

# **B. ECONOMIC ASSISTANCE TO FORMOSA**

*Mission to China*



1 January to 31 December 1950

Economic Cooperation Administration



U. S. ECONOMIC ASSISTANCE TO FORMOSA

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## U. S. ECONOMIC ASSISTANCE TO FORMOSA IN 1950

American assistance to Formosa under ECA in 1950 enabled the Chinese to maintain the economic and political stability essential to the Island's independence from Communist domination.

Within this year aid to Formosa under ECA has become the economic part of a total United States program to strengthen Formosa. At the same time, the comprehensive program of economic assistance developed on Formosa has provided significant guides to what soundly can be attempted in contributing to the development of other Asian countries.

Funds and technical assistance made available to Formosa through ECA were directed toward meeting four basic needs:

1. The immediate requirements of Formosa's people and industries for essential imported commodities they lacked the funds to purchase.
2. The need for increased farm productivity and the improvement of rural welfare on a broad scale to help achieve a healthy economy and society.
3. The urgent needs of Formosa's war-damaged industries for replacement parts and rehabilitation materials.
4. The Chinese requirements for the assistance of technical specialists in solving their most difficult production and management problems.

This effort was made in keeping with the provisions of the China Aid Act of 1948, subsequent extensions of that Act by the U.S. Congress, and the Foreign Economic Assistance Act of 1950. Approximately \$ 48 million of the funds appropriated by the U.S. Congress were used to finance the program during 1950. Of this amount approximately \$ 20 million represent goods actually received in Formosa and the remainder deliveries scheduled for early 1951. In addition, the China Mission of ECA used some local currency funds

derived from the sale of ECA-financed commodities.

Communist occupation of the mainland has limited American activities in China to the Island of Formosa. However, the accomplishments made possible on the Island through ECA efforts are important in molding the attitude toward the United States of many Chinese on the mainland. ECA activities on Formosa are also tangible evidence to other Asian countries of what the United States can offer.

### WHY DOES FORMOSA NEED AN ECA PROGRAM?

Formosa's economic difficulties result basically from the need to support out of the limited resources of a relatively small island, even though a very productive one, a large military establishment, a national government and a sharply increased population. This expenditure was necessitated before the Island's economy had recovered from extensive war damage and severance from the Japanese Empire.

During the 50 years of their rule the Island's resources had been developed by the Japanese as part of their industrial and agricultural complex. After V-J Day the Japanese administrators and technicians who had run the Island were repatriated. Chinese engineers and scientists sent from the mainland to take over the most highly developed area of China, with the exception of Manchuria, found a crippled and disorganized economy.

War-time Allied bombings had reduced large sections of several of the major cities to rubble. Lack of maintenance materials and destruction of equipment had reduced electric power output from 1.2 billion KWH in 1944 to 0.3 billion KWH in 1945. The railways were capable of carrying only 330 million kilometer tons of freight in 1946 as compared to 1,047 million kilometer tons in 1940-41. The elimination of the Japanese merchant fleet during the last years of the war had denied Formosa its essential fertilizer imports from Japan and Korea. Disorganization of the economy and administration had combined with the lack of fertilizer to reduce Formosa's rice production from 1.1 million metric tons in 1943 to 0.6 million metric tons in 1945. Similarly economic disorder and the Japanese wartime policy of decreasing sugar acreage to grow more food caused a drop in sugar production from 1,022 thousand metric tons in 1942-43 to 86 thousand metric tons in 1945-46.

Initial reconstruction efforts were handicapped by the shortage of engineers and scientists and lack of means. The attention and resources of the Chinese Government were committed primarily to the overwhelming problems on the mainland. Consequently, even with the assistance of UNRRA, reconstruction was slow.

As the Communist armies overran the mainland of China, a growing number of Chinese fled to Formosa. The complete evacuation of the mainland and nearby islands in the winter of 1949-50 increased the civilian and military refugees on Formosa to between 1,500,000 to 2,000,000. This represented approximately a 20 percent increase in the Island's population.

At the beginning of 1950 the Formosan society and economy felt more directly the impact of the Nationalist defeat on the mainland. A general sense of insecurity and fear of an early Communist assault on the Island resulted in a lack of faith in the future of Formosa and led to increasing difficulty in dealing with fundamental problems.

Inflation posed the most immediate threat to the Island's economy. Late in 1949 note circulation had reached the limit authorized, and it was no longer sound to help meet government payments by adding to the money in circulation. Meanwhile, the Chinese Nationalist Government and armies were to be supported by the economy of a single province.

Early in 1950 the Provincial Government took anti-inflation measures by limiting the amount of currency permitted to circulate and contracting bank credit. Heavy defense surtaxes were imposed and purchase of "patriotic bonds" made compulsory. The Government sold gold bullion, stock-piled commodities and former Japanese properties on the local market in exchange for Taiwan currency. The purpose was to raise local currency to cover government debts in the absence of sufficient revenue from taxes and other sources. These

measures brought a reduction in the note issue but they also caused a tightness in the money market that forced many businesses and industries to close down. The interest rate on loans was sometimes 18 percent per month.

After the assignment in June of a United States naval patrol to the Formosa Straits tensions eased. But the basic economic problems continued to plague the Island. Military expenditures alone during 1950 accounted for more than 70 percent of the consolidated National, Provincial and local government budgets. The long-range need for greater production to meet the demands of a population increasing at the rate of an estimated 300,000 per year required more attention to industrial rehabilitation.

Total government revenue, including special taxes, sales of "patriotic bonds", and other income, met only one-half of the overall government expenditures. The deficit was met by selling government foreign exchange reserves and property and through the use of proceeds from the sale of ECA-financed commodities.

The pressure of inflation continued and during the six months following the outbreak of the Korean War wholesale prices rose about 30 percent. Consumer goods were scarce and commodities frequently were hoarded. The Chinese Government's foreign exchange position further deteriorated partly as a result of the purchase of military equipment.

In the face of these factors, outside economic aid was essential if the economy was to absorb the substantial expenditures required for the defense establishment and industrial and agricultural reconstruction at the same time that the budget was kept within manageable limits.

## HOW ECA WENT TO WORK ON FORMOSA

With the Communist occupation of the entire Chinese mainland late in 1949, nothing remained of the ECA program in China except its operations on Formosa. Until the early part of 1950, the Formosa program was on a small scale. Some fertilizer, cotton goods, crude oil and certain industrial raw materials needed in the Formosan economy were provided through ECA. ECA also financed a contract whereby the J. G. White Engineering Corporation provided engineering consultant services to the Chinese government. A program with an increasingly broad impact on the Island's rural economy was being developed under the Chinese and American Joint Commission on Rural Reconstruction.

With more positive United States action to assure the security of Formosa, after the outbreak of the Korean War, the ECA program was enlarged and made longer range in character. Particular attention was given to creating the conditions for eventual Formosan self-support. There was greater emphasis on industrial and agricultural development. Limited equipment for the maintenance and rehabilitation of war-wrecked and worn out power, transportation and other major industrial facilities was provided. The Chinese also were encouraged to re-evaluate their policies with the objective of making the most effective use of American assistance.

### COMMODITIES

Fertilizer. The most important single commodity provided under ECA assistance to Formosa is chemical fertilizer. Formosan

farmers had learned to use fertilizers under the pre-war Japanese administration whose fertilizer imports exceeded 400,000 tons<sup>1/</sup> during the peak years.

In an effort to boost Formosan food production ECA in 1950 released 53,558 tons of fertilizer for the first rice crop and 78,339 tons for the second rice crop. The total of 131,897 tons, valued at more than \$ 8 million, represented 58 percent of all chemical fertilizers applied and 70 percent of all fertilizer imports to Formosa during the year.<sup>2/</sup> These imports provided the entire fertilizer requirements for rice to an estimated 280,000 farmers who applied it to more than 1,104,090 acres of paddy land. They helped make possible the largest rice crop in the Island's history - a total production of about 1,400,000 tons of unpolished rice. This bumper rice crop was a major factor in stabilizing the Island's economy. It provided sufficient food for all civilians and military forces on the Island and a small surplus for export.

Under terms of an agreement between ECA and the Formosan Government, the local currency equivalent of the U.S. dollar landed cost of the fertilizer shipments was deposited in the Special Account maintained jointly by ECA and its Chinese sister organization, the Council for U. S. Aid. The agreement provided for more liberal terms to farmers bartering rice for fertilizer. The barter ratio for the first crop of 1950 was one pound of fertilizer for 1.3 pounds of paddy rice, and for the second crop of 1950 the ratio was one to one. Farmers who lacked the rice to pay for the fertilizer were given fertilizer loans to be repaid in kind after the harvest. Fertilizer distribution was supervised by the Joint Commission on Rural Reconstruction, working through the 341 Farmers' Associations, the Food Bureau and the Communications Department of the Provincial Government.

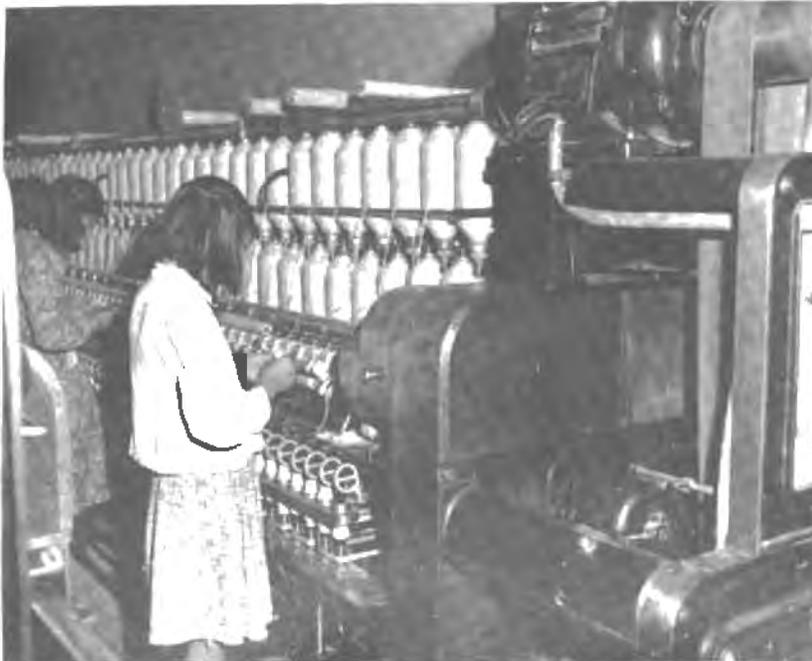
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<sup>1/</sup> Tons will refer to long tons unless otherwise specified.

<sup>2/</sup> These percentages do not include the 52,146 tons of superphosphate manufactured from ECA imports of phosphate rock and pyrites as this fertilizer was not applied on 1950 crops.

Raw Cotton, Yarn, Prior to the war Formosa had depended upon imports  
and Cloth. from Japan for cloth and piece goods. After V-J Day  
the Island continued to rely largely upon imports,  
including textiles produced by the large factories in Shanghai. During the  
evacuation from the mainland several cotton factories were moved to Formosa,  
adding to the small textile industry already started on the Island. No cotton  
is grown on Formosa and, though the demands for cloth were pressing, the  
Chinese lacked the funds to import raw cotton.

The 15,104 bales of raw cotton imported by ECA in 1950 accounted for  
93 percent of the total raw cotton imports for the year. This cotton kept  
all usable spindles in operation in the Island's six modern mills and en-  
couraged the installation of available equipment representing a 25 percent  
increase in operating spindles.



ECA-financed raw cotton imports enabled local mills  
to increase production of cotton yarn from 1000 to  
over 2000 bales monthly

Yarn produced locally from these imports and yarn evacuated from Shanghai before the Communist occupation were released to the weaving mills to be processed into cloth. The 2,754 bales refueged from ECA stocks in Shanghai made up about one third of the 1950 yarn imports. ECA also financed the importation from Japan of 19,246 pieces of cloth and a shipment of 406 tarpaulins. The tarpaulins were urgently needed as covers for open box cars carrying fertilizer and other items that could be damaged by rain. Distribution of the imported cloth, mostly grey and dyed sheeting, and the cloth produced in local mills from ECA-financed yarn was handled by the local Piece Goods Merchants' Associations - the traditional method of wholesale cloth distribution on the Island - except in Taipei City where the Taiwan Joint Textile Allocation Committee selected the dealers. This Committee composed of representatives from the Chinese Government, the textile industry, CUSA, and ECA met weekly to decide on allocations, sales, prices and credit, and ratios of exchange.

When maximum yarn and cloth production has been reached in existing mills, Formosa's yearly raw cotton requirements will total some 40,000 bales. This production will provide for the major part of Formosa's consumer needs, provide employment, and permit a substantial saving in foreign exchange.

Soya Beans, Peanuts, Communist occupation of the mainland deprived  
and Peanut Oil. Formosa of its chief source of edible oils that are  
an essential part of the Chinese diet. From  
16,627 tons of soya beans imported under ECA seven oil pressing mills processed an estimated 1,350 tons of refined edible oils for human consumption and 12,500 tons of beancakes for animal feed. Another 1,500 tons of ECA-financed soya beans were processed into bean curd, a popular food among the

local people and an important source of protein. The edible oils were released through established retail channels for general consumption and the bean cake by-product was sold to farmers for animal feed through the Farmers' Associations. The bean curd was made and distributed by the Bean Curd Makers' Guild which is represented throughout the Island.

A shipment of 996 tons of peanuts, imported to supplement local production was processed by seven peanut processing plants into 311 tons of edible peanut oil and 416 tons of peanut meal for animal and fish feed. The end products were distributed through approved sales agents. From August 1950 supervisory responsibility for transportation, storage, distribution and processing of the soya beans and peanuts, and allocation and sales of the cakes and oils previously handled by ECA, was delegated to a special sub-committee of the Taiwan Joint Committee on U. S. Aid.

Wheat and Flour. Although the native Formosans depend upon rice for their staple food, the arrival of perhaps two million mainlanders, including many who came from North China, had created a sudden demand for wheat which is grown in only limited quantities on the Island. The first cargo of ECA-financed wheat procured for Formosa arrived in June 1950. During the year a total of 6,699 tons of wheat and 2,455 tons of flour were imported by ECA. The processing of about 5,000 tons of flour and 1,700 tons of wheat bran, excellent feed for hogs and poultry, from the wheat imports kept the only large mill on the Island in operation for five months. The Taiwan Agricultural and Forestry Development Corporation, of which this Keelung Flour Mill is a subsidiary, is responsible for processing the wheat and allocation and sale of the flour under the terms of an ECA-approved

contract.

It is estimated that Formosan wheat production can reach 20,000 tons annually of which half would be retained by farmers for animal and poultry feed and half would go to flour mills. Wheat requirements, based on local flour milling capacity are about 35,000 tons per year of which 25,000 tons must be procured abroad. Additionally, 43,000 tons of flour would have to be imported to meet estimated total annual requirements.

Beef Tallow Formosa's isolation from the mainland also deprived the and Copra. Island of beef tallow and vegetable oil imports needed by the soap industry. The ECA-financed import of 1,338 tons of beef tallow from the United States and 568 tons of copra from the Philippines and Malaya provided raw material for one fourth of the soap consumed on the Island in 1960. The copra was processed into meal and coconut oil by the Taiwan Chemical Industries Company. The meal was sold at open bid under supervision of ECA and CUSA representatives for use as fertilizer. The coconut oil and beef tallow were turned over to the Taiwan Provincial Supply Board for allocation to soap manufacturers according to schedules set by ECA, with preference being given to the factories that produced the best quality soap.

Tobacco. Through legal and illegal channels a substantial amount of Formosa's foreign exchange was being absorbed in the purchase of foreign-made cigarettes which were far superior in quality to the local brands. In order to improve the locally-manufactured cigarettes by a blend of native and finer tobacco and save foreign exchange, ECA imported 223 tons of Virginia tobacco leaves at a cost of approximately \$ 301,000.

Another consideration was the revenue derived from sales of cigarettes by the Provincial Wine and Tobacco Monopoly Bureau, the Government agency which controls the manufacture, distribution and sale of tobacco products.

Formosa's economic health depends to a large extent upon the industries established on the Island during the period of Japanese rule, some of which have been expanded under the postwar Chinese administration. In an effort to help the Chinese achieve maximum production ECA has financed the importation of certain key raw materials needed to utilize local resources.

Phosphate Rock,      The Chinese have been encouraged to expand the pro-  
Pyrites, Sulphur,      duction of chemical fertilizer, which is the Island's  
and Kraft Pulp.      most essential commodity requirement. As part of this  
program ECA during 1950 financed the import of 19,700  
tons of phosphate rock, 5,413 tons of pyrites and 1,780 tons of sulphur worth  
a total of about \$ 635,000. The phosphate rock and pyrites were released to  
the Island's two superphosphate plants with a combined total capacity of  
40,000 tons of fertilizer per year. The sulphur was used mainly in the pro-  
duction of ammonium sulphate and a portion was allotted to the paper industry.  
ECA also imported 604 tons of kraft pulp to be used by the paper mills to  
manufacture heavy duty paper bags needed for sacking locally produced ferti-  
lizer and cement.

Gypsum.      The capacity production of Formosa's large cement industry of  
about 35,000 tons per month more than meets the Island's re-  
quirements. Under normal conditions it provides a surplus for export to nearby  
areas of Asia and is an important source of foreign exchange. On Formosa

today this cement production is essential to permit reconstruction of harbors, warehouses, buildings and homes and construction of dams for generating electric power and storing irrigation water. It is also a critical defense material. The gypsum required in the manufacture of cement at the rate of 3.5 tons to every 100 tons of cement must be imported. With the Chinese foreign exchange reserves committed to other urgent requirements, ECA financed the importation of 5,413 tons of gypsum at a cost of \$ 60,496. During the coming year it is planned that Formosa's needs for gypsum will be met by imports from Japan under the terms of the Sino-Japanese Trade Agreement.



The principal cement plant at Kaohsiung, port for southern Taiwan.

Crude Oil and Motor Gas. Near Kaohsiung in southern Formosa the government-owned Chinese Petroleum Corporation operates a refinery capable of refining 30/50,000 tons of crude oil per month. In 1950 72,743 tons of crude oil were brought in under ECA to keep this plant

in operation and to meet the Island's civilian needs. Late in the year an acute shortage developed on Formosa when the Chinese were unable to secure tankers to move crude oil from Iran. As a stop-gap measure 2,262 tons of ECA-financed motor gas were imported from Japan and the Philippines.

Creosote. The installation of a pressurized creosoting plant on Formosa, which ECA plans to help finance in 1951, will enable the Formosans to make better use of their timber resources and save the cost of importing treated electric power poles and railway ties. Meantime, 1,973 tons of creosote originally procured for Korea were diverted to the Island in 1950. By a makeshift dipping process it is being used to treat locally produced replacements for critically deteriorated dock pilings, crossties and power poles.

Hides and Skins. Few cattle, with the exception of work animals, are raised on Formosa and there is a consequent shortage of hides and skins for manufacturing shoes and other leather goods. ECA has obligated US\$ 132,000 for a shipment of hides due to arrive early in 1951 to ease the consumer demand that has steadily increased since the principal source of supply on the mainland was cut off in late 1949.

Sheet Bar Steel, A small industry is developing on the Island engaged in  
Pig Iron, and the processing of black sheet and galvanized sheet for  
Tin Plate. the manufacture of industrial tools and spare parts and tin plate for the manufacture of cans. The arrival of 882 tons of ECA-financed sheet bar steel from Japan kept a new steel rolling mill and several machine shops in operation. Since the Communist capture of

Hainan Island deprived Formosa of its iron ore supply, ECA has obligated \$ 150,000 to cover the cost of importing 2,946 tons of pig iron to maintain many other small private and government-owned foundries making iron castings for locomotives, machine spare parts, pipes, etc.

Formosa's food processing industry is capable of expansion and could provide considerable foreign exchange if tin plate is made available for cans. Also the Kaohsiung Can Manufacturing Company could produce sufficient cans to meet the Island's requirements. The pineapple industry, far in the lead of other processed foods, exported 200,000 cases of canned goods in 1950. ECA support to this industry to date totals \$ 105,000 for 5,000 cases of tin plate to make 125,000 cases of cans. The tin plate is scheduled to arrive in April 1951.

Lumber. The greatly increased population, an expanded defense construction program and urgent maintenance requirements for warehouses, docks and other facilities created a pressing need for construction lumber on Formosa at the same time that imports of Foochow Pine from the mainland were cut off. Formosa's mountain forests produce fine hardwoods but, particularly with present forestry methods, only limited quantities of construction lumber. ECA has procured seven million BMF consisting largely of lauan logs from the Philippines and some Oregon pine. This lumber, scheduled to arrive early in 1951, is to be sawed at Formosan mills. Another 7.5 million BMF of lauan logs, some Douglas Fir, and cottonwood (for the manufacture of matches) is under procurement.

Medical Supplies. ECA imports to Formosa that benefitted a great number of people directly were the medical supplies and

hospital equipment. These supplies, valued at approximately \$ 1,367,650, were originally shipped to the mainland under the China Relief Mission program and evacuated by ECA when the Communists threatened the Yangtze Valley. They were distributed on Formosa as part of a comprehensive public health program developed by the Joint Commission on Rural Reconstruction in cooperation with the Provincial Health Administration. Basic units of the most widely used drugs were given to all the public health centers and stations established in the villages. Home visiting public health nurses were provided with kits containing drugs and instruments they were trained to use. In addition, substantial allocations were made to government and private hospitals and limited quantities were sold through approved agents to the general public.



for distribution to farmers . . .

The import of chemical fertilizers . . .

from factories rehabilitated with ECA support.

is supplemented by local production . .



## INDUSTRIAL MAINTENANCE AND REPLACEMENT

Power. Formosa's rehabilitation and development depends to a major extent upon hydro-electric power. The Japanese had linked all the principal cities on the western side of the Island with a power grid. In addition, they had established on the narrow eastern sea coast a smaller power system used largely for industrial purposes. As a result of American war-time bombings Japanese power production, which had reached a peak of 152,000 KW, was reduced to 30,000 KW in 1945. However, Chinese engineers, through skillful skeletonizing of the system, managed to raise production to 173,000 KW in 1950. This was done with technical guidance from the J. G. White Engineering Corporation staff and a loan from the Westinghouse Engineering Company of Asia. The Chinese have been using some of their limited foreign exchange to purchase equipment for the additional power capacity they now are developing to meet the needs of Formosa's growing industry and population.

During 1950 ECA approved the use of \$ 1,200,000 in foreign exchange sales proceeds<sup>1/</sup> and \$ 4,048,000 in appropriated funds to assist the Chinese in rebuilding their power system. Of these amounts \$ 450,000 was allocated for reconstruction and extension of the Sin Tsu (Hsinchu) substation which is to supply power to a new fertilizer plant constructed by the Chinese Government at a cost of \$ 3 million. Another \$ 750,000 was expended for replacement and improvement of the transmission line bringing power to the main grid from generators at Sun-Moon Lake, the largest power installation

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<sup>1/</sup> Proceeds derived from the sale of commodities, mainly raw cotton and cotton yarn, evacuated from the mainland and sold in Hongkong and Japan.

on Formosa. In addition, ECA earmarked \$ 300,000 for the purchase of 10,000 new creosoted power poles to replace those that had rotten during and since the war. The first shipment of 4,844 poles had arrived and most of the poles were installed by the end of the year.

Meanwhile, the Island's power possibilities were surveyed by the J. G. White Engineering Corporation under its ECA-financed contract to provide advisory engineering services to the Chinese Government. As a result of this survey the Mission recommended and ECA/Washington has approved the following five projects to be financed out of appropriated funds:

Replacement and improvement of existing transmission and distribution system	\$ 1,016,000
Addition of two coal pulverizer mills for Pei Pu Steam Station	\$ 207,000
Rehabilitation of Li Wu Steam Station to complete cross-island east-west tie line	\$ 669,000
Addition of one bank 40,000 KVA power transformer at Taipeh Substation	\$ 316,000
Completion of Tien Leng Project started under pre-war Japanese administration	\$ 1,540,000

Contracts have been signed with purchasing agents and procurement has been started. The civil work required of the Chinese, involving large local currency expenditures, will be completed by December 1951. In conjunction with other efforts by the Chinese these projects should increase electric power output on the Island by 67,000 KW to a total of 240,000 KW.

Railways. Formosa's railway system provides the principal means of transportation on the Island and in 1949 carried 67,794,575 passengers and 5,610,493 tons of freight. This railway system includes 751.8 kilometers of 3'6" gauge rail in main and branch lines on the western

side of the Island and 175.9 kilometers of 2'6" gauge single track rail on the eastern side. When the Chinese took over in 1945 the system was in poor condition. Much of the rolling stock had been destroyed or damaged during the war. One-third of the cross-ties were rotten and half of the bridges were rusted or of low load rating. Many of the rails were worn thin and heavy locomotives could not be used on most sections of the system. In 1949 the railways were able to carry twice as much freight as was carried in 1945 and to handle a passenger traffic increase from 40 to almost 68 million. This was achieved by more efficient use of facilities and improved maintenance, but government subsidies or foreign aid were required for essential replacement items if performance was to be maintained.



The first 40,000 crossties imported by ECA were laid within nine days of their arrival at the port of Keelung.

During 1950 ECA financed the procurement of 200,000 crossties, \$ 275,000 worth of steel spans and paint for bridges, steel rails costing

\$ 550,000, and expended \$ 179,000 for telephone and copper wire for the car distribution system. Another \$ 322,000 was set aside for locomotive and car repair materials and \$ 191,000 for 10 passenger cars. The first shipment of crossties arrived in October 1950. The need was so great that 2,000 crossties were laid the day the ship began unloading. By the end of the year repair of the car distribution system with the new telephone and copper wire was underway. The steel spans, steel rails, paints and painting apparatus for railway bridges began to arrive from Japan in December. The ten new third class passenger coaches, also ordered in Japan, are scheduled for early spring delivery. The old freight cars that have been used for passenger cars which they will replace are to be overhauled and reconverted to freight cars. It is the aim of ECA to meet the most urgent requirements of the Island's rail transportation system. The normal replacement needs are to be met by the Taiwan Railway Administration from its own resources.

Telecommunications. Formosa's telecommunications system was severely damaged by the last war and has never been adequately repaired. Most of the equipment, excepting a new radio installation for international communication, has been in service since 1937 and is now obsolete. ECA in 1950 approved an expenditure of \$ 300,000 for telephone cable and spare parts to make possible the continued operation of the important local and toll lines and improve the service in all major towns on Taiwan. These items, now on order in Japan, will replace only critically worn underground cable conduits and terminal and repeater equipment.

Additional subscriber's telephone stations are also urgently required to relieve the existing overloaded and worn system. ECA plans to finance procurement of another 3,500 stations to handle minimum necessary business

requirements. The Government has started construction of a new telephone exchange in Taipeh to house the equipment. The J. G. White Engineering group is following closely the progress of this work.

Highways. Formosa has 17,907 kilometers of roads of different types linking the Island's smaller communities with the large cities and the railway network. These include 1,165 kilometers of main roads, 2,214 kilometers of county branch roads and 13,717 kilometers of village roads.

The Chinese Government had repaired main highways with local materials but bridges could not be repaired nor public motor transport facilities



Twenty new buses, with chassis supplied by ECA and bodies by local industry, helped ease the strain on the Island's public transportation system.

adequately maintained without certain foreign exchange purchases. In 1950 ECA, therefore, approved the expenditure of \$ 250,000 in Japan for auto assemblies, engine replacements, bus chassis and other motor transport re-

placement and repair parts. The first shipments of 20 bus chassis, 28 cases of spare parts, and 38 engine assemblies had arrived and all of these items were in service by December.

A sum of \$ 115,000 also was made available for culvert pipe and bridge paint. Reinforcing bars for highway bridges were procured by the Taiwan Provincial Highway Bureau out of its own resources.

A constant highway problem are Formosa's fast running streams and rivers. Many of these have not been bridged and make important sections of the highway impassable during seasons of heavy rainfall. As a major step toward overcoming this handicap ECA approved the expenditure of \$ 1,138,000 for the completion of the Silo Bridge. This bridge across the Cho Shui Chi, the largest river on the Island, will link the Island's northern and southern highway systems. The Japanese started construction of the bridge in 1937 and erected 30 piers and two abutments of reinforced concrete. The present project involves the design, fabrication and erection of 31 steel trusses for the superstructure of the bridge. Specifications provide the bridge will be designed for H-20 loading. ECA/Washington and the supplier (U. S. Steel Export Corporation) have agreed on the terms of a contract, but final negotiations were postponed when priority requirements for steel for defense purposes in the United States prevented firm commitments on delivery of this order.

Other Industries. During 1950 ECA released \$ 763,500 derived from foreign exchange sales proceeds to finance assistance needed by a selected number of key industries to enable them to continue operation. In line with its other efforts to build up local production of chemical fertilizers, ECA in 1950 helped finance the rehabilitation of the

Taiwan Fertilizer Plant No. 1 with a grant of \$ 250,000. The goal was to increase production at this plant from 12,000 to 30,000 tons annually. By December the work was completed and the plant was in operation at the new rate.

Production costs for superphosphate on Formosa, now approximately twice as high as costs in the United States, can be substantially reduced and output increased by replacement of inadequate grinding equipment. A second grant of \$ 40,000, therefore, was made to the Taiwan Fertilizer Company to cover the purchase of a new pulverizing unit. A six months supply of graphite electrodes, some rubber hose for mining operations and one acid pump also were purchased out of these funds. The electrodes, now in short supply, are required for production of calcium cyanamide fertilizer in the American-made furnaces installed on the Island by UNRRA.

The Kaohsiung Ammonium Sulphate Factory also received a \$ 5,500 allocation for water pumps, meters and steam meters to make possible more economic production of ammonium sulphate fertilizer.

A \$ 93,000 allocation to the Taiwan Steel Works is to be used for the installation of tinning equipment needed in connection with the fruit canning industry. The American assistance supplemented a sum of \$ 100,000 already provided by the National Resources Commission and the Provincial Government.

The Government-owned Chinese Petroleum Corporation was allocated \$ 100,000 for the purchase of heater tubes and one gasoline pump needed to put its cracking unit into production of petroleum products. The new equipment should make possible the production of higher quality gasoline and reduce foreign exchange requirements for the importation of tetraethyl lead.

For improvement of production in the five Taiwan Pulp and Paper Company mills ECA provided \$ 105,000. One of the largest mills, completed during

the war by the Japanese at a cost of approximately \$ 10,000,000, uses bagasse derived from sugar cane for the production of paper pulp. Since the sugar company has no baling equipment with which to prepare the bagasse waste product for shipment, \$ 50,000 of the ECA grant will be used to purchase 10 hydraulic press balers for distribution to various sugar centrals. When these balers are in operation production of the paper mill is expected to increase seven fold. The remaining \$ 55,000 was used to purchase phosphor-bronze wire, cloth, acid resisting bronze screen plates, woolen felts, cotton dryer canvas, carbon steel beater bars and bed plates for the five mills. All of these items were required to maintain production of pulp and paper.

Rehabilitation of the Karenko asbestos mine required the purchase abroad of rail, wire rope, mining equipment including air compressors, drills and cable and some talc milling equipment. As this mine can supply serpentine ore needed for the manufacture of fused phosphate fertilizer and also can produce asbestos and talc for export, ECA made \$ 62,000 available for purchase of the essential equipment.

## THE JOINT COMMISSION ON RURAL RECONSTRUCTION

During 1950 the Chinese and American Joint Commission on Rural Reconstruction was able to devote its efforts and experience acquired on the mainland to Formosa's rural problems. The result was a substantial improvement in the productivity and health of the Island's farmers. However, as the JCRR penetrated more deeply into the life of the farm families new problems developed to demand examination and action.

The JCRR contributed substantially to the production of the record rice crop in 1950. In cooperation with responsible Chinese agencies the Commission organized the distribution of 132,000 tons of chemical fertilizer imported by ECA and another 92,264 tons produced locally or imported by the Provincial Government. Fourteen JCRR inspectors maintained regular supervision of end use distribution to farmers from 341 Farmers Associations. Technical and financial assistance was provided to put into operation an island-wide program to multiply and distribute improved seed of the leading varieties of rice. As a result, thirty percent of the total acreage devoted to rice was planted with improved seed during the year. The Commission's irrigation and seed improvement projects alone increased rice production by an estimated 30,000 metric tons of milled rice in 1950. This rice is worth on the world market about \$ 4,200,000 or twice the amount allocated for the entire JCRR program.

The bumper rice crop can be attributed indirectly to other of the JCRR's projects. The most popular of these was the land rent reduction program which affected approximately 58 percent of all the farm families on Formosa. With JCRR encouragement, advice, and financial help, the Provincial Government carried out an island-wide program reducing rents paid by tenant farmers from

an average of more than 50 percent to 37.5 percent of the main crop. The JCPR helped train and direct the 4,257 special workers employed by the Government to put through this program and covered the cost of educational and promotional materials.



Many tenant families built new mud brick houses with increased income after reduction of land rents.

Available evidence shows that for the average tenant farmer the savings in rent amounted to approximately 1,600 pounds of paddy rice per year. A considerable portion of this was collected by the Government in increased taxes and other assessments. However, surveys indicate the rent reduction program, at least temporarily, provided farmers with an incentive for in-

creasing production and enabled them to finance the purchase of fertilizer and work animals and live better than they could have without the added income.

As rent reduction is only a first step in land reform the JCRR is assisting in a study of overall land problems to help the Government devise workable formulas for security of tenure and wider distribution of land.

During the year 25,000 farm families benefitted from JCRR-supported projects which improved irrigation on 177,210 acres of land. The Commission matched local funds provided through the Provincial Hydraulic Bureau and the local hydraulic associations and supplied engineering supervision.

Late in 1949 Formosa's first outbreak of rinderpest in 25 years threatened to wipe out 90 percent of the Island's work animals and paralyze farming operations. The JCRR shipped in vaccine and helped the Chinese organize an island-wide campaign that by the end of January had localized and stamped out the disease. During this campaign 596,261 head of cattle were inspected, 62,876 were vaccinated, and the Commission paid indemnities for 104 head of cattle which died after inoculation or were slaughtered on suspicion of being infected.

The JCRR also helped organize a program to eradicate hog cholera on Formosa. The Commission financed the expansion and improvement of vaccine production facilities and is providing technical and financial assistance for the vaccination of 35,000 hogs per month. Most of the hogs are vaccinated against erysipelas as well. The goal for June 30, 1951 is to have vaccinated 50 percent of all hogs on the Island.

Under its animal industry program the JCRR organized and subsidized one training class and plans another to teach Formosans to do the work done prior to V-J Day by Japanese veterinarians. Grants amounting to 70 percent of the estimated cost were made for rebuilding the isolation quarters at the two

ports of Keelung and Kaohsiung. Equipment and supplies valued at \$ 14,346 were made available to encourage establishment of ten veterinary diagnostic centers at key locations on the Island.

In an effort to improve the quality of livestock on Formosa the JCRR imported 463 purebred Berkshire hogs from Japan and 193 from the United States. The boars were extended to farmers through Farmers' Associations to be crossed with native sows for production of hybrid pigs for market. The sows were distributed to eight government farms for the production of foundation herds of purebred Berkshire stock. The Commission's experts also have helped the Chinese authorities select for breeding purposes 302 of the best water buffalos and Indian bulls on the Island. A program to improve the breeding of poultry was inaugurated with the importation of 110 birds from the United States and 8,100 hatching eggs and five incubators from Japan.

Formosa's sugar industry requires the import annually of about US\$ 2,500,000 worth of jute for manufacture into bags. The Commission assisted in the repair of 316 retting ponds, 49 jute packing machines, and 18 warehouses and helped organize a production program. As a result, Formosa may produce enough jute fibre by the end of 1951 to fulfill its total requirements for 10 million gunny bags.

A local silk industry is being built up with JCRR support. In the initial venture about 800 farm families participated in growing improved mulberry bushes and cocoons. Experts have been brought in from Hongkong to demonstrate spinning and weaving. It is hoped that the silk industry may in time help meet the Island's requirements for cloth and provide subsidiary employment for farm families.



Careful selection, multiplication and distribution  
of improved rice seeds . . .



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demonstration  
of western  
plant disease  
control tech-  
niques boosted  
rice production.  
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A total of 57 projects aimed at improving the yield of farm crops received assistance from the Commission. These included such different efforts as control of rice blast disease, aphids, sweet potato black rot and other plant pests, multiplication and distribution of improved seeds of principal crops such as rice, wheat, green manure crops and vegetables. As in other categories, projects which benefit the largest number of people in the shortest period of time are selected over research or "pilot plant" programs. The amount of JCRR assistance is determined by the estimated early returns in increased agricultural production, the ability of the sponsoring agency and local people benefitted to finance the project and the importance of the project to the overall economy of the Island. Payments are made on the basis of work progress.

Experience on the mainland convinced the Commission that any sustained effort at rural development must bring into operation organizations controlled by the farmers themselves. On Formosa the Japanese had created Farmers' Associations with 341 township and 4,927 village chapters throughout the Island. These Associations, however, had served the Japanese as control organizations as well as a channel for distribution of farm supplies, credit and cooperative buying and were strictly administered from the top down. The Commission is helping reorganize these Associations into effective non-political agencies to serve the farmers and to act as vehicles for voicing farm opinions. On the basis of a survey by an experienced American rural sociologist brought out from Cornell University and numerous other findings the Commission is now devoting more energies to this program which directly affects most farmers on the Island.

Within recent years the Farmers' Associations often have been dominated by local landowners and village merchants who used the organizations at times

for their own ends. A new system of electing association officials is being established which aims to insure representation of bona fide farmers. The plan now is to match this program of democratizing the Farmers' Associations with the development of rural home improvement and youth programs. The services of specialists from abroad will be required for this work.



Farmers' Associations, the cooperative community centers for Formosan farmers, handle distribution of chemical fertilizers and beancake.

The Farmers' Associations handle much of the fertilizer distribution and rice processing work on the Island. The JCRR has helped them repair 225 warehouses representing 18 percent of the total warehouse space on the Island and 40 percent of the farm warehouses.

One of the most immediate "felt needs" in the rural areas of Formosa was for more adequate health services. In this field the Commission has assisted the Provincial Public Health Bureau in organizing rural public health services. Since the start of the Commission's program the health centers on the island have been reorganized and increased from 17 to 21. These health centers are



Rural health stations, supported by local communities, under JCRR guidance increased during 1950 from 185 to 248. Stations received grants of ECA medical supplies.

Animal disease control programs, supported and supervised by JCRR, wiped out rinderpest and sharply reduced the incidence of hog cholera and erysipelas.



the focal points for 248 health stations scattered throughout the villages.

The health centers and stations emphasize the control and prevention of communicable diseases, school and child health and maternity care. The Japanese had previously enforced their sanitary measures largely by using police force to back up the directives of health officials. They also had concentrated medical care in the larger cities, leaving the farm population with very limited protection. The present JCRR-supported program seeks to extend the benefits of modern public health measures to the rural areas and make these village health stations, to the greatest degree possible, locally-supported and locally-controlled.

The Commission supported the Provincial health authorities in training a new cadre of public health home visiting nurses and midwives and provided them with bicycles and medical kits. In addition ECA medical supplies valued at a total of US\$ 168,000 were distributed to 1,400 schools, 17 health centers, 229 health stations and 216 aboriginal villages.

The JCRR also helped rebuild 77 village water systems serving a population of 191,000 persons. The objective was to stimulate local action by other communities.

In conjunction with the financial and technical assistance given to sponsoring agencies the Commission has published and widely distributed posters, pamphlets, and leaflets in support of projects. In addition to its routine press relations function, the information and education staff has emphasized dissemination of information on progress of projects in the rural areas through wall newspapers, pictorial newspapers, and visits of editors to Farmers' Associations. Educational materials are distributed to all sponsoring agencies and field stations of those agencies, to all village township and county administrative offices and to all primary, middle and vocational schools for

posting. Prior to the distribution of a handbook on "Selection of Better Laying Hens", for example, 5,000 copies of a promotion poster were distributed around the Island. Later, 20,000 copies of the handbook were distributed on request to individual farmers from the Farmers' Associations and the I & E Office.

SUMMARY STATEMENT OF JCRR EXPENDITURES

1 January to 31 December 1950

Program	No. of Projects in Progress in 1950	Amount Paid (Equiv. in thousands of U.S.\$) <sup>1/</sup>
Agricultural Improvement	95	576
Farmers Organizations	8	166
Irrigation	20	198
Rural Health	20	197
Land Reform	7	54
Animal Industry	18	316
Food and Fertilizer	5	58
Information and Education	3	32
Totals	176	1,597 <sup>2/</sup>
Project payments made by Szechuan and Kwangsi Regional Offices prior to termination of main- land programs in November 1949 but entered on headquarters records in early 1950		1,078
Administration - Local Costs		674
- American Staff		194
Grand Total		\$ 3,543

During 1950 all JCRR program and local administrative expenses were financed out of Sales Proceeds funds derived from the sale of ECA aid commodities. Appropriated funds were used only for administrative costs of the American staff (second item under Administration).

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<sup>1/</sup> U. S. dollar equivalents of expenditures in local currency are calculated as payments are made at the prevailing rate of exchange.

<sup>2/</sup> This figure does not include 1949 payments made to projects approved in 1949 and still in progress in 1950. Also, further payments were scheduled for most of these projects in 1951 on the basis of work completed out of funds obligated in 1950.

## TECHNICAL SERVICES

Under the industrial reconstruction program projected for China in 1948, ECA decided as a general policy to finance the services of a reputable engineering concern to guide the Chinese in their reconstruction efforts. In 1950 ECA continued to finance the contract negotiated in 1948 by the Chinese Government with the J. G. White Engineering Corporation of New York to carry out this policy. The Corporation retains an average of six senior consulting engineers on Formosa. This staff serves under the Joint Committee on Industrial Reconstruction and Replacement composed of three Chinese members, one of whom is chairman, and two representatives of ECA.

Advisory services rendered by the J. G. White staff during the year contributed to marked improvement in the most vital industries and public services and to substantial development of natural resources. Some projects concerned construction of large power installations and fertilizer factories. Others required demonstrations of proper riveting or tool setting methods.

The work done by these engineers in 1950 can be divided into three categories: technical assistance to the ECA program and technical aid projects utilizing local financial resources.

In connection with the ECA program, the J. G. White group checked specifications and quantities of raw materials and other commodities needed in relation to factory capacity and local markets. When ECA industrial aid through the use of sales proceeds was reimplemented for Formosa in the spring of 1950 and followed shortly by approval for expenditures from appropriated funds, the detailed knowledge of industries available to this staff of engineers aided the Joint Committee in selecting worthwhile industrial projects vital to the economic recovery of the Island. The group made industrial

surveys to check specifications for import requirements and assisted ECA and the Chinese Government in planning the overall industrial rehabilitation program. They checked all purchases made under contract with private firms, followed up on construction work, set up management responsibilities, and worked with Chinese managers to insure that projects were completed and operating economically. Because the J. G. White group was thoroughly familiar with the industries and services on Taiwan, services of outside engineering firms were not required by CUSA/ECA to make studies of individual projects as on the mainland, resulting in a substantial savings in additional engineering fees to ECA.

The technical aid projects consisted of locating unused equipment and putting it to use and management advice to increase the operating efficiency of all major industries and services. With guidance from<sup>the</sup> consulting engineers the Chinese have committed substantial sums from their limited financial resources to the fertilizer, power and textile industries and to the reconstruction of harbors and railways. The engineering and management services of the small but diversified J. G. White group have been used in almost every phase of industrial activity on Formosa, both public and private. Various government control committees regularly request advice on loans to industry, new projects, management problems, availability of equipment and material in Formosa, costs, quality of products and substitutes.

An outstanding Chinese achievement, with which the J. G. White group was closely connected, was the increase of hydroelectric power capacity from a postwar level of 30,000 KW to 173,000 KW in 1950. The engineers worked with the power company engineers on the repair of the major dam diverting water to Sun-Moon Lake. This dam was badly scoured and had to be re-surfaced with hard stone. The consulting services of the J. G. White

engineers were used in the construction of a new dam and completion of a generator station at Ural which increased power capacity by 12,500 KW. The extensive construction required to complete the Tien-leng project, started by the Japanese is now well underway following the plan drawn up by the engineers and using their offered consulting services.

In 1950 an adequate supply of food for a population that had been increased by some two million persons in the last half of 1949 was the Government's most immediate problem. Food sufficiency depended on greater agricultural production which was based on an increased supply of fertilizer, both imported and supplied by local plants as fast as they could be rehabilitated.

Preproject engineering studies have been made by the J. G. White engineers for expanding the fertilizer industry on Taiwan through ECA aid. This is an essential industry on Formosa. The Provincial Government and ECA import approximately two-thirds of the \$ 30 million worth of fertilizer required annually. The ECA-subsidized project for expansion of a calcium cyanamide factory started by UNRRA has been completed and plant production increased from 10,000 tons to 30,000 tons per year.

After a thorough investigation of a small ammonium sulphate factory owned by the military on Formosa, the Chinese Government purchased this equipment and supplied the local currency to put the factory into operation on the recommendation of the consulting engineers. The equipment of this modern American nitrogen fixation factory had been well maintained though some parts were purchased in 1942. No factory of this type had been built in the Far East with local technicians, except in Japan. The J. G. White staff aided in scheduling and supplied advisory services during the construction and initial operation of the plant. The factory was producing at full load by the end of the year. It also produces anhydrous ammonia needed

for the local refrigeration industry and, in turn, for the preservation of fish and other food.

Related to fertilizer production is the development of pyrite and sulphur deposits on Formosa. Both local and foreign geologists considered the local pyrite deposits worthless. Pyrite ores amounting to \$ 300,000 were imported by ECA in 1950 to supply the fertilizer industry. After extensive tests in factories and exploratory work conducted by the J. G. White engineers, they encouraged coordination of miners, the Provincial Geological Department and private enterprise to open up these deposits which now produce sufficient quantities to meet local requirements.

A small amount of volcanic sulphur had been mined on the Island but procedures were set up, with assistance from the consulting engineers, providing sufficient incentive to increase production from 1,000 tons maximum in 1949 to nearly 6,000 tons. This production will support the growing fertilizer and pulp and paper industries on Formosa using this material.

With guidance from the J. G. White group the chaotic conditions at the two main harbors of Keelung and Kachsiung, through which fertilizer and other essential goods had to be imported, were greatly improved. These harbors provided perhaps the poorest service in 1949 and were better than most harbors in the Far East by the end of 1950. Average turn around time for ships was reduced from an average of seven days, and sometimes 20, to 2.5 days. New piers have been constructed; breakwaters are being extended and rebuilt. Dangerous cargo facilities have been installed and harbors are being dredged to handle most vessels in the Pacific trade. The Chinese received and distributed over 200,000 tons of fertilizer from these ports for 1950 crops-- more than double the amount handled in 1949 with serious delays.

ECA has given some financial assistance to the rehabilitation of the

railway system but the major portion of this work was done through technical aid and with Chinese Government resources. The ability of local repair shops to repair and maintain both rolling stock and locomotives has shown notable improvement. All locomotives and rolling stock have finally been repaired or rebuilt and put into service. The serious condition of 1,412 bridges prompted the establishment of a new repair shop which already has rebuilt and replaced 459 spans. ECA-financed crossties, bridge spans, repair materials for locomotives, etc. were followed through from initial recommendations to complete installation.

The Provincial Highway Department is continually assisted by the J. G. White engineers in replacing bridges and improving highway service, road repair and maintenance. The engineers also helped determine where ECA aid would be most effective. They investigated the capabilities of the Highway Department's engineers, recommended that a project as large as the Silo Bridge be handled separately, and picked Chinese engineers most qualified to complete the work. The separate organization is set up and the preliminary work is proceeding under the supervision of the J. G. White staff pending arrival of the bridge steel from the U.S.

The entire inter-island telephone system, which had deteriorated during and after the war, is now being rehabilitated with technical assistance from J. G. White and financial assistance from ECA. The telephone system at Taipei is being doubled to meet the requirements of the increased population and growing business in the capital. Economic studies and details of design and improvements were carefully checked, and in some cases altered, by the engineers.

These consultants are aiding in establishing factories to produce edible oils and animal feed to save the importation from the United States and other

countries of millions of dollars worth of these commodities and the raw materials from which they are derived. Vegetable oil pressing mills, formerly owned and managed by the Japanese, were purchased by various local interests after the war on a purely speculative basis. None of the buyers knew how to operate these mills. J. G. White's chemical engineer prepared detailed instructions on proper processing of soya beans and edible soya bean oil, including design of equipment, methods of testing, and training of personnel. This allowed ECA to import soya beans for processing on Formosa. A rice bran oil mill being established by the Chinese Government on the advice of the J. G. White group, plus increased planting of peanuts, should eliminate the necessity for imports of edible oils, or soya beans and peanuts with a year and half. Utilizing latest American designs this plant will process vegetable oil from rice waste material and can produce tallow which will substitute for beef tallow now being imported by ECA to supply the soap industry.

The J. G. White staff showed the Chinese how to produce high grade carbon steel in existing electric furnaces from scrap steel. This process enabled local plants, mostly in private hands, to remain in operation. The steel is sold to village blacksmiths for manufacture and repair of critically needed farm implements. J. G. White and Chinese engineers are conducting tests for the production of pig iron in electric furnaces and presently unused blast furnaces from iron oxide residues of the fertilizer industry. Already they have made pig iron from imported iron in electric furnaces to supply local needs. Under the direction of the engineering group a tinplate mill is being established in conjunction with the Taiwan Steel Works which will produce sufficient tinplate for the important food canning industry.

After the failure of the cracking unit installed by the Chinese Government at their own expense, ECA, on the recommendation of the engineering

consultants, has purchased new tubes and pumps to put this unit into operation. This cracking unit will provide greater flexibility in oil refining and should obviate importation of motor gasoline.

The Japanese had constructed a \$ 10 million pulp mill in southern Formosa to operate on sugar cane waste. The plant was shut down due to lack of magnesium oxide, formerly imported from Manchuria, and sulphur from Japan. A J. G. White engineer worked with the engineers of the Taiwan Pulp and Paper Company to adapt a different process utilizing local chemicals, even though of higher cost, to put this mill into operation. At present, the mill is exporting bagasse pulp to Japan and adding over \$ 1 million in foreign exchange revenue. Production will further improve when the baling equipment financed by ECA makes possible more efficient handling of the bagasse waste.

Assistance to the textile industry in technical improvement of production methods made possible more effective use of ECA raw cotton and cotton yarn imports. The consultants also are advising on installation of machines brought to Formosa during the exodus from the China mainland.

Reorganization of the caustic and chlorine industry, on advice of the J. G. White staff, enabled this formerly government-subsidized industry to pay off major loans and show a profit. Certain factories were closed down, surplus labor temporarily disbanded, and only key rehabilitation continued. To utilize the chlorine gas, produced simultaneously with caustic soda and previously discarded, the engineers have recommended development of chloride lime products and chlorine insecticides. The DDT plant established by UNRRA has been improved and a rotenone section established. The solvent extraction unit for recovery of oil from presently discarded rice bran hulls will be added to this location.

Other major and minor industries receiving J. G. White assistance are

sugar, cement, soda ash, soap, salt, timber, and camphor and essences. The staff has worked out specifications, location, method of operation, and ownership of a creosoting plant to utilize more fully local timber resources and produce on Formosa treated wood products that now must be imported.

The project proposal to improve facilities for mining asbestos and talc has been accepted by ECA. Other proposals have been presented on the development and improvement of coal mines and to increase production of coking coal needed to keep pace with fertilizer production. Initial studies have been completed on the rehabilitation of gold and copper mining and possible development of alunite, aluminum, monazite (containing uranium and thorium), zirconium, and mica resources.

The J. G. White engineers stress that their policy is to put ECA out of business. They report their goal is to see the increase of agricultural production supplemented by rehabilitation and establishment of industries so that the total productive wealth of the Island can supply essential needs locally or provide sufficient exports to cover necessary imports. These engineers have worked with the Chinese and ECA to make steady progress toward that goal.

### CHINESE SELF-HELP

The ECA-supported program on Formosa would have had only a very limited effect without the efforts by the Chinese to help themselves. The long-range objective of the program on Formosa is to make the Island self-supporting. The extent to which the Chinese on their own adopt and carry forward the services, techniques and functions introduced with ECA support is, therefore, an important index to the achievements of the program. It is also a measure of the work that remains to be done.

The Chinese engineers and scientists who undertook to rebuild Formosa's severely war-damaged economy after V-J Day have established a commendable record. Some of the senior Japanese technicians, who were repatriated when the Chinese took over, doubted that the Island's economy could be restored in the then foreseeable future. At present, however, Formosa's overall production has been restored to near the highest levels achieved under the Japanese. In a few instances, of which electric power is an example, output at present exceeds the peak achieved by the Japanese.

A study completed in March 1950 indicated that the Chinese Government had spent from 1945 to that date about US\$ 29.6 million from its own critically low foreign exchange resources toward the reconstruction of railways, electric power, fertilizer, and other important industries. This compared with combined UNRRA and ECA contributions for these purposes over the same period of about US\$ 2.3 million.

ECA assistance to industrial replacement and maintenance projects was greatly increased in the last six months of 1950 whereas Chinese expenditures could not be maintained at the former rate. The local government, however, has continued to promote sounder practices in industry than might have been

expected in view of the necessary preoccupation with balancing the budget.

All of the 176 projects included in the program of the Joint Commission on Rural Reconstruction are essentially Chinese efforts. Each is carried forward by a local sponsoring agency which on Formosa is usually government directed. To this sponsoring agency the JCRR contributes financial and technical assistance. In some instances the Commission helped reorganize the original sponsoring agency, or organize smaller units at a village level, and other agencies were helped to modernize and extend their activities. In every instance, however, the success of the efforts to which JCRR has lent its guidance and support has depended largely upon the leadership and energy displayed by the local Chinese leaders and organizations.

Certain reforms enforced by the government on Formosa have been helpful in stabilizing conditions on the Island. The land rent reduction program, first carried out while Prime Minister Chen Cheng was Governor, was of particular significance. Steps have been taken under the direction of the present Governor, K. C. Wu, toward the popular election of mayors and county magistrates and members of the county and municipal councils.

Recently, an Economic Stabilization Board was established to plan and implement policies aimed at maintaining a stable economy. The tax system was partially revised and revenues substantially increased during the past year. At the same time, a budget for expenditures and receipts was instituted and applications for foreign exchange are being screened to eliminate unnecessary expenditures.

In all of these fields there is still a need for improvement before Formosa can have a sound economy. However, the beginning the Chinese have made encourages the belief that they will demonstrate an increasing ability to deal realistically and intelligently with these and other problems.

SUMMARY STATEMENT

U.S. ECONOMIC ASSISTANCE TO FORMOSA IN 1950

(Values in thousands of U. S. dollars)

	Obligated	Expended
Commodity Program	32,982	17,931
Industrial Maintenance and Replacement Program	11,716	2,341
Ocean Freight	2,758 <sup>1/</sup>	
Technical Assistance Program <sup>2/</sup>	443	443
Joint Commission on Rural Reconstruction	194 <sup>3/</sup>	194
Other Expenditures	60 <sup>4/</sup>	60
	48,153	20,969
Total Funds Obligated		Total Approx. Expenditures

1/ Payments made from this sum are included in final arrival costs of commodities and industrial maintenance and replacement items.

2/ Item covers J. G. White Engineering Corporation contract with Chinese Government. Original 1948 P/A for \$ 985,000 expired in September 1950 and second P/A for \$ 60,000 issued to cover contract negotiation period. Out of two amounts approximately \$ 443,000 was earmarked for and expended in calendar 1950.

3/ JCRR program and local administrative expenses totalling the equivalent of US\$ 3,349,686.76 were financed entirely out of Sales Proceeds funds derived from the sale of ECA aid commodities. The allocation and expenditures from appropriated funds represent administrative costs for American personnel.

4/ Includes \$ 45,800 for administrative expenses for Chinese Technical Mission in U. S. and \$ 14,393.53 for liquidation of 1948 claim of Tientsin Biscuit project.

## COMMODITY PROGRAM

(Value in thousands of U.S. dollars)

Commodity	Program 1 Jan.-31 Dec. 1949			Program 1 Jan. - 31 Dec. 1950			End Use Purpose	Remarks	
	Arrivals <sup>1/</sup>	Approx. Cost	Source By Country	Funds Obligated	Arrivals				Source By Country
					Quantity <sup>1/</sup>	Approx. Cost			
Fertilizer (amm. phosphate, amm. sulphate, amm. superphosphate)	69,460 L/T <sup>2/</sup>	6,604	U.S.	8,199	128,627 L/T <sup>3/</sup>	7,957	U.S. and possessions and Canada	Distribution to farmers for application on rice crop only (excepting one diverted shipment of 9,789 L/T of calc. ammon. nitrate allocated for sugar crop)	Released to Taiwan Prov. Food Bureau for distribution thru Farmers Associations. (1950 arrivals include 53,932 L/T at estimated value of \$2,364,023, originally procured for Korea and diverted to Formosa)
Cotton, Raw	6,578 Bb	1,056	U.S. (transferred from S'hai stock)	6,006	16,104 Bb	2,232	U.S. (some transferred from S'hai stock and diverted from Korea)	Allocation to spinning mills to be processed into yarn	Released directly to spinning mills. From July 1950 Government depended on ECA for entire supply of raw cotton. (1950 arrivals include 2332 bales valued at \$375,120, originally procured for Korea, diverted to Formosa)
Cotton, Yarn	1,477 Bb	101	S'hai stock	(no P/A)	2,754 Bb	583	Transferred from Shanghai stock	Allocation to weaving mills to be processed into cloth	Released directly to weaving mills. All yarn arrivals transferred from Shanghai stocks made from ECA-financed raw cotton imports
Cotton, Cloth (Textiles)	259,218 Pos	1,701	S'hai stock	1,345	19,246 Pos 406 Tarps	149	Japan	Cloth for sale in commercial market. Tarpaulins for box car covers	Cloth distributed to sales agents. Tarpaulins turned over to Taiwan Railway Administration
Soya Beans				4,693	16,127 L/T	2,553	U.S. (borrowed from SCAP) and Hongkong	Allocation to oil mills to be processed into edible oil and bean-cakes for animal feed	Released to Prov. Supply Board for distribution to mills. Finished products distributed thru Farmers Associations
Peanuts				1,834	996 L/T	212	Thailand (thru Hongkong)	Allocation to oil mills for processing into edible oil and bean-cakes	Released to Prov. Supply Board for distribution to mills. Finished products distributed to sales agents
Peanut Oil				1,175				For sale thru regular commercial channels and distribution thru Farmers Associations	To be released to Prov. Supply Board for allocation to Farmers Associations and commercial firms
Wheat				913	6,699 L/T	613	U.S. and Australia	For processing into flour	Released to Keesing Flour Mill. Finished product distributed thru approved sales agents
Flour	443 L/T	68	S'hai stock	2,513	2,456 L/T	307	U.S.	For sale thru regular commercial channels	Released to Taiwan Agricultural and Animal Products Corporation for distribution thru approved sales agents
Beef Tallow				678	1,358 L/T	362	U.S.	Soap manufacture	Released to Prov. Supply Board for distribution to soap manufacturers
Copra				144	566 L/T	144	Philippines and Malaya	Processing into coconut oil for use in soap manufacture	Released to Taiwan Chemical Industries under the Prov. Supply Board
Tobacco				302	223 L/T	301	U.S.	Manufacture of better quality cigarettes to reduce need for foreign cigarette imports	Released to Provincial Wine and Tobacco Monopoly Bureau
Phosphate Rock				580	19,700 L/T	389	U.S.	Manufacture of fertilizer for distribution to farmers	Released to Taiwan Fertilizer Co.

Commodity	Program 1 Jan.-31 Dec. 1949			Program 1 Jan. - 31 Dec. 1950			End Use Purpose	Remarks	
	Arrivals <sup>1/</sup>	Approx. Cost	Source By Country	Funds Obligated	Arrivals <sup>1/</sup>	Approx. Cost			Source By Country
Pyrites				298	8,413 L/T	98	U.S.	Manufacture of fertilizer for distribution to farmers	Released to Taiwan Fertilizer Co.
Sulphur				110	1,780 L/T	148	Japan	Manufacture of fertilizer and paper	Released to Kuo hsing Ammonium Sulphate Works and Taiwan Pulp & Paper Company
Wraft Pulp				396	604 L/T	69	U.S.	Manufacture of heavy duty paper bags	Released to Taiwan Pulp & Paper Co.; finished product allocated to fertilizer and cement manufacturers
Gypsum				61	5,413 L/T	61	Cyprus	Manufacture of cement	Released to Taiwan Cement Company
Crude Oil	170,338 L/T	4,498	Iran	1,665	78,743 L/T	1,446	Iran	Processing into petroleum products for civilian consumption	Released to Chinese Petroleum Corporation. Note: Approx. one-half of 1949 imports processed for mainland consumption
Motor Gas				121	2,262 L/T	121	Philippines and Japan	To meet civilian consumer needs	Released to Chinese Petroleum Corp.
Orescote				88	1,973 L/T	116	Netherlands	To treat locally-produced railway crossties and telephone poles	Originally procured for Korea and diverted to Formosa (P/A issued 6 March 1951 to cover)
Hides and Skins				132				Manufacture of shoes and other leather goods for civilian consumption	To be released to Taiwan Agricultural and Animal Products Corp. for processing and allocation
Sheet Bar Steel				90	882 L/T	90	Japan	Manufacture of black sheets, galvanized sheets and tin plate	Released to various industrial concerns (Taiwan Steel Works, Taiwan Machine Works, etc.)
Pig Iron				150			Possibly Germany	Manufacture of pipes, machinery, spare parts for engines, locomotives	To be released to Taiwan Mining and Industrial Corp. for processing and allocation to various local industries
Tin Plate				105				Manufacture of cans for pineapple and other food products for export	To be released to Taiwan Pineapple Corp. and other food processing industries
Lumber				1,404				General construction purposes (bridges, essential public and private buildings etc.)	To be released to Prov. Supply Board for allocation to lumber dealers
Medical Supplies and Equipment		1,568 <sup>2/</sup>					U.S.	Allocation to public health institutions and rural health centers, limited quantity for regular commercial sale	Allocation determined by ECA Allocation Committee

Total Approx. Cost 1949 Arrivals	15,391	Total Funds Obligated	32,982 <sup>5/</sup>	Total Approx. Cost 1950 Arrivals	17,951 <sup>5/</sup>
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- Based on Surveyors Reports made at time of off-loading.
- Only 42,770 L/T distributed in 1949; balance of 26,630 L/T arrived late in the year for distribution for first 1950 rice crop.
- Of approximately 155,000 L/T of fertilizers imported by ECA for and/or during 1950, including balance of 1949 imports and diverted shipments from Korea, about 132,000 L/T were distributed for 1950 crops and remaining 23,000 L/T held for first 1951 rice crop.
- Residual China Relief Mission stocks taken over by ECA in Shanghai.
- Totals of funds obligated and approximate cost of arrivals in 1950 include \$1,560,584 obligated and paid from foreign exchange proceeds derived from the sale principally of raw cotton and cotton yarn refuged from Shanghai stocks before the Communist occupation of the mainland.

L/T - Long Tons  
 Bt - Bales  
 Pcs - Pieces

## INDUSTRIAL MAINTENANCE AND REPLACEMENT PROGRAM

(Values in Thousands of U.S. dollars)

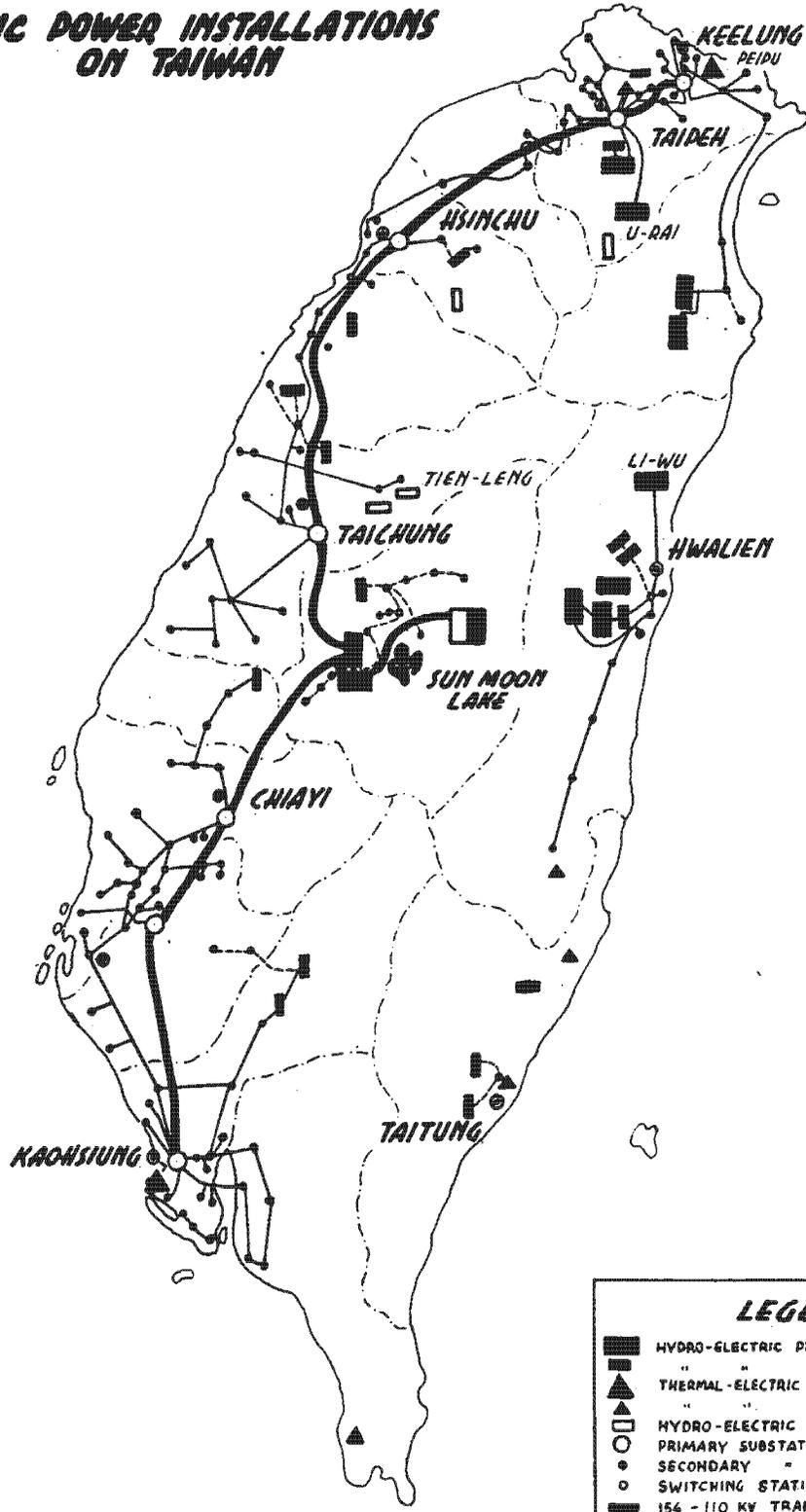
	January to December 1950			Source By Country	End Use Purpose	Remarks
	Funds Obligated	Arrivals and/or Expenditures				
		Quantity	Approx. Cost			
<b>1. POWER</b>						
a. Power Poles - creosoted	300	4,844 Pcs	97	U.S.	Replacement on essential lines	Released to Taiwan Power Company
b. Sin Tsu (Hsinchu) Substation of Taiwan Power Company	450		437	U.S., Europe	Rehabilitation and extension of substation to provide more adequate (firm) power for Fertilizer Plant No.3	Procurement under contract with private commercial firm; purchases completed, equipment arrived, en route, or in manufacture.
c. Power Distribution and Transmission System of Taiwan Power Company	1,766		750	Japan	Rehabilitation and Replacement parts for existing distribution and transmission systems (Sun-Moon Lake Nos. 1 - 2 plants, primary and/or hydro-stations, Sungshan Repair Station, etc.)	Procurement under contract with private commercial firm. Obligated funds include \$750,000 from foreign exchange sales proceeds and \$1,016,000 from appropriated funds
d. Lei Fu Steam Station	207			Japan	Addition of two coal pulveriser mills	Procurement agent selected and contract signed, procurement initiated
e. Li Wu Steam Station	669			Japan	Rehabilitation of steam station	Procurement agent selected and contract signed, procurement initiated
f. Taipeh Substation	316			Japan	Addition of one bank 40,000 KVA power transformer	Procurement agent selected and contract signed, procurement initiated
g. Tien Long Reconstruction Project	1,540			Japan	Completion of project started under pre-war Japanese administration	Procurement agent selected and contract signed, procurement initiated
<b>2. RAILWAYS</b>						
a. Steel Rails	550	3,054 L/T	290	Japan	Replacement of worn rails on main north-south trunk line.	Released to Taiwan Railway Administration
b. Crossties	2,384	86,212 Pcs	310	U.S.	Repair and maintenance of rail lines	Released to Taiwan Railway Administration
c. Railway Bridge Material	276	61 L/T	31	Japan	Bridge spans, paints and painting apparatus for railway bridges	Contract awarded, procurement underway, partial shipment received, released to Taiwan Railway Administration
d. Telephone and Copper Wire for Car Distribution System	179	136 L/T	179	Japan	Repair and maintenance of car distribution system	Released to Taiwan Railway Administration
e. Locomotive and Car Repair Materials	322			Japan	Repair and maintenance of rolling stock	Released to Taiwan Railway Administration
f. Passenger Coaches (10 cars)	191			Japan	Replacement of old passenger cars to be overhauled and converted to freight cars	Released to Taiwan Railway Administration
<b>3. TELECOMMUNICATIONS</b>						
a. Telephone Cable, Spare Parts	800			Japan	Repair of local and toll lines	To be released to Taiwan Telecommunications Administration

	January to December 1950			Source By Country	End Use Purpose	Remarks
	Funds Obligated	Arrivals and/or Expenditures				
		Quantity	Approx. Cost			
<b>4. HIGHWAYS</b>						
a. Auto Assembly	81	20 bus chassis 28 cases spare parts 38 engine assemblies	81	Japan	Replacement and repair of motor transport facilities	Released to Taiwan Provincial Highway Bureau
b. Motor Vehicles, Engine Replacement, Chassis, etc.	189			Japan	Replacement and repair of motor transport facilities	To be released to Taiwan Provincial Highway Bureau
c. Reinforcing Bars	30				Highway bridge construction materials	Full amount refunded by Taiwan Highway Bureau
d. Silo Bridge	1,138			U.S.	31 Steel spans (fabricated) to complete construction of bridge linking main north-south Highway systems	Steel fabrication by U.S. Steel Export Corporation; erection by Silo Bridge Commission.
e. Culvert Pipe	92			U.S.	Repair and construction of highways	To be released to Taiwan Highway Bureau
f. Bridge Paint	23			Japan and Hongkong	Maintenance of highway bridges	To be released to Taiwan Highway Bureau
<b>5. OTHER INDUSTRIES</b>						
a. Taiwan Fertiliser Plant No. 1	250		166		Rehabilitation of Taiwan Fertiliser Plant No. 1 to increase production from 12,000 to 30,000 tons annually	Contract awarded, all purchase orders issued, released to Taiwan Fertiliser Company
b. Taiwan Fertiliser Company	40				Industrial equipment to improve production of calcium super phosphate	To be released to Taiwan Fertiliser Company
c. Kachaiung Ammonium Sulphate Works	6				Water pumps and meters to improve production of ammonium sulphate	To be released to Kachaiung Ammonium Sulphate Works
d. Taiwan Steel Works	93				Tinning equipment for manufacture of cans	To be released to Taiwan Steel Works
e. Chinese Petroleum Corporation Refinery	100				Heater tubes and gasoline pump required to put cracking unit into production	To be released to Chinese Petroleum Corporation
f. Taiwan Pulp and Paper Company	105				Industrial equipment to improve production of pulp and paper	To be released to Taiwan Pulp and Paper Company
g. Dahe Industrial Company	62				Rehabilitation of Karento Asbestos Mine	To be released to Dahe Industrial Company
h. Lee Yuan Chemical Works	8				Improve manufacture of soda ash	To be released to Lee Yuan Chemical Works
i. Taiwan Forestry Administration	100				Transportation equipment to improve logging operations	To be released to Taiwan Forestry Administration
	Total Funds Obligated	11,716 <sup>1/2</sup>	Total Approx. Cost or Ex- penditures	2,341		

1. Total of funds obligated includes approximately \$2,239,000 obligated from foreign exchange proceeds derived from the sale principally of raw cotton and cotton yarn refuged from Shanghai stocks before the Communist occupation of the mainland.

1/2 - Long Ton  
Pcs - Pieces

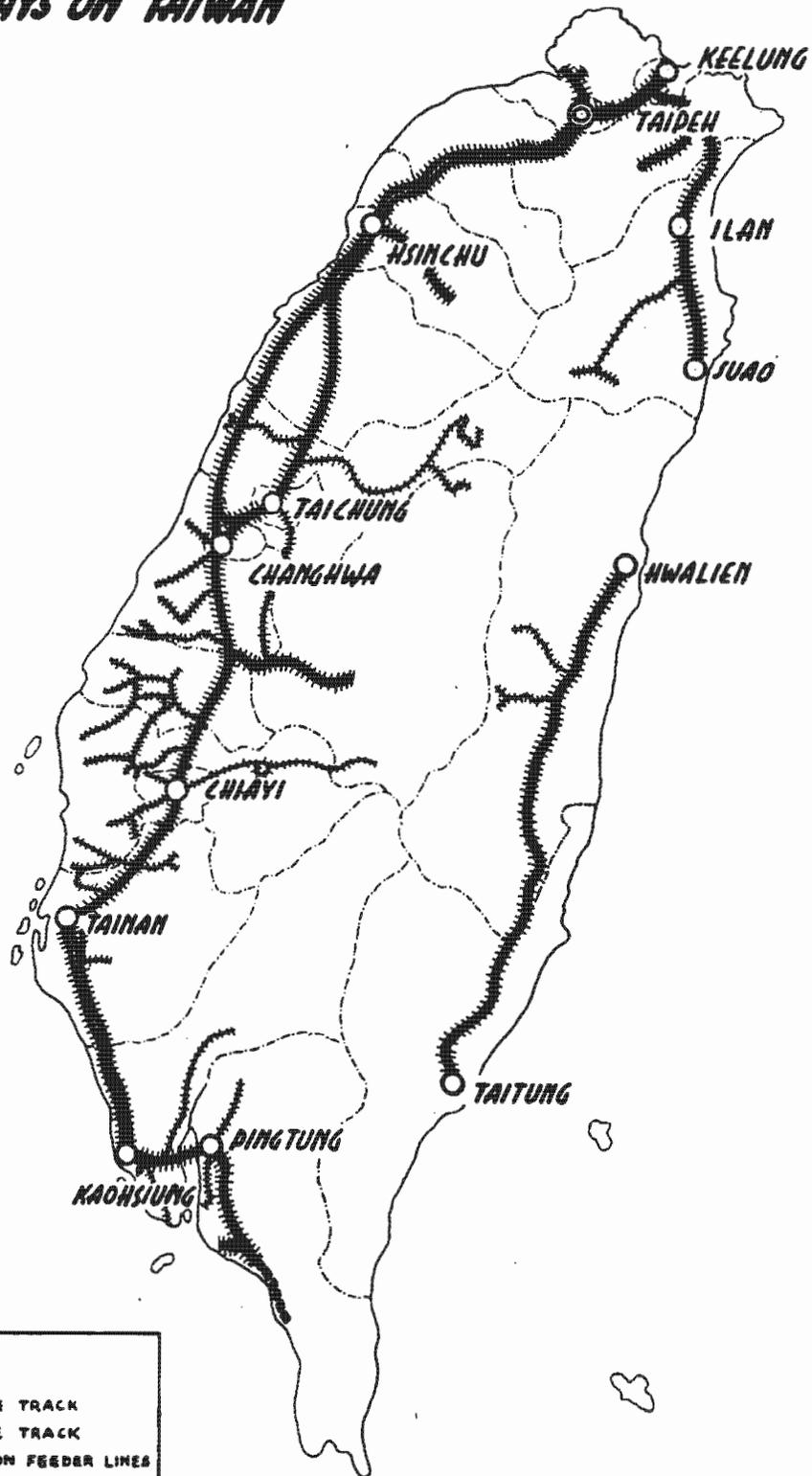
# ELECTRIC POWER INSTALLATIONS ON TAIWAN



**LEGEND**

- HYDRO-ELECTRIC PLANTS - OVER 5,000 KW.
- ▣ " " - UNDER 5,000 KW.
- ▲ THERMAL-ELECTRIC STATIONS - OVER 5,000 KW.
- ▴ " " - UNDER 5,000 KW.
- HYDRO-ELECTRIC PLANTS UNCOMPLETED
- PRIMARY SUBSTATION
- SECONDARY " "
- ◊ SWITCHING STATION
- 154 - 110 KV TRANSMISSION LINES
- - - 66 - 33 KV " "
- · · 11 - 3.3 KV " "
- ⊙ CITY

# ***RAILWAYS ON TAIWAN***



## ***LEGEND***

- MAIN LINE DOUBLE TRACK**
- MAIN LINE SINGLE TRACK**
- SUGAR CORPORATION FEEDER LINES**

# HIGHWAYS ON TAIWAN

