NO. 29

# INFRASTRUCTURE DEVELOPMENT PLANNING FOR THE SOUTHERN CUZCO IN THE REPUBLIC OF PERU

## PHASE 1

MARCH, 1979

Metal Mining Agency of Japan

Japan International Cooperation Agency

Government of Japan

# INFRASTRUCTURE DEVELOPMENT PLANNING

# FOR

# THE SOUTHERN CUZCO

# THE REPUBLIC OF PERU

## PHASE 1

# PREFACE

In response to a request from the Government of the Republic of Peru, the Government of Japan, as a part of its program of technological cooperation with respect to the development of the Coroccohuayco, Quechua, and Tintaya copper mines in the southern part of the Department of Cuzco, commissioned the present study, carried out during 1978 through the good offices of the Japan International Cooperation Agency and the Metal Mining Agency of Japan, for the purpose of suggesting plans which could facilitate the installation of needed infrastructure for the development of the mines in question.

The present study consisted of a preliminary survey and a main study. The members of the preliminary survey team were dispatched to Peru for the period from Agust 9 to 26, 1978, and during that time they consulted with various Peruvian government agencies about what ought to be covered in the study. Since it was decided that the main study would be a multifaceted one covering many fields and should play a useful role in formulating plans whereby improvements in infrastructure would contribute to regional development in the area of the mines, the project was commissioned to the International Development Center of Japan. A study team visited Peru from September 27 to October 24, 1978.

Peru is one of the world's most important mineral-resource countries, and its wide variety of resources include copper, silver, lead, zinc, and iron ore. The export of mineral resources accounts for more than 50% of Peru's total exports and plays an extremely important role in the country's economy. Since 1973 copper has replaced fish meal as the top export item, and the Peruvian Government is putting much effort into development, considering it, together with the development of petroleum resources in the eastern Amazon region, to be the wining choice as a means of rebuilding Peru's economy. The present plan for developing the three copper mines in question may be thought to be in line with the government's intentions in this regard.

In elaborating the suggested plans for infrastructure facilities, it was considered import to pay attention to the ways in which the latent or potential impact of the mining development can redound to the optimum benefit of regional economic development, and these considerations have been kept always in mind during the course of the study. The present report, which has come about as a result of the above circumstances, summarizes the results of the basic study which was carried out with respect to mines, electricity, roads, housing, use of geothermal, agriculture, with due consideration being given to the balance between mining operations and regional development. We should be pleased if the present report could be of assistance to the economic and regional development plans of the Republic of Peru and if it could add to the friendship of the past in promoting the friendly sentiments which exist between Japan and the Republic of Peru.

In closing, we wish to express our heartfelt gratitude for the invaluable cooperation from the Peruvian Government and its related agencies and public corporations, the Ministry of Foreign Affairs of Japan, the Japanese Embassy in Peru, the Ministry of International Trade and Industry and other related ministries.

March 1979

Shinsaku Hogen
President
Japan International Cooperation Agency

Masayuki Nishiiye
President,
Metal Mining Agency of Japan

## ACKNOWLEDGEMENTS

This report presents the results of a survey which was commissioned in 1978 by the Ministry of International Trade and Industry through the Japan International Cooperation Agency and the Metal Mining Agency of Japan and which was carried out by contract with the International Development Center of Japan.

The report focuses on development plans in regard to three adjoining copper mines which are planned to be developed in the near future in mountains in the southern part of the Department of Cuzco, Republic of Peru. It Surveys the present situation of infrastructure facilities in relation to the development of these mines and presents a study and a formulation of plans for the needed infrastructure facilities. It is hoped that the present study might contribute to regional development in the area of the mines in question, and that it might in this way also contribute to Peru's economic development plan. It is also hoped that it can contribute to strengthening the relations of friendship and cooperation between Japan and the Republic of Peru.

The study team spent approximately one month in Peru beginning September 27, 1978. Study team members were the following:

| | | |
|---|---|---|
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In Peru the study team received active support from the various governmental agencies of the Republic of Peru, for which we are most grateful. Also, we wish to express our thanks for the cooperation received from the Japanese Embassy, various Japanese joint venture enterprises and trading firms, and various international organizations, as well as our deeply felt gratitude to the Ministry of Foreign Affairs, the Ministry of International Trade and Industry, the Japan International Cooperation Agency, the Metal Mining Agency of Japan, and the Peruvian Embassy in Japan for the help and guidance which they provided in the course of this study.

March 1979

Saburo Kawai
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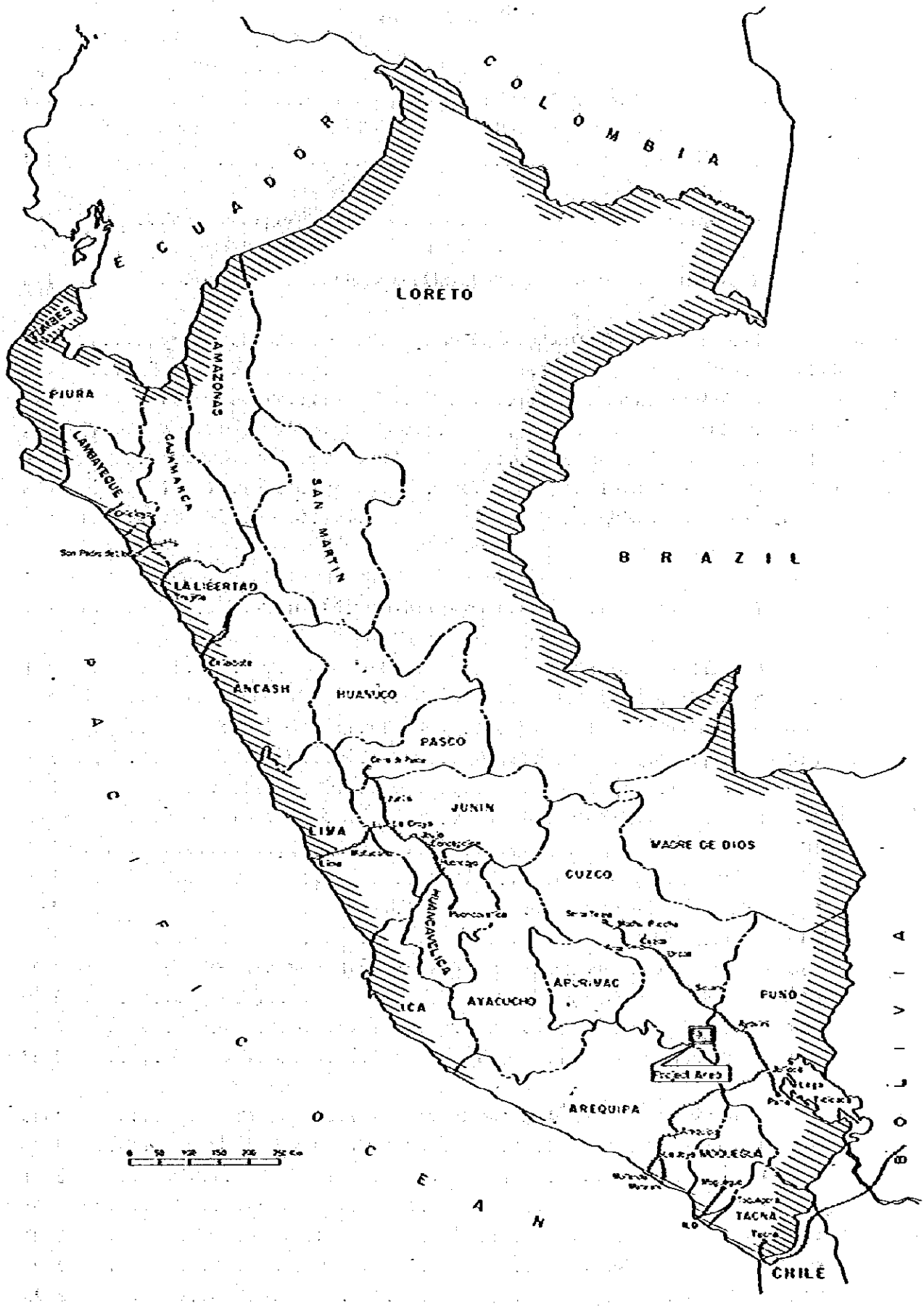
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# CHAPTER 1

# SUMMARY AND RECOMMENDATIONS

# CHAPTER 1 SUMMARY AND RECOMMENDATIONS

## 1. Background

In its official letter of July 21, 1978 (Oficio No. 224-78-EM/DGM), the Government of the Republic of Peru requested the Government of Japan for technical assistance in the study of infrastructure development related to the development of copper mining at Chroceohuayco near Velille-Yauri about 180 km south of Cuzco City in Southern Peru. Subsequently, the Government of Japan agreed to provide the technical assistance and entrusted the survey to the Japan International Cooperation Agency (JICA) and the Metal Mining Agency of Japan (MMAJ).

The Coroccohuayco copper ore-field was first found to be promising during a geological survey carried out between 1971 through 1973 under the cooperative mineral exploration project provided by the Government of Japan. Based on the result of the survey, Minero Peru and the Overseas Mineral Resources Development Company of Japan (OMRD) came into a contract in February 1974 for a joint exploration of the deposit, which is currently on-going.

In addition to the Coroccohuayco copper ore-field, the area nearby has several development potentials: (i) there is an on-going copper mine at Atlaya about 15 km west of Coroccohuayco and operated by a Peruvian private company with the capacity of 450 tons per day; (ii) there are two other promising copper deposits, one at Quechua and another at Tintaya, both of which are located within the 6–8 km radius from Coroccohuayco. Geological surveys on the former ore deposit were made under the Japanese Government's overseas geological survey project between 1970 and 1977, and the deposits are being explored by the Mitsui Mining and Smelting Co., Ltd. of Japan, who was accorded exploitation concessions. The latter Tintaya ore field is owned by Minero Peru, and a feasibility study undertaken by H.A. Simons (International) Ltd. of Canada is currently under review by the Government of Peru, which is expected to select a partner for the mining development after an international tender; and (iii) there is a strong possibility to develop geothermal energy using high temperature steam and/or hot water piped to the surface from the earth's interior. A preliminary survey carried out in 1976 by the Geothermal Energy Research and Development Co., Ltd. of Japan with the assistance from the Ministry of International Trade and Industry has shown that the prospects are specifically good for the Quisicollo area, about 33 km south-east of Coroccohuayco, for utilization of the heat not only for geothermal power development for mining but also for the development of horticulture, local air conditioning (district heating) and other industrial uses. In view of the above, Minero Peru proposed at the Peru-Japan Joint Committee held in Lima in April 1978 for the development of the Coroccohuayco mine that an integrated regional development program for the project area be formulated taking into account development potentials arising from possible projects in addition to the proposed Coroccohuayco copper mining.

## 2. Objective of the Survey

In accordance with the aforementioned request by the Government of Peru, this survey has the ultimate objective of improving the welfare of the people of the proposed Project Area by means of comprehensive and integrated development of the proposed Project Area in the province of Espinar, Cuzco as well as development of geothermal energy, and combined with the improvement of related infrastructure. This survey is to be carried out over the period of two years and the present report gives the results of the first year's work. The specific objectives of the survey are as follows:

(1) Identification of the development potential

Identification of the development potential of water resources, transportation modes, power, telecommunications and housing, as required in connection with development of the mines;

(2) Development of geothermal energy and of agriculture and livestock

In close cooperation with a technical team to carry out exploration and drilling on the Quiscollo and the neighboring areas started from 1978 under a three-year program, the most suitable way to utilize geothermal energy is to be examined so as to contribute to regional development. In addition to the original objective of establishing a mineral industry in the area, agriculture and other industries should be promoted in the Project

Area so that more employment and an improvement in the standard of living could be provided;

(3) Comparative study of infrastructure improvement and agricultural development

In connection with mine development planning, comparatively analysing various alternative means for infrastructure improvement and development of the agriculture;

(4) Estimate of investment cost needed for infrastructure improvement and agricultural development (with estimation of the total required investment amount to be made in the second year of the survey, together with evaluating the economic feasibility); and

(5) Recommendation of detailed studies and items to be studied

For realization of the development plan, recommendations on detailed studies which should be performed, and on items which should further be studied.

## 3. The Country's Economy and the Proposed Project Area

Located in the central part of the South American Continent's Pacific Coast, the Republic of Peru is the third largest country on the continent and three times as large as Japan. Peru is one of the world's best endowed countries with regard to mineral resources, in terms of both the quantities and the diversity of those resources. Geophysically the country has a north-south axis which is somewhat larger from the east-west axis, and may be divided into Costa (the desert zone along the Pacific Coast), Sierra (the mountains of the Andes which are on the inland side of the desert zone), and Selva (the dense forest jungle which is further inland), and because of the difficult topography the country has not been economically integrated. In the past, the economic development of the country was largely confined to the development of commerce and industry in the coastal area having Lima as its center, and sugar, cotton and other estate farming in the coastal zone where it has been easy to irrigate. Because of this, virtually the only development of transportation was in and along the length of the coastal zone, and in the form of arterial roads and railroads linking inland cities with the coastal zone, and inland transportation remains largely undeveloped. Further, regarding electric power, major users are concentrated in the coastal zone, while sites most suitable for development of hydropower generation are east of the Andes, and transmission costs are high because the country is so large. Under these conditions, the development of mines in the Andes zone is faced with various constraints related to infrastructure.

Closely connected with this regional disparities of economic activity, a dual structure of the economy is serving to restrain the economic development of Peru. In the past, investment from both domestic and foreign sources has been concentrated in the primary products export sector. As a consequence, a modern sector was developed in which foreign countries were relied upon as the source of capital equipment and raw materials, as well as the market for the products, which were made for export. However, the modern sector, has been able to absorb only a fraction of the nation's work force, the majority of which is employed in agriculture in the production of foodstuffs, or in small firms employing less than five workers. There is a great technological disparity between the modern sector and this traditional sector, as well as a disparity in productivity and a disparity in wages. In addition, a viable linkage between the two sectors in terms of the supply of raw materials and other inputs has not been formed. Therefore, the modern sector has had very little impact on the development of the traditional sector, yet it is only the modern sector which flourishes when favorable conditions prevail in international markets for primary products which Peru exports, and when overseas markets are soft, the entire economy suffers.

The military administration which acquired control in October, 1968, embarked on the South American continent's most radical program of land reform, and has promoted strongly socialistic policies, such as through the nationalization of the major means of production. However, these measures have had only the modern sector as their primary objective, and have not served to favorably modify the dual structure. Subsequently, many public corporations which have been established in line with national policy have accumulated growing deficits which, among others has contributed to a national fiscal crisis. The subsequent increase in money supply has had inflationary effects, and in addition, the country's imports have substantially increased through stimulating import demand, as a consequence, Peru's external debts expanded, deteriorating the international balance of payments and obliging Peru to seek assistance from IMF, the Executive Board of which in September, 1978, approved credit facilities. The Peruvian Government has adopted emergency measures to restrain total demand, which are now being enforced. Further, at an international meeting in Paris in November, 1978, a measure was

approved for relieving Peru's external debts amounting to approximately US$1.9 billion which were scheduled to fall due during the coming three years, so that some relief has been provided for the country's international balance of payments.

The long-term outlook for Peru's balance of payments is by no means dark. Because the country possesses both rich and diversified agricultural, fishery and mineral resources, exports do not rely solely on one or a few commodities and the economy is protected against the risk of fluctuation in commodity market prices. More importantly, Peru became a net exporter of petroleum in 1978. If the measures to suppress total demand are effectively implemented, it is by no means impossible for the country's economy to recover from its current difficulty. In the long run, however, it will be urgent to make progress in the integration of the dual structure of the economy. On the side of the aid giving countries and international agencies, not only is it necessary to strive for contribution to increases in the production capacity of the modern sector by means of the development in mining and other industries and development of related infrastructure, but also to forging the mutually-reinforcing linkage of both the modern and traditional sectors through the improvement of the standard of living of residents of the regions concerned. The Peruvian Government recognizes this necessity and in June, 1978, established the Organismo de Desarrollo del Sur Oriente (ORDESO) as an implementing agency to be concerned specifically with the development of the three departments of Cuzco, Aprimac and Madre de Dios, which have hitherto lagged in development. The proposed Project Area lies within this area of jurisdiction of ORDESO.

The Province of Espinar, the proposed Project Area is at the southern extremity of Cuzco Department, in the Andes at the elevation of 3,800 – 4,300 m above sea level. Espinar is large in area, encompassing 4,418 sq km, but according to the 1972 national census the population is only 42,000, making the population density only 9.5 persons per square kilometer. The only modern industry present is the Atalaya mine, and more than three-fourths of the area's residents are engaged in casual agriculture and livestock farming (including here those farmers who also have non-farm income) for their livelihoods. Other industries comprise traditional industries, commerce, transportation and other service industries, commerce, transportation and other service industries.

From the seat of the provincial government of Espinar, Yauri, to the adjacent Sicuani in the Province of Canchis it is 103 km, and to Cuzco City, Cuzco, it is 180 km as a straight line on a map, and an additional straight-line distance of 90 km to Matarani which is the major port serving the region. Cities other than Yauri are accessible by means of arterial roads and there is a railroad between Cuzco, Sicuani and Arequipa, but the Yauri zone is not favored by conveniently-located transportation arteries. In addition to the area's being isolated in this way, because it is at an elevation of about 4,000 m, the development of the transportation network has been retarded and during the rainy season most transportation services are interrupted. Within the Project Area the only paved roads are some of those in the Yauri town.

With regard to power, in addition to the two power stations in Cuzco Department, namely the Machu-Picchu hydropower plant (44 MW) and the Dolores Pata diesel generating plant (3.4 MW), there are small-scale hydro power and diesel facilities in various locations in the region but there is no supply of power from these installations to the proposed Project Area. The only power generated in the Area is that of the diesel units in Yauri and at the Project Area's mines. Because most of the Area's residents are not supplied with power, they use candles and oil lamps for lighting, and burn oil and dried livestock dung for fuel.

Meteorological conditions in the Project Area are severe. The average annual temperature is 8.1°C, and the low is −10°C, making conditions extremely difficult for farming. Precipitation is higher than in adjacent provinces, but because of the high elevation and steep gradient of much of the land, the only vegetation is wild grasses, so that most rainfall is lost as surface runoff to lower elevations and the Area in general is dry.

Because it is difficult to irrigate here, agriculture in the Project Area, being subject to natural restrictions, is limited to upland crops. The major crops under cultivation are non-improved varieties of potatoes which are capable of withstanding the cold temperature, Cañihua and Quinua, but production, which must use the extremely short rainy season, is barely sufficient for meeting the needs of the producers themselves. Only on a very few of the farms is there any mechanization to speak of, because steeply-sloping land is common, the scale of the average farm is small, and the cost of farm machinery is high. Therefore human labor is the major source of power for farming and it is difficult to expand the cultivated area. Further, because there is virtually no use of fertilizer or agricultural chemicals, the level of farming technology is extremely primitive, and productivity of both land and labor is low. As it is difficult to increase farm production in this high-elevation Area there is a trend for farming to shift to raising sheep, llamas, alpaca and cattle, as the elevation increases. In addition to the farmers'

obtaining cash income through their sale of wool and meat from sheep, llamas and alpaca, they also use these animals for transporting materials and goods. Cattle are primarily raised for sale of beef, but their milk is used for production of cheese on the farms. Native grasses are the mainstay of cattle feed, and because high costs prohibit importation of improved breeds, livestock raising in the Project Area is carried on in an extremely haphazard way.

Given the extremely low productivity of agriculture and livestock raising in the Area, the standard of living of the smallholders is extremely poor. From 10 to 20% of the residents migrate to Arequipa to work as seasonal farm laborers and obtain cash income, during the four-months-long rainy season. Therefore development strategy for the Project Area has to be twofold: first, employment opportunities for the Area's residents should be created through development and operation of the mines so that they no longer have to travel great distances to find work; second, the productivity of agriculture should be upgraded so as to improve the standard of living of the Area's residents. Further, the improvement of infrastructure in connection with the mines, such as related to power generation and roads, will also be highly important in improving the lives of the residents of the Area.

## 4. Recommendations for Development Planning

### 4-1 The Mining Sector

Within the Project Area, in addition to the Atalaya mine which is currently operating, there are several promising deposits. Although it is not at present certain when the latter will be developed, it is presumed that in consultation with Minero Peru and private companies concerned, there will be development of the Tintaya mine in 1980–82, of the Coroccohauyco mine in 1983–85, and of the Quechua mine in 1986–88. It is further presumed based upon consultations, that the scale of operation; volumes of ore, materials and fuel transported; annual power requirements; water requirements; number of employees; and life of the mines will be as shown in Table 3-6.

From the viewpoint of economies it is desirable that the same type of ore to be produced at each of the mines be processed at the same beneficiation facilities. For the same reason, it is recommended that a single machine shop and repair shop be established to serve all of the mines.

The Tintaya and Coroccohauyco mines will use the same source for water, but a more detailed study will be necessary regarding surface runoff and streams.

### 4-2 Power Development

The Atalaya mine generates its own power by use of a diesel unit at the mine, and installing a diesel generator at the Tintaya mine for its use is now being proposed in the feasibility study. However, in the near future, when development of the Coroccohauyco and Quechua mines begins, it will be economical to operate a single power plant to supply all four mines.

The following are the five alternatives for supplying power to all four mines from a single source:

(1) An increase in the output of the power plant (69.9 MW) at Machu-Picchu as envisaged by Electro Peru and installation of an additional transmission line (138 kV, 308 km) to the Tintaya mine;

(2) In Arequipa Department in the south, phase I construction work is being proceeding for the Majes Project, a large-scale regional development plan concentrating on agricultural development. As part of the Majes Project, construction of the Lluta power station (270 MW) and the Luella power station (382 MW) is contemplated. Power may be supplied to the mines by the additional installation of a transmission line (150 - 170 km in straight line on a map) from either of these stations;

(3) Installations of a 5,350 kW diesel generating plant at the Tintaya mine, which is the first of the three new mines to be developed, and supply power to the others by transmission lines (66 kV);

(4) The Rio Jarma and Macarara areas which are examined during the present geothermal survey, together with Quisicollo which has already been investigated, have the potential of generating electric power. If the

existence of high-temperature geothermal fluids is ascertained, it will be possible to supply power through the construction of a geothermal power plant with the capacity of 30 MW or more and installation of 66 kV transmission lines to the mines; and

(5) New construction of a hydropower station from which power would be transmitted to the mines. Two alternatives are conceivable: (i) To build a dam at the outlet of Langui Layo, 15 km south of Sicuani; building a power plant downstream from that, and install a transmission line (138 kV, 70 km) to the mines; or (ii) at the valley about 2 km north of Yauri which is at the point of confluence of the Aprimac and the Rio Salado which flow near the mine to construct a multipurpose dam which will provide irrigation water, drinking water and also provide a head for power generation.

The advantages and disadvantages of these five possibilities has been compared as follows:

(1) Although its feasibility must be ascertained by the future detailed survey, if geothermal power generation proves to be feasible, it would require the lowest construction cost per unit kilowatt of all (for 30 MW, about US$1,250 per kilowatt) and the lowest production cost of all (US$0.03-0.04/kWh; see Table 7 - 11);

(2) The next most advantegeous method is to supply power by means of transmission lines from the existing hydropower plant or a plant to be built. Two alternatives are possible: (i) supply from the Machu-Picchu plant; (ii) or from the Majes Project plants. In terms of the distances involved, the latter is preferrable. However, because the contents of the Majes Project became known at a point quite near to the end of the mission's stay in Peru, it was not possible to investigate its implications thoroughly, or to have a satisfactory exchange of views with authorities concerned. Since at the present time the feasibility of geothermal power generation has not yet been determined, it is proposed that the responsible agencies consider the proposed Project Area as falling within the range of power supply planning under the Majes Project.

(3) Diesel power generation is inferior in terms of costs to purchasing power by installing transmission lines.

Because economies of scale would not be obtained by constructing a hydropower plant solely for satisfying the mine's requirements, it would be the most expensive method of all. There is also a problem in that a considerable area would become submerged as a result of building a dam.

### 4-3 Road Development

With the start of operation of the mines, it is expected that large quantities of construction materials, ore, fuel, supplies, equipment and the like will have to be transported to and from the mines. The existing road network, namely the road from the Atalaya mine to Sicuani (128 km; transport thereafter by railroad) passes for much of its length through mountainous terrain and has many turns. Besides, it would have to be widened in places in order to accommodate the expected volume of traffic, so that it is not suitable for meeting the anticipated requirements. In the present survey, a number of alternatives were compared with regard to construction cost, truck operating cost, technical aspects of road improvement, maintenance, regional development effects along the roads' lengths, and other aspects. As a result, the mission identified the following two routes as being suitable for meeting transport needs of the mining development, and improvement of these roads is recommended:

(i) If only road transport is used: Mines -- Sibayo -- Arequipa -- Matarani port (283 km)

(ii) If road and rail transport are combined: Mines -- Ayaviri (95 km, thereafter, rail transport)

Which of these two should be assigned higher priority is to be determined through comprehensive analysis of the development of both railroad and harbor, during the second year of work. However, it should be noted that the construction of the road-only alternative mentioned above (i) has many advantages: (a) greatly shortening the time required to travel between the mine area and the coastal zone, (b) connecting with the Majes Project's large-scale agricultural development project along the road, and (c) linking the many villages and mines in the area. Because of this, even if the decision is later made to assign higher priority to the road-plus-rail alternative, there would still be need to improve the road-only alternative.

## 4-4 Housing

At present, it is planned for each mine to have its own mining town, but because the four mines are located near to one another, and it would be more economical, it is recommended that a single mining town be developed for all of them. However, between Tintaya and Quechua, and between Coroccohauyco and Quechua, transportation is extremely difficult because of steep topography at elevations of about 4,700 m. In contrast to this, transportation between Tintaya and Coroccohauyco is relatively easy, by means of Ruta Departmental No. 104. It is therefore recommended that at least the mines at Tintaya and Coroccohuayco have one and the same mining town.

As a suitable location for both the Tintaya and Coroccohuayco mines, it is recommended that the elevated left bank of Rio Salado at a point about midway between the two mines be used. The topography here is gentle, the physical characteristics of soil are suitable for the construction of homes, and it would be relatively easy to obtain water. The commuting distance to each mine would be about 12 km.

Should a joint development of the mining town be undertaken as recommended above, its scale, allowing for the workers, their families, and the service-related population, would be about 8,100 persons. The number of housing units which would have to be supplied is 1,350, for a total of 5,400 persons, so that about 100 ha would be required as the land area of the town. The development cost would be, in 1978 prices, US$9.8 million, and if requirements for the 3 ~ 5 year period prior to the start of operations are added, the construction cost would come to US$16.4 million. Development of a town of the above-described scale would be creation of a town twice the size of Yauri which is the seat of the provincial government.

## 4-5 Geothermal Energy Development

The present geothermal survey, in addition to the area of 2 sq km in Quisicollo which was confirmed by the 1976 survey, is to cover the rather broad area crossing Rio Jarma and Macarara north of Quisicollo and 3 km east to west and 5 km north to south, where having the same heat source as that of Quisicollo, the presence of a geothermal zone, was confirmed.

However, the quantity of heat is greatest at Quisicollo, and that at Rio Jarma is one-tenth of it while it has not been ascertained what level of heat exists at Macarara, although the level is expected to be about the same as that at Rio Jarma.

Judging from the experience of other countries in utilizing geothermal energy, if it is possible to collect heat to the extent of five times the region's naturally-released quantity, the equivalent of 30 MW per hour of electricity equivalent may be expected. However, in order to more accurately determine its feasibility, there is a need to explore the subsurface conditions further and the distribution of deep underground water, through electric prospecting and gravity tests. In addition, it is necessary to drill a 500 m observation well in order to confirm the presence of a geothermal fluids. On the basis of these results, a development plan for geothermal energy would be formulated. During the second year, further geological survey will be continued.

## 4-6 Agricultural Development

In order to improve the agricultural productivity in the Project Area, the following three measures are specifically recommended:

First, small-scale irrigation facilities should be introduced in the Project Area, as improved varieties of potato can be made possible to be cultivated, such varieties being not now in favor because of the danger of frost damage in February. If irrigation is used during the dry period, it will enable the earlier planting so that a crop is to be brought in before an early frost is likely to occur. The installation of irrigation facilities will also contribute to improving the productivity of livestock raising. Better management of soil fertility and irrigation during the dry season are expected to increase yields by 40%. In addition to this, it is necessary to introduce other crops which are suitable to the meteorological and other characteristics of the Area. For example, jojoba, a native plant in the desert zone, can be grown as a cash crop because it is a source of vegetable oil. Test cultivation of this plant should be done to determine if it is worthwhile to be planted in the Area.

Second, in view of the livestock industry offering the greatest development prospects in Project Area,

improved legume varieties should be encouraged to be grown which are suitable to the high altitude and low temperature of the Area, instead of relying on existing natural pasture grasses. The size of herds cannot be expanded any further under present conditions, but through the introduction of improved pasture, it is possible to increase the size by three to five times. At the same time it is possible to rasie beef cattle, instead of sending lean cattle to Arequipa for fattening, more valuable livestock can be produced. Further, at the stage when herds of the present breed have been increased in size, it will be necessary to shift to the raising of improved breeds.

Third, with regard to agricultural utilization of geothermal energy, experiments should be conducted at agricultural research institutes such as IVITA in La Raya to find out if it is technically feasible to put hot spring cultivation (greenhouse agriculture) into practice at Quisicollo areas where hot springs are available. Also, efforts should be made at evaluating economically if it is viable to construct glass or plastic greenhouses utilizing geothermal hot water. In pursuing hot spring cultivation in the Project Area, the following problems should be solved: (i) the cost of the vegetables grown in the greenhouses is expected to be expensive because of the investment into facilities required to be constructed; (ii) in view of the extensive agriculture currently being in practice in the Project Area, a long time is required in assimilating intensive techniques by the farmers; and (iii) there is an urgent need to strengthen extension services substantially, which are extremely weak at present due to a lack of qualified staff.

During the second year of the survey it is intended to select the suitable locations for development of the agriculture and livestock industries; to select improved pasture grass varieties; to recommend suitable irrigation methods; and to make suggestion for the dissemination of agricultural technology.

# CHAPTER 2

# PRESENT STATE OF THE PERUVIAN ECONOMY AND DEVELOPMENT PLANS

# CHAPTER 2 PRESENT STATE OF THE PERUVIAN ECONOMY AND DEVELOPMENT PLAN

## 1. General Description of Peru

### 1-1 Natural Environment

#### 1-1-1 Territory

Peru is a country with a long coastline along the central portion of the west side of the South American continent. Its total area is approximately 1.29 million km$^2$, ranking third in size in South America, following Brazil and Argentina. Its land area is approximately 3.3 times that of Japan. It extends from south latitude 0°01'48" (at its northernmost border with Colombia) to south latitude 18°21'34" (at its southern border with Chile). It borders five countries: Chile on the south, Bolivia and Brazil on the east, and Colombia and Ecuador on the north.

#### 1-1-2 Topography

Peru's land area is divided into three zones: the Costa, or desert region along the Pacific coast; the Sierra, or mountainous region of the Andes; and the Selva, or densely forested region in the east. Each of these zones may be markedly distinguished from the others by its natural conditions.

The desert region along the Pacific coast extends about 2,000 km from the border with Ecuador on the north to the border with Chile on the south. In width, however, it is very narrow, extending no more than 60 ~ 30 km between the seashore and the western foothills of the Andes. With the exception of the northern part, this region is almost without rainfall throughout the year, and except for certain areas near rivers it is mostly desert.

To the east of the desert region is the mountainous region of the Andes. The Andean mountain ranges in their northern section are some 210 km in width, but in the southern part of Peru their width reaches some 480 km. They contain a number of peaks which tower to over 5,000 meters.

The western side of the mountain region, facing the desert region of the Pacific coast, is characterized by relatively smooth slopes, but the eastern side has been eroded by rivers of the Amazon basin system and thus presents a very complicated topology. Between the mountain peaks there are extensive connecting high plateau regions between 2,000 and 3,000 meters which are suitable for agriculture and pasturage.

Between the eastern outskirts of the Andean mountain region and the eastern boudaries of the country lies the eastern forest region, or Selva, which occupies a large area of 50% of Peru's land area and has been left for the most part undeveloped.

#### 1-1-3 Climate

In terms of latitude, Peru belongs to the tropical and subtropical zones. Nevertheless, because of the Andean mountain ranges (running from north to south) and the cold Humboldt Current which flows northward along Peru's coast, climatic conditions diverge shaply in different regions of the country.

The coastal region, which receives the influence of the cold Humboldt Current, is cool atmospheric temperatures averaging 17 ~ 23° Centigrade. In spite of the large number of cloudy days, the climate is a neculiar one noted for its lack of rainfall. There are both a summer and a winter season. The climate of the mountainous region of the Andes is of continental type with sharp differences in temperature and may be divided into a rainy and a dry season. In this region the rainy season is from December to April, with annual precipitation relatively high in the north but tending to decrease as one goes south. The eastern forest region has a tropical climate which is not influenced by the Andean mountain ranges or by the Humboldt Current.

Table 2-1 shows monthly temperatures and humidity in the capital Lima (in the coastal region), and Table 2-2 shows regional variations in rainfall.

Table 2 - 1 Monthly Temperature and Humidity in Lima (1973)

| | | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature °C | Average | 22 | 23 | 23 | 22 | 19 | 18 | 17 | 17 | 17 | 17 | 19 | 22 |
| | Maximum | 28 | 28 | 29 | 27 | 24 | 21 | 19 | 19 | 21 | 21 | 23 | 26 |
| | Minimum | 17 | 18 | 18 | 17 | 14 | 14 | 13 | 13 | 13 | 14 | 16 | 17 |
| Average Humidity (%) | | 84.6 | 81.1 | 80.4 | 84.1 | 88.8 | 89.9 | 89.5 | 92.1 | 88.9 | 87.4 | 83.7 | 82.5 |

Source: Situación de la Economía Peruana

## 1-2 Population and Racial Composition

### 1-2-1 Population

According to the census conducted in June 1972, Peru's population was 14,456,000, which meant that there had been an average population increase of 3.1% annually since the previous census of 1961. In South America, Peru is the country with the fourth largest population, following Brazil, Argentina and Colombia. During the first half of the 1970s the average yearly population increase is estimated at 2.9%, and thus in 1976 the population is estimated to have been 16 million.

Approximately 62% of the total population is classified as "urban," and the tendency for the population to concentrate in the cities becomes stronger each year. As for the regional distribution of population, 47% is in the coastal region, 43% is in the mountain region, and 10% is in the eastern forest region. Thus, in contrast to the sparsely settled eastern forest region, one seas a clear tendency for the population to concentrate in the coastal cities.

The population of the capital area (which includes the port of Callao) is approximately 3.3 million, which means that about 23% of the total population of the country is concentrated there. Table 2-3 shows trends in total population growth; Table 2-4 indicates regional distribution of population; Table 2-5 shows population trends in selected major cities; and Table 2-6 shows population trends by province.

### 1-2-2 Racial Composition

According to census figures, Peru's "racial composition" is Indios 49%; persons of "mixed blood" (Mestizos) 37%; Europeans and Criollos (persons of European ancestry born in the New World) 12%; and "others" 1%. Compared to most other Central and South American countries, Peru is characterized by the high ratio of Indios. The latter reside mainly in the Andean and eastern forest regions, and live under poor economic conditions. They are heirs both "racially" and culturally of the native Indian inhabitants who lived in the country before the arrival of the Spaniards. Among the Indios are many who only one or the other of two indigenous languages, Quechua and Aymara. The majority, however, are able to speak the official language Spanish to a certain extent. Among the "Europeans," those of Spanish or predominantly Spanish descent are the most numerous, and there has been in Peru a strong infusion of Western European culture. The so-called Mestizos have mixed European and Indio ancestry, and the 1% of "others" are mainly persons of Japanese or Chinese ancestry.

## Table 2 - 2 Regional Variation in Rainfall

( Unit: mm )

| City | | Monthly Rainfall | | | | | | | | | | | | Yearly Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | |
| Costa | Piura (Northern Region) | 0 | 0 | 6.72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.72 |
| | Lima (Central Region) | 0 | 1.50 | 0 | 0.30 | 1.40 | 0.96 | 0.20 | 2.45 | 6.15 | 2.30 | 0.75 | 0 | 16.01 |
| | Tacna (Southern Region) | 0 | 0 | 0 | 0 | 0 | 0 | 32.00 | 17.60 | 31.66 | 3.40 | 0.80 | 0 | 85.46 |
| Sierra | Cajamarca (Northern Region) | 114.50 | 113.50 | 179.00 | 123.30 | 11.00 | 16.00 | 1.00 | 4.50 | 23.00 | 64.00 | 90.00 | 105.50 | 845.30 |
| | Huancayo (Central Region) | 183.80 | 114.00 | 144.00 | 69.90 | 13.00 | 2.30 | 0 | 19.80 | 32.30 | 40.10 | 62.10 | 96.60 | 777.90 |
| | Cuzco (Southern Region) | 237.70 | 161.60 | 129.00 | 40.30 | 1.00 | 0 | 0 | 6.50 | 62.95 | 42.70 | 77.13 | 154.75 | 913.63 |
| Selva | Iquitos | 360.60 | 226.80 | 399.30 | 213.10 | 205.40 | 60.60 | 155.10 | 101.80 | 118.70 | 119.00 | 238.90 | 307.70 | 2,507.00 |
| | Tingo Maria | 759.80 | 446.50 | 598.30 | 333.40 | 82.80 | 150.10 | 154.00 | 116.60 | 191.20 | 215.30 | 264.20 | 251.50 | 3,599.40 |

Source: Ministerio de Economia y Finanzas (1973)

Table 2 - 3 Growth Trends in Total Population

(Unit: 1,000 persons)

| | 1940 | 1961 | 1972 | Average Yearly Increase (%) | |
|---|---|---|---|---|---|
| | | | | 1940–61 | 1961–72 |
| Census Population | 6,208 | 9,907 | 13,572 | 2.3 | 2.9 |
| Corrected Population | 6,680 | 10,319 | 14,456 | 2.1 | 3.1 |
| Urban Population | 2,197 | 4,698 | 8,087 | 3.7 | 5.1 |
| Population of Capital Area | 645 | 1,846 | 3,317 | 5.1 | 5.5 |

Note: Figures for "Corrective Population" are those officially issued by the government.
Source: Oficina Nacional de Estadistica y Censos.

Table 2 - 4 Regional Population Distribution

(Unit: %)

| | | 1940 | 1961 | 1972 | 1990 (Estimate) |
|---|---|---|---|---|---|
| Administrative Division | North Region | 34.2 | 33.7 | 30.1 | – |
| | Central Region | 26.1 | 23.1 | 21.5 | – |
| | Capital Region | 9.9 | 18.4 | 24.4 | – |
| | Southern Region | 27.1 | 21.5 | 18.6 | – |
| | Eastern Region | 2.7 | 3.3 | 5.4 | – |
| | Total | 100.0 | 100.0 | 100.0 | – |
| Topographical Division | Coastal Region | 28.0 | 38.0 | 47.0 | 55.0 |
| | Mountain Region | 65.0 | 53.0 | 43.0 | 35.0 |
| | Forest Region | 7.0 | 9.0 | 10.0 | 10.0 |
| | Total | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Oficiana Nacional de Estadistica y Censos

Table 2 - 6 Population of Major Cities

(Unit: 1,000 persons)

| | 1940 | 1961 | 1972 | Average Yearly Growth (%) | |
|---|---|---|---|---|---|
| | | | | 1940–61 | 1961–72 |
| Capital Region | 645 | 1,846 | 3,317 | 5.1 | 5.5 |
| Arequipa | 77 | 159 | 306 | 3.5 | 6.1 |
| Trujillo | 37 | 103 | 243 | 5.0 | 8.1 |
| Chiclayo | 32 | 96 | 191 | 5.4 | 6.5 |
| Chimbote | 4 | 60 | 160 | 13.4 | 9.3 |
| Piura | 28 | 72 | 127 | 4.6 | 5.3 |
| Cuzco | 41 | 80 | 121 | 3.3 | 3.8 |
| Huancayo | 27 | 64 | 116 | 4.2 | 5.6 |
| Iquitos | 32 | 58 | 112 | 2.9 | 6.2 |
| Other | 5,757 | 7,781 | 9,763 | 1.4 | 2.0 |
| Total | 6,680 | 10,319 | 14,456 | 2.1 | 3.1 |

Source: Oficiana Nacional de Estadistica y Censos

Table 2 - 6 Population Trends by Department

(Unit: 1,000 persons)

| Department | Population Trend | | |
|---|---|---|---|
| | 1940 | 1961 | 1972 |
| AMAZONAS | 65 | 118 | 213 |
| ANCASH | 425 | 583 | 755 |
| APURIMAC | 258 | 288 | 321 |
| AREQUIPA | 263 | 389 | 561 |
| AYACUCHO | 359 | 411 | 479 |
| CAJAMARCA | 494 | 747 | 957 |
| CALLAO | 82 | 214 | 332 |
| CUZCO | 487 | 612 | 751 |
| HUANCAVELICA | 245 | 303 | 347 |
| HUANUCO | 234 | 329 | 432 |
| ICA | 141 | 256 | 373 |
| JUNIN | 429 | 521 | 720 |
| LA LBERITAD | 383 | 582 | 808 |
| LAMBYEQUE | 193 | 342 | 533 |
| LIMA | 828 | 2,031 | 3,595 |
| LORETO | 169 | 337 | 541 |
| MADRE DE DIOS | 5 | 15 | 25 |
| MOQUEGUA | 34 | 52 | 78 |
| PASCO | 90 | 112 | 185 |
| PIURA | 409 | 669 | 888 |
| PUNO | 548 | 686 | 813 |
| SAN MARTIN | 95 | 162 | 234 |
| TACNA | 36 | 66 | 100 |
| TUMBES | 26 | 56 | 79 |

Source: Atlas

## 1-3 Economic Environment

### 1-3-1 Economic Structure

A characteristic of Peru's economy is the existence, on the one hand, of a modern industrial sector which is typified by the export-oriented mining industries, and the parallel existence, on the other hand, of traditional food production methods and small and medium-scale industries with an extremely low productivity. Between the modern and traditional sectors of this dual structure there is very little linkage. This types of dual structure was built up over several countries, and between 1960 and the present there has been very little change in the dual structure itself, as economic changes that have occurred have for the most part taken place only within the framework of this structure. Since investment of domestic and foreign capital have concentrated in the modern sector oriented largely toward the export of primary products, there has been a development of financial and trading enterprises connected with this sector. On the other hand, manufacturing industries are of the import-substitution type and have been able to take root only in the very restricted domestic market. The food-producing sector of agriculture has been entirely left behind. The following discussion will indicate ways in which they sharply defined dual structure of a modern and a traditional sector penetrates the various areas of the economy.

First, to consider agriculture, in spite of the fact that more than 40% of the domestic labor force consists of persons engaged in agriculture, agricultural production contributes only 12 ~ 13% of the gross national product, and we thus see that labor productivity is markedly low in comparison with non-agricultural sectors. Out of a total national land area of 1.25 million $km^2$, 300 thousand $km^2$ are being used for agricultural purposes. Of this latter figure, only 30 thousand $km^2$ is cultivated, the remainder being pasture land in the mountain region. In the coastal region, which is mainly desert, plantations of sugar cane, cotton, etc., are in operation on land which is suitable for irrigation, and provisions are made for the supply of financing and such investment goods as fertilizer and pesticides. Of the farming population, approximately one person in four is regularly employed on these plantations. The plantations furthermore provide jobs during the busy seasons to about 15% of the total farming population who come as seasonal laborers. Compared to the relatively modern plantation methods on the plantations, food production is in general not blessed with such fertile soil and is primitive in its technical aspects. It is not accorded the necessary facilities for the supply of financing and capital goods.

Mining heads the means of earning foreign exchange and accounts for more than 50% of total exports. It also contributes importantly to government revenues. With respect to employment of labor, however, the mining sector in 1972 absorbed only 1.5% of the working population.

As for fisheries, as indicated in the fact that Peru is one of the world's few countries that produce large quantities of fish meal, there is an export-oriented modern sector which has developed mainly around the catching and processing of anchovies. On the other hand, the traditional sector, centering around the catching of fresh fish for consumption without processing stands in marked contrast. Catches for the purpose of making fish meal and fish oil are some 10 times the volume of catches for immediate consumption.

Peru's manufacturing industry is still relatively undeveloped. Approximately one-fourth of manufacturing production by value consist of the output of processing enterprises which aim at the export of minerals, sugar, fish meal, and the like. A further one-fourth is accounted for by the basic capital goods sector for the manufacture of such materials as steel, cement, and fertilizer. The rest of manufacturing production consists of consumer goods like processed foods, textiles, etc. If we look at manufacturing in terms of the modern and traditional sectors, we see that the modern sector accounts for approximately 2/3 of production by value but employes only 1/3 of all workers engaged in manufacturing. On the other hand, traditional enterprises, most of which taken individually have no more than 5 employees, account for 2/3 of the manufacturing population. The combined value of their production is, however, only 1/3 of the total. In this way, then, there is a sharp differential in productivity between the two sectors, and the wage differential is also great. With respect to Peru's manufacturing enterprises, it may be said that not only is there a lack of mutual linkage, in terms of sales routes for finished products or the supply of capital goods, between the modern and traditional sectors, but that such linkages are weak even within each of these sectors taken separately.

The modern sector looks abroad for the supply of capital installations and many raw materials and is also very largely oriented toward the sale of its finished products abroad. For more than 20 years import-substitution policies have been promoted, but these have often had incomplete results, as in the case of automobile industry, where these policies have ended with the development of enterprises which assemble imported parts and are protected by customs barriers. Thus it would be difficult to say that capital goods enterprises based on domestic industry have yet been firmly established.

The construction industry has a great impetus given to its development by the trend toward concentration of the population in cities, a trend which became especially noticeable in the period following the Second World War. This industry is worthy of note for its role as a provider of employment for unskilled workers.

The above-mentioned dual structure of the economy is also marked in such tertiary industries as finance, trade, and services. For example, financial organizations represent a high degree of concentration and have only limited roles as financial intermediaries between modern and often oligopolistic modern enterprises, providing necessary funds for the modern sector but neglecting the traditional sector. Trading enterprises, as in the case of manufacturing industries, present a situation whereby, on the one hand, large-scale and modern wholesale and retail establishment give employment to only a relatively very small number of persons in the modern sector, while on the other hand the greatest number of persons engaged in trade are working in very tiny enterprises. In the service sector, approximately half of those engaged in this sector and household servants or helpers.

As we have seen above, the dual structure is very marked in all branches of the Peruvian economy, and it is clear that due to the existence of this dual structure economic growth is restricted. As a means for moving toward greater economic development in the future, concentrated and priority efforts should be given to those areas of the economy in which the results of linking various domestic economic activities move closely to one another promise to be most effective. By such a process the integration of the dual structure should be aimed at. It is desirable that assistance from Japan should be aimed in this direction.

### 1-3-2 Economic Conditions after the Establishment of the Military Government

Peru's military government, with General Velasco as president, had its start as the result of a revolution in October 1968. The new government, which inherited the emergency financial policies of the former Belaúnde government, succeeded in putting the economy in better shape through a series of emergency stabilization measures which included a 45% devaluation of the currency, limits on credit expansion, direct government controls on foreign trade, emergency tax measures, and government-established prices for items considered to be daily necessities. During the five years between the assumption of authority by the new government and 1973, Peru's economy saw a relatively continuous and smooth development. Exports increased yearly, and the international balance of payments was favorable in all years except 1971 under the influence of depressed mineral and fish meal prices and a prolonged strike in some of the major mines. Over the period as a whole, reserves of foreign exchange increased satisfactorily, and the favorable exchange balances for the various years in question were as follow: $42 million in 1969, $25 million in 1970, $9 million in 1972, and $94 in 1973.

After 1974, the Peruvian economy, which had up to that time managed to develop smoothly as outlined above, encountered a number of difficult conditions. In 1974 imports rose sharply due to the global rises in the price of oil and foodstuffs occasioned by the "oil crisis," while exports were stagnant due to the

recession in the industrially advanced countries. The balance of payments plunged to a negative figure of $420 million, from a positive figure of $16 million for the previous year. Moreover, from the end of 1974, there was a drastic fall in the price of sugar (one of Peru's main exports), there was a sharp decrease in catches of anchovies (the raw material for fish meal) due to a change in ocean currents and over-fishing in previous years, and there was also a drop in the price of copper, another of Peru's major exports. As a result, the balance of trade in 1975 hit a record negative figure of $1.11 billion. This imbalance in imports and exports came to affect domestic production activities, bringing inflation and production cuts and pushing low income-earners into very straitened circumstances.

In August 1975, President Velasco was ousted in a bloodless coup d'etat and a new administration came into being, with Morales, another military man but one belonging to a more moderate faction, as president. The Morales government, while "following the line of socialist revolution," made clear its intention of implementing policies that would attach due importance to the economy, and announced comprehensive policies for overcoming the economic crisis which aimed specifically at such matters as cutting government subsidies, adjusting wages and prices, improving the balance of payments, and increasing government revenues. After July 1976 a generous currency devaluation was carried out, and after September 1976 a "mini-devaluation" system was introduced in the efforts to regulate the economy. Nevertheless, the Peruvian economy persisted in showing no signs of an upturn, and red-figure balances of payments continued: $510 million in 1975, $369 million in 1976, $2 million in 1977. Inflation rates were 24% in 1975, 45% in 1976, and 37% in 1977.

Influenced by a drastic austerity policy designed to curb inflation and improve the balance of payments, the Peruvian economy came to stagnate. The 1975 GDP (at 314 billion soles) represented a 3.3% increase over the previous year; the 1976 GDP (at 324 billion soles) represented an increase of 3.0% over the previous year; while the 1977 GDP (at 320 billion soles) represented a 1.2% decrease.

Under these conditions, foreign currency reserves decreased from $1 billion in 1974 to $500 million at the end of 1977. The Peruvian government requested a $300 million loan from the International Monetary Fund and this was approved by the IMF Executive Board at the beginning of September 1977, with the following conditions attached:

(1) improvements in the financial situation of public corporations
(2) decreases in subsidies
(3) restrictions on domestic credit
(4) keeping price rises of consumer goods to within set limits (within 40% during 1979)
(5) flexible and gradual changes in the exchange rate to reflect the actual strength of the currency

In the meantime, outstanding foreign debts has swollen from $4.1 billion at the end of 1977 to approximately $8.0 billion at present ($6.0 billion of the latter sum in the form of government-contracted debts). $1.54 billion of combined principal and interest are due for repayment in 1979, and $1.16 billion will be due in 1980. The debt service ratio of 70 ~ 90% is far beyond the "crisis line" of 20%.

As stated before, a characteristic of Peru's economy is the lack of organic links between the modern sector (which has overseas connections) and the traditional sector with extremely low productivity. Consequently, insofar as economic development is not furthered in a direction whereby this dual structure is dissolved or diminished, the modern sector will be active so long as overseas market conditions are good, but if the overseas-related sector would once undergo a depression, economic activity as a whole will tend to stagnate. Trends with respect to economic conditions under the current military administration are a repetition of themes which have gone before.

It must be pointed out that the so-called socialist economic policies pursued following the appearance of the recent military administration have not been working in the direction of dissolving the dual economic structure. Prior to the military revolution of October 1968, land ownership rights and ownership of export and financial enterprises were controlled by certain foreign enterprises and by a part of Peru's native elite. Then, between 1969 and 1973, a rapid succession of nationalization measures aimed at putting the major means of production in the hands of the state. As a result, sugar cane and other large-scale plantations in the coastal region, foreign enterprises including the International Petroleum Corporation (IPC) and the Cerro de Pasco mines and major banks were nationalized, and with the great changes that thus took place in the pattern of ownership of the means of production one saw a marked retreat in the influence of the foreign enterprises and of the native elite. The participation of workers in management was also partially introduced. Consequently, not only did the number of public enterprises increase, but the state became the dominant force in Peru's economy.

However, as this socialist type policy was limited to the modern sector, the state enterprises came to be obliged to cope with various difficult problems as a result. Looking at the mining industry, the International Petroleum Corporation (IPC), which had previously enjoyed overwhelming influence with respect to the domestic exploitation of oil and oil sales, was nationalized in November 1968 immediately after the revolution, and the government-operated Petro Peru Corporation became the base for the petroleum industry. The Cerro de Pasco Corporation, which had been strong in copper-mining circles, was expropriated in 1973 and underwent a change of dress, so to speak, to become the government-operated Centromin Corporation. However, at the time of nationalization both these enterprises were in need of expensive renovations of their facilities, and the government was unable to enjoy the income from exports that it had expected in the initial periods. It should be mentioned that nationalization measures were not applied to the Southern Peru Corporation (a company based on United States capital and at present the largest copper-producing enterprise in Peru) or to the Belco Corporation (a foreign-based petroleum firm).

Similarly, in the areas of manufacturing, banking, railroads, telephones and telegraphs, electricity, marketing of cotton and fish meal, etc., nationalization measures were carried out but this did not mean that all foreign capital was nationalized, and a considerable number of foreign-based enterprises, especially in the manufacturing and service industries, remain. Among the member countries of the Andean Community, Peru maintains the strictest controls (of various kinds) on foreign investments. It is often pointed out, in particular, that the rule that allows repatriation of profits only within a ceiling of 14% of the invested sum is a great impediment to the promotion of investments from abroad. In certain cases where Peru desires to rapidly develop modern industry, the introduction of advanced technology may be made difficult by this stipulation which, in other words, may be a restrictive factor with respect to technological development.

The application of socialist policies to the agricultural sector was based on the agrarian reform law (Ley de Reforma Agraria) enacted in 1969. This law limits land holdings in the coastal region to 150 ha, and in the mountain and eastern forest regions to 30 ~ 35 ha, and may be said to represent the most extreme agrarian land reform in South America. By this way, the expropriated sugar cane plantations and other large agricultural tracts were changed into cooperative unions centered around the agrarian workers. In the coastal region these are called CAP (Cooperativas Agrarians de Producción), while in the mountain region they are called SAIS (Sociedades Agrícolas de Interés Social).

The land reform aimed at freeing 10 million hectares and liberating 300 thousand tenant farmers. In practice, however, the reform has affected only 4.8 million hectares and benefited 200 thousand former tenants. In the case of large farm units, the reorganization has not gone beyond the formation of cooperatives of the farm workers and has not produced new owner-cultivators. Neither has this reorganization led to renovations in production methods or technology. It is also important to note that the majority of Peru's agrarian population has not received benefits of any kind from the agrarian reform. Approximately 60% of Peru's agrarian population are so-called owner-cultivators in possession of some amount of land, but these persons have not shared in the benefits of the land reform. Neither have the estimated 15% of the farming population who are seasonal laborers been designated to receive the benefits of the land reform. As for contributions to government revenues, farm units are in some cases, subject to pay an income tax, as before. However, after-tax profits from the collective farms are distributed among the collective members, and one may say that there has been very little effect from the land reform with respect to increasing government revenues. Rather, government expenses for purposes of supervision and guidance have tended to increase.

Regarding the influence of the socialist policies on government revenues and expenditures, very great repercussions have been brought by the yearly increases in subsidies to meet the red-ink figures produced by the many public corporations which were established in conjunction with the nationalization measures. In 1975 the sum required to meet these deficits came to nearly 15% of total government expenditures, and together with increases in other subsidies and in national defense costs, represented a major element in the rapidly increasing ordinary expenditures of the state. Because there have been no reforms in the tax structure characterized by low price-flexibility that had existed from an earlier time, ordinary expenditures. At the accounting stage, government finances have been in a deficit situation continuously from the end of 1973 to the present, and as a result it has been necessary to look to both domestic and foreign sources for loans to cover not only capital expenditures but also to cover the deficit in ordinary accounts.

It is clear that the crisis which the Peruvian economy is facing is due, over the short run, to the financial structure. The fact that sources of capital expenditure rely entirely on loans means that any increases in the volume of capital expenditures are greatly restricted. The ratio of gross fixed capital formation to total

government expenditures reached a peak of 15.7% in 1974 and fell to 11.6% in 1977. This drop in the public sector's capital formation ratio, which exercises direct control over such areas as principal export industries, heavy industry and infrastructure, has had a very great influence on production. In other words, not only has export strength declined due to the lesser frequency of needed renovations carried out on production and infrastructure facilities, but import substituion industries have also stagnated. Also, various types of obstacles to production are brought about due to delays in improvements affecting roads and water and electricity for industrial use.

Along with the negative effects which this chronic fiscal deficit exercises on production, one cannot overlook the effects on demand. Since the greatest part of the sum used to fill the fiscal deficit relies on loans from the central bank (Banco Central de Reserva del Peru), new issues of domestic currency are appearing at a rapid pitch. As a result, import demand is aroused, and one sees a rapid increase in imported articles. Although it must be admitted that the period we are here considering coincides with the period of worldwide inflation following the "oil crisis," the more than doubling of import volume in only two years between 1973 and 1975 cannot be conceived of except in terms of a vigorous import demand. The raising of foreign currency to settle accounts for imports during the first half of the 1970s was accomplished mostly through medium- and long-term foreign loans. However, by 1975 the accumulation of foreign debts had increased to nearly three times what it had been three years earlier, and the contracting of new medium- and long-term loans became difficult. As a result, there was no alternative to eating into foreign reserves, and at the end of June 1978 the foreign currency assets of the Banco Central de Reserva were only $292 million, having fallen to only 1/3 of the peak level attained at the end of 1974. If one looks at the balance of foreign currency assets and liabilities in the banking sector as a whole, the net liabilities are some $1,212 million.

Due to the increased currency issues, domestic demand is stimulated, but since this is not being accompanied by a sufficient capital formation, production increases cannot keep pace, and a pernicious inflation is continuing as a result of the gap between supply and demand. This inflationary course aggravates a structure of government finance which relies on a tax system with low price flexibility, thus creating a "vicious circle." However, in September 1978 the Peruvian government succeeded in introducing a loan from the IMF on the condition that it would enforce strict policies of suppressing total demand. Moreover, at the conference of creditor nations held in Paris in November 1978, Peru was granted debt relief with respect to payments falling due in the coming three years. In this way Peru has been able to have a breathing space vis-a-vis the difficult situation it currently faces with respect to the balance of payments.

Seen over the long run, Peru's economic make-up is by no means poorly suited for a satisfactory international trade balance. In regard to the export structure, there has been considerable diversification in exported items, so that no single item represents more than 30% of the total value. Thus, even if there should be a drastic deterioration in international market conditions affecting one or another exported item, the crisis will be dispersed to a considerable degree. Also, it must be mentioned that from 1977 through March 1978 new main and branch pipelines entered into operation which will facilitate the transport of crude petroleum from oil fields in the interior of the country and whose significance for future economic development in extremely great. As a consequence, what had been a yearly level of oil production equivalent to 30 million barrels of crude doubled during 1978 to nearly 60 million barrels. Peru, which had previously been a net importer of oil, in 1978 succeeded in reducing its level of imports to only 10% of the previous volume. On the other hand, during the same year exports increased to nearly four times the previous volume so that with 1978 as a dividing line Peru switched to being a net oil exporting country. Judging from confirmed petroleum reserves, it should not be difficult for Peru to raise its yearly oil production to 80 million barrels, and it should be possible to export 30 million barrels, in which case one may expect a great improvement in the balance of payments.

Since Peru is a potentially rich country and one favored by natural resources, provided that the policy of repressing total demand is successful it should by no means be impossible for the country to recover in a short time from the difficult economic circumstances that are presently being encountered. However, to take a more long-term view, policies aimed at repressing total demand do no more that treat, so to speak, the symptoms of the ailment. The Peruvian government should, therefore, at an early date undertake improvements in the country's financial structure. Also, and of very basic importance, it will no doubt be necessary to push development referred to earlier.

We may say that following the inauguration of the military administrations the various socialist policies have succeeded in putting into the hands of the state rights of ownership of the means of production in the fields of manufacturing, agriculture, and infrastructure. However, the nationalized areas of the economy

are sharply limited to the modern sector which lacks organic links with the traditional sector. The latter sector has not received any of the benefits of the nationalization measures, and without receiving stimuli to technological innovation has been left behind in a state of very low productivity. Also, because measures were not taken to insure an effecting mobilization of domestic savings, following the nationalization measures and the accompanying drop in foreign investment it became very difficult to raise the needed funds to renovate production facilities in the modern sector. In the future, in addition to the need for still greater efforts at self-help on the part of the Peruvian government, what will be required of countries giving assistance to Peru is not only cooperation which will strengthen production facilities in the modern sector, but also, at the same time, the provision of types of aid which can be linked to raising technology and productivity in the traditional sector, especially among small-scale farmers. If a raising of the standard of living of the traditional-sector rural population can be realized, increases in rural incomes will have the effect of stimulating demand for manufactured products, making it possible for the modern and traditional sectors to develop together, mutually strengthening one another. In the same sence, it is also strategically important that there be a development of manufacturing industries in farming villages and a development of small- and medium-scale industries in the towns and cities.

### 1-3-3 Structure of Industry

Peru's gross domestic product showed a sustained growth of over 6% annually for several years after the beginning of the 1970s, but this rate fell off after 1975 under the influence of the "oil crisis," and in 1977 there was a minus growth. In 1977, 22.1% of the GDP represented primary industries (agriculture and stockraising, fisheries, mining), 29.9% represented secondary industries (manufacturing, construction), and 48.0% represented tertiary industries. Manufacturing industries centering around textiles and food and beverage products accounted for 24.7% of the GDP, but persons engaged in manufacturing accounted for only 13% of the working population. On the other hand, agriculture, stockraising and fisheries accounted for 13.3% of the GDP but absorbed 42.3% of the working population. While these latter industries are very major ones in Peru, successive governments have given priority in policy-making to promoting capital-intensive industries and this has aggregated the gap in productivity between the two sectors of the economy. It should be noted in this regard that it is difficult, without very substantially developing industries in the modern sector (which employ relatively few people in relation to production results), to implement policies that will tend to decrease the agricultural population.

With respect to the fishing industry, in 1970 this was an extremely important sector of the economy that accounted for over 30% of total exports. After 1973, however, due to changes in ocean currents and the effects of unrestrained catches in the past, hauls of anchovies (the raw materials for fish meal and fish oil) decreased, and in 1977 fish products accounted for little more than 10% of total exports.

Mining accounts for 8.3% of GDP and absorbs only 1.5% of the employed population, but it contributes most importantly to exports, accounting for nearly 60% of the total. Extensive resources of copper, iron, lead and zinc have been confirmed especially in the Andean mountain region, and one may expect that their development, as in the case of the development of petroleum resources in the eastern forest region, will contribute importantly to Peru's future economic progress. Table 2-7 shows trends in GDP by type of industry, and Table 2-8 shows distribution of labor force by industry.

### 1-3-4 Employment Issues

Table 2-9 shows trends in the percentage of unemployed among that portion of the population expected to be engaged in economic activities. This latter portion of the populace was estimated in 1978 at approximately 5.3 million, or approximately 30% of the total inhabitants. Within this figure, 324 thousand were totally unemployed, making for an unemployment rate of 6.2%.

However, the seriousness of Peru's employment problem comes clearly to light in the high rate of "underemployment." The number of "underemployed," who because they cannot find steady employment work less than 8 hours per day or who can only find work at less than the legally set minimum wage, continued to be more than 40% after 1974 and reached a level of nearly 50% in 1978.

## Table 2 - 7 Gross Domestic Product by Industry

| | 1970 price (Unit: M. Soles) | | | | Share (%) | | | | Yearly Growth Rate (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | '74 | '75 | '76 | '77 | '74 | '75 | '76 | '77 | '74 | '75 | '76 | '77 |
| Agriculture and stockraising | 39,422 | 39,816 | 41,130 | 41,152 | 13.0 | 12.7 | 12.7 | 12.9 | 2.3 | 1.0 | 3.3 | 0.1 |
| Fisheries | 3,093 | 2,623 | 3,145 | 2,897 | 1.0 | 0.8 | 1.0 | 0.9 | 35.9 | −15.2 | 19.9 | −7.9 |
| Mining | 21,026 | 18,734 | 20,401 | 16,501 | 6.9 | 6.0 | 6.3 | 8.3 | 3.7 | −11.0 | 8.9 | 29.9 |
| Manufactuaring | 76,965 | 80,582 | 83,966 | 78,844 | 25.3 | 25.7 | 26.0 | 24.7 | 7.5 | 4.7 | 4.2 | −6.1 |
| Construction | 15,927 | 18,603 | 18,082 | 16,690 | 5.2 | 5.9 | 5.6 | 5.2 | 22.0 | 16.8 | −2.8 | −7.7 |
| Government Services | 23,076 | 24,114 | 24,596 | 25,285 | 7.6 | 7.7 | 7.6 | 7.9 | 2.3 | 4.5 | 2.0 | 2.8 |
| Electricity, Gas, Water | 124,370 | 129,557 | 132,239 | 128,360 | 40.9 | 41.3 | 40.9 | 40.1 | 7.1 | 4.2 | 2.1 | −2.9 |
| Total | 303,879 | 314,029 | 323,559 | 319,729 | 100.0 | 100.0 | 100.0 | 100.0 | 6.9 | 3.3 | 3.0 | −1.2 |

Source: El Peruano

Table 2 - 8 Distribution of Labour Force by Industry (1972)

| Industry | Employed Population | Share |
|---|---|---|
| | (1,000 persons) | % |
| Agriculture, Fishing & Forestry | 1,529 | 42.3 |
| Mining | 53 | 1.5 |
| Manufacturing | 475 | 13.1 |
| Construction | 169 | 4.7 |
| Commerce | 395 | 10.9 |
| Finance | 45 | 1.3 |
| Services | 800 | 22.1 |
| Other | 147 | 4.1 |
| Total | 3,613 | 100.0 |

Source: ILO Yearbook of Labour Statistics

Table 2 - 9 Trends in Economically Active Population and Unemployment Rates

| | 1974 | | 1975 | | 1976 | | 1977 | | 1978 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1,000 persons | % | 1,000 persons | % | 1,000 persons | % | 1,000 persons | % | 1,000 persons | % |
| Economically Active Population | 4,667 | – | 4,818 | – | 4,972 | – | 5,125 | – | 5,287 | – |
| Open Unemployment | 187 | 4.0 | 236 | 4.9 | 259 | 5.2 | 297 | 5.8 | 324 | 6.2 |
| Under-employment | 1,951 | 41.8 | 2,043 | 42.4 | 2,178 | 43.8 | 2,465 | 48.1 | 2,515 | 48.7 |

Source: Ministerio de Trabajo

If we look at the employment situation in the capital region of Lima, where approximately 30% of the economically active population is concentrated, we see that the unemployment rate increased greatly from 6.5% in 1976 to 8.7% in 1977. This principally due to a sharp decrease in public works projects (reflecting depressed economic conditions generally) and to the depressed state of the construction industry, which employs large numbers of unskilled laborers on a short-term basis. Table 2-10 shows the unemployment situation in the capital region.

1-3-5 Public Finance

As mentioned previously, the greatest problem area in Peru's public finance is its chronic deficit structure. Following the installation of the Velasco military government in 1968 there was a temporary reduction in the deficit, but in the 1970s the government continued to record large deficits, which by 1976 corresponded to 30.5% of annual government expenditures, increasing to 33.9% in 1977.

Among the major factors contributing to the fiscal deficit, we should remain the very high ratio (75% ~ 85%) of current to total annual expenditures, and also the very large sums disbursed by the government to subsidize the price of oil and major foodstuffs. The fact that the ratio of current expenditures is so high means that there is a corresponding insufficiency of resources which can be directed to capital expenditures. This makes for a financial structure in which the central bank has no choice but to increase its degree of reliance on

Table 2 - 10 Unemployment Situation in Capital Region

| | 1976 | | 1977 | |
|---|---|---|---|---|
| | 2 – 4 | 11 – 12 | 3 – 4 | 6 |
| Manufacturing | 6.3% | 8.2% | 8.0% | 8.6% |
| Construction | 5.8 | 9.0 | 13.2 | 15.3 |
| Commerce | 4.7 | 3.4 | 5.0 | 5.5 |
| Services | 4.1 | 3.0 | 3.9 | 3.6 |
| Total | 7.2 | 6.5 | 8.2 | 8.7 |

Source: Ministerio de Trabajo

foreign currency, loans. The subsidies which the government provides for food and petroleum products and which are intended to forestall drops in the purchasing power of low income earners due to inflation more than doubled in each category between 1973 and 1976 and have come to be a major factor in the pressure being exerted on Peru's financial balance.

The 1978 budget expanded greatly by approximately 44% (a figure which admittedly reflects inflation) over 1977. Deficits in the account of current revenues and expenditures have increased yearly since 1975, but due to a large-scale rise in current receipts during 1978 as a result of increased taxes, a reduction in the deficit from 39 billion soles in 1977 to 22 billion soles in 1978 was planned. In this way it has been possible to plan an increase in capital expenditures of roughly the same scale as the decrease in the deficit of the current account, with the result that in 1978, at the level of total government revenue and expenditure, the overall deficit was, as in the previous year, expected to be in excess of 70 billion soles. However, due to the fall in the value of the currency, the deficit decreased in real terms. It is planned to cover this deficit by raising 65.7 billion soles from domestic financial institutions and the remainder from foreign loans. Table 2-11 shows the financial situation of Peru's central government, and Table 2-12 shows percentage trends in government expenditures (as broken down into current and capital categories) as well as trends in the ratio of current budgetary deficits.

Table 2 - 11 Central Government Operations

(Unit: M. Soles)

| | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 Projected Figures |
|---|---|---|---|---|---|---|
| Current Revenue | 53,363 | 68,560 | 87,896 | 111,397 | 154,052 | 261,877 |
| Current Expenditure | 52,495 | 62,444 | 90,507 | 122,718 | 193,092 | 284,054 |
| Current Account Surplus or Deficit | 868 | 6,116 | –2,611 | –11,321 | –39,040 | –22,177 |
| Capital Expenditure | 15,430 | 20,206 | 27,980 | 37,640 | 40,103 | 52,790 |
| Overall Financial Balance | –14,561 | –14,090 | –30,591 | –48,961 | –79,143 | –74,967 |
| Internal Financing | 7,403 | 131 | 16,151 | 34,337 | 44,554 | 65,666 |
| External Financing | 7,159 | 13,959 | 14,440 | 14,624 | 34,589 | 9,301 |

Source: Banco Central de Reserva del Perú

Table 2 - 12 Trends in Government Expenditure and Deficit Ratios

(Unit: %)

| | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 (Estimated) |
|---|---|---|---|---|---|---|
| Current Expenditure | 77.3 | 75.6 | 76.4 | 76.5 | 82.8 | 84.3 |
| Capital Expenditure | 22.7 | 24.4 | 23.6 | 23.5 | 17.2 | 15.7 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| Deficit / Annual Expenditure | 21.4 | 17.0 | 25.8 | 30.5 | 33.9 | 22.3 |

Source: Ministerio de Economia y Finanzas

## 2. Current Situation and Trends in Major Industries

### 2-1 Agriculture

The area of Peru's cultivated land is approximately 300 thousand $km^2$, or 2.5% of the total land area. The cultivated land area may be roughly divided into three regions (the coast, the mountains, and the eastern forest), in keeping with differing geographical conditions.

The coastal region contains 25% of the total cultivated land, located in flat areas extending along the course of rivers which empty into the sea on the west. More than 90% of this cultivated land in the coastal region is artificially irrigated, and modern mechanized agricultural methods have been developed in this region.

The mountain region is the high plateau region of the Andes and the cultivated land there accounts for 63% of the total of Peru's cultivated land area. Under conditions of a severe natural environment, mechanization and modernization involve formidable difficulties, and since the greatest part of the cultivated land is not artificially irrigated, the population is mainly engaged in raising crops which rely only on natural rainfall.

The eastern forest region in the Amazon basin contains 12% of Peru's cultivated land area. As in the case of the mountain region, the eastern forest region was not favored by its natural environment for easy modernization and the progress of modernization has been slow. However, it has a climate and topology that are suited to the cultivation of cotton, cocoa, tea, coffee, and tobbaco, and the development of this region may be considered to have a very great significance for the development of Peru's agriculture in the future. Tables 2-13 and 2-14 indicate respectively, the distribution of cultivated land and areas of irrigated land in each of the country's geographical regions.

Table 2 - 13 Distribution of Cultivated Land

(Unit: hectares)

| Administrative Zone | Natural Region | | | |
|---|---|---|---|---|
| | Costa | Sierra | Selva | Total |
| Northern Zone | 407,747 | 361,584 | 63,147 | 832,478 |
| Central Zone | 286,364 | 718,942 | 139,574 | 1,144,880 |
| Southern Zone | 52,590 | 666,274 | 55,458 | 774,322 |
| Eastern Zone | 0 | 0 | 194,614 | 194,614 |
| Total | 746,701 | 1,746,800 | 452,793 | 2,946,294 |

Source: Estadistica Agraria

Table 2 - 14 Irrigated Area in Each Agricultural Region

(Unit: hectares)

| Natural Region | Cultivated land | Irrigated Land | Percentage % | Non-Irrigated Land | Percentage % |
|---|---|---|---|---|---|
| Costa | 746,701 | 739,631 | 99.1 | 7,070 | 0.9 |
| Sierra | 1,746,800 | 332,448 | 18.8 | 1,414,352 | 81.2 |
| Selva | 452,793 | 28,087 | 6.2 | 424,706 | 93.8 |
| Total | 2,946,294 | 1,100,166 | 37.0 | 1,846,128 | 63.0 |

Source: Estadistica Agraria

During the past few years, growth in total agricultural production has not kept pace with population growth, but in the case of food products, such as rice, wheat, maize, and potatoes, production growth has more than kept up with the rate of population increase. Table 2-15 shows trends in the indices of agricultural production.

Table 2 - 15 Agricultural Production Indices

(1961-65 = 100)

| | | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|---|---|
| Agricultural Production | (Total) | 119 | 125 | 124 | 129 | 135 |
| " | (per capita) | 92 | 93 | 90 | 91 | 93 |
| Food Production | (Total) | 130 | 135 | 136 | 143 | 149 |
| " | (per capita) | 100 | 101 | 99 | 101 | 102 |

Source: Food and Agriculture Organization of U.N.

Major agricultural products are those like potatoes, rice, maize and wheat for domestic consumption and those like sugar cane, coffee and cotton for export.

Agricultural products for domestic consumption are cultivated mainly in the mountain region, and the land area used in their production accounts for approximately 50% of the total area of cultivated land in the country. Nevertheless, production has been unable to keep up with growing domestic demand, and in 1977 the import of foodstuffs amounted to $140 million. Agricultural products for export are cultivated mainly in the coastal region and account for 16% of the total cultivated land area in the country. Under the influence of such factors as the instability of international prices and a rise in the price of domestic foodstuffs, the area used for the cultivation of products for export has been decreased. In 1977 the value of agricultural exports was $337 million, or 22.5% of Peru's total exports. Tables 2-16 and 2-17 show trends in production figures any production indices, respectively, with respect to major agricultural products.

Large animals such as cattle and sheep are bred mainly in the mountain region, while household livestock and poultry are raised largely in the coastal region. Overall production figures for livestock and poultry have over the past few years shown a gradual increase, influenced by the favorable trend in the production of eggs and chickens in the central part of the coastal region. Table 2-18 shows production trends with respect to animal food products.

Table 2 - 16 Agricultural Production

(Unit: 1,000 tons)

| | | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|
| Domestic Consumption Crops | Corn | 605.6 | 634.7 | 725.7 | 738.0 |
| | Potato | 1,722.3 | 1,639.6 | 1,667.0 | 1,580.0 |
| | Mandioca | 469.0 | 399.7 | 402.5 | 390.0 |
| | Rice | 494.2 | 536.8 | 570.4 | 575.0 |
| | Wheat | 127.4 | 126.3 | 127.5 | 120.0 |
| Export Crops | Sugar cane | 9,183.6 | 8,958.2 | 8,791.5 | 8,840.0 |
| | Cotton | 256.5 | 226.5 | 164.5 | 200.0 |
| | Coffee | 69.9 | 65.4 | 65.4 | 64.8 |

Source: Ministerio de Agricultura

Table 2- 17 Agricultural Production Indices

(1970 = 100)

| | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|
| Domestic Consumption Crops | Potatoes | 90.3 | 90.3 | 90.7 | 83.4 | 86.5 | 82.0 |
| | Rice | 75.4 | 76.1 | 80.9 | 87.1 | 98.6 | 101.5 |
| | Corn | 95.8 | 95.9 | 85.5 | 105.7 | 144.2 | 148.8 |
| | Wheat | 111.9 | 112.1 | 113.7 | 86.5 | 92.8 | 87.3 |
| | Others | 104.0 | 106.1 | 106.2 | 105.7 | 106.5 | 103.6 |
| | Total | 97.3 | 98.7 | 99.0 | 98.4 | 102.8 | 101.5 |
| Export Crops | Sugar cane | 114.0 | 116.1 | 121.9 | 119.1 | 114.2 | 114.5 |
| | Coffee | 100.0 | 98.5 | 92.4 | 88.9 | 98.3 | 97.7 |
| | Cotton | 94.8 | 100.0 | 99.1 | 81.6 | 69.8 | 74.7 |
| | Total | 101.5 | 104.3 | 104.0 | 94.0 | 88.9 | 91.2 |
| Total | | 98.1 | 99.8 | 100.0 | 97.5 | 100.1 | 99.6 |

Source: Ministerio de Agricultura

Table 2 - 18 Livestock Production

(Unit: 1,000 tons)

| | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|
| Beef | 85.3 | 86.1 | 86.7 | 54.0 |
| Pork | 54.6 | 54.6 | 54.9 | 87.0 |
| Lamb | 21.5 | 21.3 | 21.3 | 22.5 |
| Poultry | 105.6 | 130.0 | 140.0 | 143.0 |
| Milk | 813.1 | 812.8 | 821.3 | 828.0 |
| Eggs | 44.9 | 50.0 | 55.0 | 58.0 |

Source: Ministerio de Agricultura

Prior to the land reform measures begun in the 1960s, three-fourths of Peru's cultivated agricultural lands were owned by only 0.4% of the total number of landholders, while the majority of the farming population were owners of only very small plots of land, if any. Agricultural products for export, such as cotton and sugar cane, were cultivated on a large scale by big landowners, while food products for domestic consumption, such as potatoes, rice, maize and wheat, were cultivated by primitive methods by very small-scale producers and were furthermore dependent in part on imports, to a degree which increased yearly. Table 2-19 indicates percentages of agriculture landholders in relation to percentages of land owned prior to the land reform.

Table 2 - 19 Correspondence between Percentages of Agricultural Landholder and Percentages of Land Owned Prior to Land Reform

| | Percentage of Landholders | Percentage of Cultivated Land |
|---|---|---|
| Large Landholdings | 0.4% | 76 % |
| Medium Landholdings | 16.6% | 18.5% |
| Small Landholdings (under 5 ha) | 83.0% | 5.5% |
| Total | 100 % | 100 % |

Source: Situación de la Economía Peruana

By a land reform law in 1964, the Peruvian government aimed at improving productivity and pushing modernization through the promotion of irrigation planning. Then, on 24 June 1969 the revolutionary military government headed by General Velasco (which had its start the previous year) put into operation the revolutionary "New Land Reform Law" whose aim was to dismantle the traditional system of large landholdings and to plan for a democratic land distribution and improvements in productivity. At the same time it was stipulated, for example, that a part of the compensation to be paid for expropriated land should be invested in manufacturing industries. In this way, then, plans were made to provide a stimulus to the development of manufacturing simultaneously with the agricultural land reform.

The basic points of the new law were the following:

(1) To sweep away the unjust social system by which millions of tenant farmers were unjustly locked in poverty.

(2) In order to plan for agricultural land use of a kind that would correspond to the good of society, to set limits on the size of landholding and to expand and strengthen direct cultivation by small and medium landholders.

With respect to the execution of the reform law, it was further specified as follows:

(1) Together with the provision of guarantees of land ownership on the part of the agricultural population, encouragement is to be given to cooperative organizations (Cooperativas) for the purpose of increasing production and securing sufficient cultivated land to meet the demand of the residents.

(2) In the coastal region, in areas cultivated through the use of irrigation, the present law is applicable to holdings in excess of 150 hectares. However, in the case of pasture lands it is limited to holdings in excess of 1,500 hectares.

(3) In mountain areas and in the eastern forest region, the minimum size limit to which the law is applicable varies between 15 and 55 hectares, depending on the locality.

The land reform has been carried forward by an agency set up specifically to deal with all aspects of the reform (namely, the Dirección General de Peforma), within the Ministerio de Agricultura. The reform measures were first applied to the modern large-scale sugar cane plantations, and by 1973 the liberation of agricultural lands in the coastal region had been virtually completed. Table 2-20 gives an indication of the ways in which expropriated agricultural lands were reapportioned.

Table 2 - 20 Reapportionment of Expropriated Land (1973)

| Type of Reapportionment Unit | No. of Families | Reapportioned Area (1,000 ha) |
|---|---|---|
| Individual Management | 16,959 | 123 |
| Cooperativa | 73,632 | 1,453 |
| Comunidad | 25,734 | 361 |
| SAIS | 33,041 | 1,548 |
| Undesignated | | 1,973 |
| Total | 149,366 | 5,458 |

Source: Situación de la Economía Peruana

With a view to preventing a decline in productivity due to a lack of production technology or a possible lack, on the part of the farming population, of enthusiasm to work on the lands reapportioned in the reform program, the government has put special efforts into the setting up of agricultural cooperative organizations, through the participation and strong guidance of the President's Office and SINAMOS, the national office for assisting "social mobilization." Table 2-21 gives data on the numbers of cooperatives and of their members.

Table 2 - 21 Formation of Agricltural Cooperatives (1973)

| | No. of Cooperatives | No. of Cooperative Members (Total) | Average Members per Cooperative |
|---|---|---|---|
| Costa | 297 | 52,782 | 177 |
| Sierra | 149 | 28,902 | 193 |
| Selva | 31 | 2,418 | 78 |
| Total | 477 | 84,102 | 176 |

Source: Situación de la Economía Peruana

In the mountain region, there are a number of problems, such as linquistic complications and low levels of education, which make the formation of cooperative organizations especially difficult in many cases. To cope with these problems, the government is attempting to carry forward the reform measures by the setting up of special types of collective organizations known as Sociedades Agricolas de Interes Social (SAIS), which receive direct government guidance and participation.

Between 1969 and 1976, some 10.5 million hectares were expropriated by the state, and of this amount 7.04 million hectares passed to the hands of new owners. During the same period, 294,500 households benefited from the land reapportionment.

As stated previously, only about 1/4 of the total farming population benefited from the land reform, and it is important to remember that families in possession of their own land holdings and seasonal farm workers were not subject to receive benefits from the land reforms; application.

## 2-2 Fisheries

Within the area of the Pacific Ocean which lies west of Peru's coast there are points of confluence in which warm currents flowing from the north meet the cold Humboldt Current (also called the Peru Current) flowing from the south. And largely because of these natural conditions, until the early part of the 1970s this ocean area was a rich fishing ground blessed by abundant resources of anchovies, bonito, tuna, mackerel, and species. Catches in 1970 and 1971 exceeded 10 million tons and represented 18% and 15%, respectively, of world fish catches. Over 98% of the Peruvian catch were anchovies, used as the raw material in the production of fish meal, whose total production volume in 1971 was 1.94 million tons, or 45% of the world total. During the same year, exports of fish meal were 1.75 million tons, or 60% of world exports of this commodity. In terms of value, exports of fish meal in 1971 amounted to $272 million, taking the biggest share among Peru's exports. However, after 1972 the anchovy catch fell off sharply as a result of changes in the ocean currents. It amounted to only 1.8 million tons in 1973 and between 3.0 and 3.9 million tons after 1974. In 1977, exports of fish meal amounted to $175 million, and while this represented a share in total exports of only 11.7% (a drop from previous figures), it nevertheless remained an important export item. A major factor, however, in the worsening of Peru's balance of payments in recent years has been the fall in export volume of fish meal. Table 2-22 shows movements in fisheries production.

In May 1973 the government nationalized the fish meal and fish oil industries and established a public corporation for their manufacture, known as PESCA-PERU (Empresa Publica de Produccion de Marina y Aceite de Rescado). The catching and processing of anchovies came entirely within the domain of this new corporation. Exports and domestic sales of fish meal and fish oil had already been carried out since 1970 by a public corporation for the marketing of these products, namely, EPCHAP (Empresa Publica de Comercialization de Harina y Aceite de Pescado). Thus the establishment of PESCA-PERU merely completed the process of state control over the fish meal and fish oil industries, from the stage of ocean hauls through the marketing stage. In the background of series of nationalization measures was the fact that the fisheries sector had had an excess capacity and included a large number of inefficient factories, and also the related fact that the industry had a fragile constitution whereby many of the smaller firms became starved for funds due to the anchovy shortages. It should also be mentioned that recently the government has been engaged in better equipping fishing ports and providing supply networks, and furthermore has been actively giving its support to the promotion of a stronger fishing industry aimed at domestic consumption.

## 2-3 Mining

Peru is one of the world's major mineral resource countries, with a great variety of underground resources which include copper, silver, lead, zinc, iron, and petroleum.

In 1977 the mining sector accounted for 8.3% of the gross domestic product, and although it accounted for only a low 1.5% of the total number of employed persons, it procured approximately $900 million of exports (or more than 50% of the country's total exports) and thus plays an extremely important role in Peru's economy. Table 2-23 shows output of major mineral products.

Table 2 - 22 Fisheries Production

(Unit: 1,000 tons)

| | | | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|
| For Industrial Use | Total Basis | Anchovies | 1,769 | 3,583 | 3,079 | 3,863 | 792 |
| | | Other | 266 | 284 | 38 | 141 | 1,229 |
| | | Total | 2,035 | 3,867 | 3,117 | 4,004 | 2,021 |
| | Fish Meal | Production | 420 | 911 | 706 | 886 | 493 |
| | | Exports | 348 | 629 | 746 | 623 | 410 |
| | | Domestic Consumption | 80 | 115 | 134 | 133 | 118 |
| | | Change in Stocks | −8 | 167 | −174 | 131 | −36 |
| | | Closing Stocks | 46 | 213 | 39 | 170 | 134 |
| | Fish Oil | Production | 39 | 212 | 213 | 104 | 105 |
| | | Exports | 10 | 78 | 129 | 5 | 4 |
| For Human Consumption | | Fresh Fish | 160 | 140 | 125 | 131 | 168 |
| | | Canned Fish | 65 | 83 | 74 | 98 | 145 |
| | | Frozen Fish | 59 | 80 | 74 | 93 | 124 |
| | | Salted Fish | 11 | 16 | 19 | 12 | 11 |
| | | Total | 295 | 319 | 292 | 334 | 448 |

Source: Ministerio de Pesquería
Banco Central de Reserva del Perú

Table 2 - 23 Production of Major Mineral

| | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|
| Copper (tons) | 211,593 | 180,999 | 220,269 | 350,400 |
| Lead ( " ) | 165,798 | 154,168 | 161,066 | 169,150 |
| Zinc ( " ) | 378,029 | 364,915 | 382,693 | 388,950 |
| Silver (1,000 troy tons) | 34,881 | 34,027 | 35,922 | 37,906 |
| Iron Ore (tons) | 6,222,467 | 5,067,255 | 3,190,869 | 4,124,600 |
| Petroleum (1,000 barrels) | 40,200 | 41,200 | 41,500 | 42,800 |

Source: Ministerio de Energia y minas

The government, with the aim of strengthening state supervision over this mining sector which has such an important role in the national economy, in 1971 promulgated the Basic Mining Industry Law, whose provisions include the following: (1) state ownership of mining zones; (2) a minimum participation rate of 25% by Peruvian capital; (3) obligation of the state to market copper ore to copper refineries; (4) nationalization of business transactions with respect to minerals; (5) the right of the government to determine selling prices; (6) establishment of Minero Perú.

Minero Perú is a state-managed corporation under the Ministerio de Energía y Minas which both exercises the ownership of state-owned mines and also, on the basis of government guidance and mining industry plans, is responsible for mineral exploration, mining development, and the supervision of production. Another state-run corporation, Minpeco, is responsible for foreign trade and other transactions involving minerals, and the ores mined by each mining corporation are marketed after first being sold to Minpeco.

## 2-4 Manufacturing

Each of Peru's successive administrations has striven to promote the development of modern manufacturing industries, and the Industrial Promotion Law, which includes measures for tax exemption and tax reduction with respect to the establishment of new industries, dates from 1959. As a result of such efforts, the manufacturing sector has, with the exception of the latter half of the 1960s, achieved a steady growth. Between 1971 and 1973 the annual growth rate averaged 8%, and between 1973 and 1976 it was a still favorable 7%.

The manufacturing sector accounts for approximately 25% of the gross domestic product and provides employment to 13% of the total employed population. Up to now the greatest weight among manufactures has been represented by such consumer industries as food and beverage products, textiles, and chemical manufactures centering around plastics items and pharmaceuticals. However, since 1973 there has been a gradual increase in the manufacture of intermediate and capital goods, and the growth rate has been especially marked in industries which make use of domestic natural resources, such as steelmaking, non-ferrous metals, chemical products, and paper. Table 2-24 shows trends in manufacturing production indices.

As an integral part of its efforts to build a basic system for economic and social structural reform, the government in July 1970 established the Law of Industries, which came as a sequel to the agricultural land reform law and the basic laws on mining and fisheries. This law called for an expansion of state control over manufacturing enterprises and for the adoption of a system of manufacturing collectives which recognize the participation of workers in management. Some of its major points are the following:

(1) For purposes of promoting stable and self-reliant industrial development, manufacturing industries of all types are to be classified into groups and ranked according to priority. According to this ranking, priority measures will be accorded where indicated in regard to taxes, financing, administration, technology, etc.

(2) Enterprises which were originally started by foreign capital must make contracts with the government and must within specified time limits transform themselves into enterprises in which at least 51% of the capital is domestic.

(3) For purposes of aiding in the establishment of distribution of profits to workers and worker participation in management, 10% of yearly net profits must be distributed to workers and a further 10% of net profits must be distributed to collective bodies (Comunidades Industriales) organized by the workers.

## 2-5 Railroads and Ports

### 2-5-1 Railroads

The total length of the lines managed by Peru's state-run railroad corporation (ENAFER: Empresa Nacional de Ferrocarriles) is about 2,009 km. The two principal lines are the Central Railroad and the Southern Railroad, but also under national administration are such lines as the Tacna-Arica Railroad (62 km) and the Chimbote-Huallanca Railroad (169 km). The Central Railroad (Ferrocarril Central de Perú) runs from Peru's principal port Callao through the capital Lima and the mining region of Oroya to the agricultural center of Huancayo, and has a total length of 769 km. It plays a very important role in the Peruvian economy.

Table 2 - 24 Manufacturing Output Indices

| | Indices (1973 = 100) | | | Growth Rate (%) | | |
|---|---|---|---|---|---|---|
| | 1974 | 1975 | 1976 | '74/'73 | '75/'74 | '76/'75 |
| Fish Meal | 213.9 | 167.3 | 206.6 | 13.9 | -21.8 | 23.5 |
| Food | 106.1 | 108.0 | 105.9 | 6.1 | 1.8 | -1.9 |
| Beverage | 121.3 | 132.9 | 147.6 | 21.3 | 9.6 | 11.1 |
| Tobacco | 116.5 | 117.9 | 117.2 | 16.5 | 1.2 | -0.6 |
| Textile | 101.1 | 102.6 | 110.0 | 1.1 | 1.5 | 7.2 |
| Apparel | 111.7 | 110.8 | 102.5 | 17.5 | -0.8 | -7.5 |
| Leather and Skin | 102.1 | 120.8 | 120.0 | 2.1 | 18.3 | -0.7 |
| Leather Shoes | 100.4 | 101.4 | 126.7 | 0.4 | 1.0 | 24.9 |
| Wood | 103.1 | 97.9 | 152.2 | 3.1 | -5.0 | 55.5 |
| Wooden Furniture | 104.7 | 129.7 | 89.0 | 4.7 | 23.9 | -31.4 |
| Pulp, Papes and Cardboard | 124.1 | 103.5 | 117.4 | 24.1 | -16.1 | 13.4 |
| Printing | 99.5 | 95.1 | 92.5 | -0.5 | -4.4 | -2.7 |
| Industrial Chemical Products | 115.4 | 130.8 | 143.2 | 15.4 | 13.3 | 9.5 |
| Miscellaneous Chemical Products | 106.7 | 126.3 | 139.6 | 6.7 | 18.4 | 10.5 |
| Petroleum Refinery | 108.4 | 114.9 | 115.0 | 8.4 | 6.0 | 0.1 |
| Rubber Products | 102.1 | 112.9 | 140.1 | 2.1 | 10.6 | 24.1 |
| Plastic Products | 113.5 | 123.3 | 121.0 | 13.5 | 8.6 | -1.9 |
| Non-Metallic Minerals | 116.6 | 124.1 | 129.5 | 16.6 | 6.4 | 4.3 |
| Iron and Steel | 122.4 | 124.7 | 104.4 | 22.4 | 1.9 | -16.3 |
| Non-Ferrous Metals | 98.7 | 92.8 | 105.6 | -1.3 | -6.0 | 13.8 |
| Metal Products and Machinery | 108.9 | 128.8 | 126.8 | 8.9 | 18.3 | -1.6 |
| Metal Products excluding Machinery | 108.2 | 115.4 | 109.2 | 8.2 | 6.7 | -5.4 |
| Machinery excluding Electrical Machinery | 118.9 | 150.3 | 151.8 | 18.9 | 26.4 | 1.0 |
| Electrical Machinery and Equipment | 123.9 | 149.7 | 145.7 | 23.9 | 20.8 | -2.7 |
| Transportation Materisl | 89.8 | 108.7 | 109.2 | -10.2 | 21.0 | 0.5 |
| Measuring and Control Equipment | 92.4 | 107.0 | 127.3 | -7.6 | 15.8 | 19.0 |
| Other Manufacturing | 93.5 | 110.2 | 105.9 | -6.5 | 17.9 | -3.9 |
| Total | 111.8 | 117.6 | 123.2 | 11.8 | 5.2 | 4.8 |

Source: Ministerio de Industria y Turismo
Banco Central de Reserva del Perú

The Southern Railroad (Ferrocarril del Sur) has a total length of 1,240 km a runs via two branches from the ports of Mollendo and Matarani (Islay) to join at La Joya and then to divide again at Juliaca with branches to Cuzco and Puno.

Both the Central and Southern Railroads had been owned by the British-based Peruvian Corporation, but were after 1972 expropriated by the Peruvian government to be operated by the state-run railways corporation under the jurisdiction of the Ministerio de Transportes y Comunicaciones.

At present the government is considering such railway improvement projects at the following: (1) a new line from Cerro Verde to Matarani; (2) a new line from Matarani to Ilo; and (3) improvement of the railroad network in the coastal region. Fig. 2-1 shows the railway network of Peru.

### 2-5-2 Ports

Peru's port facilities are under the administration of the state corporation ENAP (Empresa Nacional de Puertos). The largest port is Callao, which handles approximately 33% of exports and 65% of imports.

Principal port development projects include: (1) a plan to improve the harbor facilities at Chimbote in order to cope with the increased production of steel by SIDERPERU; and (2) plans to modernize the ports of Supe, Chancay, and Huacho.

Plans in the future to use the eight ports of Paita, Salaverry, Chimbote, Callao, Pisco, Matarani, Ilo, and Iquitos exclusively for exports. Fig. 2-2 shows the main port facilities of Peru.

## 3. Overseas Economic Relations

### 3-1 Structure of Foreign Trade

#### 3-1-1 General Remarks

The main sustaining force among Peru's exports consists of primary products. For example, in 1977 copper represented 25.7% of total exports, coffee 13.5%, and fish meal 11.7%, for a combined figure of 50.9% among total exports. In 1970 exports of fish meal were $330 or 30% of total exports, but these figures decreased after 1971 in connection with the sharp reductions in anchovy catches due to changes in ocean currents, and in 1977 the value of fish meal exports was only $175 million. This fall in fish meal exports has been a major factor in the stagnation seen in Peru's total exports in recent years.

Mined exports involve the advantage that, due to the diversification of mineral resources it is possible to compensate for international price changes or reductions in output of a given type of mineral resource by increases in the production of other mineral resources. Thus exports of mineral products have increased relatively steadily, amounting in 1977 to $867 million, or 58% of total exports. Ore exports, together with the export of petroleum made possible by the completion of the Trans-Amazon Pipeline are considered to be the trump card, so to speak, which will bring about Peru's economic recovery, and great hopes are placed in their future development. Table 2-25 indicates the achievements of recent years with respect to principal exports.

As for imports, in keeping with the government's industrialization policies a dominant share of 72% of imports consists of raw materials, intermediate and capital goods. After 1973, under the influence of the worldwide inflation brought about by the "oil crisis" and food shortages, Peru's total imports increased sharply, reaching a record high of $2.39 billion in 1975. However, following the currency devaluation and the import restrictions put into effect after 1976 with the aim of improving the international balance of payments, Peru's imports leveled off somewhat to $2.10 billion in 1976 and $2.16 billion in 1977. Table 2-26 shows import figures for major imported items in recent years.

Fig. 2 - 1 Railway Networks

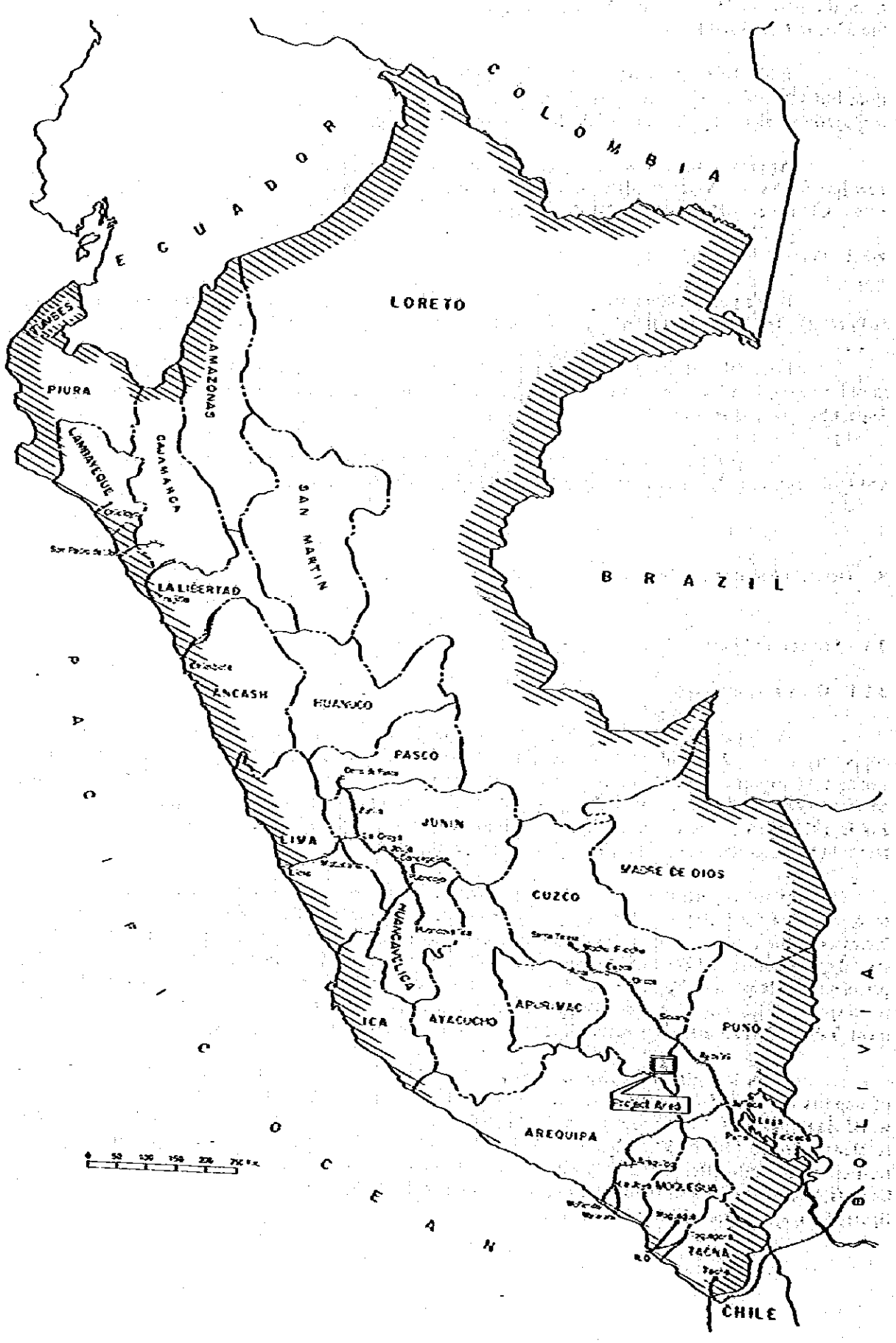
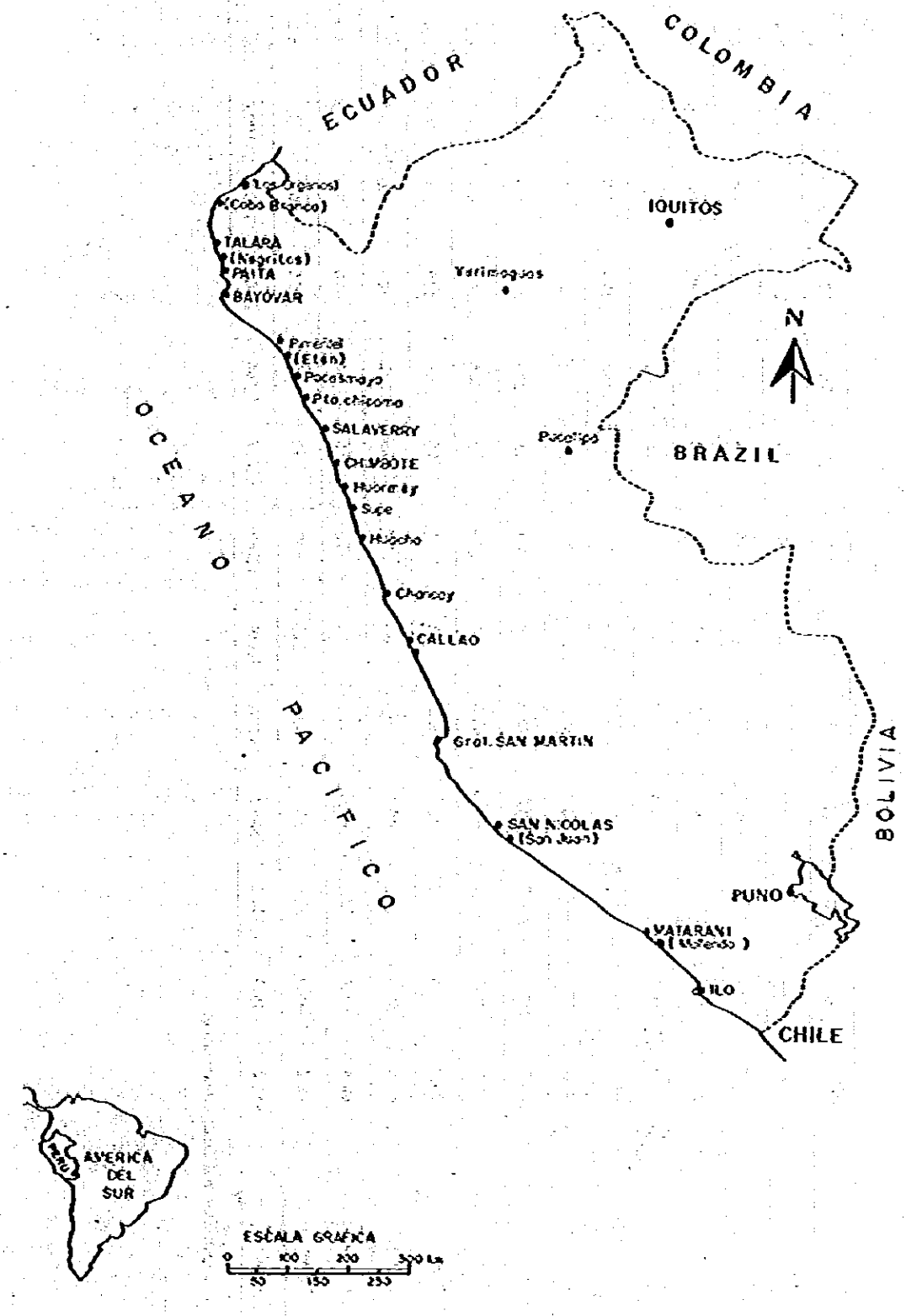


Fig. 2 - 2 Main Port Facilities



## Tbale 2 - 25 Volumes of Major Exports

(Unit: M. US$)

| | 1968 | '69 | '70 | '71 | '72 | '73 | '74 | '75 | '76 | '77 | Share (%) '70 | '75 | '76 | '77 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coffee | 33.2 | 31.2 | 43.8 | 35.9 | 37.8 | 64 | 35 | 49 | 106 | 203 | 4.2 | 4.0 | 9.3 | 13.5 |
| Sugar | 58.8 | 39.5 | 60.7 | 69.1 | 72.6 | 89 | 156 | 296 | 94 | 85 | 5.9 | 24.3 | 8.2 | 5.7 |
| Cotton | 57.7 | 66.9 | 52.1 | 44.7 | 44.5 | 62 | 94 | 60 | 76 | 49 | 5.0 | 4.9 | 6.6 | 3.3 |
| Wool | 9.4 | 8.5 | 3.3 | 2.4 | 5.3 | – | 3 | 5 | 15 | 5 | 0.3 | 0.4 | 1.3 | 0.3 |
| Fish Meal | 206.4 | 202.1 | 303.5 | 267.4 | 237.6 | 136 | 198 | 168 | 168 | 175 | 29.3 | 13.8 | 14.7 | 11.7 |
| Fish Oil | 27.1 | 17.5 | 43.2 | 60.3 | 50.5 | – | 39 | 38 | 1 | – | 4.2 | 3.1 | 0.1 | – |
| Copper | 208.1 | 265.2 | 246.7 | 175.2 | 188.6 | 284 | 369 | 175 | 226 | 386 | 23.9 | 14.4 | 19.7 | 25.7 |
| Zinc | 35.5 | 40.0 | 48.7 | 48.0 | 62.8 | 93 | 175 | 173 | 166 | 142 | 4.7 | 14.2 | 14.5 | 9.5 |
| Lead | 28.9 | 34.6 | 35.3 | 26.7 | 32.5 | 43 | 117 | 73 | 96 | 136 | 3.4 | 6.0 | 8.4 | 9.1 |
| Silver | 68.5 | 58.5 | 62.3 | 49.1 | 60.5 | 69 | 82 | 83 | 82 | 107 | 6.0 | 6.8 | 7.2 | 7.1 |
| Iron Ore | 68.4 | 68.4 | 72.1 | 60.6 | 68.5 | 61 | 73 | 55 | 56 | 98 | 7.0 | 4.5 | 4.9 | 6.5 |
| Other | 48.2 | 46.9 | 62.6 | 50.1 | 69.0 | 213 | 39 | 42 | 60 | 115 | 6.1 | 3.5 | 5.2 | 7.7 |
| Total | 850.2 | 879.3 | 1,034.3 | 889.5 | 930.2 | 1,114 | 1,380 | 1,217 | 1,146 | 1,501 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Japan External Trade Organization

Table 2 - 26 Values of Major Imports

(Unit: M.US$)

| | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|
| Consumers Goods | 154.9 | 198.9 | 176.4 | 172.6 |
| Raw Materials and Intermediate Goods | 919.7 | 1,171.6 | 1,031.9 | 1,049.7 |
| Capital Goods | 610.8 | 780.7 | 675.2 | 505.2 |
| Other | 223.5 | 239.0 | 216.5 | 436.5 |
| Total | 1,908.9 | 2,390.2 | 2,100.0 | 2,164.0 |

Source: Japan External Trade Organization

### 3-1-2 Major Trading Partners

#### (1) Exports

In terms of a breakdown of export-destination countries, the share of the United States is by far the largest, accounting in 1977 for $460 million or 29% of total exports. Japan follows the United States in importance as an export-destination country. Japan has gradually increased its share since the 1960s and in 1977 absorbed $191 million of Peru's exports, or 12% of the total. Other important export-destination countries are West Germany, Chile, and Italy. During the 1960s West Germany held the second-place position next to the United States, but its share has gradually fallen off, and in 1977 exports to West Germany were, without prospects of immediate future growth, $70 million.

With respect to global regions, North America and Western Europe each account for approximately 30% of Peru's exports, competing with one another for first place. Next in importance are exports destined for Asia and for Central and South American countries. The greatest part of exports to Asia goes to Japan and China. Exports to Central and South American countries — especially to the member nations of LAFTA — grew steadily during the latter half of the 1960s and the first years of the 1970s, attaining a peak share of 29.5% in 1974. Since that time, however, the share has decreased, and stood at only 14.5% in 1977. Table 2-27 shows exports figures in relation to global regions.

#### (2) Imports

Looking at import sources in terms of individual countries, the largest source of imports is, as in the case of exports, the United States, which in 1977 sold $678 million worth of goods to Peru, accounting for 28.9% of Peru's total imports. Other major import sources are West Germany, Japan, Ecuador, and Venezuela. West Germany and Japan at one time followed the United States in the volume of their exports to Peru, but their relative shares have gradually fallen off, and in 1977 they were surpassed by Ecuador and Venezuela.

In terms of global regions, North America provides the largest market for purchases, maintaining a stable share of more than 30%. Next in importance are Central and South American countries and Western Europe. The share held by Central and South American countries increased from 18.7% in 1975 to 23.1% in 1976, and then to 28.6% in 1977, reflecting a changeover from North America to Argentina and other Latin American countries as sources of imported wheat and meat. Western Europe was until 1976 second in importance after North America as a source of imports, but fell to third place (with a 26.1% share) in 1977 due to the rapid rise in transactions with Latin American countries. Imports from Asia involve principally Japan (as in the case of exports). Japan's share in imports has, however, gradually decreased, and stood at 8% in 1977. Table 2-28 shows import figures in relation to global regions.

Table 2 - 27 Peru's Exports by Region and Country

(Unit: M. US$)

| | | 1974 | '75 | '76 | '77 |
|---|---|---|---|---|---|
| South America | Brazil | 23.4 | 37.6 | 55.4 | 60.5 |
| | Chile | 20.5 | 87.3 | 18.6 | 37.0 |
| | Mexico | 11.3 | 10.5 | 20.9 | 29.0 |
| | Ecuador | 12.0 | 10.7 | 17.2 | 21.6 |
| | Venezuela | 8.0 | 9.6 | 14.7 | 19.5 |
| | Argentina | 50.6 | 36.7 | 21.4 | 18.8 |
| | Colombia | 21.1 | 16.8 | 12.0 | 18.4 |
| | Bolivia | 7.4 | 5.8 | 6.5 | 12.2 |
| Central America | Costa Rica | 2.1 | 0.7 | 1.0 | 2.0 |
| | El Salvador | 4.2 | 1.3 | 2.2 | 2.0 |
| | Panama | 2.2 | 2.1 | 1.5 | 8.3 |
| Caribbean | Cuba | 5.5 | 22.4 | 16.4 | 19.5 |
| | Trinidad Tobago | 0.2 | 0.5 | 2.1 | 0.5 |
| | Jamaica | 0.1 | 0.3 | – | 0.4 |
| Canada | | 5.2 | 3.6 | 2.7 | 11.6 |
| United States | | 547.4 | 317.9 | 319.5 | 460.3 |
| Bahama Islands | | – | – | 0.1 | 0.6 |
| Eastern Europe | East Germany | 42.5 | 24.2 | 25.7 | 40.1 |
| | Poland | 48.0 | 28.6 | 47.8 | 35.6 |
| | Hungary | 5.4 | 6.9 | 7.5 | 24.1 |
| | Czechoslovakia | 10.7 | 8.6 | 13.9 | 19.2 |
| Western Europe | Italy | 40.3 | 33.5 | 56.9 | 83.2 |
| | West Germany | 119.0 | 85.6 | 92.2 | 70.2 |
| | Netherlands | 43.9 | 45.1 | 26.0 | 38.1 |
| | France | 36.2 | 27.0 | 25.8 | 37.2 |
| | Belgium | 47.4 | 34.8 | 61.8 | 31.5 |
| | Britain | 40.9 | 43.4 | 75.1 | 63.2 |
| | Switzerland | 8.7 | 4.3 | 5.1 | 11.4 |
| | Sweden | 1.8 | 3.0 | 2.1 | 9.3 |
| | Portugal | 3.1 | 1.0 | 8.4 | 6.3 |
| | Yugoslavia | 12.2 | 4.0 | 9.6 | 31.8 |
| | Spain | 21.2 | 9.7 | 13.6 | 25.3 |
| Asia | China | 66.9 | 48.1 | 41.9 | 36.9 |
| | Japan | 204.5 | 151.1 | 176.1 | 190.5 |
| | Taiwan | 4.1 | 1.1 | 2.0 | 16.0 |
| | Republic of Korea | 1.1 | 3.2 | 4.5 | 13.5 |
| Middle East | Iran | 1.1 | 1.1 | 5.3 | 7.0 |
| Africa | Algeria | 2.7 | 2.7 | 2.8 | 5.0 |
| Pacific | New Guinea | – | – | – | 1.5 |
| | Australia | 3.8 | 0.2 | 0.3 | 0.7 |
| Total | | 1,520.5 | 1,314.6 | 1,282.7 | 1,581.7 |

Source: Japan External Trade Organization

Table 2 - 28 Peru's Exports by Region and Country

(Unit: M. Soles)

| | | 1974 | '75 | '76 | '77 |
|---|---|---|---|---|---|
| South America | Ecuador | 70.6 | 137.0 | 172.7 | 187.0 |
| | Venezuela | 39.0 | 143.8 | 89.8 | 183.5 |
| | Brazil | 43.8 | 83.5 | 87.5 | 63.8 |
| | Argentina | 34.7 | 39.5 | 48.8 | 60.9 |
| | Colombia | 30.1 | 43.6 | 32.4 | 34.8 |
| | Chile | 14.8 | 30.0 | 31.7 | 14.6 |
| | Bolivia | 5.5 | 9.5 | 3.2 | 7.1 |
| Central America | | 4.3 | 5.8 | 26.6 | 1.6 |
| Caribbean | | 0.2 | 1.7 | 0.2 | 0.2 |
| Canada | | 54.8 | 104.7 | 81.0 | 46.3 |
| United States | | 478.2 | 1,094.4 | 610.4 | 561.5 |
| Other American Countries | Antilles | 3.0 | 18.0 | 13.0 | 10.0 |
| | Bahama Islands | 0.8 | 9.0 | 3.4 | 2.4 |
| Eastern Europe | Romania | 4.2 | 12.6 | 4.9 | 12.1 |
| | Hungary | 13.4 | 36.4 | 8.8 | 4.9 |
| | Soveit Union | 1.4 | 6.1 | 7.1 | 2.2 |
| Western Europe | West Germany | 160.6 | 322.5 | 214.5 | 142.7 |
| | France | 29.6 | 71.9 | 51.8 | 55.6 |
| | Netherlands | 48.1 | 118.2 | 40.4 | 29.6 |
| | Italy | 41.1 | 62.2 | 65.5 | 29.6 |
| | Britain | 38.5 | 106.4 | 72.2 | 79.4 |
| | Sweden | 19.7 | 64.0 | 48.1 | 62.2 |
| | Switzerland | 33.2 | 66.4 | 38.2 | 37.7 |
| | Finland | 7.1 | 6.4 | 7.8 | 16.2 |
| | Spain | 17.5 | 30.1 | 25.8 | 11.5 |
| China | | 0.6 | 1.1 | 0.6 | 0.4 |
| Asia | Japan | 183.2 | 280.0 | 144.4 | 142.0 |
| | Singapore | 2.9 | 5.5 | 4.5 | 7.3 |
| | Taiwan | 3.5 | 4.8 | 16.5 | 5.4 |
| Middle East | | 0.7 | 3.6 | 0.4 | 0.3 |
| Africa | Union of South Africa | 3.6 | 9.7 | 3.4 | 10.4 |
| Pacific | New Zealand | 44.4 | 27.7 | 24.1 | 25.5 |
| | Australia | 7.3 | 49.0 | 20.6 | 12.3 |
| Total | | 1,530.5 | 2,634.4 | 2,134.9 | 1,937.2 |

Source: Japan External Trade Organization

### 3-2 Balance of Payments and Foreign Currency Reserves

Peru's international balance of payments registered black-ink figures for the last time in 1974, and has since 1975 continued to show a deficit. During the three years 1975~77 the deficit reached the cumulative size of approximately $1 billion. Reasons for the deficit may be sought in the crumbling of the pattern which had obtained previously whereby non-trade-sector deficits inherent in a deficit-borne structure of government finance were partially offset by black-ink trade-balance figures, and whereby deficits in the ordinary balance could be further offset by long- and short-term black-ink figures in the capital account balance. One very basic reason was the rise in import demand which accompanied and was largely the result of the very rapid rise in the government deficit. The deficit in ordinary accounts which came about in both 1975 and 1976 largely as a result of the deficit registered in the foreign trade balance could not be covered by black-ink figure from the capital account balance, with the result that in those two years the overall balance registered negative figures of $510 million and $369 million, respectively.

The deficit in the international balance of payments has been met in the form of medium- and long-term foreign loans and the eating away of foreign currency reserves. As a result, Peru's foreign currency reserves fell from $1 billion in 1974 to $400 million in 1976, the latter figure corresponding to somewhat less than three months of imports at the then current annual import level. The government thus obliged to strive for an improvement in the international balance of payments through reduction of expenditures in the public sector, currency devaluation, and the enforcement of measures to repress imports. Because of these efforts, the size of the 1977 deficit decreased to $2 million. A favorable turn toward a positive trade balance is expected as a result of increased petroleum exports made possible by the opening of the Trans-Amazon Pipeline in 1978, and the prospects are good that the international balance of payments will be improved. Table 2-29 shows movements in the international payments balance, and Table 2-30 shows movements in foreign currency reserves.

## 4. Economic and Social Development Planning

### 4-1 Development Planning Up to the Present

Including the development plan currently in progress, in Peru four development plans have up to now been established and put into practice. The earliest plan, announced in February 1960, was a five-year plan for comprehensive development which placed particular emphasis on developing the infrastructure sector including hydroelectric power, highways and railroads, and also on developing facilities for the refining of ores. However, in 1962 this plan was superseded by 10-year plan for economic and social development covering the period 1961 ~ 1971. In this 10-year plan, emphasis was placed especially on planning for improvements in the standard of living, formation of a "unified market" for the national economy, and rectification of geographical differences and gaps between various agricultural sectors by expanding the area of agricultural lands and agricultural productivity. The total investment envisaged in the plan was 184.6 billion soles, and a yearly growth in gross domestic product of 5.9% was estimated. 29.4% of the public investments were to be budgeted for agriculture, 22.9% for transport and electricity, 43.8% for social projects involving housing, hygiene, education, etc., and only 4.6% for industry. In order to bring the plan to fruition it was indispensable that there be an agrarian reform involving rectification of ownership patterns with respect to large landholdings, but because plans for such a reform met with stubborn opposition on the part of large landholders, this issue was held over into the 1970s.

In the following period, comprising the years 1971 ~ 1975, a five-year plan for national development was established which included the major national development goals of the Velasco administration and which envisioned not only economic development but also, at the same time, the achievement of radical goals involving reforms in the country's social and cultural structure. The plan called for a total investment of approximately 27 billion soles and an annual growth rate of 7.5% in the gross domestic product during the five-year period. A breakdown of public investments to different sectors of the economy shows that 25.5% was destined for manufacturing idustries, 16.4% for transport, 16.4% for mining, 7.6% for agriculture, 4.2% for fisheries, and 30.3% for other purposes. In comparison with the previous plan, this plan was characterized by a marked decrease in the relative weight of investments in the agricultural sector and by the emphasis placed on promoting the mining and manufacturing sectors. Nevertheless, as in the previous plan, agrarian reform was recognized as an important task to be undertaken. In addition, the goal of carrying out reforms in the social and economic structure was widely hailed as a means of hastening economic development, and measures which expanded the

Table 2 - 29 Balance of Payments

(Unit: M. US$)

| | 1968 | '69 | '70 | '71 | '72 | '73 | '74 | '75 | '76 | '77 |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Current Balance | -22 | 2 | 202 | -34 | -31 | -261 | -725 | -1,541 | -1,198 | -929 |
| Trade Balance | 177 | 221 | 335 | 160 | 133 | 16 | -403 | -1,098 | -739 | -438 |
| Exports | 850 | 880 | 1,034 | 890 | 945 | 1,113 | 1,506 | 1,291 | 1,360 | 1,726 |
| Imports | -673 | -659 | -699 | -730 | -812 | -1,097 | -1,909 | -2,389 | -2,099 | -2,164 |
| Service | -236 | -251 | -215 | -232 | -204 | -320 | -370 | -492 | -517 | -548 |
| Transfer | 37 | 32 | 82 | 39 | 40 | 42 | 48 | 50 | 58 | 58 |
| B. Capital Balance | 79 | 99 | 116 | -30 | 127 | 398 | 1,196 | 1,223 | 1,142 | 1,007 |
| Long-Term | 92 | 128 | -17 | 9 | 106 | 408 | 720 | 1,293 | 807 | 946 |
| Short-Term | -13 | -29 | 133 | -39 | 21 | -10 | 476 | -70 | 335 | 61 |
| C. Errors and Omissions | -72 | -68 | -33 | 16 | -87 | -43 | -72 | -192 | -313 | -80 |
| D. Total Balance of Payments | -15 | 33 | 285 | -48 | 9 | 94 | 399 | -510 | -369 | -2 |

Source: International Financial Statistics, IMF

Table 2 - 30 Movements in Foreign Currency Reserves

(Unit: M. US$)

| | 1974 | 1975 | 1976 | | 1977 | |
|---|---|---|---|---|---|---|
| | Dec. | Dec. | June | Dec. | June | Dec. |
| Reserves | 966.2 | 467.8 | 351.2 | 367.7 | 302.0 | 457.4 |

Source: Banco Central de Reserva del Perú

functions of state-managed corporations and which increased the numbers and strengthen manufacturing collectives and publically owned enterprises of various types were put into practice during the period of the plan. Due to changes in the economic environment, the plan was altered to end in 1974 (one year earlier than originally intended), and after 1975 Peru entered into a new period included within a new four-year national development plan.

### 4-2 General Outline of the 1975~78 Four-Year Plan

The core of Peru's current economic and social development planning is the four-year plan for national development begun in 1975, in which is proclaimed the radical goal of "the realization of social democracy through the complete participation of the nation's people." Seven fundamental objectives are given as follows: (1) promotion of reforms in the social structure; (2) strengthening of the people's participation in the various fields of politics, economy, society and culture; (3) strengthening publically owned enterprises; (4) raising of production levels and improvement of the distribution structure; (5) large-scale reduction in unemployment and latent unemployment; (6) rectification of social and economic imbalances among geographical regions and promotion of development in border regions; and (7) strengthening state control over natural resources.

The plan called for a yearly increase in the gross domestic product of 6.5%, which is in excess of the average 6.0% growth rate achieved during the period 1970 ~ 1974. While growth rates in the agriculture and manufacturing sectors were estimated to be relatively low, the growth rate in the mining sector was intended to be 28.8% (as the result of production increases), the growth rate in the fisheries sector was intended to be 12.1% (as a result of the expected recovery in the production of fish meal), and in the construction sector the growth rate was intended to be 13%. However, overall growth rates were only 3.0% in both 1975 and 1976, and a minus 1.2% in 1977, far below the planned figures. Thus the achievement of the goals which were set appears difficult. Table 2-31 shows original estimates and actual results with respect to growth rates in the various sectors of the economy.

With respect to foreign trade, the plan envisaged an average yearly growth in exports of 15.6%, largely as a result of expanded production of petroleum and copper. On the other hand, the plan called for keeping yearly growth in imports to 5.6% through the enforcement of import restriction measures. However, Peru's foreign trade has continued to show a deficit after 1974, and this has been a major factor in the country's economic crisis. Table 2-32 indicates 1974 estimates of exports from the various production sectors in 1978 (the last year of the five-year plan).

Total investments planned for the four-year period were 510 billion soles, of which approximately 251 billion soles were to be public investments. A breakdown by economic sectors shows 34.1% destined for mining and petroleum development, 12.3% for manufacturing, 12.4% for transport, 8.5% for electricity and communications, 7.9% for agriculture, and 32.7% for other purposes. Compared to the previous four-year plan, this represents a continuing trend toward a higher relative weight of investment in the mining and manufacturing sectors. Table 2-33 gives a breakdown, by economic sector, of the plan's allocation of public investments.

Table 2 - 31 Growth Rate Estimates and Results, by Economic Sector

| | Planned Values | | | Active Results | | |
|---|---|---|---|---|---|---|
| | Sector Percentage of GDP | | Yearly Growth Rate | GDP Growth Rate (%) | | |
| | 1974 | 1978 | | 1975 | 1976 | 1977 |
| Agriculture | 12.6 | 11.0 | 3.3 | 1.0 | 3.3 | 0.1 |
| Fisheries | 1.4 | 1.3 | 12.1 | -15.2 | 19.9 | -7.9 |
| Mining & Petroleum | 7.2 | 9.4 | 28.8 | -11.0 | 8.9 | 29.9 |
| Manufacturing | 28.4 | 29.5 | 8.8 | 4.7 | 4.2 | -6.1 |
| Construction | 5.1 | 6.2 | 13.0 | 16.8 | -2.8 | -7.7 |
| Sub Total | 54.9 | 57.4 | 8.9 | -3.7 | 33.5 | 8.3 |
| Services | 45.1 | 42.6 | 6.2 | 8.7 | 4.1 | -0.1 |
| Total | 100.0 | 100.0 | 7.7 | 3.3 | 3.0 | -1.2 |

Source: Instituto Nacional de Planificación

Table 2 - 32 Estimates of Exports from the Various Production Sectors

(Unit: M. Soles)

| | 1974 | 1978 |
|---|---|---|
| Agriculture | 5,800 | 5,800 |
| Fisheries | 4,700 | 8,300 |
| Mining (Excluding Petroleum) | 19,300 | 34,800 |
| Petroleum | 400 | 6,800 |
| Other | 5,600 | 9,000 |
| Total | 35,800 | 64,600 |

Source: Instituto Nacional de Planificación

Table 2 - 33 Public Investment by Economic Sector

(Unit: M. Soles)

| Sector | | Amount | Share (%) |
|---|---|---|---|
| Productive Sector | Agriculture | 19,939.0 | 7.9 |
| | Food | 5,623.0 | 2.2 |
| | Fisheries | 6,807.2 | 2.7 |
| | Manufacturing | 30,756.2 | 12.3 |
| | Tourism | 2,652.9 | 1.1 |
| | Mining | 42,487.9 | 16.9 |
| | Petroleum | 43,164.0 | 17.2 |
| Economic Infrastructure | Electricity | 16,782.1 | 6.7 |
| | Transport | 31,218.3 | 12.4 |
| | Communications | 4,548.1 | 1.8 |
| Social Infrastructure | Housing | 13,584.8 | 5.4 |
| | Education | 14,477.4 | 5.6 |
| | Health | 6,452.1 | 2.6 |
| | Other | 13,061.0 | 5.2 |
| Total | | 251,554.5 | 100.0 |