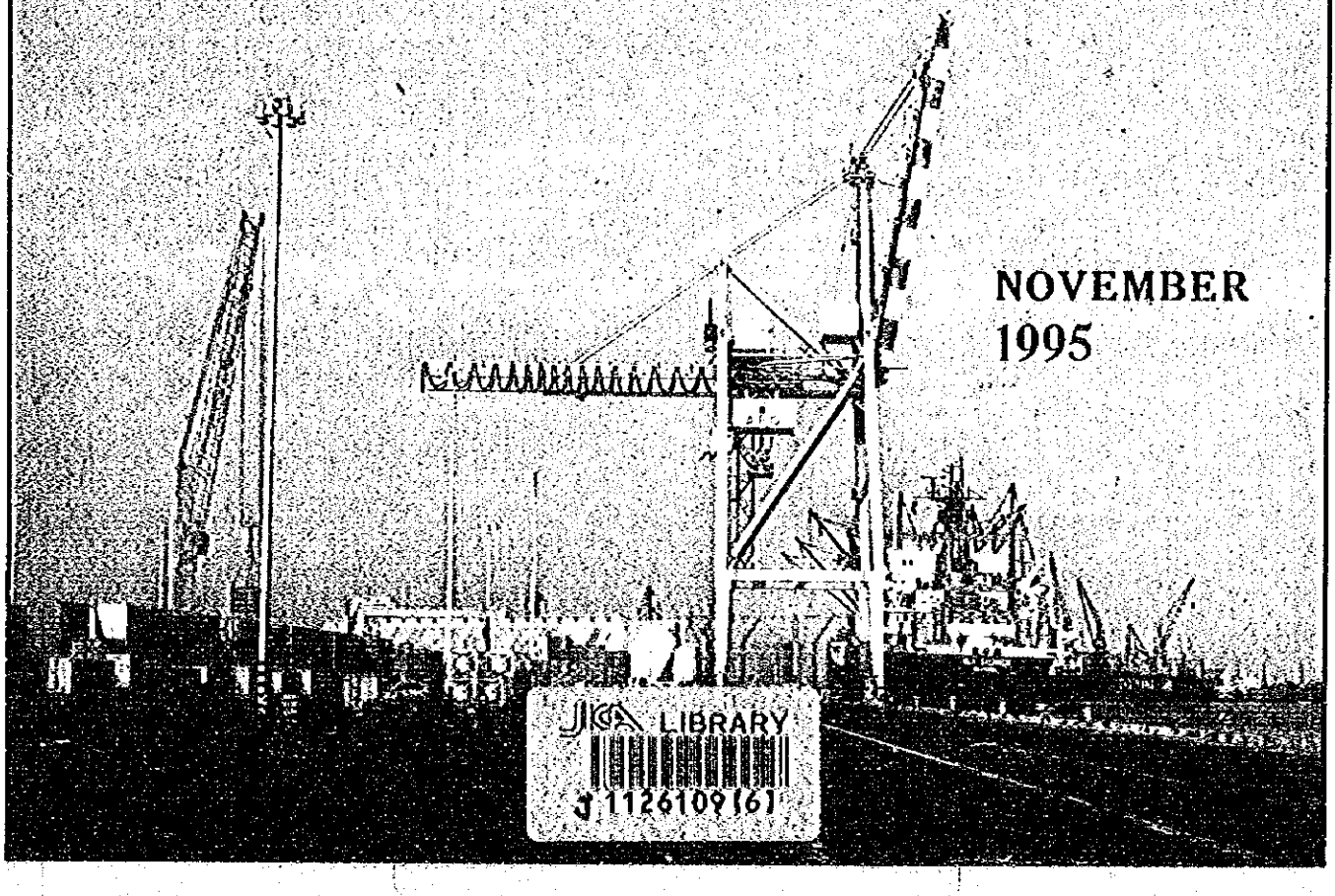
社会開発調査部報告書
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NO. 32

FINAL REPORT

THE STUDY ON THE MASTER PLAN FOR THE PORT OF GUAYAQUIL IN THE REPUBLIC OF ECUADOR



NOVEMBER
1995

THE OVERSEAS COASTAL AREA DEVELOPMENT INSTITUTE OF JAPAN
NIPPON KOEI CO., LTD.

FINAL REPORT

THE STUDY ON THE MASTER PLAN FOR THE PORT OF GUAYAQUIL IN THE REPUBLIC OF ECUADOR

NOVEMBER
1995

Fx change Rate
US$ 1.00=2,240 Sucres=¥100
(August, 1994)

PREFACE

In response to a request from the Government of the Republic of Ecuador, the Government of Japan decided to conduct a Study on the Master Plan for the Port of Guayaquil and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Ecuador a study team headed by Mr. Hajime Kawate, Executive Director of the Overseas Coastal Area Development Institute of Japan and composed of members from this institute and the company, Nippon Koei Co., Ltd, three times between July 1994 and November 1995.

The team held discussions with the officials concerned of the Government of Ecuador, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Ecuador for the close cooperation they extended to the team.

November 1995

Kimio FUJITA
President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

November 1995

Mr. Kimio FUJITA
President
Japan International Cooperation Agency

Sir,

It is my great pleasure to submit the Final Report for the Study on the Master Plan for the Port of Guayaquil in the Republic of Ecuador.

This report is the outcome of works between July 1994 and November 1995 including three field surveys during the period. The work was undertaken by the Overseas Coastal Area Development Institute of Japan (OCDI) and Nippon Koei Co., Ltd as per the contract with the Japan International Cooperation Agency (JICA).

Based on the findings of these surveys and utilizing data and information collected, and along the line of the scope of work which was agreed upon by both governments, the report is formulated to cover the following subjects;
(1) To formulate a mater plan for the Port of Guayaquil up to the year 2010,
(2) To conduct a feasibility study of a short-term improvement plan for the Port of Guayaquil for the period up to the year 2003.

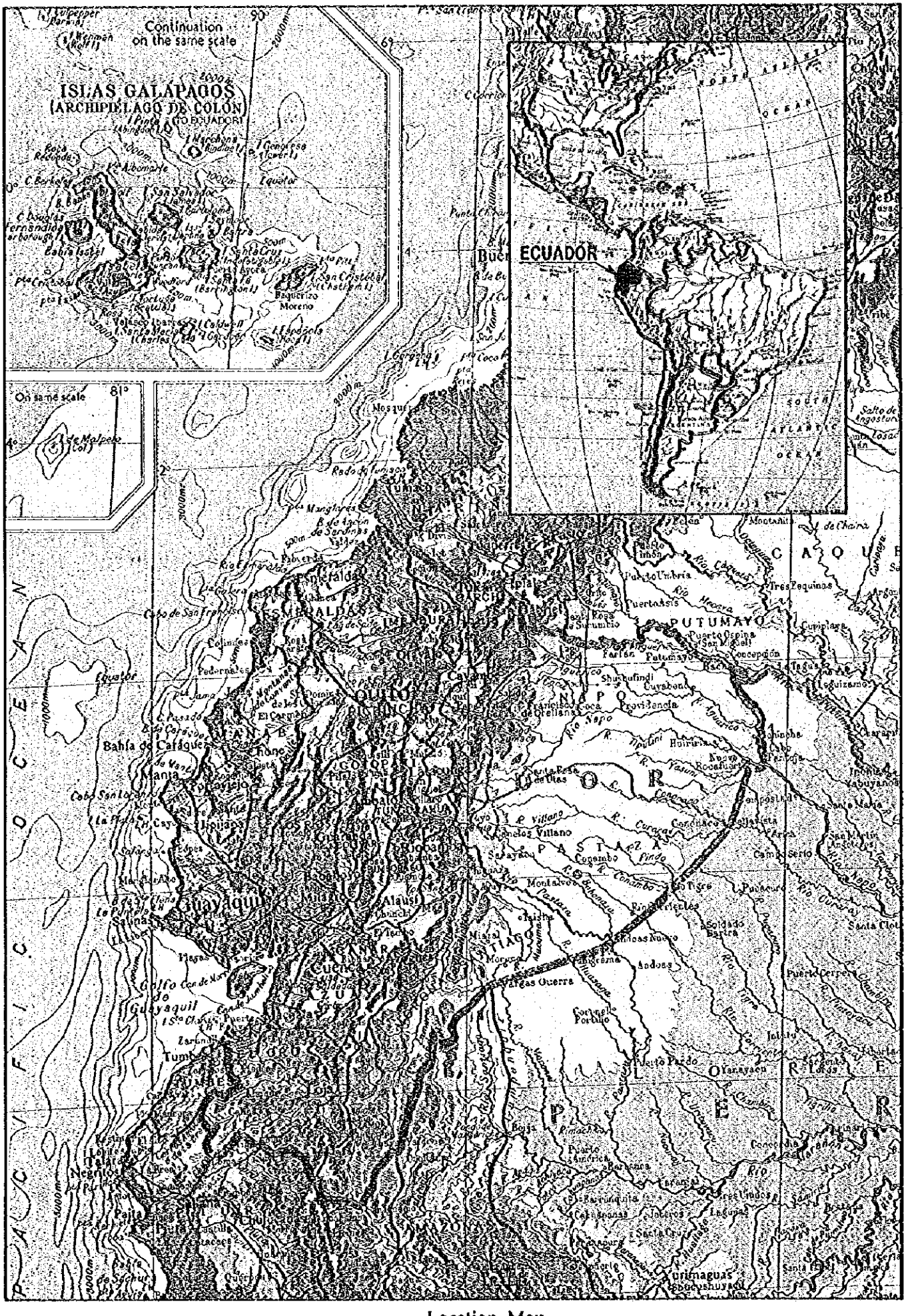
On behalf of the study team, I would like to express my deep appreciation to the Government of Ecuador, the Port Authority of Guayaquil and other authorities concerned for their thoughtful cooperation and assistance and for the heartfelt hospitality which they extended to the study team during our stay in Ecuador.

I am also greatly indebted to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Transport and the Embassy of Japan in Ecuador for giving us valuable advice and assistance at every step in the whole course of the study.

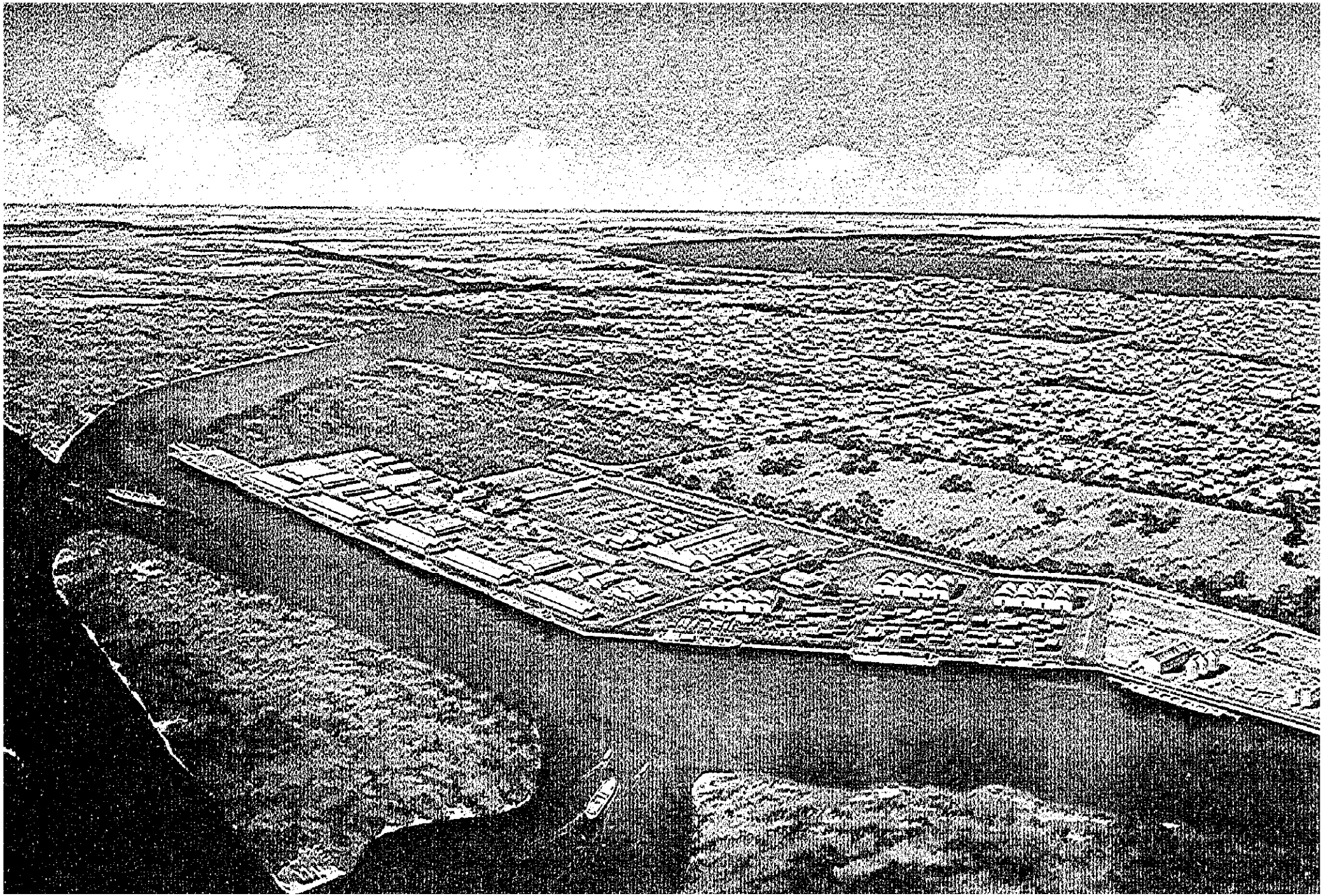
Yours faithfully,

Hajime Kawate

Hajime Kawate
Leader, Team for the Study on the Master Plan for the Port of Guayaquil in Republic of Ecuador



Location Map



CONTENTS

List of Table

PART I PRESENT SITUATION OF THE PORT OF GUAYAQUIL

PART II MASTER PLAN OF THE PORT OF GUAYAQUIL

PART III FEASIBILITY STUDY OF THE PORT OF GUAYAQUIL

List of Figure

PART. I PRESENT SITUATION OF THE PORT OF GUAYAQUIL

PART II MASTER PLAN OF THE PORT OF GUAYAQUIL

PART III FEASIBILITY STUDY OF THE PORT OF GUAYAQUIL

ABBREVIATIONS
ABREVIATURAS

APG	Port Authority of Guayaquil Autoridad Portuaria de Guayaquil
ASEAPG	Syndical Association of Employees Asociación Sindical de Empleados
B/L	Bill of Lading Conocimiento de Embarque
BANS	New Scotland International Bank Banco Internacional de Nueva Escocia
BOR	Berth Occupancy Rate Tasa de Ocupación del Muelle
BOT	Build, Operate and Transfer Construcción, Operación y Transferencia
CEDEGE	Guayas River Basin Development Research Committee Comisión de Estudios para el Desarrollo de la Cuenca del Río Guayas
CFS	Container Freight Station Estación de Flete de Contenedores
CIF	Cost, Insurance and Freight Costo, Seguro y Flete
CNMMP	National Committee of Merchant Marine and Harbor Consejo Nacional de Marina Mercante y Puertos
CONADE	National Committee of Development Consejo Nacional de Desarrollo
CONAM	National Committee of State Modernization Consejo Nacional de Modernización del Estado
CONAZOFRA	National Committee of Free Zones Consejo Nacional de Zonas Francas
CPU	Central Processing Unit Unidad Procesamiento Central
CY	Container Yard Patio de Contenedores
CBT	Dry Bulk Terminal Terminal a Granel Seco
DIGMER	General Affairs of Merchant and Littoral Marine Dirección General de la Marina Mercante y del Litoral
DWT	Dead Weight Tonnage Tonelaje de Peso Muerto
EIA	Environmental Impact Assessment Evaluación del Impacto Ambiental
EIRR	Economic Internal Rate of Return Tasa Interna de Retorno Económico
EPZ	Export Processing Zone Zona de Procesamiento de Exportación
ESC	Complementary Services Enterprise Empresa de Servicios Complementarios
FTD	Estimated Time of Departure Hora Estimada de Salida
FAO	Food and Agriculture Organization of the United Nations Organización de Alimentos y Agricultura de las Naciones Unidas
FCL	Full Container Load Carga de Contenedor Lleno
FEU	Forty-foot Equivalent Unit Unidad Equivalente a 40 pies
FIRR	Financial Internal Rate of Return Tasa Interna de Retorno Financiero

FOB	Free on Board Libre a Bordo
GDP	Gross Domestic Products Producto Interno Bruto
GRT	Gross Register Tonnage Tonelaje de Registro Bruto
GT	Gross Tonnage Tonelaje Bruto
GYE	Port of Guayaquil Puerto de Guayaquil
HHW	Highest High Water Nivel Más Alto del Agua
HP	Horsepower Caballos
IC	Integrated Circuit Circuito Integrado
IDB	International Development Bank Banco Internacional de Desarrollo
IEE	Initial Environmental Examination Examen Ambiental Inicial
IEOS	Ecuadorian Institute of Sanitary Matters Instituto Ecuatoriano de Obras Sanitarias
INEC	National Institute of Statistics and Census Instituto Nacional de Estadísticas y Censos
INEFAN	Ecuadorian Institute of Forestal and Natural Areas Instituto Nacional Ecuatoriano de Forestación y Áreas Naturales
INERHI	Ecuadorian Institute of Hydraulic Resources Instituto Nacional Ecuatoriano de Recursos Hidráulicos
JICA	Japan International Cooperation Agency Agencia de Cooperación Internacional del Japón
KWH	Kilowatt-hour Kilovatios-hora
LCL	Less than Container Load Menos que la Carga del Contenedor
LLW	Lowest Low Water Nivel Más Bajo del Agua
LOA	Length Overall Longitud Total
LSI	Large-scale Integration Integración de Gran Escala
M/O or O/M	Maintenance and Operation, or Operation and Maintenance Mantenimiento y Operación, u Operación y Mantenimiento
MAG	Ministry of Agriculture and Livestock Ministerio de Agricultura y Ganadería
MHW	Mean High Water Pleamara Media
MICIP	Ministry of Industry, Commerce, Integration and Fishery Ministerio de Industrias, Comercio, Integración y Pesca
MLW	Mean Low Water Bajamar Media
MLWS	Mean Low Water Spring Nivel Medio de Bajamar Equinoccial
MSL	Mean Sea Level Nivel Medio del Mar
NPV	Net Present Value Valor Neto Actual

OCC	Opportunity Cost of Capital Costo de Oportunidad del Capital
OCDI	The Overseas Coastal Area Development Institute of Japan Instituto de Desarrollo del Área Costera del Exterior del Japón
ODA	Official Development Assistance Asistencia Oficial para el Desarrollo
OECF	Overseas Economic Cooperation Fund Fondo de Cooperación Económica del Exterior
OP	Port Operator Operador Portuario
OPB	Port Operator of Ship Operador Portuario de Buque
OPC	Port Operator of Cargo Operador Portuario de Carga
OR	Official Record Registro Oficial
PNB	National Program of Banana Programa Nacional del Banano
QC	Quality Control Control de Calidad
RO-RO	Roll-on Roll-off Embarque y Desembarque por Tracción Propia
SOAPG	Institution's Workers Union Sindicato de Obreros de la Institución
TB	Gross Tonnage Tonelada Bruta
TBR	Gross Register Tonnage Tonelada Bruta Registrada
TEU	Twenty-foot Equivalent Unit Unidad Equivalente a 20 pies
TM	Metric Tons Toneladas Métricas
TPM	Dead Weight Tonnage Tonelaje de Peso Muerto
UNCEMP	Coordination and Execution Group of Port Modernization Plan Unidad Coordinadora y Ejecutora del Plan de Modernización de Puertos
UNCTAD	United Nations Conference on Trade and Development Conferencia de las Naciones Unidas sobre Comercio y Desarrollo
ZOFREE	Esmeraldas Free Zone Zona Franca de Esmeraldas

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Study on the Master Plan for the Port of Guayaquil in the Republic of Ecuador

July 1994 - November 1995
Counterpart: Port Authority of Guayaquil

Background and Objectives of the Study

1. The port of Guayaquil is located in the most inner part of the Gulf of Guayaquil, the mouth of which opens on the southern coast facing the Pacific Ocean with a very vast extension. The city of Guayaquil which contains the port area of Guayaquil is the most populated in the Republic of Ecuador and is situated about 300 km southwest of Quito, the capital of the Republic of Ecuador.

2. Thanks to the economic activities of this adjacent big city and the very blessed natural conditions of the port, the port of Guayaquil thrives as the biggest and most active port in the Republic of Ecuador.

3. In recent years, the volume of cargoes handled at the port of Guayaquil has shown a strong tendency to increase. By the latest figure obtained, the cargo volume through the port is about 3 million tons per year and this represents 70% of the total cargo volume through four commercial ports in the country.

4. The present container terminal of the port was rather newly developed in the beginning of the 1980's. But the cargo volume through the ports in the Republic of Ecuador is rapidly increasing.

5. With such a rapid growth in the cargo volume, it is estimated that the cargo volume at the port of Guayaquil will exceed the capacity of the port in the near future.

6. Under these conditions, the Government of the Republic of Ecuador requested the Government of Japan to carry out the Study. For the preliminary study and the arrangement of the scope of the Study, JICA has sent a preparatory study team to the Republic of Ecuador and both sides have agreed on the Scope of Work for the Study.

7. Based on the Scope of Work agreed on between both sides, the study aims to formulate a master plan for the Port of Guayaquil up to the year 2010, and to conduct a feasibility study of a Short Term plan for the Port of Guayaquil for the period up to the year 2003.

Method of the Study

8. For the Master Plan, cargo volume in 2010 are forecasted in the two cases relating the increase ratio of GDP, an actual rate base and a planning rate base. On the other hand, two different levels in cargo handling efficiency are selected as basis for calculation of required number of berths in these two cases. With such conditions the two layout plans are prepared through examination on some varied cases in future cargo volume, cargo handling efficiency and location of each terminal.

9. The Short Term Plan with a target year of 2003 is formulated under the framework of the Master Plan, with actual growth rate of GDP and assuming container terminal to

be located at the existing area of the Master Plan considering the policy of APG. The Short Term Plan is evaluated from various viewpoints including important factors such as of the national economy, financial situation of APG and environment.

Outline of the Projects

10. The basic target of the development of the port of Guayaquil up to the target year of the Master Plan is identified as follows.

(1) the core of distribution of international trading cargo
(2) the core of regional and economic development

11. In order to accomplish the target, the development and planning of the port of Guayaquil should be based on the following eight subjects.

(1) to realize the modernization of port activity
(2) to cope with the increasing trend of foreign trade and growing trend of containerization
(3) to assist the promotion of exports
(4) to support industrial development in Guayas Province and in Ecuador
(5) to maintain efficiency with regard to port management
(6) to offer good service to port users
(7) to consider the environment surrounding the port including mangrove area
(8) to obtain economic and financial soundness including appropriate investment

12. Under the framework of the Master Plan considering the policy of APG, the Short Term Plan with a target year of 2003 is proposed as summarized in the table below.

	Master Plan		Short Term Plan	
Target Year	2010		2003	
Cargo Handling Efficiency	High	Medium	Gradually progress	Rapid Progress
Required Number of Berth				
Container terminal	3	3	2	2
Multi-Purpose terminal	9	10	8	7
Bulk terminal	1	1	1	1
Main Facilities to be Developed	Container berth (185 m × 1) Multi-purpose berth (185 m × 4) Related work road and pavement	Container berth (220 m × 3) Multi-purpose berth (185 m × 2) Related work road and pavement	Container berth (185 m × 1) Multi-purpose berth (185 m × 1) Related work road and pavement	Container berth (185m × 1) Related work road and pavement
Project Cost (Million sucres)	300,214	240,631	78,119	55,784

Evaluation

13. The Economic Internal Return Rate (EIRR) calculated based on the countable benefit is 24.7 per cent and the Financial Internal Return Rate (FIRR) is 25.4 per cent. So, the project is judged as being feasible, both economically and financially.

14. Some technical problems are found in the water area in front of the berths on maintaining the navigable depth, but these are of no importance. Soil conditions of the area concerned present no problem. Furthermore, the EIA revealed no unfavorable impact, thus the execution of this project will cause no problems for the environment.

15. When considering important factors which would affect this project, it can be duly said that this proposed project should be implemented in a deliberate and well harmonized way with the general movement of modernization.

Recommendation

16. To ensure the smooth implementation of this proposed plan of the port of Guayaquil, the Study Team recommends the following items. The measures which have been already implemented or planned according to the modernization program by APG may be included. However, these items are mentioned for further promotion of them.

(1) Proper application of privatization
(2) Establishment and utilization of information system
(3) Upgrading of APG's technical function
(4) Establishment of environmental policy
(5) Reinforcement of personnel policy and training system
(6) Systematic and flexible planning and project implementation
(7) Establishment of effective maintenance system
(8) Reinforcement of port promotion
(9) Regional development

PART I

PRESENT SITUATION

OF

THE PORT OF GUAYAQUIL

Chapter 1 GENERAL DESCRIPTION

A. History

1. In ancient times, the present territory of Ecuador was occupied by different tribes scattered in the region. In the first half of the 15th century, the old Kingdom of Quito settled its directorship over these small states. Later, the Kingdom of Inca which originated from Cuzco absorbed these tiny states using its overwhelming military force (circa 1460).

2. The Kingdom was ruined by the Spanish invaders (Conquistadores) in 1532, after which the territory of Ecuador became a Spanish colony. This colonial status continued to the 1820's leaving an enormous trace upon every aspect of Ecuadorian life that is still felt today. Belonged to the Domain on the Viceroy (a division of the Spanish colony in the South and Central America) of Peru, it entered under the control of the Domain of Nueva Granada later.

3. However, by reason of the difference in custom of natives and its geographically-isolated location, Ecuador had made itself gradually into a self-governing community since 1563 and established an autonomous legal and legislative organization named the Audencia in Quito. Today's boundary of the Republic of Ecuador was decided in consideration of the territory of this Audencia de Quito.

4. From the early 19th century, independence movements began emerge all over the Spanish colonies in Latin America. Simon Bolivar of Venezuela assumed leadership of these movements in the northern and western parts of South America. Under his leadership, General Antonio Jose de Sucre defeated the Spanish army still dominating the area of Ecuador in Pichincha on May 24, 1822 and Quito had accomplished its long cherished hope of independence as a part of the Gran Colombia built by Simon Bolivar, together with Azuay and Guayaquil. After the death of Bolivar, Ecuador separated itself from the Gran Colombia and these three parts united into an independent country named the Republic of Ecuador in 1830.

5. Ecuador experienced a succession of political conflicts between the politic sects in order to consolidate its democratic structure. But, as a result those long struggles and disputes, a democratic government and civilian control of the nation finally prevailed in 1979. Since then the Republic of Ecuador has made efforts to become more prosperous and modernized, and to maintain a political environment.

6. Since the down of the modern age, Guayaquil has been noted as an important port city situated in the middle of the passage way in the Pacific Ocean, along with the western coast of South America. Ship routes connect Guayaquil with Panama and Nicaragua to the north, and Callao and Santiago de Chile to the south. In the 18th century, it played an important role as the supply depot for the shipyard in Callao. At the end of the 19th century, it strengthened its position as the number one port of the country with the boom in cacao exports. The port of Guayaquil has continued to thrive under the striking growth in the seaborne trade of Ecuador in the last decades.

B. Natural Condition

7. Ecuador is located in the northern part of South america facing the Pacific Ocean and crossing the equator where the country gets its name. It borders on the Republic of Columbia in the north, on the Republic of Peru in the south and the east. The Galapagos Islands, which have become famous by Darwin's theory "The Evolution Species", also belong to Ecuador and are situated some 1,000 km away from the Ecuadorian Coast.

8. From the geographic points of view, Ecuador is divided into three zones; the coastal or littoral zone, the highlands, and the Amazon, the jungle plains at the west of the country. These three zones have their own characteristics in the topographical and environmental aspects. The coastal zone is a plain area with the ground elevations under 800 m. This zone shows climate variations according to a combination of the marine current movement, the river characteristics and the speed and direction of the continental winds. The average annual temperature of Guayaquil, the largest city in Ecuador with 1.8 million inhabitants, located almost in the center of the coastal zone is 25.0 degree centigrade. Due to the influence of the cold current of "Humboldt" the temperature of Guayaquil is not so high as other coastal regions of the world located on the equator.

9. The Highlands consist of the mountain ranges with ground elevations between 1,500 and 5,000 m. Quito, the capital of Equador with 1 million population, is located in the center of the inter Andes Alley at an elevation of 2,800 m. The temperature of the highlands vary according to ground heights. Quito, though located right on the equator, has an average annual temperature of 14.0 degree centigrade. The Amazon or Oriental Region constitutes a vast plain covered by virgin forests, and is the origin of the Amazon River. It is scarcely populated.

10. The coastal zone including the study area is defined as a plain area extended from the north end to the south end of the country with some 530 km length having the 20-200 km width. There are four provinces within this zone, that is, Esmeraldas, Manabi, Guayas and El Oro from the north to south. (See, Figure I-1-1) The coastal area facing the Pacific Ocean is featured with beaches, dunes, rocks, cliffs, mangroves etc. and the land use patterns in the area are categorized largely as shown in Table I-1-1. According to this table, Guayas province occupies large shares by each item, especially in Mangrove. Mangroves in the Gulf of Guayaquil are predominant.

11. The topographical characteristics of the coastal line in Guayas Province are summarized as follows.

(1) From the end of the Province to Salinas (84 km):
Coastal alignment in this area is divided into the two categories of sandy littoral string and cliff.
The sandy littoral strings have many hyper-saline lagoons behind them. Usually, the sandy littoral barriers or dunes are developed and the lagoons are enclosed by barriers or dunes. The strings are also dotted with rocky points. While, the cliff has rocky headlands at someplace and are eroded by the wave attacks of the Pacific Ocean. In this area, there is a estuary which supplies the sea water for the shrimp factories located there.

(2) Salinas-Playas (90 km):
In this area, the above mentioned strings and cliffs appear alternately. At the strings, the shore is suffered by intense altered erosion and accretion process.

(3) Playas-Posolja (22 km):
The said string continues. Around the lagoons, some thin magroves are developed. The coastal environment is of clear accretion supposedly due to the discharge from the Gulf of Guayaquil. Near Posorja, the coast is sheltered from the open sea, and the mangrove of the Gulf begins. While the riverbed of the Canal Del Morro suffers the effect of sedimentation, the shore is eroded at someplace due to wave action.

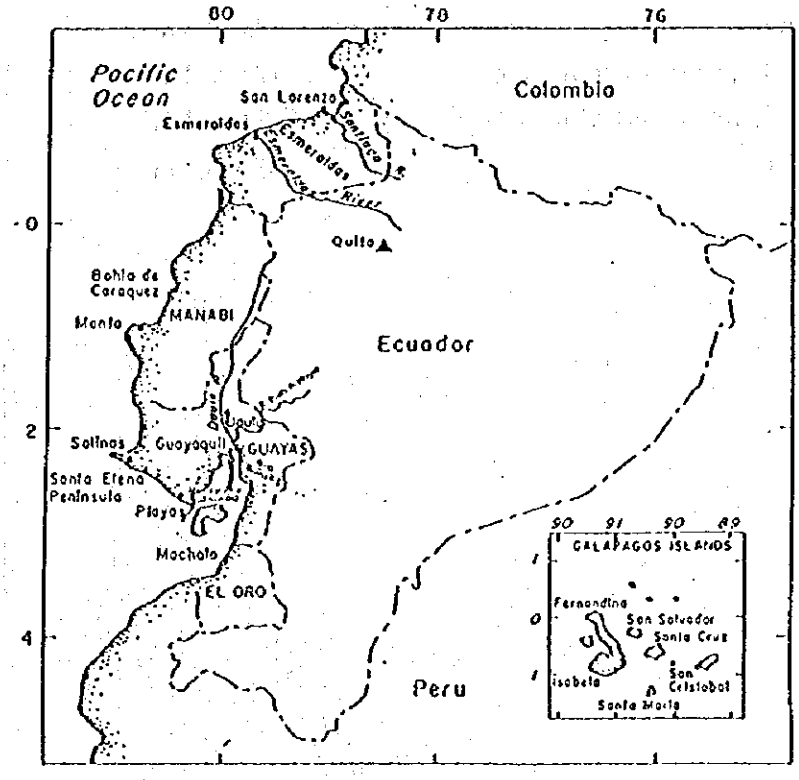


Figure I-1-1 Coastal Provinces of Ecuador

Table I-1-1 Land Use Patterns along the Coast of Ecuador

(Unit: ha)

Land Use	Guayas	El Oro	Manabi	Esmeraldas	Total
Mangroves	121,464 (69.4)	24,489 (24.0)	7,973 (4.4)	21,293 (12.2)	175,219 (100.0%)
Shrimp Ponds	52,912 (59.2)	26,484 (29.6)	8,377 (9.4)	2,596 (1.8)	89,368 (100.0%)
Beaches	17,340 (86.6)	2,520 (12.6)	164 (0.8)	4 (0)	20,028 (100.0%)
Total	191,715 (67.4)	53,493 (28.8)	16,514 (5.8)	22,893 (8.0)	284,615 (100.0%)

Source: Centro de Levatamilentos Integrados de Recursos Naturales por Sensores remotos

12. The Guayas River flows into the Gulf of Guayaquil. (See, Figure I-1-2) This river is one of the few rivers in the country having permanent flow throughout the year as well as the Esmeraldas River. Average discharge is estimated to be some 1,100 m^3/sec. and decreases to one tenth of the average in the dry season. (May-November) (See, Figure I-1-3) But, the water level changes corresponding to the tidal change. The fluvial system of the Guayas River consists basically of the Daule and Babahoyo Rivers and their tributaries. (See, Figure I-1-4) It drains an area of approximately 33,700 km^2 and is distributed as follows:

Daule River Basin	13,800 km^2
Babahojo-Vinces River Basin	17,900 km^2
Taura River and Others (10)	2,000 km^2
Total	33,700 km^2

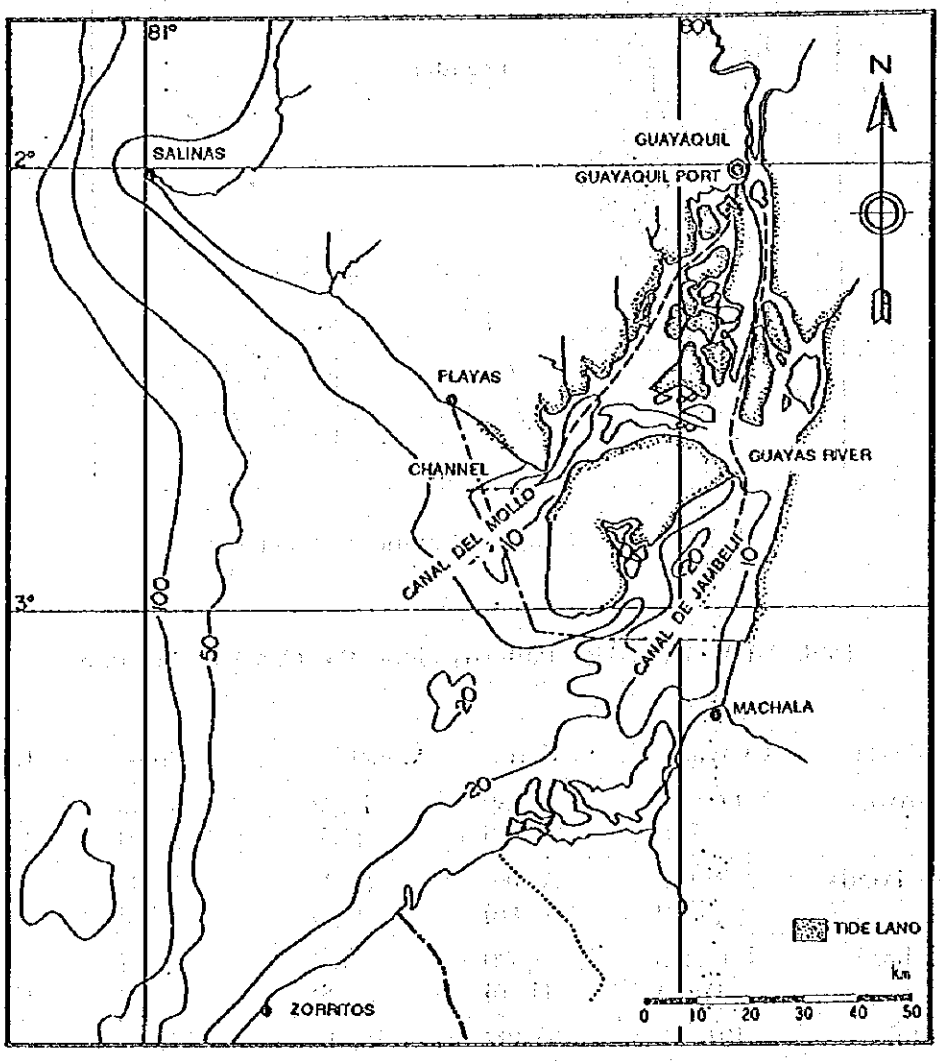


Figure I-1-2 The Gulf of Guayaquil

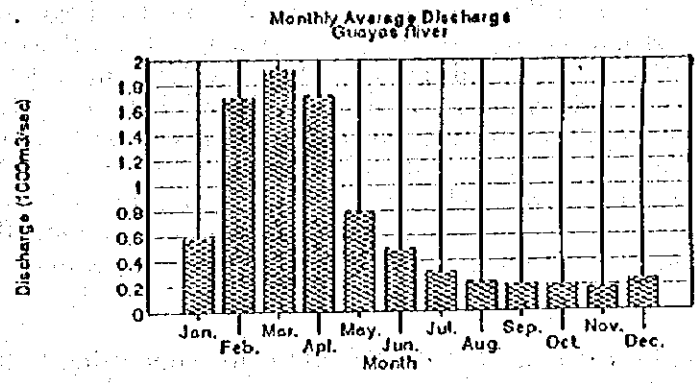


Figure I-1-3 Monthly Average Discharge of Guayas River

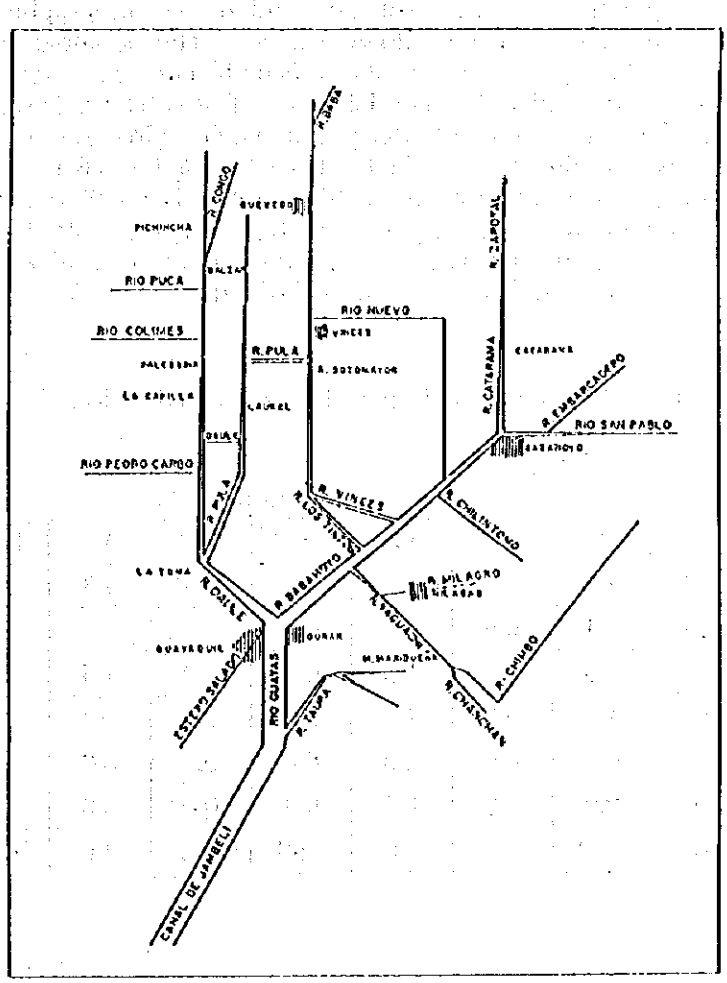


Figure I-1-4 Schema of Guayas River Basin

13. The Guayas River, from the junction of the Daule and Babahojo Rivers to its mouth opposite Isla Verde Island, is approximately 56 km long. Parallel to its course lies an extensive body of salt water called Estero Salado, with many inlets and an ample mangrove ecosystem. Tidal influence is present as for as 100 km upriver. The Guayas River and the Estero Salado are connected at one point by the Estero Cobina, a man-made canal with locks, which permits the transit of small vessels. More open communication exists in the area called the interior Guayas River Estuary, between the islands of Escalante and Puna. The amount of fresh water entering the Estero Salado is difficult to determine, but constitutes a factor of major importance in the ecological characteristics and processes of the entire area.

14. The Guayaquil Port is located at the Estero Cobina connecting to the ocean through the Estero Salado and the Canal Del Morro. The Port is not affected by the waves due to its deepest location, but there are some water current caused by the tidal change. The velocity of the current seems to be around 2-3 knot at the Estero Salado, and it does not affect the navigation. The meteorological and the oceanographic conditions in the coastal zones are summarized in the following tables. The oceanographic conditions such as deep sea wave directions and heights of Ecuadorian coast, were observed by ship liner between Guayaquil and Galapagos Islands and also by US Navy. (Table I-1-2) According to these data, predominant deep sea wave direction is S-SW. The distributions of the wave heights show 16% for 0.5 m, 74% for 0.6 to 2.0 m and 10% for over 2 m. The deep sea waves are not so high, but it is noted that the waves are characterized with their long wave period and have big energy potentially judging from the preceding wave observation data at the Manta Port in the coastal zone. This long period waves are generated by the swells coming from the Antarctic.

Table I-1-2 Deep Sea Wave Height and Direction

(Unit:%)

Wave Height	Direction								
(m)	N	NE	E	SE	S	SW	W	NW	Total
0.0−0.5	0.2	1.1	0.7	3.5	4.2	3.5	1.3	1.8	16.3
0.6−1.0	5.5	4.4	0.9	0.4	17.5	5.0	1.1	2.2	37.0
1.1−2.0	0.4	4.8	1.3	1.8	12.3	7.0	1.5	7.7	36.8
2.1−3.0	0.7	1.3	0.7	1.3	0.9	2.2	0.7	1.3	9.1
3.1−4.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.8
4.1−	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	6.8	12.0	3.6	7.0	34.9	18.1	4.6	13.0	100.0

C. Socio-Economic Activity

1) Population

15. Table I-1-3 shows the general trend of the population in Ecuador by province. As shown in the table, the population of Ecuador has increased and reached 9.6 million in 1990. The population growth rate from 1982 to 1990 is about 2.3% per year.

16. Among the provinces, Guayas province has the largest population. The population in 1990 was 2.5 million or 26% of the total population of Ecuador. Pichincha province has the second largest population (1.7 million) followed by the provinces of Manabi (1.03 million) and Azuay (506,000).

17. The population share of urban areas in Ecuador was 41% in 1974, 49% in 1982 and 55% in 1990, which clearly describes an urbanization trend. Guayas province is the most highly urbanized with the urban areas comprising 76% of the total land area, Pichincha follows with a rate of 73%.

2) Gross Domestic Products

18. Gross Domestic Product (GDP) increased from s/. 147.6 billion in 1980 to s/. 201.4 billion in 1993 at 1975 prices. Annual growth rate between 1980 and 1993 is 2.4%. The general trend of GDP by industrial sectors in Ecuador is shown in Table I-1-4 and Figure I-1-5. As shown in the Table and Figure, the GDP at 1975 constant prices steadily increased from 1980 to 1993 except in 1983 and 1987. The negative growth of GDP in 1983 was attributable to non-oil sectors. In 1987 growth of petroleum was negative due to the destruction of oil pipeline by earthquakes.

19. Among the industrial sectors, Agriculture, Manufacture, Commerce, Service and Petroleum have large shares, 17%, 15%, 15%, 14% and 14% respectively. The total share of these five sectors accounts for more than 70% of the total.

20. From 1980 to 1993 at 1975 prices, shares of Agriculture, Petroleum, Electricity and Transport increased. On the other hand, share of Construction fell by about 40%.

21. Figure I-1-6 shows Gross Product by each sector and province. Share of Gross Product of Guayas province is the largest (29%). Second province is Pichincha (21%), followed by provinces of Sucumbios, Manabi and Azuay with shares of 8%, 7% and 5%. Share of these five provinces accounts for about 70% of the total.

22. The sector of Agriculture, hunting & fishery is concentrated in Guayas (19%), Manabi (18%) and Pichincha (9%) provinces. Petroleum and Mining sector is popular with Sucumbios (48%), Napo (29%) and Esmeraldas(14%) provinces. Main provinces of Manufacturing, Electricity gas & water and Financial service are Guayas, Pichincha and Azuay. The other sectors are mainly in Guayas, Pichincha and Manabi province.

Table I-1-3 Population by Province in Ecuador

Province	1974			1982			1990		
	Urban	Rural	total	Urban	Rural	total	Urban	Rural	total
MOUNTAIN ZONE									
Azuay	117,493	249,831	367,324	169,156	272,863	442,019	218,619	287,471	506,090
Bolivar	19,044	125,549	144,593	22,757	123,192	145,949	32,650	122,438	155,088
Canar	19,821	126,749	146,570	28,299	146,211	174,510	55,519	133,828	189,347
Carchi	38,094	82,763	120,857	48,181	79,598	127,779	57,508	83,974	141,482
Cotopaxi	32,378	203,935	236,313	42,645	235,093	277,678	65,419	210,905	276,324
Chimborazo	78,171	226,145	304,316	89,224	227,724	316,948	119,813	244,869	364,682
Imbabura	69,604	146,423	216,027	92,350	154,937	247,287	129,174	136,325	265,499
Loja	75,732	266,607	342,339	120,654	240,113	360,767	151,799	232,899	384,698
Pichincha	658,791	329,515	988,306	973,326	408,799	1,382,125	1,279,997	476,231	1,756,228
Tungurahua	93,668	186,252	279,920	120,430	206,347	326,777	151,552	210,428	361,980
Sub-Total	1,202,796	1,943,769	3,146,665	1,707,022	2,094,817	3,801,839	2,262,050	2,139,368	4,401,418
COAST ZONE									
El Oro	126,407	136,157	262,564	213,970	120,902	334,872	290,749	121,823	412,572
Esmeraldas	72,146	131,005	203,151	118,563	130,445	249,008	134,960	171,668	306,628
Guayas	956,681	555,732	1,512,333	1,399,567	638,887	2,038,454	1,918,278	596,876	2,515,146
Los Rios	97,434	285,998	383,432	148,378	307,491	455,869	199,374	328,185	527,559
Manbi	213,003	599,963	817,966	318,818	549,780	868,598	433,891	598,836	1,031,927
Sub-Total	1,470,591	1,708,855	3,179,446	2,199,296	1,747,505	3,946,801	2,976,444	1,817,388	4,793,832
AMAZONIAN ZONE									
Morona Santiago	9,520	43,885	53,325	16,618	53,599	70,217	23,799	60,417	84,216
Napo	4,260	57,926	62,186	20,011	95,093	115,110	23,629	79,758	103,387
Pastaza	5,361	18,104	23,465	10,327	21,452	31,779	15,127	26,684	41,811
Zamora Chinchipe	3,838	30,655	34,493	10,595	36,096	46,691	16,384	49,863	66,167
Sucumbios	-	-	0	-	-	0	20,492	56,460	76,952
Sub-Total	22,979	150,490	173,469	57,551	226,246	263,797	99,351	273,182	372,533
GALAPAGOS	2,356	1,681	4,037	4,493	1,626	6,119	8,013	1,772	9,785
ZONAS NO DELIMITADAS	-	18,193	18,193	-	42,156	42,153	-	70,621	70,621
TOTAL	2,698,722	3,822,988	6,521,710	3,968,362	4,092,350	8,060,712	5,345,858	4,302,331	9,648,189

Province	Anual Growth Rate (%) '90/'74			Anual Growth Rate (%) '90/'82			1990 Share (%)		
	Urban	Rural	total	Urban	Rural	total	Urban	Rural	total
MOUNTAIN ZONE									
Azuay	2.42	0.54	1.24	3.28	0.65	1.71	4.09	6.68	5.25
Bolivar	2.18	-0.18	0.27	4.62	-0.08	0.76	0.61	2.85	1.61
Canar	4.04	0.21	0.99	8.73	-1.18	1.03	1.04	3.11	1.96
Carchi	1.68	0.06	0.81	2.24	0.67	1.28	1.08	1.95	1.47
Cotopaxi	2.74	0.13	0.60	5.49	-1.34	-0.06	1.22	4.90	2.86
Chimborazo	1.66	0.31	0.70	3.75	0.91	1.77	2.24	5.69	3.78
Imbabura	2.41	-0.27	0.80	4.28	-1.59	0.89	2.42	3.17	2.75
Loja	2.71	-0.52	0.45	2.91	-0.38	0.81	2.84	5.41	3.99
Pichincha	2.59	1.43	2.24	3.48	1.93	3.04	23.94	11.07	18.20
Tungurahua	1.87	0.47	0.99	2.91	0.25	1.29	2.83	4.89	3.75
Sub-Total	2.46	0.37	1.30	3.58	0.26	1.85	42.31	49.73	45.62
COAST ZONE									
El Oro	3.26	-0.43	1.75	3.91	0.09	2.64	5.44	2.83	4.28
Esmeraldas	2.44	1.05	1.60	1.63	3.49	2.64	2.52	3.99	3.18
Guayas	2.71	0.28	1.98	4.02	-0.65	2.66	35.88	13.87	26.07
Los Rios	2.79	0.53	1.23	3.76	0.82	1.84	3.73	7.63	5.47
Manbi	2.68	-0.01	0.98	3.90	1.07	2.18	8.10	13.92	10.70
Sub-Total	2.75	0.24	1.59	3.85	0.49	2.46	55.68	42.24	49.69
AMAZONIAN ZONE									
Morona Santiago	3.59	1.24	1.77	4.59	1.51	2.30	0.45	1.40	0.87
Napo	6.81	1.24	1.97	2.10	-2.18	-1.33	0.44	1.85	1.07
Pastaza	4.07	1.58	2.25	4.89	2.77	3.49	0.28	0.62	0.43
Zamora Chinchipe	5.72	1.89	2.54	5.54	4.12	4.45	0.30	1.16	0.69
Sucumbios							0.38	1.31	0.80
Sub-Total	5.79	2.32	2.98	7.06	3.58	4.41	1.86	6.35	3.86
GALAPAGOS	4.82	0.20	3.46	7.58	1.08	6.04	0.15	0.04	0.10
ZONAS NO DELIMITADAS		5.35	5.35		6.66	6.66	0.00	1.64	0.73
TOTAL	2.66	0.46	1.52	3.79	0.83	2.27	100.00	100.00	100.00

Source: INEC, "V CENSO DE POBLACION Y IV DE VIVIENDA 1990"

Table I-1-4 Gross Domestic Product in Ecuador

GDP and Each Sector in Ecuador (Market Price) — Unit: Million sucres

Sector	1980	Share(%)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Share(%)
Agriculture	35,570	12.1	41,651	50,356	73,005	110,003	147,979	208,745	274,583	432,834	721,602	1,099,929	1,762,061	2,465,587	3,323,476	12.1
Petroleum	35,686	12.2	44,615	52,412	86,115	126,833	183,516	137,969	122,567	296,983	604,666	1,217,981	1,367,758	2,439,491	2,931,883	10.7
Manufacture	51,799	17.7	59,951	73,874	103,642	158,816	230,259	274,177	350,257	664,829	1,088,837	1,587,906	2,554,178	4,279,840	5,968,707	21.7
Electricity	2,434	0.8	2,546	3,693	5,285	4,002	3,401	6,487	7,413	2,169	3,920	-14,564	-12,959	22,846	75,946	0.3
Construction	21,749	7.4	30,522	37,576	34,423	36,143	46,593	67,267	96,981	139,728	235,873	328,049	565,971	881,760	1,340,156	4.9
Commerce	42,751	14.6	46,339	57,652	76,347	130,164	173,338	246,833	363,144	610,927	1,119,409	1,736,724	2,722,670	4,164,447	5,550,786	20.2
Transport	23,145	7.9	29,861	36,025	54,301	87,844	93,931	125,565	169,713	296,262	461,027	708,066	1,064,311	1,505,446	2,439,871	8.9
Finance	25,331	8.6	29,900	39,295	39,438	51,093	62,288	76,384	97,706	145,709	236,968	353,308	568,961	901,983	1,376,400	5.0
Service	42,848	14.6	51,564	58,802	73,999	101,055	137,601	179,463	232,718	329,406	501,163	736,193	1,066,811	1,796,550	2,937,662	10.7
Others	12,024	4.1	12,383	12,136	15,716	26,776	42,034	64,344	77,419	120,877	196,200	449,610	646,229	851,152	1,496,201	5.4
Total	293,337	100.0	348,662	415,715	560,271	812,629	1,109,940	1,383,232	1,794,501	3,019,724	5,170,485	8,204,222	12,295,991	19,413,602	27,451,086	100.0

GDP and Each Sector in Ecuador (Based Year at 1975)

Sector	1980	Share(%)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	Share(%)
Agriculture	21,198	14.4	22,647	23,101	19,891	22,007	24,178	26,656	27,323	29,416	30,230	32,080	33,938	35,154	34,555	17.2
Petroleum	15,070	10.2	15,992	16,527	19,893	21,879	23,875	24,513	11,107	23,964	21,642	21,442	23,251	24,599	27,298	13.6
Manufacture	26,807	18.2	29,159	29,564	29,183	28,643	28,710	28,241	28,729	29,312	27,856	28,055	28,951	29,908	30,731	15.3
Electricity	1,115	0.6	1,117	1,241	1,426	1,836	1,833	2,232	2,616	2,721	2,839	2,781	2,841	2,918	2,980	1.5
Construction	6,906	4.7	7,239	7,285	6,728	6,583	6,742	6,841	7,011	6,824	6,264	5,333	5,274	5,256	5,032	2.5
Commerce	24,789	16.8	25,032	25,562	22,537	23,467	24,268	24,793	25,397	25,925	26,470	27,469	28,557	29,420	29,918	14.9
Transport	10,038	6.8	10,517	10,687	10,511	10,914	11,506	12,571	12,829	13,620	14,700	15,362	16,289	17,223	17,992	8.9
Finance	12,638	8.6	13,215	13,275	12,814	13,198	13,643	13,845	13,979	14,169	14,496	14,708	15,145	15,495	15,644	7.8
Service	21,996	14.9	22,926	23,630	24,296	24,855	25,094	25,406	25,825	26,477	26,824	27,260	27,770	28,090	27,639	13.8
Others	7,015	4.8	5,597	5,373	5,606	5,843	6,205	6,238	6,206	6,114	6,812	7,053	8,572	9,291	9,397	4.7
Total	147,622	100.0	153,443	155,265	150,885	157,226	164,054	169,136	159,016	175,742	176,195	181,531	190,638	197,436	201,447	100.0

Source: Informacion Estadistica Mensual, Banco Central del Ecuador
Cuentas Nacionales del Ecuador 1969-1992, Banco Central del Ecuador

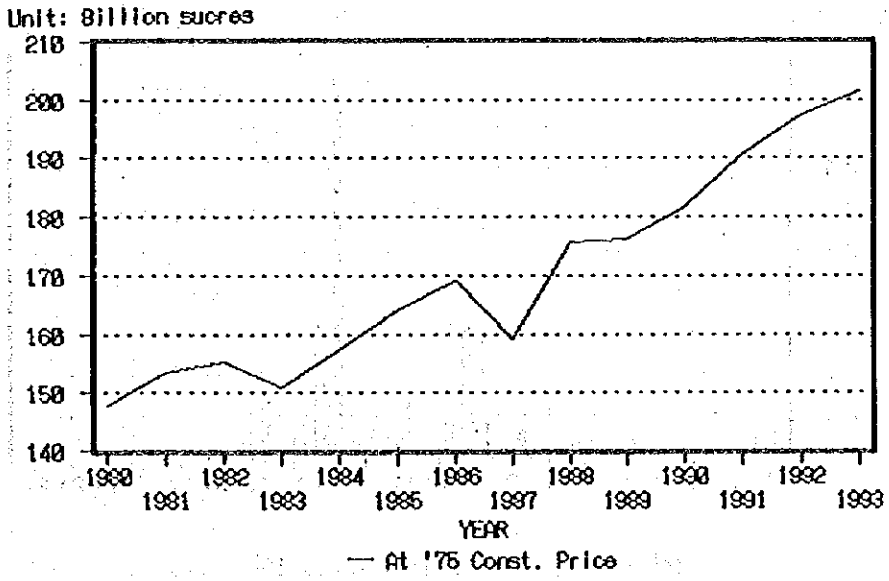
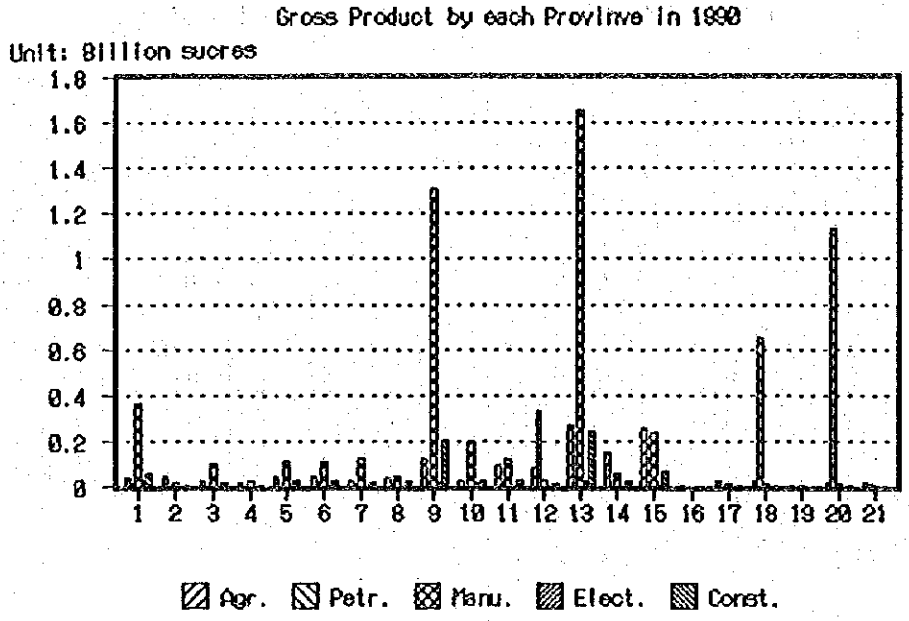
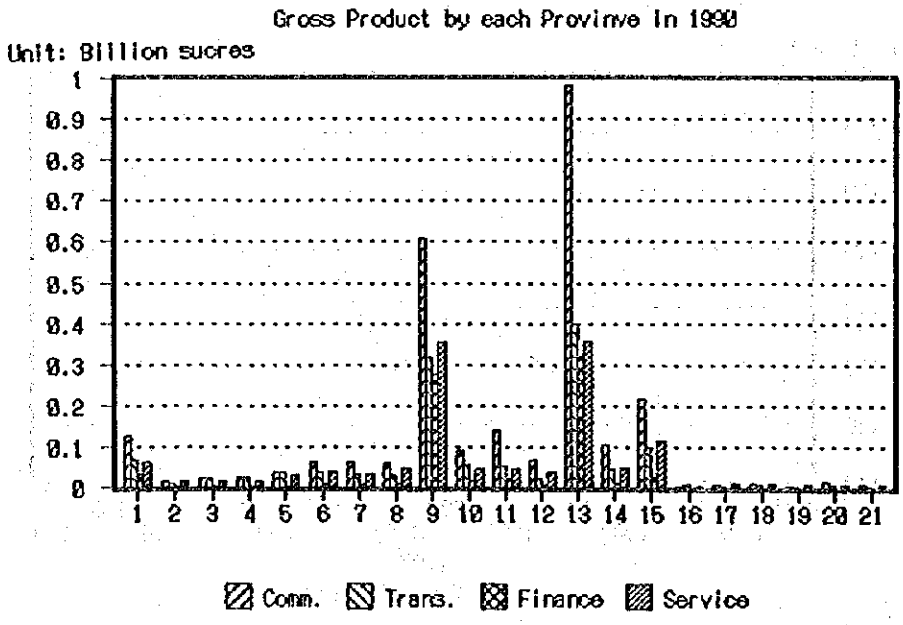


Figure I-1-5 Trend of GDP at Constant Price in Ecuador





No	Province	No	Province	No	Province
1	Azuay	8	Loja	15	Manabi
2	Bolivar	9	Pichincha	16	Galapagos
3	Canar	10	Tungurahua	17	Morona
4	Carchi	11	El Oro	18	Napo
5	Cotopaxi	12	Esmeraldas	19	Pastaza
6	Chimborazo	13	Guayas	20	Sucumbios
7	Imbabura	14	Los Rios	21	Zamora

Source: Econ. Galo Salvador, Aswsor de CONADE

Figure I-1-6 Gross Production by Each Province in 1990

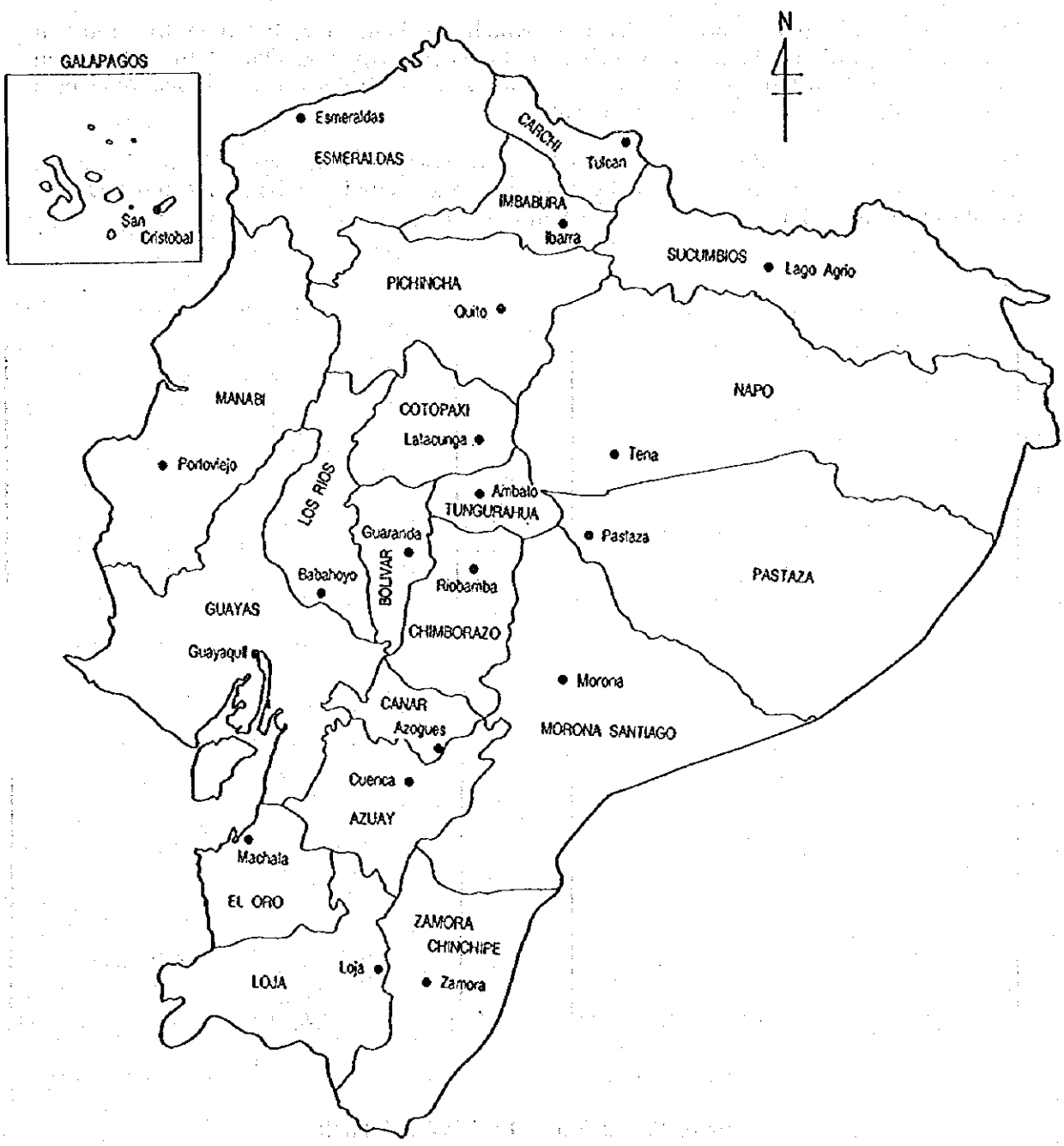
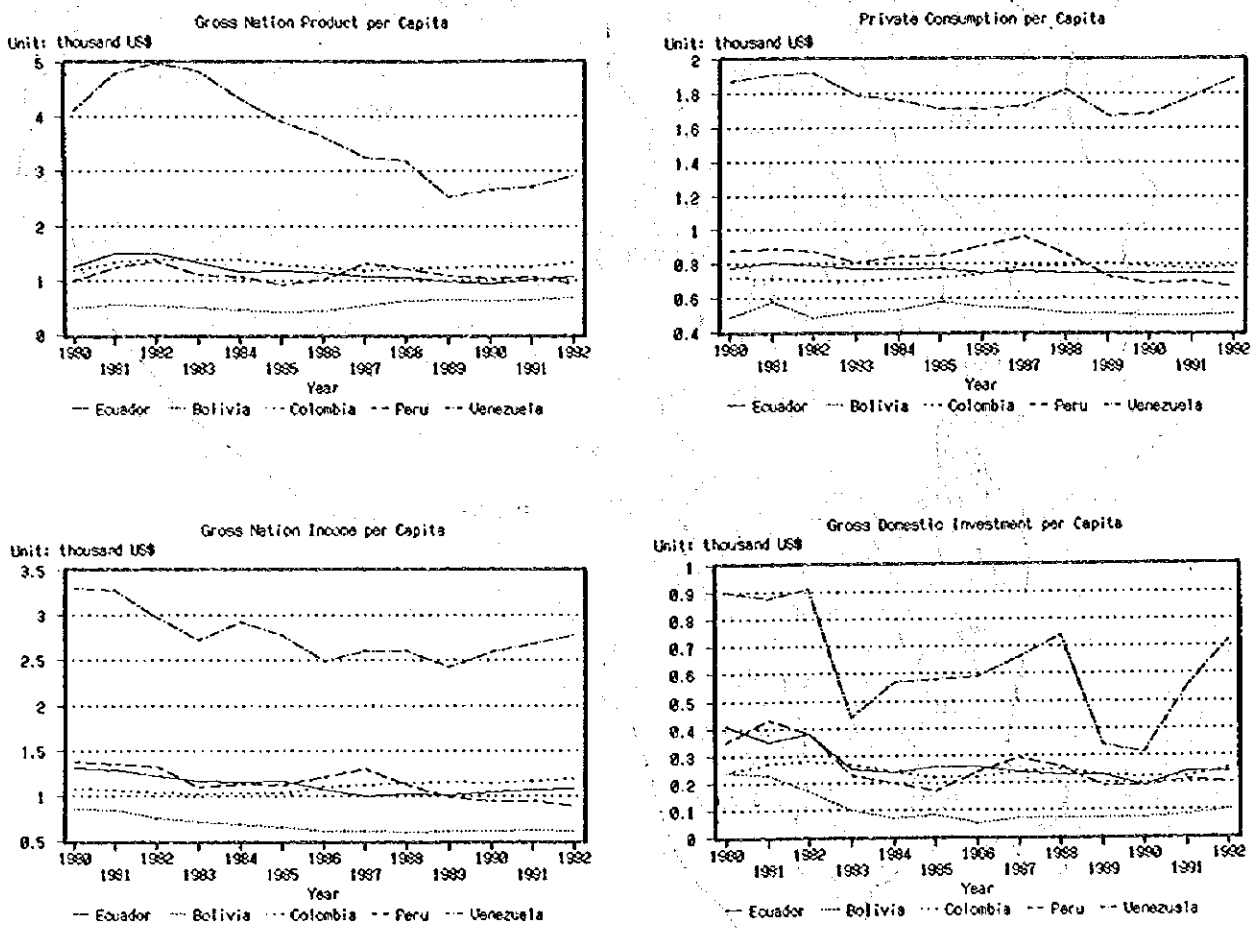


Figure I-1-7 Map of each Provinces in Ecuador

3) Andean Group

23. Ecuador has many tariff preferences which are being negotiated in the different economic integration schemes in which Ecuador is participating. One of the integration schemes is "Andean Group". This is a Free Trade Zone with Bolivia, Colombia, Venezuela and Peru (Bilateral Agreement with Peru).

24. Economics of Andean Group Countries are compared in Figure I-1-8. Venezuela holds the highest position followed by Colombia and Ecuador. GNP, GNI and GDI per Capita of Ecuador have been increasing since 1990.



Source: World Table 1994, World Bank

Figure I-1-8 Trend of Economic Activity in Andean Group

4) Employment

25. Table I-1-5 shows the number of people employed by the industrial sector. It can be seen that the Petroleum sector has a low share in comparison with GDP, employing only 0.6% of the population. On the other hand, shares of Agriculture and Service sector seem to be high at 31% and 25%.

Table I-1-5 Industrial Sector Employment in Ecuador

Population of Economic Activty

	1982			1990			1990/1982		
Sector	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Agriculture	62,501	724,471	786,972	132,821	885,740	1,018,561	2.13	1.22	1.29
Petroleum	2,921	4,485	7,406	7,955	12,840	20,795	2.72	2.86	2.81
Manufacture	190,895	95,635	286,530	253,036	115,901	368,937	1.33	1.21	1.29
Electricity	9,733	3,450	13,183	10,112	2,537	12,649	1.04	0.74	0.96
Construction	100,827	57,182	158,009	131,135	65,158	196,293	1.30	1.14	1.24
Commerce	221,993	49,921	271,914	395,530	78,650	474,180	1.78	1.58	1.74
Transport	75,035	26,286	101,321	101,325	29,677	131,002	1.35	1.13	1.29
Finance	41,711	2,405	44,116	75,803	5,554	81,357	1.82	2.31	1.84
Service	427,127	127,788	554,915	651,718	180,753	832,471	1.53	1.41	1.50
Others	74,111	47,586	121,697	151,828	39,477	191,305	2.05	0.83	1.57
Total	1,206,854	1,139,209	2,346,063	1,911,263	1,416,287	3,327,550	1.58	1.24	1.42

Rate of Population

	1982			1990		
Sector	Urban	Rural	Total	Urban	Rural	Total
Agriculture	5.2	63.6	33.5	6.9	62.5	30.6
Petroleum	0.2	0.4	0.3	0.4	0.9	0.6
Manufacture	15.8	8.4	12.2	13.2	8.2	11.1
Electricity	0.8	0.3	0.6	0.5	0.2	0.4
Construction	8.4	5.0	6.7	6.9	4.6	5.9
Commerce	18.4	4.4	11.6	20.7	5.6	14.3
Transport	6.2	2.3	4.3	5.3	2.1	3.9
Finance	3.5	0.2	1.9	4.0	0.4	2.4
Service	35.4	11.2	23.7	34.1	12.8	25.0
Others	6.1	4.2	5.2	7.9	2.8	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: INEC, 'V Censo de Poblacion y IV de Vivienda 1990'

26. Table I-1-6 and Figure I-1-9 show the unemployment rate. The unemployment ratio increased from 1990 to 1992. In 1992 unemployment in the Mountain zone was particularly high compared other years. Because unemployment New sector substantially increased. The unemployment rate in the Coastal zone (11%) is higher than the other zones of the country.

Table I-1-6 Rate of Unemployment in Ecuador

Rate of Unemplyment

Rate	1990	1991	1992	1993 2nd
National				
Unemplyment	6.1	8.5	8.9	8.4
Open	4.7	5.7	6.2	6.4
Concealed	1.4	2.8	2.7	2.0
New sector	3.1	1.5	2.3	2.3
Total	9.2	10.0	11.2	10.7
Mountain Zone				
Unemplyment	5.7	8.3	8.5	7.7
Open	4.4	6.0	6.2	6.3
Concealed	1.3	2.3	2.3	1.4
New sector	2.9	1.5	10.8	2.4
Total	8.6	9.8	19.3	10.1
Coast Zone				
Unemplyment	6.4	8.7	9.2	8.9
Open	4.9	5.4	6.1	6.5
Concealed	1.5	3.3	3.1	2.4
New sector	3.3	1.5	2.4	2.3
Total	9.7	10.2	11.6	11.2
Amazonian Zone				
Unemplyment	5.3	5.8	7.8	3.4
Open	4.2	3.9	6.0	3.0
Concealed	1.1	1.9	1.8	0.4
New sector	1.3	0.6	0.8	1.4
Total	6.6	6.4	8.6	4.8

Source: INEC, 'Empleo, Desemple y Subempleo en el Sector Urbano, a Nov. de 1993'

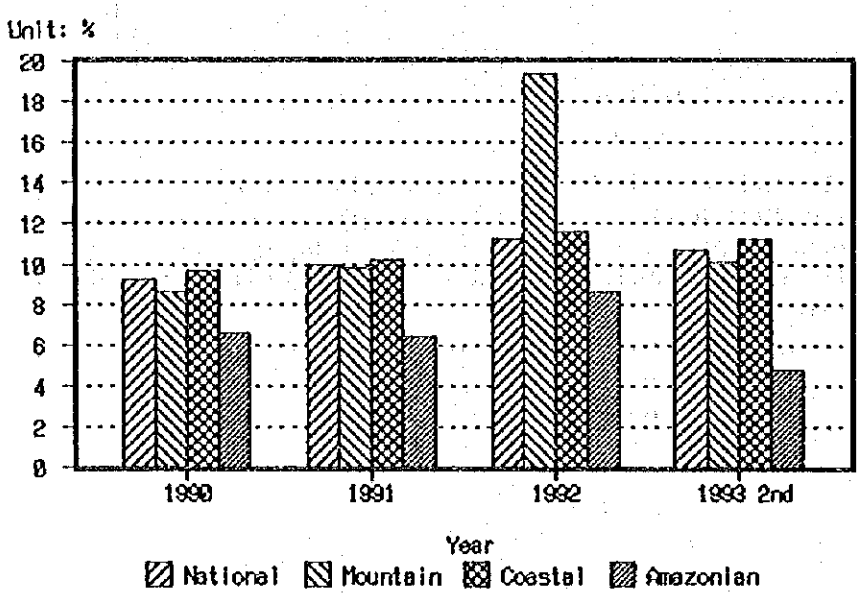


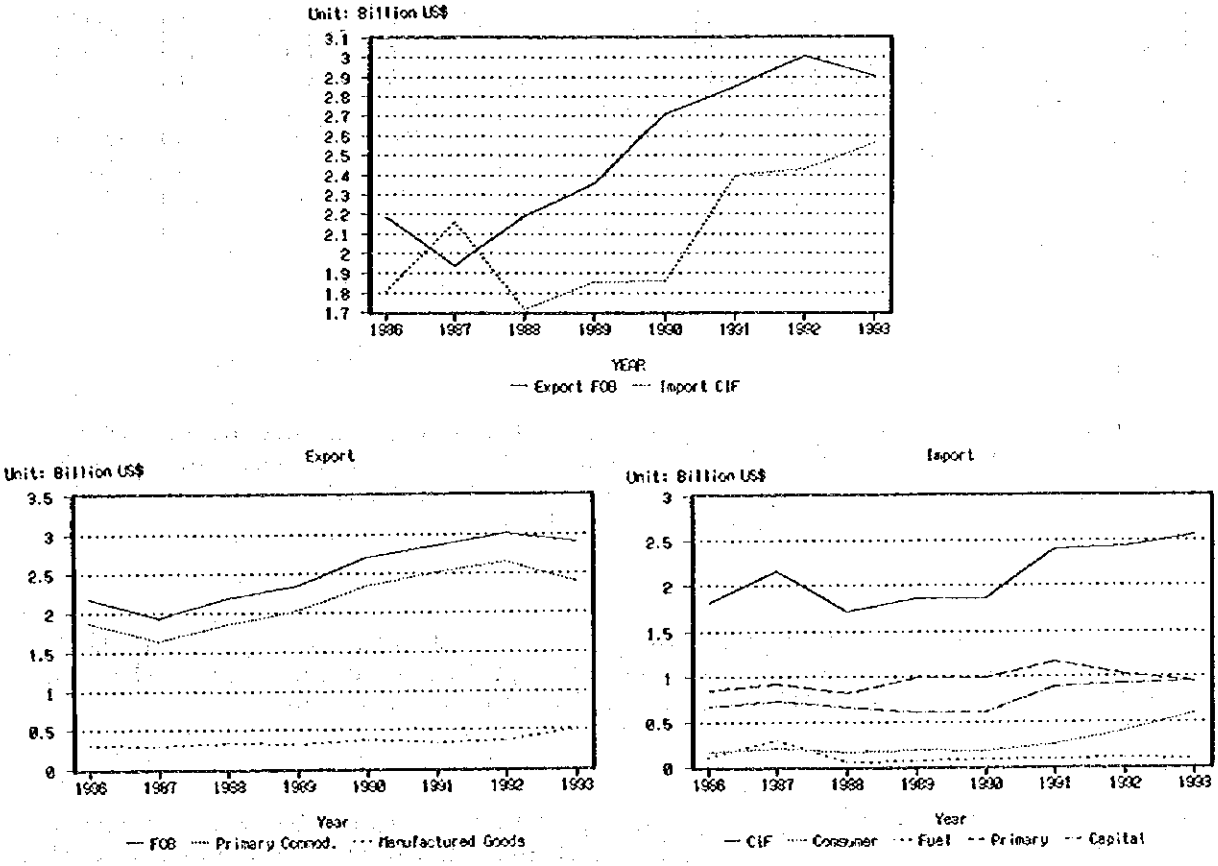
Figure I-1-9 Trend of External Trade in Ecuador

5) External Trade

27. Figure I-1-10 shows recent export and import of major goods from 1986 to 1993. Total exports declined in 1987 but has been gradually recovering in recent years. Primary commodities have been a major component of export. The share of primary commodities in export is more than 80% in 1993. Major commodities in primary goods are Crude Petroleum (40% in export), Banana (17%) and Shrimp (16%).

28. On the other hand, exports of manufactured goods were stagnant between 1986 and 1992. But manufactured goods in 1993 increased by 40% from in 1992. The major commodities in manufactured goods are Petroleum derivative (4%), Metal manufacture (3%) and Sea product (2%).

29. Imports declined from 1988 to 1990 but rapidly recovered in 1991. Major commodities are Primary material (37% in import), Capital goods (37%) and Consumer goods (23%) in 1993.



Source: Banco Central del Ecuador,"Informacion Estadistical Mensual", 6 1994

Figure I-1-10 Trend of External Trade in Ecuador

6) Industrial Activity

(a) Agriculture

30. The major agricultural products of Ecuador are banana, sugar cane, rice and palm as shown in Table I-1-7. Production increased 1.4-2 times from 1986 to 1993. The major products of export in Ecuador are banana, cacao and coffee.

Table I-1-7 Agriculture Product in Ecuador

Unit: thousand ton

	1986	1987	1988	1989	1990	1991	1992	1993	1993/1986
Banana	2,316	2,387	2,576	2,576	3,055	3,525	3,995	4,422	1.91
Sugar Cane	2,750	3,001	2,596	2,914	3,256	3,661	3,591	4,073	1.48
Rice	576	781	955	867	840	848	1,030	1,240	2.15
African Palm	658	688	674	903	836	873	902	947	1.44
Platano	776	848	959	1,053	1,065	921	975	824	1.06
Dry Hard Maiz	316	300	327	415	391	427	423	487	1.54
Potato	389	354	338	362	369	372	497	428	1.10
Soyabean	76	146	131	153	167	172	137	143	1.88
Coffee	161	124	114	129	135	139	138	137	0.85
Dry Soft Maiz	10	95	96	107	97	117	106	102	10.69
Cacao	90	58	85	83	97	100	94	83	0.93
Barley	44	43	51	56	42	45	45	44	1.01
Wheat	33	31	34	26	30	25	24	26	0.77
Cotton	37	20	24	33	37	34	33	21	0.57

Source: INEC-SEAN

a) Banana

31. Banana is the most important export commodity and is exported mainly to USA, Germany and Italy. The share of banana was about 80% of the total agriculture product of export in 1991. Main banana producing are El Oro (32%), Guayas (23%) and Los Rios (22%). Total share of three provinces is 77% in 1993.

b) Coffee

32. Coffee is also a major export commodity, most of which is exported to USA, Germany and Chile. Coffee is mainly produced in Manabi province (34% share in Ecuador), Los Rios province (11%) and Sucumbios province (11%) in 1993.

c) Cacao

33. Los Rios province is the major producing district of cacao, accounting for 32% of the total production, followed by Manabi (20%) and Guayas (20%) provinces in 1993. Cacao is also a major export commodity; more than 50% is exported to USA.

(b) Fishery

34. Fishing is another important industry. Figure I-1-11 shows export of Fishing Product (ton & US$). From 1992 to 1993, volume of fishery export increased 1.9 times. Total product decreased from 1985 to 1992. This main reason is fish meal production. The other production increased steadily.

35. Refrigerated shrimp and tuna are the main export products having respective shares of 63% and 8%. The other major products are canned goods (13%) and perishables (8%). Shrimp is exported mainly to the USA, Spain and France.

(c) Manufacturing

36. GDP by constant price of the manufacturing sector slightly increased from 1980 to 1993 are represent 15% of GDP. (Refer to Table I-1-5).

37. Table I-1-8 shows GDP at constant price of manufacturing industry. Manufacturing sector in Ecuador comprises light-industry such as food products, textiles/ garments and wood & furniture. Share of these sub-sectors accounted for 63% of total manufacturing sector GDP in 1990. But growth rate to these sub-sectors remained at the same level from 1986 to 1990.

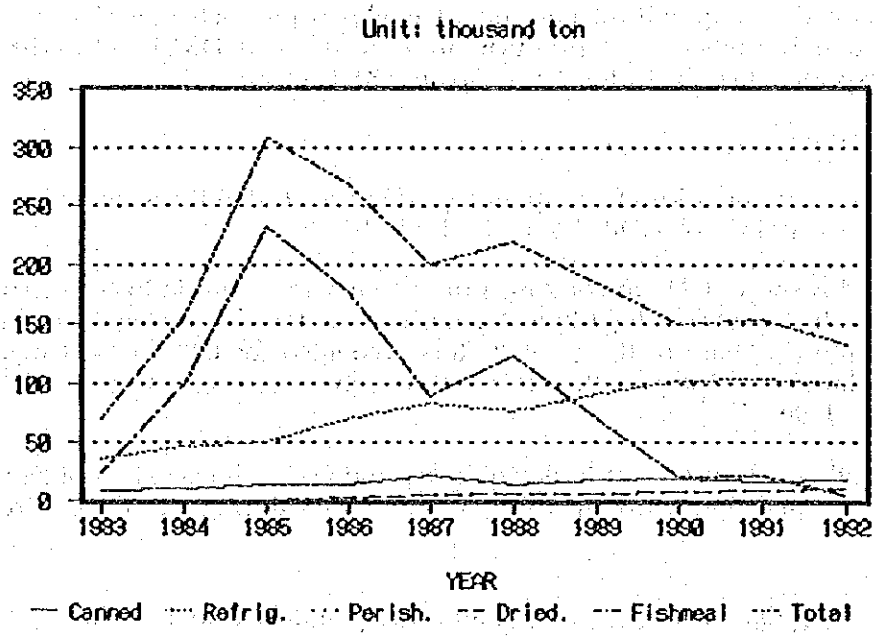
38. In the other sub-sectors such as Paper & printing, Machinery/Equipment and Other Manufacturing, GDP increased by 26%, 36% and 33% during the period from 1986 to 1990.

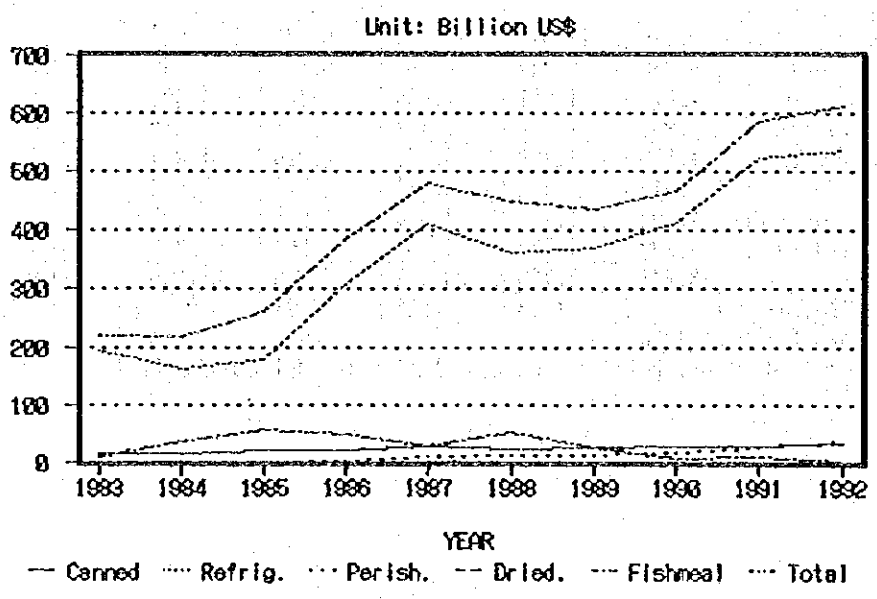
Table I-1-8 GDP of Manufacturing Industry in Ecuador

Unit: Million sucres

Year / Description	1986	1987	1988	1989	1990	Share '90 (%)	1990/1986 Rate
Foood Product	10,770	11,075	10,729	9,786	9,668	34.5	0.90
Textiles/Garments	5,936	5,944	6,366	6,586	6,440	23.0	1.08
Wood & Furniture	1,678	1,681	1,448	1,409	1,404	5.0	0.84
Paper and Printing	1,992	2,082	2,197	2,075	2,519	9.0	1.26
Chemicals-Rubber	1,856	1,790	1,746	2,070	1,874	6.7	1.01
Minerals	3,615	3,334	3,811	2,773	2,924	10.4	0.81
Machinery/Equipment	1,102	1,251	1,356	1,555	1,504	5.4	1.36
Other Manufacturing	1,292	1,572	1,659	1,604	1,722	6.1	1.33
Total	28,241	28,729	29,312	27,858	28,055	100.0	
Annual Growth Rate (%)		1.73	2.03	-4.96	0.71		

Remarks: Price based at 1975
Source: Banco Central del Eciador, 'Cuentas Nacionales del Ecuador No.16'





Source: MICIP, Undersecretary of Fishers Rescurces

Figure I-1-11 Export of Fishery Product in Ecuador

7) Transportation

(a) Registered vehicles

39. In 1992, 427,228 vehicles were registered in the country, 40,071 units more than in 1991. Pichincha province had the highest number of registered vehicles with 142,868 units; Guayas province followed with 130,423 units registered. These two provinces hold 64% of total existing vehicles in Ecuador. Manabi is in third place with 22,340 units and Azuay fourth place with 21,175 vehicles.

40. Of the total vehicles circulating in the country, 88% are classified as private units; taxis represent 10%; Government units stand for 2% and Municipal vehicles about 0.3%. In 1991, the distribution by usage was 87%, 11%, 2%, and 9%, respectively.

41. It is also observed from the total vehicles registered in 1992 that pick-up trucks comprise the greatest number of units with 36% of the total, followed by automobiles with 32% and jeeps with 9%.

(b) Railway

42. Government railroads (Guayaquil, Quito, Cuenca) transported 1,028,154 passengers in 1992. Northbound share was 51% and the Southbound share was 49%.

43. During October and September, a large number of passengers moved northbound, while October and August constituted the months of greater southbound movement.

(c) International air traffic

44. In 1992, 406,559 people entered the country through Quito and Guayaquil airport; most of them arrived in Quito (61%) and the remaining through the Guayaquil airport. Main cities of origin for the arriving passengers in Quito were Miami, Bogota and New York; 61% of the total passenger volume originated from these cities. Miami, Panama city and New York constituted the most important cities of origin for Guayaquil. These three cities represent together 72% of the total passengers who arrived through Guayaquil airport.

45. During the year under reference, 403,312 passengers flew from the country, 59% of which used Quito airport and 41% Guayaquil airport. The most frequent cities of destination for the Quito passengers were Miami, Bogota and New York, respectively, while for the Guayaquil passengers the main cities of destination were Miami, New York and Panama.

(d) International marine traffic

46. In 1992, 2,990 vessels arrived in the country through the different domestic ports: Guayaquil (52%), Puerto Bolivar (20%) and Manta (10%) being the most representative of Ecuador; together they constitute 28% of the total number of ships which arrived in the country ports; ships under Panamanian and Liberian flags entered in greater number to the Guayaquil port while Liberian and Panamanian ships arrived in greater number at Manta and Puerto Bolivar Port.