joint Commission on Rural Reconstruction (JCRR)

##### Origin and Early History:

The Joint Commission on Rural Reconstruction is a reflection of decades of close cultural relations between China and America. Many years of missionary activity in China predisposed many leading Chinese toward friendly cooperation with Americans. The Joint Chinese-American China Foundation, The Boxer Indemnity Fund Scholarships and other activities provided opportunities for American Education for thousands of Chinese students. Many Americans also studied in China and taught at Chinese educational institutions at all levels. (15, page 7)

The idea of a joint agency consisting of both Chinese and American representatives for the agricultural and rural development on China with American assistance was conceived in the post-World War II period. At the end of 1945, a China-U.S. Agricultural mission was set up at the initiative of the Chinese government to survey the needs of rural reconstruction and development on China and to recommend a suitable program. (15, page 8) The report of this commission was published in the year 1947. One of the main recommendations of this report was setting up an agency for rural reconstruction - a Joint Commission on Rural Reconstruction - which might include experts from the United States as well as from China. Dr. Y. C. James Yen, pioneer of the Chinese Mass Education movement was the prime mover of this idea. He drafted the memorandum proposing the setting up of the JCRR and also worked hard for getting it approved by the United States Congress. He had the support of a U.S. Congressman, Walter Judd of Minnesota who was a former medical missionary in China and was familiar with Chinese rural problems. As a result of their efforts, the 80th Congress of the United States passed an act called the China Aid Act in April, 1948. (6, page 13) As a provision in this act, JCRR was formally inaugurated in Nanking (China) with the late Dr. Chiang Monlin as its chairman. But, JCRR could not function for long on Mainland China. When the communist victory became certain

and imminent on the mainland, JCRR moved to Taiwan in August, 1949 to continue its assignment for rural development on Taiwan and to assist the Government of Republic of China which also moved to Taiwan after communist victory.

The Philosophy:

Dr. Yen had conceived of an "integrated program of rural reconstruction" which was in large part molded after his experiments with the Mass Education Movement in China.

(6, page 13) The program of JCRR was therefore defined as "the application of a coordinated attack on the multiple problems of a chosen rural community with a view of bringing about a new social order for the betterment of rural life."

(6, page 13) But, this concept was later modified and revised by JCRR whose thinking and action gravitated to a less grandiose, project-oriented approach. The experiences and results of the pilot model community development projects supported this new line of thinking of JCRR. So the fundamental philosophy was shifted from the "total approach" to the "project-oriented approach."

The overall objective of the JCRR has been to provide financial and technical assistance to governmental and private agencies in their service to Taiwan agriculture, to stimulate agricultural production and improve rural welfare, and to encourage and develop rural leadership in Taiwan. JCRR did

not have a preconceived philosophy as such; it believed in the formulation of projects which could facilitate rapid and piecemeal problem-solving in the different micro-environments of rural Taiwan. In order to achieve these objectives, the JCRR adopted an approach and a program to the solution of the problems which they identified in rural Taiwan. They wanted to learn from the farmers and the local people what they needed instead of trying to teach them and tell them what they should need. While assisting for increase in agricultural production and improvement in the living conditions through the income incentives resulting from this production, it also stressed the need for equitable distribution of the accrued benefits of increased production, i.e. realization 'distributive social justice.' (6, page 14)

It, therefore, supported and cooperated with the government in implementing the Land Reform Program and also gave priority to those projects which benefitted the maximum number of people.

The Organization of JCRR:

The organization of JCRR is so flexibly designed as to facilitate the operation of its programs without any red tapism and procedural delay; and organizational changes are made as programs change. The commission initially consisted of five members - three of whom, including the Chairman, were appointed by the President of the Republic of China and the



other two by the President of the United States. But later in 1964, when the activities of JCRR became less, the strength of the Commission was reduced to three - two Chinese including the chairman and one American.

The JCRR staff consists of 10 technical divisions and 5 administrative offices. The technical divisions include, (1) Plant Industry, (2) Animal Industry, (3) Forestry, (4) Fishery, (5) Agricultural Extension, (6) Rural Health, (7) Rural Economics, (8) Farmers' Organization, (9) Rural Credit, and (10) Irrigation and Engineering. The administrative offices are divided into 5 sections such as (1) The Secretariat, (2) Administrative branch, (3) Controller, (4) Budget and program, (5) Information & Education. (20, page 39) But, this pattern underwent various changes later as and when the programs and scope of activities increased or decreased.

#### The Functional Role and Position of JCRR:

T. H. Shen clarifies the functional position of JCRR thus: "JCRR is not an executive agency which actually conducts rural programs. Rather it serves to stimulate interest in rural improvement and to furnish technical and financial aid in carrying out the projects of other agencies which it considers to be worth while." (20, page 39) It therefore adopted a policy which generally did not replace nor duplicate the existing governmental machinery or bureaucracy. Since its specific functions changed from time

to time, from program to program and division to division, JCRR is called a "floating organization." (6, page 16) It has been working as occasion demands and in cooperation with and support of rural agencies at all levels, governmental or non-governmental.

The Budget, Projects and Programs:

The China Aid Act of 1948 under which the JCRR was established stipulated 10 percent of the economic aid funds to China to be utilized for JCRR projects and programs. JCRR funds derived from two sources, viz. (1) appropriated U.S. dollars; and (2) local currency, from the Chinese counterpart account. The latter which is, strictly speaking, Chinese internal revenue, has been the source of 94 percent of the total JCRR expenditures. The U.S. dollar funds have been used to send participants to the United States for training and to procure commodities in the U.S. In spite of the delay in receiving the AID allocations due to procedural reasons, the JCRR has made a very favorable impression on the government organizations concerned and on the rural population by the expeditious manner in which it has been able to get the programs under way. (15, page 26) JCRR generally requires the sponsoring agencies of all projects to make cash contributions in accordance with their ability. These cash contributions are often made in addition to voluntary local labor for the project. According to T. H. Shen,

"JCRR provides 60 percent of the cost of the project - the rest of 40 percent to be met as matching contribution by the sponsoring agency. Local agencies also contribute manual labor, land, office space, and other facilities." (20, page 40)

Since 1950, JCRR has disbursed on Taiwan and the off-shore islands an approximate U.S. \$136 million, of which U.S. \$7.1 million were appropriated for U.S. procured commodity and technical assistance, and the balance of 95 percent Taiwan currency generated from U.S. foreign aid commodity imports. (6, page 11) About two-thirds of the local currency has been expended in the form of grants to support public service and innovative type projects with revenue producing or income generating capacity. (6, page 11)

The major categories to which JCRR resources have been allocated include (1) water use and control, (2) crop production, (3) agricultural credit, (4) agricultural extension, (5) rural health, (6) fisheries, (7) forestry, (8) soil conservation, and (9) livestock production. Since 1950, it has aided over 700 agencies - ranging from State Department of Agriculture up to Township Forest Protection Associations; and approved approximately 6500 projects covering the entire rural Taiwan. (6, page 11)

Though the results and achievements are attributable to several agencies, there are certain projects and programs for the success of which the major share of credit goes to JCRR.

There are over 30 organizations in Taiwan which are devoted to agricultural research and experimentation. JCRR has been helping to establish and strengthen these organizations by giving consistent priority to their work. Some of the results of these organizations' work have been especially noteworthy. The "mushroom story" is a striking illustration of the innovative role JCRR has played in the field of research. (6, page 25) Early in the 1950's, the technical staff of JCRR explored the possibilities of introducing artificial mushroom cultivation into Taiwan. There were favorable conditions for all aspects of the scheme except one major problem: the lack of local supply of the conventional ingredient, horse manure. In 1954, JCRR spent U.S. \$594,000 and assisted the Taiwan agricultural research institute for testing of various locally available substitutes for horse manure. Many were critical and skeptical of the venture. But the experiment resulted in a synthetic composite of chemical fertilizers and rice stock or other stocks within which mushroom culture flourished. The mushroom industry soon developed out of this pilot project. In 1966, Taiwan received export earnings of U.S. \$25 million from canned mushrooms.

In land use and improvements, irrigation and flood control, the JCRR has made noteworthy contributions. A Land Consolidation Program was implemented on a pilot basis jointly by the Government and the JCRR in Tainan county in

1959 to improve land use conditions. The program was divided into five stages, viz. (a) survey of land plots and titles and assessment of land values, (b) construction of farm roads, (c) rearrangement and consolidation of farm plots, (d) reallocation of new plots, (e) payment of compensation to land owners for losses of land as a result of land consolidation. The entire program was completed in May, 1959; and it was later extended to other areas too. (20, page 114-115) This program remodeled the original farm plots into 0.25 hectare plots and simultaneously provided means of direct irrigation and communication. A total of 160,000 hectares of farm lands of which more than two-thirds were irrigated paddy lands have undergone consolidation. As a result, production has been raised by 30 percent and costs reduced by 20 percent. (13) JCRR also started, in 1953, a systematic program of soil conservation which covered 75,000 hectares of slope farm land. An integrated soil conservation and land use program including development of farm road, irrigation systems, crop pattern and soil management is carried out in 11 areas ranging from 60 to 560 hectares. (13)

Shihmen Reservoir is a multi-purpose water resource development project with four major functions of irrigation, power generation flood control and public water supply. This was fully supported by JCRR. The project which was completed in 1964 serves 50,000 hectares of irrigable plateau land in Taoyuan. Besides development of 900,000 k.w. of electricity,

it reduces the flood level downstream and provides and improved public water supply for a population of 340,000.

(13) Wherever irrigation facilities were inadequate to irrigate all the land at the same time, a rotational irrigation system has been introduced under which different crops are grown in different plots of which one crop at a time needs water. The other crops are either dryland crops or which need water at a different time. Utilization of underground water resources by well drilling methods has been another step undertaken for more irrigation. Existing wells have been improved and new wells have been constructed. (13)

In stepping up agricultural production, the JCRR participated in the efforts for technological advancements, particularly in developing high-yielding varieties of seeds. During the period from 1946 to 1964, 62 varieties of Ponlai (Japonica) rice were registered officially which are now in use. (13) Taichung Native No. 1 is a new variety which has been developed in Taiwan and which is now being commonly used as a breeding material, or even directly multiplied for extension in many Asian rice-producing countries. The large increase in sugar cane yields was due mainly to the improvements in sugar cane varieties. In 1941-42, the average cane yield per hectare was 66 M.T. and sugar yield was 7.4 M.T. By 1956, this rose to 76 M.T. and 10.3 M.T. respectively. (13)

This increase was mainly due to the introduction and rapid extension of a new variety called N: Co 310. New varieties of corn seed, vegetable seeds, fruits and fiber crops also have been developed and introduced. Under the corn improvement program, corn production increased fourfold to 64,300 M.T. in 1967. The export of banana and pineapple along fetched a foreign exchange earning of U.S. \$82.4 million in 1967. (13)

Taiwan's field rats, which destroyed an estimated total of 135,000 metric tons of crops a year, have not been brought under control with JCRR assistance. Rapid development of the pesticide manufacturing industry has been undertaken and many useful pesticides have been developed. (20, page 146) The loss of crops from diseases and pests was estimated at an average of 18 percent of total agricultural production before pest control was started by JCRR. (20, page 142)

JCRR also participated in the livestock improvement schemes and initiated certain pilot programs. Cattle raising for beef is a new industry since 1962 when JCRR imported Santa Gertrudis bulls to improve the native yellow cattle. Hybrid varieties of pigs, ducks and chicken also have been developed. Poultry diseases such as New-Castle, Fowl Cholera and Pullorum have been prevented. Another important trend has been the increasing interest which the farmers and businessmen show in dairying. This may be attributed to the development of a number of forage grasses and legumes entirely

new to Taiwan and also to the increasing demand for dairy products. A pilot dairy farmer program was initiated by JCRR in 1958 in the Yangmei demonstration area. Better feeding and management of the cows and artificial insemination which upgraded the local varieties have brought about an increase in the average milk production per cow from 2,228 kgs. to 3,721 kgs. in 1968. The average number of dairy cows kept by a dairy farmer in the whole country has gone up from 3.3 head in 1964 to 6.1 head in 1967. (13) Prevention and control of livestock diseases, upgrading of local varieties through artificial insemination, better feeding methods and starting of feed mills, establishment of modern slaughter houses, etc. have jointly contributed to the improvement of livestock program and industry in Taiwan in recent years. JCRR was actively involved in these various measures.

JCRR also influenced the government in formulating and implementing some of the public laws and policies which have been necessary for institutional changes and for providing incentives to farmers for better production. Though the idea of land reforms was already in existence in China, JCRR helped in planning it and implementing it in the new circumstances of Taiwan; and provided necessary financial support. (20, page 42) It also took up the responsibility of developing Taiwanese leadership and to fill the vacuum which was left by the Japanese when they left. It precipitated a government sponsored program to revitalize, streamline and democratize



the Farmer's Associations. (6, page 23) JCRR has always been supporting the Farmers' Associations in supporting them as well as utilizing them for JCRR activities. The other programs which JCRR has been undertaking with long-term objectives are agricultural extension, family planning projects, training of workers for rural development and the overseas technical assistance projects.

JCRR and Agricultural Planning:

The Chairman of the JCRR is the Governor of the Agricultural Production Committee (APC) which has been responsible for developing the four-year agricultural plans (which are the integral parts of the total Economic Plan). The chief of the Commission's office of planning serves as the Executive Secretary of APC. This means that there is coordination and integration between the JCRR and the planning agency. To some, it might look as though JCRR itself is the planning body in Taiwan. But it is not so. The APC consists of eight working groups consisting of various agencies such as government ministries, provincial department of agriculture, JCRR, Farmers' Associations, Universities, etc. JCRR's main role in planning is to provide necessary expertise in the planning process. It is more a problem solver than implementer. Since 1953, all the activities of JCRR have been developed within the framework of the Four Year Economic Plans.

The Special Features of JCRR:

Two of the methods which JCRR adopted in its approach are worth discussing since they are considered to be very important from the point of view of U.S. aid to other countries. They are (1) the joint character of the agency and its freedom for policy-making, and (2) the Sponsoring Agency Approach to aid allocation. (6, pages 15 and 20 and 15, pages 21 to 38)

Jointness - JCRR is a bi-national commission consisting of the representatives of both Chinese and American governments. The decisions of this Commission have always been unanimous. Whenever there was any issue on which common agreement could not be reached, that issue was kept pending and postponed for decision later until unanimity could be attained after further formal and informal discussions among the members. The Commission enjoys a semi-autonomous status as it is free to make its own policies and programs within the overall framework of the U.S. aid policies and subject to the budget constraints. This status was a prerequisite for the success of the principle of "jointness." The JCRR established certain organizational and procedural principles of their own which were different from those followed by either of their parent governments. These principles included independent staffing pattern, funding and program planning which were all under the control of the JCRR. This is considered to be a deviation from the normal and usual policies of U.S. aid administration in foreign countries.

The usual policy is that the AID formulates and directs the programs for which funds are allocated. The interesting aspect of the staffing procedure of the JCRR is that both the U.S. staff and the Chinese staff have been integrated to work as one body and as colleagues under one supervising agency.

According to Montgomery, Hughes and Davis, "Jointness appears to have a definite advantage in decision-making over the usual pattern of U.S. AID-Host country relationships. In the latter it is almost axiomatic that both sides come up with rational but divergent positions concerning matters of program content and project priority. Subsequent arrival at bi-national agreement is often associated with a clash of opinions ending in compromise and, all too often, ill feelings. In JCRR, where there is joint consideration by the representatives of both countries during the entire process of fact-finding, program planning and formulation, and in project screening and approval, there is less opportunity for parties to reach different decisions on a national basis. Because both staff elements work together as colleagues, each develops a much better understanding of the policies, problems, and needs of the other .... Also, a joint organization has great flexibility in the choice of activities or projects it will support. Regular agencies of government are

subject and to a degree must be responsive to political pressures .... A joint organization, on the other hand, being relatively immune to the pressures of 'constituents' can act without regard to any but the most important political considerations .... These facts have been stressed by high officials of the Chinese government as an important attribute of JCRR operations." (15, page 29)

As a result of the principles of jointness which it established and worked out, JCRR became a part of the institutional system of the host country. The U.S. technical experts were integrated with the local staff. JCRR's joint staff of U.S. and Chinese technicians provided an atmosphere in which American technology could be transferred and adapted to the advantage of the Taiwan's development. The JCRR, therefore, provided an institutional form within which American innovative skills contributed quickly and effectively to ongoing programs.

The Sponsoring Agency Approach to Aid Allocation:

In spite of the freedom and special status it enjoyed, JCRR never functioned as an implementing agency directly with the people. It has been working with and through different organizations in direct contact with rural people, to strengthen the capacity of such organizations to serve rural needs and sustain their programs after assistance is terminated. In this respect, it worked with agencies at all the levels,

from national level to the village level. This approach is considered to be contrary to the "Servicios" in Latin America which AID has been promoting and which are parallel to the JCRR. The Servicios were functioning as operating agencies directly with the people without depending on the existing host government rural institutions to carry out their own projects. They were preoccupied with operations, neglecting their role of institution-building and transfer of technology. In the early 1960's, the whole scheme of Servicios had to be terminated at U.S. initiative. (6, page 18)

This sponsoring agency approach has, according to Richard Lee Hough, produced a number of results which attributed to the success of JCRR operations in Taiwan. (6, pages 18 to 20)

(1) The commission was able to give life and drama to its principle of distributive justice. Its direct contact and work with the rural institutions facilitated a deep and broad penetration into the rural structure of Taiwan and to provide the benefits to the maximum number of people. Hough is quoting in this regard Albert Ravenholt who commented as follows: "By insisting upon a fairer distribution of the benefits of increased production as a condition of financial and other assistance, the JCRR has avoided this pitfall (of the new technology benefitting the 'haves') and won a popular reputation for human concern that facilitates all commission efforts." (6, page 19)

(2) JCRR succeeded in locating management and operational responsibilities for its projects within the client rural organization in such a way to engender local incentives for self-help actions. This avoided the time-consuming usual stereotype procedure of the central government-U.S. aid mission methods.

(3) It helped strengthen the capacity of the farmers to articulate their interests and problems publicly.

(4) It created an awareness and increasing popular demand for better public services in the countryside.

In its early years in Taiwan, JCRR showed a rather marked preference for supporting projects at the lowest feasible level of public and private organization. This tactic was calculated to create interests and enthusiasm among the people at the grass roots levels and also develop aspirations in them for their own progress. This approach also was intended to draw the attention of the higher level organizations to the problems at the lower levels. The "Green Island" movement in the early 1950's on Taiwan is an illustration of this tactic of the JCRR. This movement was "A long-run effort in reforestation directed to the reclaiming and turning to productive uses the mountain-sides and highlands denuded during the war and immediate post-war periods."

(6, page 20) The JCRR initially "bypassed an ineffective Taiwan Forestry Administration and went directly to the

townships and counties to encourage and assist local leadership in launching the program. After performing its galvanizing role in the rural communities, the Commission then turned its attention to the Forestry Administration, providing it with considerable technical and capital assistance over a period of years." (6, page 20)

#### B. The Farmers' Associations

Another institutional approach which is considered to have played a prominent role in Taiwan's rural development is the organization of Farmers' Associations (FA). According to T. H. Shen, "the Farmers' Associations in Taiwan is the largest and most important of all rural organizations. Among these are fishermen's associations, forest protection associations, agricultural cooperative and 4-H clubs. An understanding of the farmers' association will give us a general idea as to how the rural community is organized in Taiwan, for the other rural associations are patterned more or less on the Farmers' Association." (20, page 1)

#### Origin and Historical Background:

It is reported that the first Farmers' Associations were initiated in the early 1900's voluntarily by farmers to protect themselves from landlords and to seek reduction in land rent. These initial organizations existed only in a few places; and the only purpose was to gain bargaining power against the landlords. (1, page 34) During the

Japanese administration, these associations were fully organized and controlled by the government. The chairmen of the associations at all levels were appointed by the government and they were all officials. The Governor General of the Province was the Chairman of Provincial Farmers' Associations and local magistrates were the chairmen of the local associations. The purpose with which the government started these associations was to get the agricultural policies and programs of the Japanese administration implemented at the local levels and to enlist the cooperation of the farmers to increase agricultural production for export to Japan. The associations therefore functioned as mere instruments in the hands of the officials.

After the Japanese left and Taiwan was ceded to China in 1945, a process of democratization of the FAs began. It was decided that no government official could hold any position in the associations. The office bearers for different positions were to be selected by the members of the association at each level. The Provincial Department of Agriculture and Forestry (PDAF) started a Farmers' Organization Division to supervise and guide the activities and affairs of the Farmers Association. In 1949, when the National Government of the Republic of China moved to Taiwan, a reorganization and reconsolidation of these associations took place. Under this reconsolidation scheme, the farmers associations and the cooperatives were brought under a



single federated system of multi-purpose, farmer-member controlled associations. But the control over the association slipped out of the hands of bona fide farmers. JCRR, then, invited Professor W. A. Anderson of Cornell University to make a thorough study of the laws, regulations, and organization of the associations. Anderson made several recommendations. Following his recommendations, a committee consisting of the representatives of JCRR, PDAF, and PFA was set up to make final recommendations on the reorganization of the associations. The report of this committee was submitted to government in April, 1951 and after scrutiny and discussion of the contents of this report, the revised law for the reorganization of the associations was promulgated in 1953.

"The new law instituted elections by secret ballot, redefined membership so as to insure farmer control of the Farmers' Associations and prescribed a host of organizational reforms, particularly designed to rationalize management functions as against policy formulation and control functions in the FA system and to revitalize the role of the village agricultural unit in the township FA." (6, page 24)

The history of the FA's in Taiwan may be divided into three main periods: (1) Initial period: period of initial organization, growth and development under the Japanese rule;

instruments and puppets in the hands of the administration, (2) Second period: 1945 - 1949 - The period of destruction of both physical plant, morale of personnel and general operating efficiency, and (3) The Third period: After 1949 - Period of reorganization, consolidation, democratization, assuming extension role and functioning as partners of the government.

Structure and Organization:

Structurally, the farmers associations are a federated system starting from village or neighborhood level and ending with the provincial level. It is, today, a non-governmental cooperative organization with multi-purpose functions which are directly related to almost all the phases of agricultural production and farmers' life.

There are four levels of associations, viz. (1) village agricultural unit, which is at the village level, (2) the Township Association, (3) County/City association, and (4) Provincial association. The number of associations at each level and total membership are given below: (6, page 24)

<u>Level</u>	<u>Number at each level</u>
Provincial	1
County/City	22
Township	341
Village units	4872

As Lee points out in the same source, the total membership of all the 4,872 village units was 830,425.

### The Village Agricultural Units:

Farm households in the villages group together and form small agricultural units. Fourteen or fifteen such village units jointly constitute one township association. Each of these units has an average membership of 174 and therefore the total membership in a township association may be around 2,500. There are altogether 4,872 village units composed of 830,425 farm families. (6, page 24) These village level units are the key elements of the local Farmers' Associations. They elect representatives to the Township Association and provide the last link in the network down to the primary producer, the farmer.

Each unit elects a chairman to convene the meetings. Also it elects three to four representatives to an annual convention in which control of the township farmers' associations is vested. This is how the link between the village unit and the township association is established.

### The Township Association:

As pointed out above, a township association is composed of fourteen or fifteen village agricultural units. The members' representatives whom the village units elect constitute the township association at the township level. These representatives elect a board of directors, composed usually of eleven to twenty-one members. The board of directors elects the chairman of the board and appoints a general manager, who carries out the board's decisions and

policies. The members also elect another board - the board of supervisors - consisting of three to seven members. This board has the responsibility of inspecting and approving the financial operations of the association. The township FA has operational functions which will be discussed later.

County/City Association:

Every township farmers' association in the same county elects, in its annual assembly, two to three representatives to the county farmers' association convention. The general pattern of the county farmers' association is the same as that of the township FA. But county FA is not an operational body its role is that of an advisory character.

Provincial Farmers Association (PFA):

This is the apex association in the whole pyramidal structure. The county association elects, in its annual meeting, representatives to the PFA convention. The number of representatives from each county FA ranges from two to three, varying in direct proportion to the size of its membership. The PFA follows the pattern of the country and the township farmers' associations. The Provincial Farmers' Association is the supervisory body, supervising the lower level associations' activities.

Township Farmers' Association: Its Functions,  
Programs, and Finance:

The FA at the township level has five operational units to transact the various items of business which can be grouped as follows: (a) purchasing and marketing section, (b) credit section, (c) the agricultural extension section, (d) the administrative section, and (e) the accounting section. The administrative and accounting sections are the routine clerical services. So, the services of the association to the farmers include extension education, credit, marketing, and purchasing. These are briefly discussed below:

(1) Agricultural Extension Education: This section was started in 1953. The area of operation of the agricultural extension education section is co-terminus with that of Township FA. The work is organized in cooperation with the local township governments. Each association has two farm advisors working under the chief of the extension section. In addition, in some cases, there may be a 4-H club or home economics advisor whenever there is such work is conducted.

(2) Credit: The association also performs banking functions; it receives deposits and issues loans to the members. This facilitates one of the most difficult tasks in the rural areas -- pooling and circulation of rural funds for production and farm improvement purposes. The Land Bank of Taiwan, and the Cooperative Bank of Taiwan, both are apex

banks, and reach the rural people through the credit section of the FA's.

(3) Purchasing and Marketing: This section has two categories of transactions, (a) government entrusted, and (b) self-conducted. The government conducted transactions include, 1) fertilizer distribution, 2) rick collection, 3) storage and processing, 4) purchase of farm products, 5) distribution of rice rations and other supplies.

Self conducted activities include, (1) purchase of farm supplies and daily necessities for resale to farmers, (2) cooperative marketing of farm processing facilities. These activities of the FA's eliminate the middlemen who exploit the farmers and help reduce the cost of production or improve the producer's share of the consumers' dollar in agricultural marketing.

In addition to these activities, they also perform other services such as (a) hog insurance program, (b) in-service training to association employees, (c) conducting special training courses for chiefs of small agricultural units, and (d) livestock artificial insemination services.

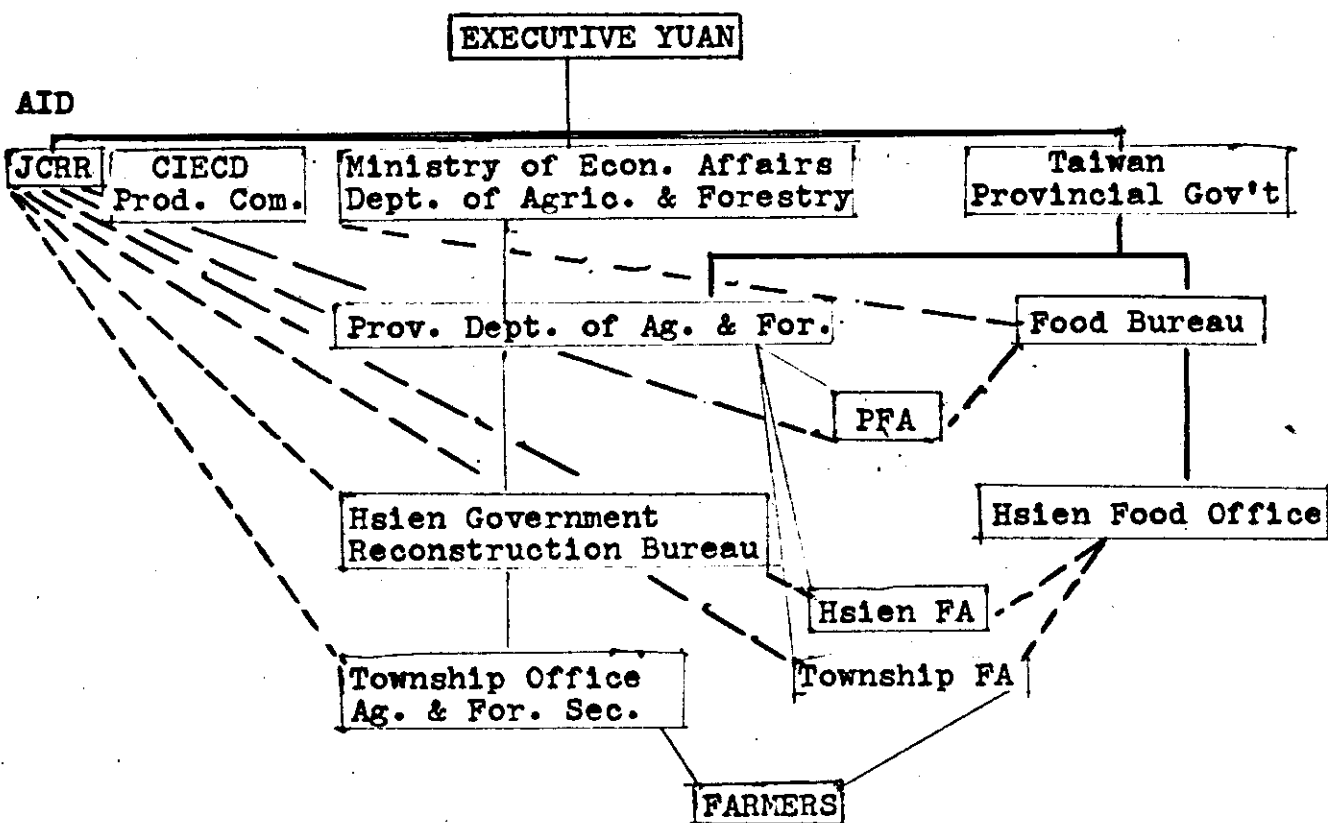
In short, the Township FA's perform all the extension and service functions which, in many other countries, are the functions of the regular governmental agencies. These associations have become the organizational units through which governmental agencies in Taiwan carry out programs with the farmers. For example, the Provincial Food Bureau makes

use of these associations for carrying out its fertilizer-barter operations, distributes pesticides and other supplies, and collects land taxes. Then relationship between government agencies and the FA's are discussed separately below:

Relationship Between Government Agencies and FA's:

The following chart illustrates three types of relationships -- administrative, supervisory and functional relationships -- between the governmental agencies including JCRR and the Farmers' Associations at various levels. The thick line indicates administrative relationship and the thin line indicates supervisory relationships and the dotted line indicates functional relationship.

The Farmers' Associations are nominally subject to the supervision of the Ministry of Interior of the Central Government. But the actual supervisory role is performed by the Provincial Department of Agriculture and Forestry (PDAF). The PDAF guides and assists the FA's through its Farmers' Organization Division. This is external supervision. The PFA performs a supervisory role over the lower level associations which is internal. At the county level, the Reconstruction Bureau of the county/city government is the agency responsible for the growth of the county/city farmers' association and all the township associations within the county/city area. The Township Government (the basic



- Administrative Relationship  
 ——— Supervisory Relationship  
 - - - Functional Relationship

(Source: Based on R. P. Christensen: Taiwan's Agricultural Development, Its relevance for developing countries today, page 33)



administrative unit) has no legal authority over the township farmers association. But the agricultural technicians of their reconstruction sections work in close cooperation with the extension advisors of the FA's. The Township government and the Township FA may work together in the implementation of certain programs through mutual discussion and arrangement; but the Township government has no power of control over the Township FA.

FA's at all the levels are functionally related to JCRR. The JCRR has no authority over the FA's. It provides technical and financial assistance; coordinates with the FA's in certain activities and strengthens them for better and more functioning. While the Food Bureau is having Functional relationship with PFA, Hsien Food Office maintains such relationship with Hsien FA and Township FA's within the Hsien. Since the Township office has no supervisory control over the Township FA's, it also maintains a functional relationship with the Township FA's.

#### The Government's Role in Relation to FA's:

In addition to the supervisory role, governmental agencies have also been playing certain functional roles of providing technical and financial assistance to the FA's. These roles include (1) organization and training, (2) economic services, and (3) extension education. The government has been helping in the organizational matters, conducting elections

and screening of employees. The government also helps the PFA in organizing and conducting training of their office-bearers and employees. PDAF, JCRR and local governments provide subsidies for these training programs. In the areas of economic services of the FA's like purchasing, marketing, etc. governmental help has become highly essential and it has been forthcoming. Also the government has provided loans and subsidy for constructing processing and warehousing facilities which have tremendously promoted the economic activities of the associations. About 35 percent of the extension educational expenses are provided by the government and JCRR, and the remaining 65 percent being met from the profits of the associations. (7, page 5) The expert advice, teaching aids and training materials which are required for the extension education program are also made available by the government whenever needed by the FA's.

Finances:

The various sources of finances of these associations are as follows:

- (a) Sales proceeds from the sale of the association's stock shares;
- (b) Membership initiation fee paid by the new members on admission;
- (c) Annual membership fees;

- (d) Net profits of the association from its business operations;
- (e) Commissions and handling charges for services entrusted to the association by government agencies and public enterprises;
- (f) Voluntary contributions from the members;
- (g) Loans and subsidies from government agencies and other sources.

"The assets of the farmers' associations in Taiwan are estimated to be NT \$900,000,000 and include 276 hectares of farm land, 103 livestock breeding stations, 330 hectares of nursery fields, 1,118 rice warehouses, 579 fertilizer warehouses, three tea-processing plants, and 409 rice mills. There are 295 farmers' associations with credit departments, having deposits of NT \$900,000,000." (20, page 51)

Joint Revolving Fund:

For emergency purposes such as crop failure due to floods, typhoons, etc., all the associations have joined together and constituted a joint revolving fund. Each association makes an annual contribution to this fund; and whenever there is any emergency facing the association, it borrows from this fund to overcome the emergency situation.

Development of Local Action Programs:

The FA's extension education employed certain methods in enlisting the cooperation of the farmers and educating them in the adoption of new methods and practices in farming. These methods chiefly include, (a) group method, (b) result demonstrations, and (c) use of audio-visual aids and distribution of education materials.

In their group approaches, they organized Village Extension Advisory Committees composed of village chief, local farm leaders and chief or head of the small village agricultural unit. This committee has to approve the annual plan of work prepared by the Extension Advisor of the FA. It also discussed the various problems of the farmers in its annual meeting which is attended by the Extension Advisors. There are about 3,257 such committees existing in 289 townships with a total of 20,116 local farm leaders participating.

(7, page 7)

Besides, there are what are called the "Farm Discussion Groups" which function as centers of farm extension education at the village level. A discussion group is composed of a number of adult farmers over twenty-one years of age -- the maximum number being twenty. It meets once a month for exchange of practical experiences and for joint study on problems which they face in farming. Four of such groups are assigned to one extension advisor who utilizes the

monthly meetings as an opportunity for extension education. The groups usually deal with problems of production, marketing, purchasing, mutual aid and/or citizenship training. The writer believes that these methods of "group discussion," "group action," and "group decision" are considered to be effective educational means of improving the production and management efficiency of the farmers, particularly in the developing countries.

But, this writer could not find any information regarding the coordination between the Advisory Committee and the Discussion Group.

#### Result Demonstrations:

The need and request for holding certain result demonstrations arise out of the meetings of the Advisory Committees or Discussion Groups. Then the extension advisors report these needs and requests to the Township FA's and the TFA arranges to conduct such demonstrations with the help of the subject matter specialist. An important feature of the TRA's result demonstrations is that they are not externally imposed; rather they are locally evolved and oriented to the needs and problems of the local farmers, though the process of stimulation may be external.

For supporting and supplementing the efforts of the extension workers in their work, the FA's have been, from

time to time, distributing copies of leaflets, posters, circular letters, etc. to the farmers. Other audio-visual aids like slides, special radio programs, were also arranged and they are expected to have been beneficial to the farmers.

The following are some figures for 1962 which give a quantitative perspective of the various efforts that have been undertaken for educating the farmers as well as channelizing their energies for local action programs by the Farmers' Associations in Taiwan:

Item No.	Activity	No. of Activity	No. of persons Participated
1	Ext. Adv. Com. mtgs.	2,144	18,825
2	Local Leaders trng.	823	31,390
3	Subject Matter trng.	2,795	493,512
4	Gen'l. Farm discussion	2,347	137,673
5	Farm Discussion Group meetings	24,567	411,075
6	Judging and identif.	290	13,884
7	Farm observation tour	2,008	137,555
8	Method demonstration	1,562	52,967
9	Result demonstration	7,828	-----
10	Educational slides	12,344	-----
11	Special radio programs	2,593	-----
12	News releases to local papers	3,426	-----

Source: S. C. Hsieh (7, pages 8-9)

Of course, these are figures. What do these figures say? What has been the impact of these extension education programs? It is difficult to measure the impact of such programs in tangible terms. The impact can be felt only on a long-term basis and also in the totality of the results for which other factors are also responsible. It may be possible, perhaps, to assess the impact of a method of result demonstration by a follow-up study of the number of farmers who have adopted a practice after the demonstration was over. Even then, the findings may not be accurate. For, a farmer is influenced to adopt a particular practice by a variety of factors most often. However, it is now widely accepted out of the experiences in several countries that the various extension educational methods do have their own impact on the farmers decision-making process with regard to better and more production.

To Sum Up:

"FA system provides a single structural pattern through which agriculture and rural life in general can be improved. In effect, the system is the institutional transmission belt designed to catch up the farmers in the development process by transmitting downward services, incentives and innovations and conveying upward felt needs and problems." (6, page 24)

### C. Land Reform Program

The idea and attempts for land reforms in China are not of recent origin. The history of land reforms in China can be traced back to the first century A.D. Wang Mang in the first century, Prime Minister Wang An-shih in the 11th century, are the two rulers who deserve special mention for their efforts in land distribution and reforms of land tenure in the past centuries. (20, page 47) Coming to this century, Dr. Sun Yat-sen, founder of the Republic of China, advocated a land-to-the-tiller program in 1924. All these rulers were greatly influenced by the concepts of Confucian humanism of social justice and human welfare. But, owing to strong and successful opposition from the landlords, all the attempts for land reforms failed. Learning the experiences of the past, the Central government of China in 1942 began an "owner farmer establishment" on a small scale in selected provinces, all on the Mainland of China. The results were very encouraging and led to the beginning of land reform on a wider scale. (20, pages 47-48)

JCRR, after it was established in 1948, gave serious consideration to the problem of land tenure and decided to render technical and financial assistance to the government in China for launching a land reform program. But before they could introduce a new reform in all the provinces, the Communists seized power and the program was shifted to Taiwan.



The Background:

Coming to the background of land reforms in Taiwan proper, the Japanese had taken certain steps to improve tenure conditions for tenants in the late 1930's. Government policy required that "(a) terms of tenancy be extended to five or six years or more, (b) that contracts be automatically renewed unless cancelled by mutual consent in the case of crop failure, and (c) that no contract be declared void before expiry without sufficient reason. Arbitration committees were set up to adjudicate disputes among landlords and tenants but they were dominated by the landlord's interests." (1, pages 45-46) The lot of the tenants, therefore, did not still improve in any significant manner.

Grajdanev has discussed in his book, Formosa Today, the land tenure and land ownership situation in the 1930's. The following table reveals the land distribution pattern in the 1930's:

Type of Land	Owned	Rented	Total
Dryland	60%	40%	100
Paddyland	33%	67%	100
All cultivable land	46%	54%	100

Source: Grajdanev: Formosa Today. International Secretariat; Institute of Pacific Relations, New York, 1942, page 77

According to this table, two-thirds of the paddyland was cultivated by tenants. Taking all the cultivable land together, 54 percent of the land was rented. This means that the agricultural production was concentrated on rented land. The landlords, it is reported, generally lived in larger towns and cities. Absentee landlordism was predominant in Taiwan as was the case in many other traditional societies.

The number and percentage of farmers who are owners, part-owners and tenants during the same period are shown in the table below:

Ownership	No. of farmers		% distribution	
	1932	1938	1932	1938
Owners	132,000	130,000	33	31
Part-owners	119,000	136,000	29	32
Tenants	153,000	159,000	38	37

Source: Grajdanev: op. cit., page 76

This table shows that the agricultural land was concentrated in hands of about one-third of the total farmers, the other two-thirds being exploited and dependent on the one-third. Taiwan agriculture therefore was predominately tenant-operated during this period, if the part-owners are considered as tenants for purpose of analysis.

Another important feature of the ownership was regarding the distribution of landowners by size of holding. In 1930, for example, landowners who owned less than one chia (2.397 acres) accounted for sixty-four percent of all holdings. This constituted fourteen percent of the total cultivated land. This and other categories of landowners by size of holdings are presented in the following table:

Size of holding	Number of holding	Land area	Percentage Distribution		Average area per holding
Chia	Thousands	'000 Chia	%	%	Chia
0 - 0.49 ...	173	41	43	6	0.24
0.50 - 0.99 ...	87	62	21	8	.72
1.0 - 4.99 ...	122	259	30	36	2.10
5.0 - and over	23	359	6	50	15.50
Total	405	721	100	100	1.78

Source: Grajdanev: op. cit., page 78

What were the economic consequences of this situation of land tenure and ownership? Was agricultural production adversely affected? Not at all. "It is significant that tenure conditions apparently did not limit expansion in total agricultural production. ... agricultural output per hectare and per worker increased at relatively high rates during the 1920's and 1930's." (1, page 46) But, the question of income distribution remains. Since the rent

rates were high, as high as fifty percent or more, the output increase would have benefitted the landlords more than the cultivators.

The Situation of 1949:

By 1949, when the National Government of China moved to Taipei, the tenure conditions were to the advantage of the landlords who snatched away the major portion of the produce through high rental rates ( 50 percent to 70 percent of the main crop). The tenure states of the farmers at this time was approximately as follows:

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Year 1949	
Item	<u>Number of farmers</u> Percentage distribution (approx.)
Owner-operators	34
Part-owners	23
Full tenants	36
Farm hands	7

---

Source: T. H. Shen: Op. cit., page 41

The area of farm land cultivated by tenants was forty-one percent of the total cultivated land the average size of farm of each tenant family was about one hectare. (20, page 41)  
The economic condition of the tenants in general became poor and many did not have adequate means of livelihood. This was the background from which the National Government of Free China and JCRR launched a new Land Reform Program on Taiwan in 1949.

The Land Reforms:

"Land reform was carried out in three stages: (1) Rent reduction and other improvements for tenants beginning in 1949; (2) the sale of public land to tenants, initiated on a large scale in 1952; and (3) the land-to-the-tiller program (...) beginning in 1953." (1, page 46)

Rent Reduction Program: (Phase 1) - The National Land Law which was enacted in March, 1949, fixed the maximum ceiling for rent as 37.5 percent of the annual major crop. It was also provided that the minimum period of rent would be six years and the tenants could renew the lease if they wished to. "Approximately 200,000 hectares of tenanted land (about 20 percent) of the total cultivated area were affected and about 300,000 tenants were benefitted." (1, page 46)

Action Taken: "All cultivated fields were surveyed and grouped in twenty-six grades according to productivity ratings for use in deciding rental. New six year lease contracts were written covering all rented lands, and tenants had preferred rights to renew them. Advance payment of rent was abolished and no extra payments were permitted. Government inspectors were employed to see that the rent reduction program was carried out. Local farm tenancy committees with representatives of tenants, landlords, and government officials were appointed to adjudicate disputes and also assure that the rent reduction program was carried out

according to law." (1, page 46)

T. H. Shen has presented an illustration of the benefit of this program from the point of view of an individual farmer-tenant: (20, page 41)

Prior to the law

A farmer-tenant cultivating one hectare of paddyland and harvesting two crops received 6000 kg. of paddy rice. He had to give 3000 kg. of paddy rice to the landlord. The balance of 3000 kg. was his share for all his efforts and investments.

This did not suffice to cover his expenditures and also for his family's food.

After the law

Assuming that he harvests the same 6000 kg. of paddy rice now also. According to the new law he pays only 2250 kg. to the landlord; and receives a share of 3750 kg. This extra of 750 kg. of paddy rice is important from the point of view of his family's standard of living. It is also possible that he has better incentives now to produce more.

Sale of Public Land - (Phase II): When the Japanese left, the government had taken over the lands which were in the hands of the Japanese government and also Japanese nationals. These lands constituted about twenty percent of the total arable land. The government decided to sell these lands to needy farmers. The sale actually began in 1948, but was discontinued for some time and again started in 1952. The tenants who purchased the land paid the equivalent of 2.5 times the annual value of the main crop.

(1, page 47) The payments were made over a period of ten years in half-yearly installments. This scheme was administered by the local government agencies.

"By 1961 about 96,000 hectares of public land had been sold to about 200,000 tenant families. Land prices declined after the rent reduction program." (1, page 46)

Land-to-the-tiller Program -(Phase III): JCRR and the Taiwan Provincial Land Bureau jointly conducted a survey of the distribution of land holdings during 1951-1952 and on the basis of the findings of this survey, the government decided to get into the third phase of the land reforms - transfer of land to the actual cultivators. For the implementation of this objective, another law called the Land to the Tiller Act was passed on January 20, 1953. The Act provided that, (1) "each non-tilling landowner shall be permitted to retain not more than three hectares of medium grade paddy land or six hectares of medium grade dry land that he was then leasing to the tenants," and (2) all acreage in excess of this (ceiling) shall be bought by the government and resold to tenant farmers. "Allowable retentions would be proportionately smaller for the better grades and larger for poorer grades of land." (20, page 43) "The terms of sale were similar to those for public land: The purchase and resale price of land was fixed at 2.5 times the annual crop yield, and tenant purchasers paid the government in

twenty semiannual installments over a period of ten years. The government compensated landlords by paying them seventy percent of the purchase price with land bonds redeemable in kind (rice) and thirty percent in stock shares in four government corporations." (20, page 47)

Under this program, 140,000 hectares or about sixty percent of the privately owned tenanted land was purchased by the government and resold to tenants. (1, page 47)

The Results and Effects of Land Reform Program:

After the land reform measures, more farmers have become owners of the land. The percentage distribution of owners, tenants and part owners has changed as shown in the following table:

Tenure Status	Percentage before land reform, 1949	Percentage after land reform, 1957
Owners	36	60
Tenants	39	17
Part owners	25	23
Total	100	100

Source: R. P. Christensen: Op. cit., page 47



According to this table, the owner-cultivators increased from thirty-six percent in 1952 to sixty percent in 1957. The percentage of full tenants decreased from thirty-nine percent to seventeen percent. This is certainly a considerable institutional change in the farm structure of a country during a period of five years.

This has also resulted in a change regarding the proportion of cultivated land tilled by owners and by tenants. Out of the total of 681,154 chia of private land in June, 1952, sixty-three percent was tilled by owners and the remaining thirty-seven percent by tenants. After the completion of the land-to-the-tiller program in June, 1955, the area under owner-cultivation increased to eighty-six percent while that under tenant-cultivation reduced to fourteen percent. This change is shown in the following table:

Distribution of Private Farm Land by Type of Tenure  
1952 and 1955

Type of farmland	1952		1955	
	Area	%	Area	%
Owner cultivated	427,197	64	585,864	86
Tenant cultivated	253,957	37	93,709	14
Total	681,154	100	679,573	100

Source: JCRR Economic Digest Series No. 13, page 20

What is presented above is the physical change that has resulted in the land ownership due to the land reform program. But, what are the economic consequences of the land reforms and to what extent the economic life of the farmers, or in general, the rural people as a whole has changed after the land reforms? Dr. Anthony Y.C. Koo's study on the impact of land reform on the economic development in Taiwan has brought out several interesting findings which are summarized below. (11, pages 61, 76-77, 111, 120, 121)

(1) After the land reforms were put into operation, rent became just a small fraction of the total cost for tenant-cultivators. Two reasons may be attributed to this change:

(a) Rent was made a fixed charge under the law and

(b) agricultural production increased over a period of time due to the incentives provided by land reforms.

(2) Productivity in agriculture increased. Dr. Koo does not claim that Land reforms were the sole factor for increase in productivity; he identifies them as one of the main factors.

(3) The data and experience in Taiwan during post-land reform period contradict the argument that a division of farmland into small units as a result of land reforms would cause a decline in productivity.

(4) Annual exports of agricultural products increased tremendously. Total annual agricultural exports in terms of U.S. dollars increased from \$7 million in 1950 to \$40 million in 1955.

(5) Demand for chemical fertilizer and pesticides rose up due to the expansion of agriculture. Fertilizer constituted about twenty-two percent of the total farm expenditure as revealed by a farm income study in 1957.

(6) Use of industrial products as inputs in agriculture also rose up. Using 1953 as the base, the aggregate index for the use of industrial products as inputs in agriculture increased to 137 in 1959.

These findings suggest that the land reforms resulted in a more equitable distribution of income, incentives for better and higher production which led to more consumption and savings, demand for more capital inputs which led to more industrialization. The total effect is a general improvement in the standard of living and aspirations for better life.

According to T. H. Shen, "this program has brought a significant change in farmers' incomes with the change in land ownership and the reduction in the rent payment. The return for family labor has increased since the land reform.... After land reform the investment and income pattern in agriculture and the income pattern also changed. The total investment in agriculture in 1955 was about twice that in

1950, but the net farm income from 1950 to 1955 increased four times." (20, pages 45-46)

#### D. Agricultural Research, Education and Extension

Agricultural research, education and extension are a group of other areas which have been conspicuous with their systematic contributions to agricultural development. There have been a variety of institutions and organizations that have contributed to the development of technology as well as to the development of human agents - the enlightened farmers, the research personnel, the extension personnel, the workers for farmers' associations, etc. -- during the process of development. They include the universities, research institutions at various levels, the agricultural institutes and vocational schools, the primary schools which almost attained the universal primary education, the extension services and the farmers associations.

##### Research and Education:

National Taiwan University, Provincial Chung Hsing University and Provincial Junior College of Agriculture are the higher educational institutions at the national level which are engaged in agricultural education and research and giving guidance to the lower level institutions. At the county and township levels, there are forty-one vocational agricultural schools, three fisher vocational schools and one tea vocational school for imparting education and

training to lower level agricultural technicians and workers who work at the county and township levels. These vocational schools are very significant as these schools have been producing the skilled technicians who are at the core of the whole agricultural development process in Taiwan.

The promotion of elementary education has helped in developing a literate and enlightened farm population. In 1959, 95.4 percent of the school-age children were in school as against the pre-war peak of 71.3 percent in 1935. For the same period, the number of high, normal and vocational schools increased from seventy-five to 344. A majority of the graduates from the vocational schools are employed in farms, township offices, farmers' associations, and agricultural cooperatives to carry out agricultural extension and administrative work. In addition there are many short courses and training lessons for farmers in practical training of farming techniques. (13, page 90)

Agricultural research is the major responsibility of the PDAF. The PDAF has several research institutions under its jurisdiction: (20, page 31) They are:

1. Agricultural Research Institute
2. Livestock Research Institute
3. Seven Agricultural Improvement Stations at the local or regional levels
4. Seed and Seedling Multiplication Farm
5. Veterinary Serum and Vaccine Laboratory
6. Forestry Research Institute with six branch stations
7. Fishery Research Institute with four branch stations

In addition, there are some corporations and bureaus which are focusing on applied research in agriculture. They are:

1. Sugar Research Institute of the Taiwan Sugar Corporation
2. Tobacco Research Institute of the Provincial Tobacco and Wine Monopoly Bureau
3. Pineapple Experimental Station of the Taiwan Pineapple Corporation

According to Dr. K. T. Wright, some of the more important activities in the area of research appear to have been:

(19, page 39)

- (a) Breeding, multiplication and distribution of improved crop varieties;
- (b) Development of more intensive cropping systems with greater multiple cropping and use of higher return crops;
- (c) Development of many improved crop cultural methods of production, and
- (d) Improvement in livestock production, particularly in the breeding of hogs, through imported boars and artificial insemination; and also improvement in hog feeding and cholera control; and in poultry breeding

Extension: (20, pages 94 to 103)

Until 1952, extension work was conducted with the sole purpose of agricultural production dealing with individual crops by subject-matter specialists. The extension workers had, in addition, the responsibility of enforcing certain regulatory measures and collection of repayment for production loans, etc. But this approach helped only the problems of individual crop cultivation. They did not help the problems of the farm families in its totality. This gap

was identified by the JCRR agencies who decided to have a "new look" at the extension activities in rural Taiwan. (20, page 94) They therefore helped in reorganizing the extension work on the educational type of extension.

In 1952, 4-H work on farm youth was started. Later in 1956 farm extension education for adult farmers in general, and home economics work for women in particular were inaugurated. This led to the programs of demonstration, group methods, training and discussions, etc. at the farm level. In 1957, all the extension programs for adults, women and youths were integrated together on an overall extension program. Finally, it came to be known as the Cooperative Extension Work in agriculture and home economics, as in the case of U.S.A. PDAF is the sponsor of all the agricultural extension activities; the farmers' associations at all the levels and the JCRR cooperating with it. JCRR is practically the coordinating and guiding agency in the whole process of extension activities. The various agencies that are involved and their interrelations are shown in a chart on the next page.

The Township farmers association is the agency which implements the extension programs at the grass-roots level through its extension education division. Their methods and programs have already been discussed under "Farmers' Associations" earlier in this chapter.

## Cooperative Extension Work in Taiwan

<u>Sponsoring Agencies</u>	<u>Executing Agencies</u>	<u>Cooperating Agencies</u>
Provincial Department of Agriculture and Forestry	Provincial Farmers' Association	JCRR
Hsien or City Government	Hsien or City Farmers' Association	NTU College of Agriculture
Township Office	Township Farmers' Association	PCHU College of Agriculture
Farm Extension (with adult farmers)	4-H Clubs (with rural youth)	Provincial Agricultural and Livestock Research Institute
		District Agricultural Improvement Stations
		Taiwan Sugar Corporation
		Provincial Food Bureau and Various Departments of Provincial Government
		Home Economics Extension (with rural women and girls)

Source: T. H. Shen. Agricultural Development in Taiwan Since World War II. Page 95



## E. The Four Year Economic Plans and the Agricultural Plans

Taiwan's agricultural policy is embodied in its constitution, Articles 142 and 146. According to the provisions of these two articles, the national economy "shall seek to effect equalization of landownership and restriction of private capital in order to attain a well-balanced sufficiency in national wealth and people's livelihood." For this purpose, "the State shall, by the use of scientific techniques, develop water conservancy, increase the productivity of land, improve agricultural conditions, plan for the utilization of land, develop agricultural resources, and hasten the industrialization of agriculture." (20, page 55)

### The General Economic Plans:

In order to realize these national objectives, the Government of the Republic of China formulated a total economic plan for the country and the first Four Year Economic Plan was launched in the year 1953. So far, four Four Year Plans have been implemented and the fifth plan is underway.

When the first plan was started, it had two-fold policy objectives: (1) It aims to improve the standard of living of individuals, and (2) to strengthen the nation's economy through the development of agricultural resources, a steady increase in output, the stabilization of prices,

and improvement of the quality of agricultural products, which will make greater exports possible. (20, page 55) With these policy objectives, each plan formulated a program which was modified in the subsequent plans based on the experiences and also on the new priorities.

The Economic Stabilization Board (ESB) was the policy-making body with regard to the four year plans. It consisted of a chairman and eleven members representing various ministries, JCRR, the Bank of Taiwan, the Council for U.S. Aid, etc. The Premier of the Executive Yuan served as the chairman of the board. Under the board, four committees dealt with matters concerning, (a) foreign exchange, finance, and credit, (b) United States aid and price stabilization, (c) budget and taxation, (d) agricultural programs. The policy-decisions of the Board depended on the study and recommendations of the various committees which also included technical specialists. (20, page 58)

During the period of the first and second plan, there was "an average annual increase in real national income of 7.6 percent and 6.5 percent, respectively. The average for the whole period, 1953 - 1960, was 7.1 percent." (20, page 376)

#### The Agricultural Plans:

A separate agricultural plan is being worked out as a part of the total Economic Plan. The first agricultural

plan was drafted by "Committee D" (the unit under the old Economic Stabilization Board (ESB) "responsible for the planning and industries of agricultural regions" 1, page 58) through its six ad hoc groups which were entrusted with six major aspects, namely, food, crops, special crops, forestry, fisheries, animal husbandry and water conservancy.

Committee D is one of various committees which are assigned with various components of the four year economic plans.

These working groups included representatives of various cross sections, specialists, farmers' associations, college professors, government officials and public and private enterprises. (20, page 63) Later in 1958, after the ESB was inactivated, agriculture was brought under a separate body called Agricultural Planning and Coordination Committee (APCC). (20, page 59)

"The APCC consists of eight working groups dealing with the various phases or areas of agricultural production such as food crops, water resources, forestry, livestock and fisheries. Members of the groups, ranging around 100, include representatives of the provincial department of agriculture and forestry (PDAF). The PFA, JCRR Commissioners and Division Chiefs, College Professors, U.S. Aid officials and officials from concerned GRC ministries." (6, page 21)

The Chairman of the JCRR Office of Planning is the Executive Secretary of the APCC. This means that JCRR has a strong influence with regard to the agricultural planning and

policy-making. "JCRR personnel are deeply involved in the agricultural planning process. The style and structure of the planning are, for the most part, their creation."

(6, page 22)

The general objectives of the Agricultural Plans were laid down as follows at the initial stages:

- "(a) To bring about a stabilization of the prices through the provision of an adequate supply of agricultural products to meet the needs of the military and civilian population;
- (b) To expand agricultural exports in order to increase the revenue from foreign exchange;
- (c) To reduce agricultural imports in order to effect a saving of foreign exchange;
- (d) To improve the livelihood of the farmers and at the same time, maximize the farmers' contribution to the economy of the island."  
(20, page 63)

#### The Technology of Agricultural Planning:

Richard Lee Hough has commented on the planning process as follows: "The Four Year Plan is shaped through the work of various groups with the across-the-board support of JCRR's office of planning. The plan flows from aggregate projections of agricultural growth and concomitant development objectives and production goals. These goals and projections are in the first instance based on historical production patterns and yields as modified by several factors, e.g. expected changes in response to projected market demands;

new production practices, varieties and other physical inputs which have been developed by research institutions, tested by experiment stations and extended through demonstration. (6, pages 21-22)

He further comments that "agricultural planning in Taiwan clearly is not unduly centralized. Detailed uniform planning of targets and fiat imposition of elaborate controls to monitor and enforce the plan from the center are alien to the process. Ample leeway is given to primary producers and their local organizations to cope with and manipulate their different micro-environments. .... Further, the actual field-of-activity projects tributary to the plan are largely developed at village, township and provincial levels, in many cases by the planning committees responsible for coordinating and/or carrying out the projects. (6, page 22)

United States Aid:

U.S. aid has been significant with regard to the pace of economic development in Taiwan. The U.S. economic aid, agricultural commodity aid programs and technical assistance administered through the JCRR helped achieve large increases in agricultural output and productivity. The Four Year plans depended heavily on the different types of aid which the United States has been providing to Taiwan uninterruptedly since 1953. "Agricultural commodity aid programs helped save scarce foreign exchange and provided capital for road

construction and land and water development projects.

Technical assistance, including the training of agricultural technicians in the United States, contributed greatly to the technical competence with which agricultural development programs were carried out. Although it is not possible to estimate how much U.S. aid caused agriculture development to increase, it is evident that Taiwan's agricultural development would have been much slower if foreign aid had not been available " (20, page 84)

The annual growth rate of the net agricultural product in Taiwan during first and second four year plans was 5.78 percent and 3.1 percent, respectively. (20, page 279)

Including the third four year plan, the total agricultural production increased during the twelve year period, at an average compound rate of 5.9 percent per year. (22, page 22)

#### IV. The Overall Achievements

It may be now appropriate to consider the total impact of the various institutional approaches that have been discussed in the previous chapter on the economic and social life of the people in Rural Taiwan.

##### A. Economic

There has been commendable growth in agricultural production and productivity in Taiwan in recent years. In spite of rapid population growth, limited natural resources and large expenditures on defense, Taiwan's national income in real terms has increased at an annual rate of 7.6 percent and per capita income has increased at an annual rate of 4.2 percent during the period 1952 to 1967. (20, page 1) According to the data compiled by Christensen and Yee, and as quoted by K. T. Wright, Taiwan ranked first in annual growth rate in the agricultural sector output, agricultural production and in total food production during the period under review, among the seven Asian countries which they selected for study (Taiwan, Japan, Korea, Thailand, India, Pakistan, and Philippines) and the United States. (22, page 25) According to the output index increased from 346.52 in 1949 to 619.74 in 1960 (1901 being the base). (5, page 20)

Since 1952, agricultural output per unit of input has increased at an annual rate of 2.5 percent a year. "The rapid growth of overall productivity since 1952 is especially

significant when it is considered that the physical possibilities of bringing additional land under cultivation were very limited and agriculture had to provide employment for an increasing number of workers." (1, page 16)

The dollar value of the national product originating in agriculture has shown a steady increase from 1951 to 1959. The annual growth rate of agriculture's net produce averaged 6.35 percent. This rate compares favorably with the average rate of population growth of about 3.5 percent for the period under review. The agricultural sector grew at an average rate of 7.77 percent, while the industrial sector and other sectors grew at 9.12 percent and 8.02 percent, respectively. (20, page 277)

Agriculture has been contributing to the growth of non-agricultural sectors by providing capital and labor as a result of the growth in the agricultural sector. The net outflow, measured in current Taiwan dollars, was NT \$55 Million (U.S. \$1.375 million) in 1920, NT \$102 (US \$2.55) million in 1940, and NT \$1,931 (US \$48.275) million in 1960. (1, page 25) "Agriculture has depended upon the purchase of capital goods for non-agricultural sources. ... Funds also flow out of agriculture by payments of farmers for rent, interest, taxes and fees, and savings deposits made by farmers through financial institutions." (1, page 25) "The rise in productivity of agricultural workers in Taiwan has made possible the release of many farm people for work in other occupations... Estimates indicate that net migration from agriculture to



non-agriculture sectors was equal to nearly fifteen percent of the non-agricultural population in 1965. .... People who migrate from farms to cities have been reared and educated in rural areas. Thus capital invested in people is transferred from agriculture to non-agricultural sectors." (1, pages 26-27) Agriculture, therefore, makes an important contribution to other sectors through migration.

As revealed by a social and economic survey conducted by JCRR under the guidance of Dr. Arthur F. Raper in 1959, the living standard of the people as a whole in the rural areas has definitely improved compared to the situation in 1952. "The improvement is manifest chiefly in material advances. A great majority of the farms have newly built or remodeled dwellings and more modern furniture than before. The people now wear much finer clothes and consume better foods.... In addition to the increased supply of life's necessities, there are the fast advances in rural electrification, in ownership of radio sets and sewing machines, and in the opportunity to see movies, to listen to modern music, to participate in modern recreation, and to enjoy other facilities which are still considered luxuries." (20, page 370)

#### B. Social and Other:

There has been considerable change in the social life of the rural Taiwan as a result of the various programs and institutional reforms carried out by the JCRR, Land Reform

Program, FA's, Four Year Plans, etc.

The Land Reforms have had a powerful effect on the village leadership. During the Japanese administration, the landlord class was dominant in village life and both the formal and informal leadership was vested in this class. This was accepted both by the villagers as well as the authorities. The landlord was everything in the village. He wielded power, prestige and influence. He fixed the rent; he rented out land when he desired and withdrew from the tenants when he did not like a particular tenant. The actual cultivators of the land were always in misery and under the exploitation of the absentee landlords. "This picture is changing as a result of the land reform program. In those villages from which the landlord leaders shifted their interests from land to other economic activities, there is a leadership vacuum." (3, page 49) This has necessitated the development of new leadership. This new leadership is decided not on the basis of wealth and family prestige, but on the qualities and leadership abilities of the persons selected.

Bernard Gallin has observed the changes thus: "There appears to be the beginning of a crack in the traditional social system which had grown out of the unequal distribution of rural wealth and income as a result of the land tenure system. The land reform program which has led to many

landlords withdrawing their interests from the rural villages appears to be leading to some equalization of social status in rural Taiwan. This makes it possible for new village leaders to become effective." (3, page 53)

Dr. Koo, while stressing the power of incentive in an economy, comments on the impact of land reforms on education: "Many who got the immediate benefit of land reform can believe that there is a relationship between reward and performance. The power of incentive in an economy should never be underestimated. This is evidenced by the prevalent utilization of incremental income on the part of farmers to educate their children. Investment in human capital must be predicated on the belief that children who receive an education will get a reasonable rate of return and that they will get as much of a chance for upward mobility in the society as other children of similar ability. Since education makes possible the fullest and optimum use of human resources, an economic policy that contributes to this end has laid a foundation for a dynamic and productive society." (11, page 124)

T. H. Shen has observed that "perhaps the most obvious and most universal advance made in rural Taiwan in the last six years (1952 - 1958) is in education. In the townships investigated enrollment of school-age children in the primary schools has increased from an average of ninety percent in 1952 to an average of ninety-eight percent in 1958. Formerly

many of the parents had to be reminded, called upon, or even warned, before they sent their children to school. Now all of them take the initiative to see that their children are in school. Many new classrooms have been added to the old primary schools, and new schools have been set up to accommodate added children. .... Many rural families now desire to send their young people to secondary schools and colleges. As a result the number of young people studying in such schools has increased considerably. Ambitious parents feel ashamed if they cannot send their boys and some of their girls to middle schools or colleges as their neighbors have. In addition to this social aspiration there is also a realistic incentive. Rural people, parents and young folks alike, have learned that elementary education is not sufficient to prepare a person seeking employment other than work on the family farm or in the village store."

(20, pages 371-372)

The quality and habits of diets also have improved. During 1951-65, "per capita food consumption went up about one-fourth and total food consumption nearly doubled. The percentage increases in per capita income and food consumption suggest that income elasticity of demand for food was only about 0.3. This relatively low estimate may be explained by the fact that people generally were consuming fairly adequate diets from a nutritional standpoint in the early 1950's and chose to use their additional income to increase their consumption of clothing, housing and other items with

which they were less adequately supplied. .... Per capita consumption of meat averaged nineteen kilograms in Taiwan, compared with only three kilograms in Japan in 1958. Per capita consumption of fish, fruit, and vegetables averaged about as high in Taiwan as in Japan, but consumption of dairy products averaged much lower in Taiwan than it does in Japan." (1, page 22) Both the calorie consumption and protein per capita has been steadily increasing over the years from 1950. The average calorie consumption has increased from 2,057 to 2,359 between 1950 and 1958 -- 302 calories more. Total protein per head increased from 45.79 gm. to 56.89 gm. -- 11.10 gm. more - for the same period. (20, page 287)

A study conducted by O. D. Meaders of the College of Education of the Michigan State University in Taiwan regarding the contribution of education to agriculture has concluded that the "academic middle schools and the vocational agriculture schools in Taiwan have made many positive contributions to agricultural development during the period since 1945." (13, page 87) Those who graduated from the academic middle schools with agriculture as their major subject have been working as teachers and researchers in the agricultural field. They have provided the needed technical know-how at the farm level which, according to Meaders, is "one of the missing links" in several developing countries.

The farmers' associations have been, in addition to their economic functions of providing facilities for marketing of

the agricultural produce, supplies of agricultural inputs and consumption goods to the farmers and also timely credit for farming purposes, functioning as the agency for agricultural extension work. The FA's provided a communication channel between the farmers on one side, and the research stations, agricultural departments and other government agencies and the JCRR on the other side. Research and extension became more meaningful and related to the local problems because of the role of these farmers' associations at various levels. The democratization of FA's (discussed earlier) has created opportunities for self-expression and self-management on the part of the farmers which contributed to the process of leadership development in rural Taiwan. The leadership vacuum which was left after the Japanese left the country has been filled by Taiwanese leadership through this democratization process of the FA's.

The JCRR has been acting as a catalytic agent for rural development in Taiwan. It not only provided technical and financial assistance for agricultural development, but also encouraged the development of local organizations and local leadership. It stood strongly behind the Land Reform Program by providing both technical and financial support. It involved the FA's in the decision-making process with regard to programs for rural development and utilized the FA's for channeling its resources down to the local levels. "Perhaps

the most lasting and significant element of JCRR's contribution to Taiwan has been its role of furthering the spread of economic pluralism on the land, of progressively involving larger numbers of the farming population in the throes of modernization." (6, page 26) But, along with this role of JCRR in economic prosperity of the rural sector, it has also been promoting political and social development. "JCRR clearly supports the growth of a responsible rural citizenry which has the capacity for democratic participation in public affairs. It will point with satisfaction in this respect to the very considerable contribution the FA system is making with its procedures of popular representation and secret elections. .... The farmers' associations offer the best opportunity for training local leaders in parliamentary procedures and in self-help activities.... (In 1964) five of the sixteen magistrates, one of the five mayors, eleven of the seventy-four members of the Provincial Assembly, over forty percent of the township office heads, and thirty percent of the members of the county and city assemblies were former elected officers of the farmers' associations." (6, page 27) But, at the same time, JCRR is opposed to FA's being involved in politics and political factions. A problem in Taiwan today is how to arrest the growing tendency on the part of the FA leadership to involve in the political matters which are not within the spirit and purpose of FA's.

One may ask the question - Is it necessary to limit the activities of FA leadership within economic and social spheres and prevent them from participating in the political process? However, this writer feels that if the FA leadership at different levels continues to hold political positions, and becomes more and more powerful in the local politics of Taiwan, then it may be possible that, in the course of time, major changes in the methods of evolving national leadership will be brought about and there will be link between the local politics and national politics which are absent today.

The Four Year Agricultural Plans have coordinated the programs and projects of various institutions and organizations and integrated them with national goals and objectives. In other words, government has been able to play better and more effective roles in rural development through these plans. The plans also provided opportunities for representatives and technical experts of various organizations and institutions, both governmental and non-governmental, to come together in formulating national policies for social and economic development of the country. The plans also helped minimize the duplication of functions which are carried out by different agencies.

In conclusion, it can be said that the five institutional approaches jointly have brought about economic and social stability, development of local leadership, educated and



enlightened citizenry, better and more equitable distribution of income and growing equalization of social status in rural Taiwan.

## V. Taiwan's Agricultural Development Model

After having presented the various specific undertakings and the overall achievements of those undertakings, it may be useful to reflect on the model of Taiwan's agricultural and rural development, if there is any model at all. This section therefore deals with this task; and also the relevance of the Taiwan model for other developing countries.

### A. A Discussion on Selected Development Models in the Context of Taiwan's Experiences

There have been several development models evolved and suggested by economists for transforming and modernizing traditional agriculture and for accelerated development. Has the agricultural development model of Taiwan been in conformity with any of the economists' models? In other words, what has been Taiwan's impact on the understanding economists have of development?

Professor W. Arthur Lewis is noted for his two-sector model. He argues that growth of agricultural output consistent with the expansion of the non-agricultural sector is necessary to maintain stable terms of trade between the two sectors. Failure in bringing about an increase in the agricultural production either will cause prices of food products to rise or imports of food products to become necessary; either one will be deflationary on the non-agricultural sector. Logically, he asserts that smooth

economic development requires that industry and agriculture should grow together. Regarding small farm holdings in densely populated under-developed countries (as is the case of Taiwan), he believes that "when agriculture is in the hands of small farmers, the introduction of innovation depends more upon government initiative than upon the initiative of private entrepreneurs." This means that farm output can be increased through considerable expenditure on roads, rural water supplies, agricultural credit facilities, and other services which are essentially in the government sphere. But, regarding institutional changes, he is of the view that "present institutional framework is in most under-developed countries quite adequate for an enormous advance in productivity by means of the introduction of improved technology." (12, pages 227, 279 and 136)

Bruce F. Johnston and John W. Mellor have, while discussing the development strategies of agricultural development, listed some of the roles of agriculture in a developing economy: (10, pages 571-581) An efficient agricultural sector and a sufficiently large agricultural surplus can contribute to general economic development by (1) meeting substantial increases in the demand for food as the low-income countries experience growth, (2) permitting expansion of exports of agricultural products (one of the most promising means of increasing income and foreign exchange earnings, particularly in the earlier state of development), (3) freeing

labor for employment in manufacturing and other expanding sectors, (4) contributing to the capital required for overhead investment and expansion of secondary industry, (5) raising real income of the farm population to stimulate industrial expansion, and (6) developing talents and attitudes favorable to development.

John W. Mellor has concluded that there are certain essential elements in transforming the traditional agriculture: (1) Institutions to provide incentives--the system of land tenure, for example, is important, (2) Research to develop improved production possibilities, (3) supply of new forms of inputs such as new varieties, fertilizer and pesticide, etc., (4) Institutions to service agricultural production including financing and marketing institutions, and (5) Education to help farmers make choices, and (6) Planning agricultural development. (14, pages 230-378)

Professor T. W. Schultz believes that ".... there is a logical economic basis why traditional agriculture employing only the factors of production at its disposal is incapable of growth except at high cost, and why the rate of return to investment in modern agricultural factors can be high by past growth standards. Thus it really does matter what is done in developing agriculture in countries that want to achieve economic growth as cheaply as possible." He further asserts that ".... rapid sustained growth rests

heavily on particular investments in farm people related to the new skills and new knowledge that farm people must acquire to succeed at the game of growth from agriculture." (18, page 5) To sum up his other important arguments: Traditional agriculture is far less productive in comparison with a modern agriculture, but it is efficient in utilizing all factors at its disposal. Agricultural improvement through reallocation of the existing, traditional factors and through increases in the stock of such factors is expensive and offers only limited scope. Therefore, according to Schultz, the transformation of traditional agriculture lies in the supply of new and nonconventional farm inputs and the skills of farm people in using them effectively. Investment in human agents in agriculture, he asserts, is the key to a rapid growth from agriculture. And human capital in agriculture constitutes the major and cheapest source of growth. (18, page 12)

A. T. Mosher has categorized the requirements of agricultural development into two groups, viz. The Five Essentials and the Five Accelerators. The Five Essentials are: (1) Markets for farm products, (2) constantly changing technology, (3) local availability of supplies and equipment, (4) production incentives for farmers, and (5) transportation. The Five accelerators are: (1) education for development, (2) production credit, (3) group action by farmers, (4) improving and expanding agricultural land, and (5) national

planning for agricultural development. (16, page )

There are other models and ideas about agricultural development by other agricultural economists and agencies, for example -- the package of technology as advocated by the Asian Development Bank. But the above are some of the models which are considered to be related to the experiences of developing countries in the last two decades and which are being discussed quite often.

Relation of these models to Taiwan's experiences:

Taiwan's economic development policy has been giving emphasis for both industrial and agricultural development. Both have been growing simultaneously, complimenting each other. (See page 59) Agriculture has been supplying the raw materials required for industrial expansion and also transferring labor and capital to the industrial sector. Industry in turn has been manufacturing and supplying the agricultural machinery and equipment for better agricultural production and for improving the infrastructure which is prerequisite for agricultural development. Though Taiwan has not fulfilled the full requirements of the two-sector model of Professor Lewis, it has implemented a policy of "balanced growth." But it may be argued that industrial sector is tending to have an upperhand in the Taiwan's economic development for the fact that agriculture's share of net national product has been reducing. But this trend has not been detrimental to the progress of agriculture. With regard to the adequacy of the existing institutional framework in the developing

countries, Taiwan has disproved the view of Professor Lewis. Taiwan has rather demonstrated the need for institutional changes for accelerating the process of rural development.

Taiwan's agriculture has also been playing the roles which Johnston and Mellor have assigned to a developing country's agricultural sector. It has been and is supplying adequate food to meet the increasing demand due to population growth and due to general improvements in the standard of living; it has improved and expanded agricultural exports considerably; it has contributed to the growth of industrial sector by transferring labor and capital; it also has been developing the required talents, skills and attitudes necessary for social and economic change in the rural areas.

Has Taiwan developed the essential elements as suggested by J. W. Mellor? Yes. Taiwan is again an example for reorganizing and developing institutions and bringing about institutional changes for development. The land tenure and land redistribution reforms, the farmers' association, the JCRR, are all examples in this regard. It has developed new production techniques through research -- both fundamental and applied; it has provided education, both formal and informal, to the farm population to help them make better decisions and choices; it has also initiated and implemented plans for agricultural development as part of the total

economic development. Taiwan has not only fulfilled the five essentials of Dr. Mosher, it has also fulfilled the five accelerators though its approach to priorities has no relation to that of Dr. Mosher. In fact, all the accelerators of Dr. Mosher's classification have been essentials for Taiwan's agricultural development.

The growth of Taiwan's agricultural sector during the last two decades or more is an interesting and revealing case in which human capital played a vital role as in the case of Japan. It also is an example for the supply of new and non-conventional farm inputs and for the development of farmers' skills in using these new inputs effectively. The case of Taiwan, therefore, fully illustrates Dr. Schultz's strategy of agricultural development. May be that Schultz's strategy developed out of the experiences of Japan and Taiwan and possibly other developing countries.

Where does the above analysis lead us to? The conclusion is very interesting. Taiwan's agricultural development model is a totality of all the various models which have been presented above in this section. It has not followed a particular pattern or model or sequence as suggested by a particular economist or agency; it has evolved its own model. Or, in other words, none of the models suggested has its exclusive relevance to Taiwan's experiences. The Taiwan model grew out of its own problems, needs and resources.



But in this process of developing its own model, it was guided and influenced to a great extent by the lessons and experiences of Japan. Yhi Min Ho has commented in his introduction to his book, Agricultural Development of Taiwan 1903 - 1960, thus: "The experience in both cases constitutes historical examples of agricultural growth without drawing upon the scarce resources of an economy and illustrates the importance of investment activities in the human agent for a rapid and sustained growth in agriculture. In both cases, provision of irrigation and chemical fertilizers occupied an important role in the transformation of agriculture." He then concludes that "one can actually regard the case of Taiwan as the first successful experience of transplanting the Japanese developmental methods to another region." (5, page 13)

The above analysis leads to a conclusion that Taiwan's Agricultural Development has been a comprehensive model, covering institutional, human, infrastructural and technological development which have been complimentary and supplementary to each other.

B. The Relevance of Taiwan's Experiences to Other Developing Countries:

At the outset, it can be stated that the total example of Taiwan, as it is, has not much relevance to the other

developing countries because of the peculiar problems and individuality of each country. But it may be useful to explore the possibilities of adopting or adapting certain aspects of the Taiwan development strategy in some of the developing countries which are struggling hard for rural development.

The JCRR Model:

The special characteristics of JCRR were discussed earlier in Section III. The whole idea of a joint commission of aid agency for rural development in which the representatives of two countries are involved with adequate freedom for policymaking and action is certainly a novel one and it is worth trying in other countries too. As pointed out by Montgomery, Hughes and Davis, "JCRR's function has been to administer American aid of all kinds - loans, grants, and technical assistance - to agriculture, rural health, and related projects. Its operations, partly because of its special character as a joint, autonomous, semi-independent organization, seem unconventional when compared with those in other fields of U.S. aid. By providing both funds and advice to projects submitted to it for support, JCRR has been able to respond quickly in areas where a 'felt need' was articulated, and by placing the management and operating responsibilities squarely on the shoulders of the 'local sponsoring' or aid requesting agencies, it has

stimulated interest on the part of a variety of institutions, public and private, large and small, and at many levels of the society." (15, page 2)

It always worked with and through the various sponsoring agencies starting from national level to the village level. Its approach and ability to come down to the "grass roots" level organizations to give a helping hand to the needy ones and to give priorities to projects which benefit the largest number of people is unique and highly commendable. The democratic spirit with which it implemented its aid programs and the flexibility with which it formulated its policies and projects are exactly the principles that are required in rural development with long term objectives of human development and local leadership. The spirit of jointness with which both the Chinese and American staff worked together without any apparent friction and the Commission's policy of adopting resolutions with unanimity in its meetings are all examples which are rare in other similar organizations and agencies involved in similar tasks in other countries.

But, at the same time, we may have to recognize certain special circumstances of JCRR which, perhaps, may not be available in other countries for similar achievements and successes. Firstly, the Chinese members of the commission have been those who have had sufficient training in American

system of education and the American approach to problem-solving and development, and have been able to develop a spirit of understanding and friendship with their American counterparts. This may not be the case in other countries. Secondly, the method of decision making with unanimity seems to be a Chinese trait and part of their culture; and this may also be a special characteristic not available in other countries. Thirdly, the National Government of China does not have a separate Ministry of Agriculture and this situation prevented the possibility of any friction between JCRR and the central government. To put it in other words, JCRR took the place of a central ministry of agriculture and rural development functionally at least. It is therefore suggested here that in attempting to transplant the JCRR model in other countries caution may be taken to make proper adjustments and modifications in relation to the particular situation prevailing in those countries. Also it can never be predicted that the same will be the experiences of another JCRR in another country.

#### The Land Reform Program:

The concept of a phased program of land tenure reforms and redistribution and the way in which it has been implemented within a period of about five to seven years in Taiwan certainly draw the special attention of all countries which

have similar land economic problems and which are trying to bring about institutional changes in land ownership and utilization. The major factors which contributed to the success of this program are the administrative and legal arrangements which the government instituted in a short span of time. The method of giving compensation to the landlords through stocks and shares is a productive idea which helped transfer of the assets of "absentee landlords" for investment in industries for productive purposes. The land reforms in Taiwan seem not only to have revolutionized the land ownership pattern; but also have shifted the rural leadership from the hands of the landlords to those who actually till the land and contribute to the welfare of the country. This might be called a silent and peaceful revolution in a developing society.

But, certain questions come up in the mind of this writer at this context. How could the Government of Taiwan implement the land reform without any negative reaction or opposition from the landlords? Was there no reaction at all? If there was a reaction, how did the government successfully overcome it? Would it have been possible to carry out similar steps by a government which is democratically constituted and which is answerable to the parliament and the public? Such questions are not often raised and discussed while paying compliments to a country's economic development. But these

questions, according to this writer, are important and need to be investigated.

Farmers' Associations:

The experiences of Taiwan's farmers' associations are of great value to those developing countries which are attempting to develop local organizations for rural development through the principles of local action and self help. These farmers' associations have demonstrated that local organizations, if properly conceived, organized and managed, are capable of delivering the goods to the local people with regard to their occupational needs and improvement in their occupational techniques.

There are somewhat similar organizations functioning in other countries too. The Basic Democracies in Pakistan, the Village Development Committees in Thailand and the Panchayati Raj institutions in India are examples in this regard. But what has been the impact of these institutions on the socio-economic life of the rural people in those countries compared to the impact of FA's in Taiwan? This writer can compare the Panchayati Raj Institutions in India with FA's in Taiwan with more confidence. The Panchayati Raj Institutions are a federated system of local governing democratic institutions having multifarious functions. On one side they have responsibilities in connection with the national community development program and on the other side

they have their own local development functions. But these institutions have been functioning more as general planning and policy making bodies with their administrative and local political leadership ambitions. Their impact on the economic life of the farmers is not yet felt. Though an extension service of these institutions have been successful in spreading improved practices among the farmers, a coordinated approach to agricultural production, marketing and supplies of inputs and consumption goods has not been adopted and implemented. On the contrary, the FA's have taken the full responsibility of the various dimensions related to the agricultural production and farmers consumption through their various economic and educational functions which are integrated together. As a result the impact of these farmers' associations have been felt by the farmers in their better standard of living. One might say that the Service Cooperatives in India are expected to perform economic functions. But, the fact is that they are not performing economic functions on the lines on which the FA's are doing to the advantage of the farmers. The Service Cooperatives in India are still predominantly credit institutions rather than farmer-production oriented. So, it may be worthwhile exploring the possibilities of reorganizing the Indian cooperatives adapting the suitable aspects of the Farmers' Associations in Taiwan, at least the functional aspects if not the structural aspects.

**C. Taiwan Approach to the Application of Technology and Development of Infrastructure**

The Asian developing countries have been, in recent years, experimenting with some of the agricultural techniques of Japan and Taiwan, and a process of adaptive research is going on in those countries. With regard to technology and infrastructure, Taiwan provides the following experiences which may be relevant to other countries: (1, pages 84-89)

1. That expenditure for agricultural research need not be necessarily large. Locally oriented research with less expense can bring about useful results. Taiwan has only one research worker for 800 farmers.
2. Adaptive research is important in introducing new varieties of plants and breeds of livestock.
3. A decentralized system of research institutions will help locate farmers' problems and seek earlier solutions.
4. Larger investments in vocational agricultural schools, district agricultural improvement stations, and extension services conducted in close collaboration with farm credit and marketing activities.
5. Development of infrastructure such as irrigation, flood control and drainage, transportation facilities and farm roads are important for augmenting agricultural production.
6. Well-developed credit systems are needed to facilitate the use of capital inputs required for applying improved technology. And these capital inputs should be used to increase productivity and not to substitute for labor.
7. Subsidies may be necessary at the initial stage of introducing a new program or a new technology.



8. A very important conclusion from the Taiwan experiences is that farm production organized on many small farm units also can be efficient in terms of land utilization. Farms with less than 0.5 hectare in Taiwan produce more than twice as much per hectare as farms with over 2.5 hectares.
9. A systematic and continuous program of relevant extension education at the village level using the local organizations with trained leadership is necessary for development.

In addition, Taiwan has also demonstrated the need for institutional changes through its Land Reform Program and also the need for proper institutional environment in which the above measures of technology and infrastructure could be successfully undertaken. Stability of prices and markets has been another major contributing factor for sustained economic progress in rural Taiwan which is also a useful experience for other developing countries.

D. The Political Environment and Foreign Aid:

Taiwan is an island with a population of about thirteen million which is equal to that of a small state of Kerala in India. The National Government of China with many skilled technicians and administrators which moved to Taiwan was able to concentrate all its human resources on this small island for its rapid development. Also the political stability of the island, being dominated by a single party government, helped the government to go ahead with its policies and programs uninterruptedly. American

foreign aid to Taiwan also has been substantial and coming forth all through the last two decades, and the policy of American aid to Taiwan has been more liberal in comparison with other developing countries. Without such American aid it would not have been possible for Taiwan to make such headway in agricultural and general economic development. This is mentioned here not to underestimate the intelligent and hardworking people of Taiwan who have been responsible to a great extent for the rapid development of rural Taiwan.

So, while comparing the rate of growth of Taiwan's economy with other Asian countries or developing countries, the peculiar political climate of Taiwan and the foreign aid may also be taken into consideration as two special contributing factors.

However, it may be concluded that various institutional approaches of Taiwan's rural development model could be adopted and adapted by other countries to their advantage provided that a conducive political and administrative environment is created by (1) building up an organizational framework, (2) developing channels of horizontal and vertical communication, (3) providing economic incentives to the people, (4) developing social discipline among the public as well as among the leadership, and (5) skillfully preventing

the tendencies that lead people into dissatisfaction and  
frustration.

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