Title	JAPANESE INTERNATIONAL TECHNICAL COOPERATION AND ECONOMIC DEVELOPMENT : East and South Asian Countries
Sub Title	
Author	KAWADA, HISASHI
Publisher	Keio Economic Society, Keio University
Publication year	1969
Jtitle	Keio economic studies Vol.6, No.2 (1969.) ,p.1- 22
JaLC DOI	
Abstract	
Notes	
Genre	Journal Article
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-19690002-0001

JAPANESE INTERNATIONAL TECHNICAL COOPERATION AND ECONOMIC DEVELOPMENT

—East and South Asian Countries—

HISASHI KAWADA

CONTENTS

I. DIFFICULTIES and PROBLEMS

A. Experiences in International Cooperation

In the 1960's, stimulated by President Kennedy's ambitious recommendations, international organizations strived to solve the problem of the economic gap between the North and South through a number of new policies and programs.(1) Yet, despite ten years of international cooperation on a scale exceeding all earlier efforts, the results are not match expectations. Economic development plans, which are based on econometrical models in which economic growth is stimulated by additional investment, have not yielded the expected growth rate in GNP, with exception of a few countries. Of course, new manufacuring plants have been established and some have proven successful, but on the other hand, many are not operating well because of the shortage of qualified manpower, market difficulties or the poor quality of the goods produced. As a result, the gap between industrialized and industrializing countries has been widening. This is not meant to underestimate the role of international cooperation, but it does indicate the serious difficulties involved in such endeavors.

The difficulties seem to arise from several factors, some of which are not responsive to outside intervention and can be altered only by a national effort, such as in the case of the social and economic factors commonly seen in developing countries. Among them there are the traditional social class structure, racial problems, religious practices, land ownership, stagnant unemployment or disguised unemployment and the extremely low productivity of the pre-modern sector of industry. In most cases, a national consensus supporting development efforts is lacking, and thus a strong motivation to stimulate self-efforts is not wide spread. In addition to these factors, most international cooperation programs provide capital funds or productive machinery to the developing economy, but do not undertake programs to train of managers, engineers, administrators and skilled

(1) Recent report by Pearson Committee for the International Bank and Tingergen report are expected to stimulate international cooperation of developed countries.

technicians. There are, however, studies on the importance of human resource development and they emphasize technical cooperation as one of the most important factors in economic development.[2]

OECD, DAC, UNESCO-ECAFE, ILO and other organizations of the United Nations, started to discuss the parallel approach of economic and technical cooperation at the same time. Further, various studies have demonstrated the impact of educational investment on economic growth, particularly econometircal research on the relation between economic growth and educational investment in industrialized coutries.[3] This trend encouraged research on case studies of developing countries aiming at finding a strategy for human resource development as a part of economic growth plans.[4] In this way, the resarch for effective international cooperation provides more concrete measures. However, many developing countries are still mired in poverty and stagnation. Therefore, international organizations repeatedly appeal for developed countries to contribute up to one percent of their GNP to developing countries. If more convincing and efficient methods for development, perhaps these appeals will be more powerful.

In Asia, DAC, ECAFE, ILO, Columbo Plan and other international organizations have been striving to cooperate in human resource development, by assisting in educational reform, establishing vocational training centers, training the staff for such centers, and supporting the sending of trainees and students to developed countries. There is no doubt that the impact of such cooperation is great, at least for the modern sector of industry. On the other hand, the "brain drain" from developing countries because of the scarcity of jobs for enabling well-educated and trained persons to utilize their abilities fully, means a loss of man power. This means that supply and demand of manpower does not meet, because of lack of well designed planning of human resources development.

So far, most developing countries have adopted the development models based on Western historical experience. However, the present conditions of developing countries may be entirely different from those of Western countries; therefore the model itself may have to be adopted to the particularistic conditions of each developing country, in particular such a frame must be the sum total of a working strategy for detailed action in each specific area and sector.

B. Problems of Dual Economy and Human Resource Development

The greatest obstacle to self-generation of industrialization perhaps lies in the traditional backward sector. If the vast majority of the population remains in the agricultural sector where productivity is low, the modern sector will face

(2) F. Harbison and C. Myers; Education, Manpower and Economic Growth, McGraw Hill, 1961.

(3) T. Schultz, J. Timbergen and others; Economic Models of Education, OECD, 1965.

(4) Anderson and Bowman eds.; Education and Economic Development, Aldine, 1963.
F. Harbison and C. Myers eds.; Manpower and Education, Country Studies in Economic Development, McGraw Hill, 1965.

a very narrow market. Therefore development plans must seek parallel development of the advanced and backward sectors. As seen in India's first five year plan, the concentration solely on heavy industry ended in failure. The second five year plan sought the parallel development of the two sectors of economy. As Indian experiences show, the most difficulty seems to be in increasing productivity of traditional backward sector.

In the development of agriculture and traditional rural handicrafts, a general plan may be useful only in the sense of serving as a guide to select or find the kind of crops and methods best fitted to the specific area. Outside cooperation may also contribute, if it carries out research and creative work in specific areas. That agriculture is very particularistic in each area is well described in following sentence. Agricultural development is a process of involving the interaction of a large number of variables, both economic and noneconomic. A great difficulty in prescribing a successful developmental program for agriculture in a specific region or country hinges on the very high degree of specificity, complexity and interaction involved. Some variables are specific to the locale where the agricultural production takes place. Some variables are absolutely essential to growth; without them, growth is virtually impossible. The great variability between countries or regions and through times makes today's prescription invalid tomorrow and the program for the West invalid in the East.(5) Professor Max Millikan has described the best process of agricultural development as a complex systems problem. There are two complexities: (1) the very large numbers of interrelated factors and (2) the unique importance of any one factor or series of factors in any given situation. While, it is relatively easy to identify related factors, of greatest important for development is the ability to identify the key factors that will stimulate more rapid growth and the major inhibitors, some of which may be amenable to change while others are not. Moreover, a general approach is not workable, because such factors may differ by area even in one country.

Given these facts, the theory of economic development must be adjusted to each specific area in order to find realistic measures for increasing productivity by selecting the most suitable type of products and by developing other factors such as fertilizer and markets, instead of proceeding on the basis of a development plan based on experience under entirely different conditions. Therefore developing countries need an increasing number of agronomists and field engineers with creative competence to find and develop appropriate action for each specific area. At the same time, once such a plan is put into effect, the technicians who actually work with agricultural and other workers must focus on training them to take over functions performed by outsiders. Stagnation of productive activities must be eliminated through action based on research and experiments.

(5) C. R. Wharton; Modernizing Subsistence Agriculture, in M. Meiner, ed. Modernization, N.Y. Basic Books, 1966 p. 262.

Needless to say, pressure from the national and local government must be applied continuously through all stages of the program.

On this point, Japanese experience in early Meiji may suggest a method for promoting the parallel development of the traditional and modern sectors. During the first decade under new government radical effort of modernization and civil war, Japan faced serious economic crisis and inflation. The search for a sound economic foundation and industrialization became keen need for new Japan. A group of national government officials with the aid of local government conducted extensive research through out the country for three years. They found wide variations in the characteristics of each area and in the historical development of local products. Based on their survey of the human and natural resources, and market context of each district, they proposed the most suitable locations for each industry. They also proposed, along with other things, a policy for human resource development. For example, in the area suited to sericulture, the local government was encouraged to establish a system of traveling instructor to help farmers improve mulberry plants and silk worms as well as methods of cultivation. At the same time, they proposed the development of markets and silk manufacture under government support. Later, secondary school for sericulturist training and technical colleges for sericulturist and silk industry, for silk textiles and dying process, were established in the center of the area of production.

Some of these facts can be found in *Kogyo Iken* (Proposals for Industrial Development), the government document issued in 1884.[6] The authors of this document utilised a comparative approach, reviewing volume of production and productivity, amount of export and imports, and national economic power of industrialized countries at that time. They considered Japan's most urgent problem to be how to achieve balanced economic development, as a late starter, given limited resources. For industrialization, they had to depend on the importation of modern technology and science and had to develop highly skilled manpower. All these efforts required massive financial outlays which had to be paid for by the export of domestic products. Silk and tea, followed by cotton textiles became the major export goods which stabilized the international balance of payments, and therefore made possible the industrial development of Japan.[7]

The development of human resources, at least for industrialization, had to match the rising manpower demand of industry, since experience in industrial activities is indispensable for acquiring competence as managers, engineers, technicians and other industrial skills.

The gap between the supply of and demand for developed manpower means inefficient utilization of capital which is scarce in developing countries. There-

(6) KOGYO IKEN (Proposals for Industrial Development), 1884. in H. Ouchi and T. Tsuchiya ed. MEIJI-ZENKI-ZAISEI KEIZAI SHIRYO SHUSEI (Collection of Historical Documents on Early Meiji Public Finance and Economy), vol. 18, 19, Tokyo, Kaizosha, 1931.

(7) Ibid.

fore, as pointed out by Harbison and many others, training within industry occupies a very important position in human resource development.[8] Japanese experiences of training within industry have been much discussed by specialists as a possible model for developing countries.[9]

This does not mean that the Japanese model of industrialization is relevant for developing countries today when world circumstances are entirely different. Yet the advantages and difficulties experienced by Japan as one of the later departure countries have some features in common with presently developing countries.

C. The Need for Improved Cooperation

The Sixth ILO Asian Regional Conference in Tokyo adopted a resolution on human resource development for economic growth. No country would dare oppose such a program. It seems, however, that agreement on how to achieve the purposes of this program efficiently is lacking.

So far, the main direction of international technical cooperation has been the search for a general diagnosis applicable to all developing countries despite the fact that countries differ in combined sets of various factors. In this way, many international cooperative programs have been shuffling their programs. So far, with a few exceptions, the great majority of developing countries have not achieved expected target set by the program. Here many doubts arise on regarding the formalism in the international bureaucracy. Are not many programs too abstract and removed from actual conditions instead seeking to balance various political pressures?

Isn't it neccessary to provide more concrete programs suited to the specific conditions of a particular area or country in developing educational and training projects? Have specific measures based on their own experience proved successful in developing the traditional sector such as agriculture, fishery, forestry and rural and city cottage industry?

Is there any effort to collect case studies illustrate on self-development in native industry and which may suggest the most appropriate directions of development? Is there any research on medium-sized firms which will be more useful in promoting the industrialization process?

The integration of various development projects for economic and human resources in many sectors seems indispensable for balanced growth. What will be the optimum share for each sector and for a country, is as yet unsolved. However, it should be answered on what are the major obstructions to international consortium cooperation and expanding joint cooperation beyond only two coutries.

(8) Harbison and Myers, op. cit.

(9) M. Sumiya; NIHON SHOKUGYO KUNREN HATTEN SHI (I) (History of Job Training in Japan), Tokyo, Japan Institute of Labor, 1970.

S. Levine and H. Kawada; Human Resource Development and Economic Growth in Japan, forthcoming publication as a part of Inter-University Study of Labor Problems in Economic Development.

Most important of all is to find the proper socio-psychological stimulus for industrialization in those countries akin to the role played by Christianity in the West or Chinese Philosophy in Japan.

There are many questions not properly solved. This paper intends to review Japanese technical cooperation in general and in selected countries and to present some tentative proposals on how to improve international technical cooperation programs.

II. INTERNATIONAL TECHNICAL COOPERATION BY JAPAN

A. The Post World War II Period: General Characteristics

After World War II, Japan was under occupation and lost the territory which she had controlled outside the small area of her home islands. Japan at this time naturally engaged in no international cooperation activition. Economic reconstruction began and accelerated after the Peace Treaty and independence in 1952. The Japanese economy has been highly dependent on foreign markets for her natural resources and of course as a market for her products. Such structural characteristics of Japan's economy by themselves stimulate her interest in international cooperation. In 1955, Japan started to give reparations and free economic cooperation to the developing countries where she had committed war damage. Most of such reparations were paid in the form of construction projects and industrial machinery with technical services attached to Burma, the Philippines, Indonesia, Vietnam, Korea, Laos, Thailand and Cambodia. Government credit, private credit for exporting products supported by the government, capital investment, and technical cooperation followed. The credit offered was for the purpose of developing mining resources, constructing dams and transport facilities, and building new industrial plants. Such activities required many managers, engineers and technicians who faced the difficulties of training domestic counterparts to handle their functions.

Japanese overseas technical cooperation is gradually increasing along with economic cooperation. Yet compared with economic cooperation programs by the United States, France, Great Britain and West Germany, the amount of Japanese technical cooperation is relatively small.

Such Japanese programs extend to many countries in Asia, the Near East, Central and South America and Africa and are also carried out through international organizations. However, such cooperation programs have only increased very recently because the success of Japanese industrialization was not widely recognized until a few years ago. Unitil then, developing countries did not bother to approach to Japan for technical assistance. When industrialized countries began to recognize the dynamic economic growth of postwar Japan, awareness spread throughout the world.

Now Japan's ability to offer technical cooperation is widely recognized, but there remain many difficulties to overcome. The first is the Japanese language

which is not common among developing nations, except among many of Korean and Taiwanese people. At the same time the Japanese are not well trained in international activities and not skilled in learning foreign languages. Second, despite serious efforts by the government, sufficient institutional capicity to train managers, engineers and other skilled workers and to accept students from developing countries is not well developed.

On the other hand, Japan may be uniquely qualified to offer a model of economic and human resource development that is much closer in many respects to the conditions of current developing nations. (1) As a late starter of industrialization, Japan faced the problems of excessive importation and the development of modern industry as well as the need for a special approach to the problem of a dual economy. (2) Japan's advantage has been its ability and willingness to learn from advanced nations, and its disadvantage has been the wide gap between the modern and traditional sectors. (3) The role of the state in economic development has been dominant in Japan, a characteristic observed in practically all developing countries. (4) Japan is the only developed country outside of the West that will provide a stimulus to most developing countries. (5) Surplus population, though slowing down the growth, also provides lower labor costs and thus provides the possibility of reducing total costs and easing the process of accumulation of capital. (6) Instead of the Protestant Ethic which has been the source of motivation in Western countries, Japan had Chinese philosophy. (7) Though poor in natural resources, the Japanese worked diligently. That is a neccessary requirement of developing nations for successful industrialization. If there is anything unique about Japan's approach which reflect her experience, it can be observed in reviewing actual cooperation activities by the government and private circles of Japan.

B. Overseas Cooperation by the Japanese Government in Manpower Development

Funds expended by Japanese cooperation programs in the field amounted to only 4.4% of total cooperation, compared with 20% average of DAC countries in 1968. This not only shows Japan's lack of effort and concern, but also reflects the attitude of developing countries towards Japan. During recent years, as the Japanese economy grew by leaps and bounds, the expectation of developing countries especially in Asia towards Japan has changed, particularly in those countries which experinced Japanese high level of technology, scientific competence in construction, manufacturing plant operations and machinery brought to them as reparations. Many students were sent to Japan as a part of reparation payments, and they observed of close hand the dynamic process of economic growth. In recent years, an increasing number of students, trainees and specialists visit Japan seeking ideas for manpower development programs.

The type of overseas technical cooperation by Japan is similar to that of other developed countries. There are visiting students and technical trainees, inter-

national training courses, overseas technical training centers, overseas activities of Japanese engineers and specialists, youth cooperation corps and other technical cooperation activities by the government.

(1) Overseas Students and Technical Trainees in Japan (Government Basis)

The number of students and trainees accepted by the Japanese government even including those of coming under reparation schemes, is far less than those studying in Western countries. However, the number is increasing and reached 2,600 persons in 1968 (East and South Asian countries, 84.4%). The total number of technical trainees accepted by Japan from 1954 to March, 1969, amounted to 9,170 persons from countries in East and South Asia, and 1,656 from other countries.[10] Among Asian countries, those developing countries sent large size of trainees in such order as; Taiwan, Thailand, Indonesia, Korea, India, the Philippines, Pakistan and Malaysia. In 1960, the annual number of visiting students and trainees coming through government channels passed the 1,000 mark. In 1966, the number exceeded the 2,000 mark, and in 1968, it rose to 2,600 persons.

The fields they selected to study reflect their judgement of what to learn from Japan and the needs of their countries. Out of 1,396 technical trainees, the percentage choosing various fields is as follows; Agriculture (23%), Public Administration (19.3%), Postal Service (10.6%), Welfare Work (10.6%), Transportation (6.7%), Light Industry (5.6%), Construction (4.7%), and other (19.5%).

Those trainees came under the following categories: (1) international technical cooperation programs such as the United Nations' Organization and Colombo Plan: (2) agreements involving reparations between the other country and Japan, and (3) by the request to Japan of other countries to instruct trainees. The expenses, in principle, are to be paid by the Japanese government, but in some cases travel and residence expenses are paid by the international organizations or the trainee's home country. There are two methods of training: individual and group. Corresponding with the increasing number of trainees, the group approach has become more widely used.

Visiting students are divided into the following five categories: (1) regular disciplinary department students, (2) advanced research students who graduated from universities in their home countries, (3) medical internship, (4) training in the plants or undertakings, (5) students coming under reparation agreements. In 1968, the number of students in each category are as follows, (1)–52, (2)–140 from 40 countries, (3)–8, (4)–12, (5)–0.

(2) Courses for International Training

The Japanese government sponsers and trains the members of Productivity Study Teams, trainees of International Course and APO fellows who are organized or selected by the Asian Productivity Organization. In 1968, nine study teams with 76 persons visited Japan. Their main fields of interest were textiles, chemistry, aluminum, medium and small enterprises, and the travel service industry.

(10) Figures are quoted from Keizai Kyoryoku no Mondaiten-1969 (Problems of Economic Cooperation) ed. by Ministry of Commerce and Industry, Tokyo, 1970.

Other teams focused on such areas as cost control, production control and top management functions. These teams were composed of four to ten persons each and stayed in Japan from two to seven weeks. Participants consisted of top and senior middle management.

International training courses were held in three fields: leadership training for small and medium enterprises, production engineer training, and quality control. Participants totaled 57 and each course had less than 20 persons. They were sent by 12 countries affliated with the APO and the countries actively participating were Thailand, Nepal, Taiwan, India and the Philippines.

APO Fellowship trainees came to only 12 persons. All those programs were sponsered by the Japanese government and administered by the Japan Productivity Center.

(3) Overseas Technical Training Centers

These centers seek to train specialists upon request from the government of developing countries. Japan provides specialists and training experts, equipment and machinery and the other country provides land, building and other needs. The expenses for maintenance of these centers are paid jointly. This type of activity has been in effect since 1958 in Pakistan, Thailand, India, Ceylon, Korea, Singapore, the Philippines and other countries.

Subjects of training include small-scale manufacturing pertaining to metal processing machine tool, bicycles, glass, electronic machines, chemistry, prototype machine and bamboo and wood works; tele-communication; textile; fishery. There are 20 such centers and most of them are located in Asia with 3 in Africa and 2 in Latin America.

Along with these training centers, research and demonstration centers such as Indian agriculture technical centers, medical centers in Thailand and Cambodia, and a tele-communication research center in West Pakistan have been established. Administration of some of these centers has been transferred to native specialists but some continue to rely on Japanese cooperation for several years.

At the end of 1968, 118 Japanese specialists were involved in the work of those 29 centers. The achievements by the centers are the result of devoted work by the specialists who have helped to develop products fitted to the special condition of the area to increase the harvest size by experimental work or to train talented leadership able to instruct farmers on how to utilize farming methods developed by the center.

The achievements of these centers are so promising that if the number of centers with able specialists are multiplied, it will surely be beneficial for developning countries. This may suggest the need for more technical cooperation better fitted to the characteristics of each area and move practical action rather than searching for general formulas in time-consuming discussions. Of course, if success is to be expected, many able field specialists must be developed, because those activities depend entirely on their ability and devotion.

(4) Overseas Activities of Leading Engineers and Specialists

The Japanese government sent overseas 314 specialists in 1967, and 403 in 1968 in addition to the centers above mentioned. They are attached to the Colombo Plan and North East Asia Plan (181), Near East and Africa Plan (49), Central and South American Plan (38), Medical Cooperation Plan (161) and others (22). The total number of specialists on agriculture and marine products, medicine and welfare sent overseas amounted to 1,811 between 1955 and 1968 (1,361 to Asian Countries). In 1968, the specialists sent overseas by the government were distributed among various fields as follows; medical and welfare (40)%, agriculture and marine products (20.6%), postal communication (6%), mining (5.7%), government administration (5.5%), construction (5.2%), public utility (4%), and others (13%).

(5) Other Technical Cooperation Activities by the Government

Besides the above-mentioned programs, the Japanese government sent overseas many teams of specialists to assist in formulating long-range development plans as well as plans for specific projects in developing countries. For these purposes, the government established two systems in 1962; funds to support overseas research on formulating development plans in the Ministry of Commerce and Industry, and funds to support basic pre-investment research in the Ministry of Foreign Affairs. These programs are for promoting basic surveys or feasibility research to be conducted by teams of specialists. In 1968, 16 teams were sent overseas to work out concrete development plans. If the developing countries agree to the plan, the Japanese teams try to persuade them to grant contracts for construction of the projects to Japan. Such cooperation in formulating development plans include coastal resources for Taiwan, power plant development for Ecuador, small and medium enterprise development for Taiwan, paper and pulp industry development for Indonesia, power plant development for Turkey, planning of steel mill development for South East Asian countries, and a power plant development project for Indonesia. Pre-investment surveys include agricultural and water resource development for Korea, harbour development for Taiwan, bridge construction for Thailand, fish harbour construction for Malaysia and a TV network extention project for Uganda.

Other teams of specialists also were sent for the integrated development of the Mekong River, Asian highway construction, an overall plan for economic development for Thailand, Laos, Cambodia and Malaysia as part of an international consortium project.

These technical cooperation programs geared to very specific projects produce immediate results for economic development but it is not clear whether these programs are successful in developing human resources in the countries concerned with the possible exception of benefits for persons directly attached to these projects.

C. Overseas Technical Cooperation by Private Business

Most private overseas technical cooperation has been related to the export of

plant and complex machinery or capital investment. This type of private overseas cooperation has been much greater than that of the government, amounting to 70% of total economic cooperation. Further, private enterprises tend to work harder to achieve success in order to make profits. Therefore, their activities for human resources development proved to be the most efficient even though limited to only the specific area of the investment or undertakings. It is difficult to estimate what percent of total investment, about 1.15 billion dollars for developing countries at the end of 1968, has gone into manpower development.

The majority of cases of direct investment consist of a joint company with the government or private business of the countries concerned. Japanese enterprises are responsible for developing managers, engineers, administrators, foremen and akilled workers among native workers. Before they decide to invest, the Japanese enterprises make thorough surveys of socio-economic factors such as geography, the marketing possibilities, labor and others, in order to assure a sound basis for profitability. This kind of activity illustrates the best methods of selection of particular industries and size of plant fitted to each area. They develop the methods of manpower development fitted to the people and to the other factors of the area.

It is commonly observed that other countries sent middle management especially engineers to Japan for in-plant training. By this process of in-plant training, most trainees not only acquire useful knowledge and experince, but also learn directly what the efficient plant should be and they are also impressed by the hard work and discipline of Japanese employees. Management is composed jointly of delegates representing the two parties who made the investment.

(1) Training in Japan

Private capital investment and plant exportation by Japan, are concentrated in mining and manufacturing. For the success of overseas Japanese investment, suitable manpower must be found or developed. They recruit employees and select key persons for training in Japan.

The special character of these trainees is that they are employees of Japanese overseas firms and they are expected to replace Japanese after their training and manage the undertakings. Most are trained for a specific assignment and are expected to show the same high standard of performance of the task achieved by their Japanese counterpart. As is described later, this type of training seems to be one of the most effective means of human resource development.

To help these training activities, the Japanese government supported the establishment of the Overseas Engineers Training Institute. This Institute offers short orientation courses and Japanese language couses lasting from two to six months. Then trainees are sent to a Japanese plant where they are trained on the job under the direction of Japanese engineers and managers who are expected to be assigned to the overseas firm where the trainees return.

Until March, 1969, the number of trainees received by the Institute totaled 4,045. Of this figure, 85.8% are from Asian countries, 8.1% from Latin America,

and 5.5% from the Near East. Their national origins include Taiwan (596 persons), Thailand (534), South Korea (478), India (361), Malaysia (311), Indonesia (214), Pakistan (184), the Philippines (163) and others. In 1968, the 788 trainees in manufacturing were in such major industries as automobiles, industrial machinery, electric machinery, textile, steel and construction. These figures are limited to trainees registered at the Institute and there are many who are hired directly by Japanese companies and hence are not registered in the statistics.

(2) Japanese Managers, Engineers and Experts in Developing Countries

Japanese investments in developing countries, whether independent or joint companies, require many Japanese managers, engineers and experts to work with native employees. The number of Japanese sent abroad for business activities vary from a few to several hundreds in one firm depending on the size and nature of the industry. Total numbers are not clear, but based on 1,551 cases of private investment in developing countries, there must be well over ten thousands Japanese in these categories sent overseas. Most of them are qualified to carry out a variety of tasks including training native people to perform their jobs efficiently. These Japanese work with native engineers trained in Japan who cover up the language weakness of the Japanese and play a valuable role as a bridge between the natives and the Japanese. These native engineers help to train natives through course work and on-the-job training. These activities relating to manpower development are performed as an integral part of the enterprise's assignment and are naturally paid for by the companies. In many cases, the sincerity and devotion of these Japanese helps to change the traditional attitudes of the natives toward industrial life and to motivate them to adjust to industrialization. Many native workers who have completed the course and training requirments find their raised status in the native industrial sector.

(3) Other Japanese Specialists in Developing Countries

The Japan Chamber of Commerce has established overseas enterprise technical cooperation centers in six district offices. These centers prepare a file of specialists and engineers who are willing to offer their services to the enterprises of developing nations. Up to March, 1969, the total number of listed specialists was 3,730. Up to then, requests from developing countries totaled 3,868. However, only 599 persons were sent overseas. In 1968, of 541 who were listed and 291 requests, only 41 persons were sent abroad. Before these specialists depart from Japan, they are given an orientation program to prepare them to act more effectively in cooperation activities.

Many were sent to Brazil, the Philippines, Thailand, Pakistan, India and Taiwan. In these countries, the Japan Chamber of Commerce has an agency or office to support the specialists. Many requests came from machine manufacturing, textiles, electric machinery and the chemical industry.

The Overseas Management Cooperation Committee of Japan-CIOS also sends specialists on management development to developing countries. Partial subsidies from the government have been granted to this committee since 1967.

Still, the number participating in this paln is limited; in 1968, only 20 specialists were sent to South Korea, Taiwan, Pakistan, the Philippines, Peru and Brazil under this program.

This type of cooperation reflects the increasing sense of international responsibility among Japanese industrialists. At the same time, changes in economic structure and technological innovation has reduced the need for experinced middle and senior specialists in modern firms in Japan, despite the severe shortage of young workers now prevailing in Japan. Therefore, once the precise needs of developing countries are made known, Japanese business may be able to expand this type of technical cooperation even further.

There are other technical cooperation programs by private business such as surveys for industrial development plans, technical cooperation in the field of small-scale industry, and overseas consulting activities.

Surveys for industrial development plans are made by teams of specialists organized by industrial or trade organizations and partly supported by government funds. These surveys are related to the plans for natural resource development for specific industries. These survey teams are composed of staff members of related enterprises or the industry with an interest in importing the products or exporting physical plant and equipment. So far these development plans have centered on agriculture, mining, lumber, electronics plants, fire work, chemical fertilizer plants, petro-chemical plants, and others.

Overseas technical cooperation programs for small-scale industry are designed to offer production technology and management experience for developing small-scale industry which plays in important role in providing employment opportunities and supporting large-scale modern industry in developing nations. The center of such activity is the Japan Plant Association which conducts feasibility surveys, plant exports, and management training with some subsidies from the Japanese government. From 1961 to 1967, this work resulted in the constructed of 28 plants in 15 countries. In 1968, six plants were built in three countries in such areas as leather, veneer, rice process, rice bran oil and refrigeration.

The Overseas Construction Cooperation Association was organized in 1955 to participate in basic surveys for construction projects in developing ountries. It sent 61 teams to participate in such surveys between 1955 and 1968.

Overseas consulting firms are also quite active in sending teams for preliminary surveys of development projects. It has already sent 246 teams since 1964. This group organized the Overseas Consulting Enterprise Association and receives subsidies form the government.

The Association has a list of several hundred consultants and has a growing file of data on development activities of international organizations and various countries. It has 30 surveys contracts from 15 developing countries. The fields it covers are natural resource development, construction of railroads, highway and tele-communications, and manufacturing industry.

III. CASE STUDIES OF TECHNICAL COOPERATION BY JAPAN

Three developing countries are selected, for discussion here, namely Taiwan, the Philippines and India. They are quite different in their historical and cultural context, their rate of economic growth, the size of land area and population, and the relations between each of them and Japan.

Taiwan's growth rate has exceeded their own of economic plan. Taiwan has recently received the greaterst share of international cooperation from Japan both in loans and technical aid. The Philippines received reparation pay from Japan and sent many trainees to Japan, but except for natural resource development, Japanese investment has not increased much. The economic growth rate of the Philippines is high but is encumbered by an increasing debt that cuases inflation. India is the largest nation and industrialization has developed rather extensively in some areas but the rate of growth is low and many people suffer from poverty and hunger.

Comparative observations of the three countries should provide some insights into the best methods for cooperation in human resource development.

A. Taiwan

Taiwan has successfully implemented its economic plan and has established a basis for continued self-development. However, there still remains the great task of modernizing economic structure which will be solved by continued economic growth.

The Japanese government had invited 1,470 trainees from Taiwan up to March, 1969. Their fields of specialization include agriculture, education, government administration, light industry and others. The number of students from Taiwan studying in Japan is 133. The Asian Productivity Organization also sent 287 persons to Japan to visit factories and to observe industry, the economy, and government administration. The Japanese government sent 88 specialists to Taiwan to assist in research on development plans for mining, harbour construction, fishing industry and others.

Private enterprises also sent their employees to work at the exported plant or to oversee the company's investments. Plant exportation and construction programs totaled 18 cases including five chemical fertiliser plants and the construction of bridges and harbours.(11)

Private companies invested in 224 manufacturing firms and others. The main industries selected for investment are electric machinery (43), textiles (40), the chemical industry (31), and machinery (27). These investments requrie Japanese managers, engineers and other specialists. The total number of such specialists may be more than 2,000. Their most important assignment is to train Taiwan employees of various skill levels. At the same time, companies select

(11) "*Overseas Technical Cooperation*" (Japanese) Jan., 1970, Monthly journal published by Overseas Technical Cooperation Institute.
See also Problems of Economic Cooperation, op. cit.

employees and send them to Japan for training.

It is diffcult to evaluate the results of these cooperation programs for Taiwan economic development. However, the trainees from Taiwan are said to be the most adoptable to Japanese training on the whole.

Among the many types of technical cooperation, manpower development by private companies illustrates clearly the most effective training methods.

(1) Domestic Electric Machinery Manufacturing (Daido Steel Machinery)

The main products of this company are refrigirators, TV's and heavy electric machinery. The company accepted Toshiba's holding of 18% of the capital and their technical help. Total employees were 4,110, at the end of 1967. The company sent about 58 trainees, mostly engineers, to Japan up to March, 1968. Trainees are sent directly to Toshiba and after few days of orientation are attached to trainers in the plants. Training is concentrated on the key processes of newly developed machinery and production control by the on-the-job training (OJT) method. Japanese trainers are selected from supervisors with over ten years experience. The duration of training is from two to three months.

The training in Taiwan is arranged differently according to the type of production, namely whether it is an assembly line or a part manufacturing plant. For assembly line training, operators graduated from junior high school receive two to three months training based on a textbook guide for the job.

The employees in part manufacturing plants are also junior high school graduates, but they are trained different skills. Some jobs require very complicated skills which are acquired through training by a Japanese technical trainer. Toshiba has sent 54 specialists for such training. The duration of this type of training is from two to three months and consists mainly of practicing operations. By expanding the kinds of products and raising the quantity of production, this company has multipled the number of engineers, technicians and skilled operators. Labor mobility is very high in Taiwan, but employees of this firm do not leave because of the good image of this company.

The process of development by this firm consists of (1) technological cooperation, (2) assembly of imported parts, (3) manufacturing of simple parts, and (4) manufacturing of complex parts.[12]

(2) NEC's Cooperation with the Taiwan Communication Manufacturing Co.

This telephone exchange machine making company adopted a training system similar to the previous case, namely OJT for operators and training of engineers in Japan. In 1967, this company started to produce machines of a larger size which required higher manpower standards. To meet this change, the training system adopted special standards for each category of worker such as for engineers—designing and production process control; for foremen—proper methods for handling machine tools, distributing wire, testing products and some knowledge of production control.

(12) This case and the following cases of cooperation by Japanese companies are based on interview with company staff by Kawada and his students at Keio University during 1968–1969.

In this way, in Taiwan, more engineers now give instruction on making complicated parts under the guidance of Japanese engineers. Taiwan has now reached the level of most developed countries in South-East Asia in the sense they have highly qualified engineers and a skilled work force in manufacturing. However Taiwan needs more engineers and technicians for further industrialization.

B. The Philippines

Economic relations between the Philippines and Japan began in 1956 when the reparations treaty was signed. Reparations in the form of government credits and export credits have been spent by the Philippines to import plant, machinery, and other materials, and services from Japan. Investments by private companies are limited to mining and have not yet developed to any great extent, partly because American influence has already been solidly established. There are only 19 projects by private companies of which nine are manufacturing firms.(13)

Japanese technical cooperation has leaned more toward receiving trainees and students, APO visitors and specialists sent to the Philippines by the Japanese government. By March, 1969, trainees invited to Japan totaled 790 of which 88 came in 1968. Students numered 86 (12 in 1968). Specialists sent to the Philippines totaled 58 (18 in 1968). By contrast the United States invited 357 trainees and students and sent 1,198 specialists in 1968. Just recently the technical cooperation center for small manufacturing opened to train workers in metal processing and other skills. Compared with the U.S., Japan's role in the Philippines is relatively small. Therefore the case described below should not be overestimated.

(1) Private Technical Cooperation

One of the few Japanese private enterprises which have established joint relations is Ajinomoto which has invested 40% of capital and established an Ajinomoto manufacturing firm. The partner is an immigrant of Chinese origin. Production planning and control are under six Japanese staff members sent from Japan. One to two employees are sent to Japan and after the orientation course is over, they are trained in the company's Japan plant under Japanese engineers and foremen by a man-to-man OJT system. Generally, the level of ability of engineers and technicians is high, reflecting the already well-developed modern industry. Though there are more than two million unemployed workers, a shortage of engineers and skilled workers is evident.

The quality of most workers is rather good reflecting the well-developed educational system, but they lack decision-making ability and independent judgment. They can function satisfactorily with a short OJT training program. The great training problem is how to develop managerial capacity for creativity because such individuals are the most urgently needed.

C. India

India faces the greatest difficulties in economic development. Despite its quite

(13) "Overseas Technical Cooperation", July, 1969.

developed modern sector, a vast majority of the population in the traditional sector prevents progress and lowers per capita GNP. India has been receiving the greatest share of international cooperation and Japan is only one of many countries to offer technical cooperation. Japan has more than 491 million dollars worth of credits and other loans which are part of a consortium aid plan by advanced countries.

Technical cooperation by Japan consists of inviting trainees, students and many teams for a short tour. Up to March, 1969, 852 trainees, mainly to study agriculture, fishery and light industry had come to Japan. The number of students in Japan amounted to 48 at that time. APO also sent 310 persons and the government sent 79 specialists. Private enterprises invited their Indian employees to Japan for training and sent at least same number of specialists to India. Several such cases are presented below.

(1) Government Overseas Technical Cooperation Centers

According to a report which reviews the impact of Japanese overseas technical cooperation activities,[14] it seems that the contribution of Japan to India is not clear in various programs with one exception. That exception is the technical cooperation centers. Since 1962, eight agricultural technical centers, a training center for small-sized enterprises, and a technical training center for the processing of maritime products have been established.

These centers for agriculture have been successful in increasing farm productivity based on the diligent activities of Japanese agronomists. They perform the experimental farming using Japanese intensive methods of cultivation, with selected species of rice and with machinery and fertilizer. They train native specialists who work together with Japanese. These activities have encouraged neighboring farmers to improve their farming. Along with those activities using intensive methods of cultivation, integrated agricultural development programs, have been developed by other countries.

Due to the promising results, the Indian government requested the extention of these centers' activities in the direction of wider populariaztion of improved agricultural methods by establishing sub-centers and increasing Indian staff members for that purpose. In addition, they wished to develop the most suitable farming methods for each specific area. This means a great change from small model farms to specialized demonstration centers covering a much wider area. There are many teams of Indians who engage in field work mainly under the guidance of Japanese specialists. These centers conduct experimental research on natural and social conditions of the area, farm production, technical levels, soil reform, and the interrelations between farmers and government administration. These centers engage in research, seek to spread knowledge of improved cultiva-

(14) Ministry of Foreign Affairs, Bureau of Economic Cooperation, Report on the Evaluation of Technical Cooperation, (Mimeograph) 1967.
See also several articles in *Overseas Technical Cooperation, (Japanese)*, Nov. 1969.

tion methods and train staff. In this way, each center has its specialized task to develop farming techniques according to the particularistic factors which it faces.

Now, instead of 8 centers under Japanese sponsorship there are only two, but on a much larger scale. This experience has suggested several weaknesses which should be eliminated as follows: (1) increased activities are not followed by increased budgets from Japan and India, thus making it difficult to achieve desired results: (2) equipments needed for activities frequently are not delivered on time and therefore specialists waste time because of neglect by the senders and poor Indian transportation: (3) the center's program is concentrated sloely on rice farming, and often tries to promote agricultural techniques which can be adopted only by wealthy farmers but not the average farmers. If centers are provided with documents and other materials on other types of crops including tropical plants which can be grown commercially, they will be able to help in developing Indian agriculture more suited to the conditions of each specific area. It is true that the government encourages cooperative organizations of farmers to use machinery, even where it is not possible economically.

In conclusion, India contains a great variety in the field of agriculture and thus the overall development of agriculture approaching the same high standard cannot be achieved within a few years. Each area will probably develop at different rates, reflecting the different combination of natural and human resources.

Two training centers in other fields have also been in operation. One is a center for training in making machines and tools, and for training engineers and skilled workers, both for small-sized manufacturing near Calcatta. The other is a training center for processing fishery products. This will be followed by a center for the fishing industry.

The above centers all seem to be quite successful due to the diligence of the Japanese specialists.

(2) New Indian Fishery Company

This company was established in 1955 by Taiyo Fishery at the request of the Indian government. Its main activities consist of fishing and can manufacuring and it has 496 employees of which 480 are Indian and 16 are Japanese. The Japanese are composed of 2 managers, 7 fishing boat captains and 7 chief engineers.

This company sent four employees to Japan for training as engineers, radio operator and navigator. They spent three to six months in Japan and were trained on the fishing boat and in the plant. They became staff assistants to Japanese officers and became candidates for officers.

Training in India is carried out by a Japanese staff assisted by Indians trained in Japan. Despite great difficulties in communication, efficient cooperation by the Indian staff made it possible to reduce gradually Japanese specialists in India. But it may take more than ten years to locate abundant fishing grounds. In 1968, seven Indian fishing boats were operated under their own captains.

One of the the difficulties experienced by this company was that it required people with higher education for certain jobs, but persons accustomed to such work in India are scarce. Therefore, the shortage of employees of the foremen class is the greatest bottleneck to raising production. Another difficulty is the Indian policy of manpower nationalization. In many cases, very important members of the Japanese staff must leave India before completing the training of the Indian staff to take their places and hence the Indians lack enough tranining to perform the job.

At any rate, this joint company has successfully raised food production. Its productivity will be about 80% of that of the Japanese firm, after training is completed for all levels of the work force.

(3) The Baroda Rayon Corporation Ltd.

This is a case of plant exports by Japanese companies. At the beginning of operations in 1958, 35 Japanese engineers were sent for construction and operation. But after two years, out of 1250 employees, no Japanese were left in India. During construction, ten Indians were sent to the plant in Japan and trained on the job. Operators were trained under Japanese supervision without much trouble. But many of those trained in Japan have left the company for other employment. This was the same for operators. Regardless of this kind of mobility, the company manages to operate successfully.

(4) Toshiba Ananda Lamps Ltd.

This case marks one of the most successful enterprises in India. Because the brand name of Toshiba among electric lamp makers is widespread in India, they had thousands of applicants for 17 openings for engineers. For operators, thousands of daughters of government officials and buiness people applied for about 200 job openings.

This type of keen competition for jobs made possible selection of the ablest university graduates. They were sent to Japan for one year or a little more. At first, they entered the Overseas Engineer Training Institute for orientation and study of Japanese. The Institute reported that their performance was the best of all trainees and that they mastered sufficient Japanese needed to become trainees in a very short period. Then they were divided into three groups and sent into plants, where they were attached to Japanese engineers and foremen assigned to train them and later they went to the Indian plant to work. Those Japanese who carried out the training established very close friendship with trainees. They invited Indian trainees to their homes very often, a practice not so common in Japan. This shows that these Japanese were devoted and willing to make sacrifices for the success of the company's program.

When they went to India, these ably trained Indian engineers offered all possible cooperation in construction, training, and operation of the plants. The company even made profits during the first six months of operation which was not expected by both partners.

There are many cases such as described above. If everywhere development

proceeded so successfully, it would not be so impossible to realize a much more rapid industrialization.

IV. SUMMARY AND PROPOSALS

A. Summary

(1) A wide variety of Japanese technical cooperation programs by country have been observed. This may be a reflection of each country's attitude towards Japan which has been shaped by historical, cultural and economic relations with the developed countries. Even after Japan gained independence with the post world War II peace treaty, those past relations, whether looked upon favorably or not, left decisive influences on such things as language, the educational system, industrial relations practices and economic life as well as the political system. Therefore, international consortium cooperation helped to bring about wider participation by Japan.

(2) Taiwan has had the closest relations with Japan and therefore Taiwanese trainees and students have experience the least difficulties in learning in Japan. On the other hand, those sent from the Philippines and India have encountered greater difficulties in this respect. Developing countries desire to learn from Japanese experience how to deal with the most difficult problems they face to-day. These problems for which Japan must find solutions include transition to effecient government, an apropriate farm labor force and a properly balanced economy between large and small enterprises. Those changes are stimulated by economic growth of Japan. Therefore Japan may offer two phases of experience to the developing countries; one for finding solutions to current problems and the other for developing a perspective for the future.

While Japanese instructors face greater problems of communication which have to be solved, there are many points on which Japan and developing countries are much closer together such as social life, standard of living and problems of a dual economy, and these points cannot be ignored. However, all of those three countries expect to learn agricultural techniques and to gain experience in government administration from Japan.

(3) On the other hand, private companies have much more efficient programs for training their key employees in Japan. With very few exceptions, most of those trained in Japan are performing their work successfully and are expected to be able managers and engineers after the Japanese specialists return to Japan. This success is partly due to the outstanding ability of selected trainees, the guidance of Japanese instructors in Japan, and the influence of Japanese plant life where employees are highly motivated towards their work.

(4) Specialists sent by the Japanese government generally performed their tasks successfully. As for manpower development, the distinctive contribution of technical cooperation centers and research centers is highly appreciated, and many have been requested to continue such cooperation or else are handed over

to the host government which will continue their work. In particular, agricultural centers in India have demonstrated how to increase production in agriculture. If programs are geared to the needs of all levels of farmers, and if integrated programs are expanded to include various kinds of crops, live-stock raising and the dairy industry, these centers can be more successful in human resource development.

Technical centers focusing on small-scale manufacturing in India performed good training and valuable services in developing the skills of employees of many parts-makers.

(5) Managers, engineers and technical workers sent to start operations in overseas plants also performed an indispensable service in human resource development. Success is dependent upon the talent and character of those sent abroad. Shortcomings of the Japanese staff, in most cases, are made up for by their devotion and hard work. They were assisted by several native staff members who played a dominant role in achieving successful operation of the plants and in training domestic employees. Those native staff members are and will be managers and engineers of those plants.

(6) It is observed that thousands of university graduates in engineering courses are not well adopted to practical work, partly because of their attitudes towards plant jobs and partly because of their education which overemphasizes abstract knowledge.

For the purpose of economic development, some part of education and training should be linked with specific plans for investment in plant operations or other institutional services. For this purpose, the experience of Japan, the Soviet Union and other later developed countries may offer useful models if alterations are made. The most effecient technical cooperation is found in programs which develop skills and jobs that are clearly defined in connection with concrete projects or are developed by participation of able specialists.

B. Proposals

(1) This partial review of Japanese experience with overseas technical cooperation suggests the need to imporve the approach which has so far stressed quantitative goals. In addition to that, the structural and qualitative side should be emphasized to beak through the bottleneck of development.

(2) The search for and definition of the proper division of international cooperation among international organizations are going on, while national governments and private business may contribute to more efficient human resource development.

Certain projects will undoubtedly be dependent on international consortium support such as: the construction of massive highways, dams and water resource development, large scale education and training institutes, and providing general and specific types of cooperation.

Certain activities cannot expect support from private business and here the na-

tional government has a major role to play such as: experimental, training and demonstration centers in various specific fields established to meet the needs of the particular area, and other specialist teams for training and education in developing countries.

In the case of private business, investment of capital and technology requires training and other human resource development for success, and that may provide the most efficient and effective method of manpower development compared to other forms of cooperation, at least in the short run. In the case of private business, however, conflicts may arise which have to be settled by the governments concerned.

As a whole, Japan's participation will increase at each level of international cooperation, if its economic growth is maintained, because Japan is so dependent on overseas markets. Whether her share of international consortium support will increase more than other forms of support will be decided by proposed programs of international organizations

(3) Research on cases of distinctive development of production in traditional sectors may also contribute to finding methods uniquely fitted to specific fields in developing countries. Though the economy as a whole may be stagnat, there are splendid native products whose production with some improvement should be encouraged in every country. Some of them may even have the potentiality of being transformed into modern industry.

International cooperation should not only try to influence the experience of developed countries, but should also help to uncover and develop the valuable potentialities of people in developing countries.