D.3 INTERVIEW SURVEY

D.3.1 Questionnaire Design and Sample Selection

Interview survey was conducted on the basis of the result of Questionnaire Survey. At first, 11 companies, which responded positively on investment in the Esmeraldas EPZ (Question No. 7), were selected. Hereinafter, these companies are referred to as "Group A".

Moreover, 9 organizations which include industrial associations and companies, have been selected. Those are not necessarily candidate investors, but have some specific information on industrial activities and investment in South America. Those are referred to as "Group B". Lists of the selected organizations are shown in Tables D-3 and D-4.

Basically questionnaire for interview survey comprises the following items:

(For Group A)

(1) Current situations of investment abroad, with particular attention to Latin America
(2) Planned project for foreign investment
(3) Possibility on investment at Esmeraldas EPZ
(4) Requirements for infrastructure
(5) Requirements for land lot (area) and labor force
(6) Other specific points

(For Group B)

(1) Current situations in investment abroad, with particular attention to Latin America
(2) Investment requirements
(3) Esmeraldas EPZ in the future
(4) Specific factors to each organization

D.3.2 Results of Interview Survey

Results of interview survey on each item are summarized mainly based on companies of Group A. Results of interview survey to Group B are included in the final section.

1) Current Situations of Investment Abroad

Out of 11 companies of Group A, which answered positively on the question about possibility of investment in Esmeraldas, 6 companies already have factories abroad. Among them two companies have factories in South America (Colombia and Brazil).

2) Planned Project for Overseas Investment

Most of Group A companies have plans to invest abroad for factories and sales promotion offices in the future. Regions for investment are scattered in the United States, Mexico, Brazil, Asia and so forth.

3) Possibility of Investment in Esmeraldas EPZ

At present most of Group A companies have not acute interest in investment in Esmeraldas, although in the long term there may be possibilities to locate there. In this question, most of companies answered that this depends on strategy of companies on market, input (raw materials and labor), and economic situations in South America.

4) Requirements for Infrastructure

The following items are put on a list of requirements for infrastructure by Group A companies:

(1) Basic infrastructure and utilities -- especially, reliable supply of electricity
(2) Port facilities and transportation net work
(3) Water with good quality (especially for medicine)

5) Requirements for Land Lot and Labor Force (Demand for land and workers)

The figures indicated below are not concrete demand of land and workers and not directly related to the demand for the Esmeraldas EPZ, but they are cited for references in case of investment abroad by Group A companies.

As for land area, 4 out of 7 companies answered to the enquiry, require 1000 m^2 or less. On workers, 6 out of 7 companies require 50 persons or less.

Size of Land	No. of Companies
300 ~ 999 m^2	2
1000 m^2	2
3000 m^2	1
10000 m^2	1
20000 ~ m^2	1
Not available	4
Total	11

Size of Workers	No. of Companies
~ 30 persons	2
40 ~ 50 persons	4
300 ~ persons	1
Not available	4
Total	11

6) Other Specific Points

Other points designated by interviewees through the survey, are summarized hereunder.

(1) Local partner

Some of answerers stated the necessity of local partners, especially in the same fields of industrial lines. They want to reduce risks in vestment through partnership in terms of capital cost and markets.

(2) Standard factory

Requirements for standard factory are strong. For medicine manufacturer, its specification should be taken into consideration in terms of air-conditioning and dust elimination.

(3) Stable economic conditions

Some companies worried about economic conditions and country risks in South America, including Ecuador.

(4) Tax incentives

For small business, tax incentives are one of key points for investment.

(5) Accumulation of local industry

A certain level of accumulation of manufacturing industry near the site is preferable for machinery industry.

(6) Promotion activities

Some interviewees stated that promotion activities were important. They said that seminars should be held in the United States, Japan and Europe. Also, they said the mission to Ecuador from Japan would be helpful to accelerate the promotion.

(7) Vocational training

According to an interviewee, vocational training school for leather industries was established in Brazil. It is said that this kind of approach may be needed in Ecuador. However, most of companies replied their employees will be trained through on-the-job training by themselves.

(8) Prospective industry

As general comments, an interviewee of trading company, who was the resident representative in Ecuador, indicated food processing factories might be most prospective because they could utilize raw materials.

Table D-1 NUMBER OF PLANNED PROJECT OF 517 SELECTED COMPANIES BY INDUSTRIAL SECTOR (JETRO-BASED DIRECTORY)

Food & Drinks	68
Textile & Garments	45
Paper & Pulp	9
Chemicals	73
Pharmaceutical	33
Rubber goods	18
Metal Products	77
Machinery	108
Heavy Electric Machinery	13
Home Appliances	15
Office Machinery	18
Telecommunication Equipment	28
Audio Equipment	17
Electronic Parts	84
Transport Equipment	28
Auto Parts	64
Precision Machinery	42
Optical	9
Miscellaneous Mfg.	107
Total	856

Remark: Total number of selected companies is 517. This means each selected company has 1.66 kinds of project in average.

Table D-2 NUMBER OF ADDITIONALLY SELECTED COMPANIES BY INDUSTRIAL SECTOR (TOYOKEIZAI DIRECTORY)

ISIC	Activities	No. of Companies
3111	Slaughtering, preparing and preserving meat	2
3233	Manufacture of products of leather (bags, etc.)	1
324	Manufacture of footwear	2
331	Manufacture of wood	7
332	Manufacture of furnitures	3
3412	Manufacture of containers and boxes of paper and paper board	3
3523	Manufacture of soap and cleaning preparations, etc.	14
356	Manufacture of plastic products	4
3825/29	Manufacture of office, computing and accounting machinery	9
3853	Manufacture of watches and clocks	4
3901	Manufacture of jewelry and related articles	2
3903/09	Manufacture of sporting and athletic goods, toys	8
	Total	59

Table D-3 LIST OF GROUP A FOR INTERVIEW SURVEY

	Name	ISIC Category	Major Products/ Services	Location
1.	"A" Machinery Co.	382	Parts for Machinery	Tokyo
2.	"F" Machinery Co.	385	Precision Machinery	Osaka
3.	"I" Trading Co.	-	Whole Sale/Trades	Tokyo
4.	"M" Heavy Industry Co.	384	Machinery and Transport Equipment	Tokyo
5.	"M" Food Manufacturing Co.	312	Coffee	Tokyo
6.	"T" Chemical Industry Co.	352	Explosives	Tokyo
7.	"T" Medical Products Manfg. Co.	352	Drugs and Medicines	Toyama
8.	"T" Chemical Industry Co.	351	Chemical Product	Tokyo
9.	"Y" Machinery Co.	382	Machinery for Agriculture	Yamagata
10.	"J" Engineering Co.	-	Engineering	Tokyo
11.	"D" Sporting Goods Manfg. Co.	390	Sporting Goods	Tokyo

Table D-4 LIST OF GROUP B FOR INTERVIEW SURVEY

	Name	Major Products/ Services	Location
1.	Japan External Trade Organization (JETRO)	Government Body	Tokyo
2.	Japan Small Business Corporation	government Body	Tokyo
3.	Japan Leather and Leather Goods Industries Association	Association for Leather Industries	Tokyo
4.	Japan Auto Parts Industries Association	Association for Auto Parts Industries	Tokyo
5.	Japan Frozen Food Association & "T" Fishery Co.	Fishery & Frozen Food	Tokyo
6.	"C" Trading Co.	Textile (Whole Sale)	Osaka
7.	"H" Wood Products Manfg. Co.	Wood Board/Furniture	Tokyo
8.	"S" Trading Co.	Fishery (Whole sale)	Kobe
9.	"N" Chemical Product Manfg. Co.	Chemical Products	Tokyo

Table D-5 NUMBER OF EMPLOYEES BY ISIC AND SIZE OF CAPITAL (QUESTION NO.1)

Quantity (Share %)

ISIC	- 19 persons		20 - 49		50 - 99		100 - 199		200 - 299		300 - 499		500 - 999		1000 -		No. of Answers		No. of Answerers	
311/12	1	(20.0)	0	(0.0)	1	(20.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(20.0)	2	(40.0)	5	(100.0)	5	(100.0)
313/14	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	0	(0.0)	1	(100.0)	1	(100.0)
321	0	(0.0)	0	(0.0)	0	(0.0)	1	(50.0)	1	(50.0)	0	(0.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
322	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
332	0	(0.0)	0	(0.0)	0	(0.0)	1	(50.0)	0	(0.0)	0	(0.0)	1	(50.0)	0	(0.0)	2	(100.0)	2	(100.0)
341	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(50.0)	0	(0.0)	0	(0.0)	1	(50.0)	2	(100.0)	2	(100.0)
342	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
351/52	0	(0.0)	0	(0.0)	1	(6.7)	1	(6.7)	2	(13.3)	3	(20.0)	4	(26.7)	4	(26.7)	15	(100.0)	15	(100.0)
355	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(50.0)	1	(50.0)	0	(0.0)	2	(100.0)	2	(100.0)
356	0	(0.0)	0	(0.0)	1	(33.3)	0	(0.0)	1	(33.3)	1	(33.3)	0	(0.0)	0	(0.0)	3	(100.0)	3	(100.0)
372	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	4	(100.0)	4	(100.0)	4	(100.0)
381	0	(0.0)	0	(0.0)	2	(28.6)	2	(28.6)	1	(14.3)	0	(0.0)	1	(14.3)	1	(14.3)	7	(100.0)	7	(100.0)
382	0	(0.0)	1	(4.5)	7	(31.8)	3	(13.6)	2	(9.1)	3	(13.6)	3	(13.6)	3	(13.6)	22	(100.0)	22	(100.0)
383	0	(0.0)	2	(11.8)	1	(5.9)	3	(17.6)	1	(5.9)	4	(23.5)	4	(23.5)	2	(11.8)	17	(100.0)	17	(100.0)
384	0	(0.0)	0	(0.0)	0	(0.0)	1	(14.3)	0	(0.0)	0	(0.0)	1	(14.3)	5	(71.4)	7	(100.0)	7	(100.0)
385	0	(0.0)	0	(0.0)	0	(0.0)	1	(25.0)	1	(25.0)	0	(0.0)	2	(50.0)	0	(0.0)	4	(100.0)	4	(100.0)
390	0	(0.0)	1	(50.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(50.0)	2	(100.0)	2	(100.0)
Others	1	(5.6)	1	(5.6)	2	(11.1)	2	(11.1)	3	(16.7)	2	(11.1)	1	(11.1)	5	(27.8)	18	(100.0)	18	(100.0)
Total	2	(1.7)	5	(4.3)	15	(12.9)	15	(12.9)	13	(11.2)	14	(12.1)	21	(18.1)	31	(26.7)	116	(100.0)	116	(100.0)

Capital (Yen)	- 19 persons		20 - 49		50 - 99		100 - 199		200 - 299		300 - 499		500 - 999		1000 -		No. of Answers		No. of Answerers	
~ 3 million	1	(33.3)	1	(33.3)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(33.3)	0	(0.0)	3	(100.0)	3	(100.0)
3~10 mil.	1	(25.0)	1	(25.0)	1	(25.0)	1	(25.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	4	(100.0)	4	(100.0)
10~30 mil.	0	(0.0)	1	(9.1)	5	(45.5)	3	(27.3)	1	(9.1)	1	(9.1)	0	(0.0)	0	(0.0)	11	(100.0)	11	(100.0)
30~100 mil.	0	(0.0)	2	(8.7)	6	(26.1)	5	(21.7)	4	(17.4)	4	(17.4)	2	(8.7)	0	(0.0)	23	(100.0)	23	(100.0)
100~500 mil.	0	(0.0)	0	(0.0)	3	(12.5)	5	(20.8)	5	(20.8)	4	(16.7)	4	(16.7)	3	(12.5)	24	(100.0)	24	(100.0)
500 mil. ~	0	(0.0)	0	(0.0)	0	(0.0)	1	(2.0)	3	(5.9)	5	(9.8)	14	(27.5)	28	(54.9)	51	(100.0)	51	(100.0)
Total	2	(1.7)	5	(4.3)	15	(12.9)	15	(12.9)	13	(11.2)	14	(12.1)	21	(18.1)	31	(26.7)	116	(100.0)	116	(100.0)

Remark: No. of No Answerers is one in ISIC 385.

Table D-6 OVERSEAS INVESTMENT PLAN BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 2)

Quantity (Share %)

ISIC	1 Yes	2 Interest	3 Need to	4 No Plan	5 Finished	No. of Answers	No. of Answerers
311/12	3 (60.0)	0 (0.0)	0 (0.0)	1 (20.0)	1 (20.0)	5 (100.0)	5 (100.0)
313/14	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
321	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
322	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
332	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
341	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
342	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
351/52	4 (26.7)	5 (33.3)	2 (13.3)	0 (0.0)	4 (26.7)	15 (100.0)	15 (100.0)
355	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
356	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	3 (100.0)	3 (100.0)
372	2 (50.0)	2 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (100.0)	4 (100.0)
381	1 (14.3)	1 (14.3)	1 (14.3)	1 (14.3)	3 (42.9)	7 (100.0)	7 (100.0)
382	4 (18.2)	4 (18.2)	3 (13.6)	8 (36.4)	3 (13.6)	22 (100.0)	22 (100.0)
383	4 (23.5)	2 (11.8)	4 (23.5)	2 (11.8)	5 (29.4)	17 (100.0)	17 (100.0)
384	4 (57.1)	0 (0.0)	0 (0.0)	2 (28.6)	1 (14.3)	7 (100.0)	7 (100.0)
385	2 (40.0)	0 (0.0)	3 (60.0)	0 (0.0)	0 (0.0)	5 (100.0)	5 (100.0)
390	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
Others	4 (22.2)	5 (27.8)	7 (38.9)	1 (5.6)	1 (5.6)	18 (100.0)	18 (100.0)
Total	34 (29.1)	22 (18.8)	25 (21.4)	17 (14.5)	19 (16.2)	117 (100.0)	117 (100.0)

Capital (Yen)	1 Yes	2 Interest	3 Need to	4 No Plan	5 Finished	No. of Answers	No. of Answerers
~ 3 million	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	3 (100.0)	3 (100.0)
3~10 mil.	0 (0.0)	1 (25.0)	1 (25.0)	0 (0.0)	2 (50.0)	4 (100.0)	4 (100.0)
10~30 mil.	5 (41.7)	2 (16.7)	1 (8.3)	3 (25.0)	1 (8.3)	12 (100.0)	12 (100.0)
30~100 mil.	5 (21.7)	3 (13.0)	5 (21.7)	6 (26.1)	4 (17.4)	23 (100.0)	23 (100.0)
100~500 mil.	5 (20.8)	6 (25.0)	7 (29.2)	2 (8.3)	4 (16.7)	24 (100.0)	24 (100.0)
500 mil. ~	19 (37.3)	9 (17.6)	11 (21.6)	4 (7.8)	8 (15.7)	51 (100.0)	51 (100.0)
Total	34 (29.1)	22 (18.8)	25 (21.4)	17 (14.5)	19 (16.2)	117 (100.0)	117 (100.0)

Remark: No. of No Answerers is zero.

Table D-7 SCHEDULE OF INVESTMENT ABROAD BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 3)

Quantity (Share %)

ISIC	1 Within 1Y	2 1-2 Ys	3 3 Ys -	4 Not decided	5 Finished	No. of Answers	No. of Answerers
311/12	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	3 (100.0)
313/14	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
321	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
322	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
332	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
341	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
342	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
351/52	1 (9.1)	4 (36.4)	2 (18.2)	4 (36.4)	0 (0.0)	11 (100.0)	11 (100.0)
355	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
356	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
372	2 (50.0)	1 (25.0)	0 (0.0)	1 (25.0)	0 (0.0)	4 (100.0)	4 (100.0)
381	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	3 (100.0)	3 (100.0)
382	1 (9.1)	3 (27.3)	1 (9.1)	4 (36.4)	2 (18.2)	11 (100.0)	11 (100.0)
383	1 (10.0)	3 (30.0)	0 (0.0)	5 (50.0)	1 (10.0)	10 (100.0)	10 (100.0)
384	2 (50.0)	0 (0.0)	0 (0.0)	1 (25.0)	1 (25.0)	4 (100.0)	4 (100.0)
385	1 (20.0)	2 (40.0)	0 (0.0)	2 (40.0)	0 (0.0)	5 (100.0)	5 (100.0)
390	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	2 (100.0)	2 (100.0)
Others	2 (12.5)	4 (25.0)	2 (12.5)	8 (50.0)	0 (0.0)	16 (100.0)	16 (100.0)
Total	18 (22.2)	21 (25.9)	6 (7.4)	32 (39.5)	4 (4.9)	81 (100.0)	81 (100.0)

Capital (Yen)	1 Within 1Y	2 1-2 Ys	3 3 Ys -	4 Not decided	5 Finished	No. of Answers	No. of Answerers
~ 3 million	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)	1 (100.0)
3~10 mil.	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	2 (100.0)
10~30 mil.	2 (25.0)	3 (37.5)	0 (0.0)	3 (37.5)	0 (0.0)	8 (100.0)	8 (100.0)
30~100 mil.	4 (30.8)	3 (23.1)	0 (0.0)	5 (38.5)	1 (7.7)	13 (100.0)	13 (100.0)
100~500 mil.	1 (5.6)	4 (22.2)	3 (16.7)	9 (50.0)	1 (5.6)	18 (100.0)	18 (100.0)
500 mil. ~	11 (28.2)	10 (25.6)	3 (7.7)	13 (33.3)	2 (5.1)	39 (100.0)	39 (100.0)
Total	18 (22.2)	21 (25.9)	6 (7.4)	32 (39.5)	4 (4.9)	81 (100.0)	81 (100.0)

Remark: No. of No Answerers is 36.

Table D-8 REGION OF INVESTMENT BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 4)

Quantity (Share %)

ISIC	1 N. America	2 S. America	3 Europe	4 Asia	5 Pacific	6 M. East etc.	7 Others	8 Not decided	No. of Answers	No. of Answerers
311/12	1 (33.3)	0 (0.0)	1 (33.3)	1 (33.3)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	5 (166.7)	3 (100.0)
313/14	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
321	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
322	1 (50.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (200.0)	2 (100.0)
332	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
341	0 (0.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (150.0)	2 (100.0)
342	1 (100.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
351/52	4 (44.4)	3 (33.3)	6 (66.7)	4 (44.4)	1 (11.1)	0 (0.0)	0 (0.0)	1 (11.1)	19 (211.1)	9 (100.0)
355	1 (50.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (200.0)	2 (100.0)
356	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
372	4 (100.0)	3 (75.0)	2 (50.0)	2 (50.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	12 (300.0)	4 (100.0)
381	1 (33.3)	0 (0.0)	1 (33.3)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (166.7)	3 (100.0)
382	4 (36.4)	1 (9.1)	3 (27.3)	9 (81.8)	2 (18.2)	1 (9.1)	0 (0.0)	0 (0.0)	20 (181.8)	11 (100.0)
383	2 (20.0)	0 (0.0)	3 (30.0)	9 (90.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (10.0)	15 (150.0)	10 (100.0)
384	2 (50.0)	0 (0.0)	2 (50.0)	3 (75.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	8 (200.0)	4 (100.0)
385	0 (0.0)	0 (0.0)	1 (25.0)	3 (75.0)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)	5 (125.0)	4 (100.0)
390	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	2 (100.0)	2 (100.0)
Others	5 (31.3)	1 (6.3)	7 (43.8)	11 (68.8)	2 (12.5)	0 (0.0)	0 (0.0)	2 (12.5)	28 (175.0)	16 (100.0)
Total	26 (33.3)	8 (10.3)	31 (39.7)	57 (73.1)	7 (9.0)	1 (1.3)	2 (2.6)	6 (7.7)	138 (176.9)	78 (100.0)

Capital (Yen)	1 N. America	2 S. America	3 Europe	4 Asia	5 Pacific	6 M. East etc.	7 Others	8 Not decided	No. of Answers	No. of Answerers
~ 3 million	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (200.0)	1 (100.0)
3~10 mil.	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	3 (150.0)	2 (100.0)
10~30 mil.	0 (0.0)	0 (0.0)	2 (25.0)	6 (75.0)	1 (12.5)	0 (0.0)	1 (12.5)	1 (12.5)	11 (137.5)	8 (100.0)
30~100 mil.	3 (25.0)	1 (8.3)	3 (25.0)	9 (75.0)	2 (16.7)	0 (0.0)	1 (8.3)	1 (8.3)	20 (166.7)	12 (100.0)
100~500 mil.	4 (23.5)	3 (17.6)	7 (41.2)	13 (76.5)	1 (5.9)	0 (0.0)	0 (0.0)	1 (5.9)	29 (170.6)	17 (100.0)
500 mil. ~	18 (47.4)	4 (10.5)	18 (47.4)	28 (73.7)	2 (5.3)	0 (0.0)	0 (0.0)	3 (7.9)	73 (192.1)	38 (100.0)
Total	26 (33.3)	8 (10.3)	31 (39.7)	57 (73.1)	7 (9.0)	1 (1.3)	2 (2.6)	6 (7.7)	138 (176.9)	78 (100.0)

Remarks: (1) No. of No Answerers is 39.
(2) Plural Answers

Table D-9 PLANNED OPERATIONS ABROAD BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 5)

Quantity (Share %)

ISIC	1 Mfg.	2 Processing	3 Cooperation	4 Supporting	5 Others	No. of Answers	No. of Answerers
311/12	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	3 (100.0)
313/14	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
321	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
322	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
332	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
341	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
342	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
351/52	6 (54.5)	4 (36.4)	0 (0.0)	0 (0.0)	1 (9.1)	11 (100.0)	11 (100.0)
355	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
356	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
372	3 (75.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	4 (100.0)	4 (100.0)
381	1 (33.3)	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	3 (100.0)
382	4 (36.4)	1 (9.1)	4 (36.4)	0 (0.0)	2 (18.2)	11 (100.0)	11 (100.0)
383	5 (50.0)	3 (30.0)	2 (20.0)	0 (0.0)	0 (0.0)	10 (100.0)	10 (100.0)
384	3 (75.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	4 (100.0)	4 (100.0)
385	3 (60.0)	0 (0.0)	2 (40.0)	0 (0.0)	0 (0.0)	5 (100.0)	5 (100.0)
390	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
Others	6 (37.5)	2 (12.5)	3 (18.0)	5 (31.3)	0 (0.0)	16 (100.0)	16 (100.0)
Total	44 (54.3)	13 (16.0)	14 (17.3)	5 (6.2)	5 (6.2)	81 (100.0)	81 (100.0)

Capital (Yen)	1 Mfg.	2 Processing	3 Cooperation	4 Supporting	5 Others	No. of Answers	No. of Answerers
~ 3 million	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
3~10 mil.	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	2 (100.0)	2 (100.0)
10~30 mil.	6 (75.0)	1 (12.5)	1 (12.5)	0 (0.0)	0 (0.0)	8 (100.0)	8 (100.0)
30~100 mil.	4 (30.8)	4 (30.8)	5 (38.5)	0 (0.0)	0 (0.0)	13 (100.0)	13 (100.0)
100~500 mil.	9 (50.0)	4 (22.2)	3 (16.7)	1 (5.6)	1 (5.6)	18 (100.0)	18 (100.0)
500 mil. ~	24 (61.5)	4 (10.3)	4 (10.3)	4 (10.3)	3 (7.7)	39 (100.0)	39 (100.0)
Total	44 (54.3)	13 (16.0)	14 (17.3)	5 (6.2)	5 (6.2)	81 (100.0)	81 (100.0)

Remark: No. of No Answerers is 36.

Table D-10 MAJOR REASONS FOR INVESTMENT ABROAD BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 6)

Quantity (Share %)

ISIC	1 Request	2 Image	3 Price of Materials	4 Utility Price	5 Land Area	6 Wage Rate	7 Export	8 Market Share	9 3rd Market	10 Market in Japan	11 Affiliated Co.	12 Others	No. of Answers	No. of Answerers
311/12	1 (33.3)	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	9 (300.0)	3 (100.0)
313/14	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (200.0)	1 (100.0)
321	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (200.0)	1 (100.0)
322	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	5 (250.0)	2 (100.0)
332	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (200.0)	1 (100.0)
341	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (150.0)	2 (100.0)
342	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	3 (300.0)	1 (100.0)
351/52	1 (9.1)	0 (0.0)	3 (27.3)	0 (0.0)	1 (9.1)	1 (9.1)	2 (18.2)	9 (81.8)	4 (36.4)	3 (27.3)	1 (9.1)	0 (0.0)	25 (227.3)	11 (100.0)
355	1 (50.0)	1 (50.0)	0 (0.0)	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (300.0)	2 (100.0)
356	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (200.0)	2 (100.0)
372	1 (25.0)	0 (0.0)	1 (25.0)	0 (0.0)	0 (0.0)	2 (50.0)	0 (0.0)	3 (75.0)	1 (25.0)	0 (0.0)	0 (0.0)	2 (50.0)	10 (250.0)	4 (100.0)
381	0 (0.0)	1 (33.3)	1 (33.3)	0 (0.0)	1 (33.3)	1 (33.3)	0 (0.0)	2 (66.7)	2 (66.7)	0 (0.0)	1 (33.3)	0 (0.0)	9 (300.0)	3 (100.0)
382	2 (18.2)	1 (9.1)	2 (18.2)	2 (18.2)	1 (9.1)	4 (36.4)	1 (9.1)	6 (54.5)	3 (27.3)	2 (18.2)	0 (0.0)	1 (9.1)	25 (227.3)	11 (100.0)
383	1 (10.0)	1 (10.0)	2 (20.0)	1 (10.0)	1 (10.0)	5 (50.0)	1 (10.0)	7 (70.0)	2 (20.0)	0 (0.0)	2 (20.0)	0 (0.0)	23 (230.0)	10 (100.0)
384	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)	1 (25.0)	2 (50.0)	0 (0.0)	2 (50.0)	2 (50.0)	0 (0.0)	2 (50.0)	0 (0.0)	10 (250.0)	4 (100.0)
385	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (40.0)	1 (20.0)	2 (40.0)	0 (0.0)	1 (20.0)	2 (40.0)	1 (20.0)	9 (180.0)	5 (100.0)
390	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (300.0)	2 (100.0)
Others	1 (6.3)	2 (12.5)	3 (18.0)	1 (6.3)	1 (6.3)	7 (43.8)	3 (18.8)	10 (62.5)	7 (43.8)	3 (18.8)	3 (18.8)	0 (0.0)	41 (256.3)	16 (100.0)
Total	10 (12.3)	6 (7.4)	19 (23.5)	6 (7.4)	7 (8.6)	35 (43.2)	9 (11.1)	50 (61.7)	25 (30.9)	11 (13.6)	12 (14.8)	4 (4.9)	194 (239.5)	81 (100.0)

Capital (Yen)	1 Request	2 Image	3 Price of Materials	4 Utility Price	5 Land Area	6 Wage Rate	7 Export	8 Market Share	9 3rd Market	10 Market in Japan	11 Affiliated Co.	12 Others	No. of Answers	No. of Answerers
~ 3 million	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
3~10 mil.	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	2 (100.0)	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	6 (300.0)	2 (100.0)
10~30 mil.	3 (37.5)	0 (0.0)	2 (25.0)	0 (0.0)	1 (12.5)	6 (75.0)	1 (12.5)	2 (25.0)	1 (12.5)	2 (25.0)	2 (25.0)	1 (12.5)	21 (262.5)	8 (100.0)
30~100 mil.	3 (23.1)	1 (7.7)	5 (38.5)	1 (7.7)	1 (7.7)	7 (53.8)	0 (0.0)	7 (53.8)	2 (15.4)	4 (30.8)	0 (0.0)	0 (0.0)	31 (238.5)	13 (100.0)
100~500mil.	0 (0.0)	0 (0.0)	4 (22.2)	1 (5.6)	2 (11.1)	6 (33.3)	3 (16.7)	11 (61.1)	8 (44.4)	1 (5.6)	3 (16.7)	0 (0.0)	39 (216.7)	18 (100.0)
500 mil. ~	4 (10.3)	5 (12.8)	8 (20.5)	3 (7.7)	2 (5.1)	13 (33.3)	5 (12.8)	27 (69.2)	14 (35.9)	4 (10.3)	6 (15.4)	3 (7.7)	94 (241.0)	39 (100.0)
Total	10 (12.3)	6 (7.4)	19 (23.5)	6 (7.4)	7 (8.6)	35 (43.2)	9 (11.1)	50 (61.7)	25 (30.9)	11 (13.6)	12 (14.8)	4 (4.9)	194 (239.5)	81 (100.0)

Remarks: (1) No. of No Answerers is 36.
(2) Plural Answers

Table D-11 POSSIBILITY OF INVESTMENT IN ESMERALDAS BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 7)

Quantity (Share %)

ISIC	1 Yes		2 Possibly		3 No		No. of Answers		No. of Answerers	
311/12	0	(0.0)	0	(0.0)	3	(100.0)	3	(100.0)	3	(100.0)
313/14	0	(0.0)	1	(100.0)	0	(0.0)	1	(100.0)	1	(100.0)
321	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
322	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
332	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
341	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
342	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
351/52	0	(0.0)	3	(27.3)	8	(72.7)	11	(100.0)	11	(100.0)
355	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
356	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
372	0	(0.0)	0	(0.0)	4	(100.0)	4	(100.0)	4	(100.0)
381	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)	2	(100.0)
382	0	(0.0)	2	(22.2)	7	(77.8)	9	(100.0)	9	(100.0)
383	0	(0.0)	0	(0.0)	9	(100.0)	9	(100.0)	9	(100.0)
384	0	(0.0)	1	(25.0)	3	(75.0)	4	(100.0)	4	(100.0)
385	0	(0.0)	1	(20.0)	4	(80.0)	5	(100.0)	5	(100.0)
390	0	(0.0)	1	(50.0)	1	(50.0)	2	(100.0)	2	(100.0)
Others	0	(0.0)	2	(13.3)	13	(86.7)	15	(100.0)	15	(100.0)
Total	0	(0.0)	11	(14.5)	65	(85.5)	76	(100.0)	76	(100.0)

Capital (Yen)	1 Yes		2 Possibly		3 No		No. of Answers		No. of Answerers	
~ 3 million	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
3~10 mil.	0	(0.0)	1	(50.0)	1	(50.0)	2	(100.0)	2	(100.0)
10~30 mil.	0	(0.0)	0	(0.0)	8	(100.0)	8	(100.0)	8	(100.0)
30~100 mil.	0	(0.0)	3	(27.3)	8	(72.7)	11	(100.0)	11	(100.0)
100~500 mil.	0	(0.0)	3	(20.0)	12	(80.0)	15	(100.0)	15	(100.0)
500 mil. ~	0	(0.0)	4	(10.3)	35	(89.7)	39	(100.0)	39	(100.0)
Total	0	(0.0)	11	(14.5)	65	(85.5)	76	(100.0)	76	(100.0)

Remark: No. of No Answerers is 41.

Table D-12 REASONS TO NEGATIVE ANSWER BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 7)

Quantity (Share %)

ISIC	1 Other Area		2 Not Attract		3 Others		No. of Answers		No. of Answerers	
311/12	1	(33.3)	0	(0.0)	2	(66.7)	3	(100.0)	3	(100.0)
313/14	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
321	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
322	0	(0.0)	1	(50.0)	1	(50.0)	2	(100.0)	2	(100.0)
332	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
341	1	(50.0)	0	(0.0)	1	(50.0)	2	(100.0)	2	(100.0)
342	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
351/52	3	(37.5)	2	(25.0)	3	(37.5)	8	(100.0)	8	(100.0)
355	2	(100.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
356	0	(0.0)	2	(100.0)	0	(0.0)	2	(100.0)	2	(100.0)
372	1	(25.0)	2	(50.0)	1	(25.0)	4	(100.0)	4	(100.0)
381	1	(50.0)	0	(0.0)	1	(50.0)	2	(100.0)	2	(100.0)
382	5	(71.4)	0	(0.0)	2	(28.6)	7	(100.0)	7	(100.0)
383	4	(44.4)	4	(44.4)	1	(11.1)	9	(100.0)	9	(100.0)
384	1	(33.3)	2	(66.7)	0	(0.0)	3	(100.0)	3	(100.0)
385	1	(25.0)	2	(50.0)	1	(25.0)	4	(100.0)	4	(100.0)
390	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
Others	1	(7.7)	7	(53.8)	5	(38.5)	13	(100.0)	13	(100.0)
Total	24	(36.9)	22	(33.8)	19	(29.2)	65	(100.0)	65	(100.0)

Capital (Yen)	1 Other Area		2 Not Attract		3 Others		No. of Answers		No. of Answerers	
~ 3 million	0	(0.0)	1	(100.0)	0	(0.0)	1	(100.0)	1	(100.0)
3~10 mil.	0	(0.0)	1	(100.0)	0	(0.0)	1	(100.0)	1	(100.0)
10~30 mil.	3	(37.5)	2	(25.0)	3	(37.5)	8	(100.0)	8	(100.0)
30~100 mil.	4	(50.0)	2	(25.0)	2	(25.0)	8	(100.0)	8	(100.0)
100~500 mil.	5	(41.7)	4	(33.3)	3	(25.0)	12	(100.0)	12	(100.0)
500 mil. ~	12	(34.3)	12	(34.3)	11	(31.4)	35	(100.0)	35	(100.0)
Total	24	(36.9)	22	(33.8)	19	(29.2)	65	(100.0)	65	(100.0)

Remark: No. of No Answerers is 52.

Table D-13 PLANNED OPERATIONS IN THE EPZ BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 8)

Quantity (Share %)

ISIC	1 Mfg. (CBF)		2 Mfg. (SF)		3 Services		4 Others		No. of Answers		No. of Answerers	
311/12	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
313/14	0	(0.0)	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
321	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
322	2	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
332	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
341	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)	1	(100.0)
342	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
351/52	5	(71.4)	1	(14.3)	0	(0.0)	1	(41.3)	7	(100.0)	7	(100.0)
355	1	(50.0)	1	(50.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
356	0	(0.0)	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
372	2	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
381	1	(33.3)	2	(66.7)	0	(0.0)	0	(0.0)	3	(100.0)	3	(100.0)
382	3	(33.3)	4	(44.4)	0	(0.0)	2	(22.2)	9	(100.0)	9	(100.0)
383	3	(42.9)	3	(42.9)	0	(0.0)	1	(14.3)	7	(100.0)	7	(100.0)
384	3	(75.0)	1	(25.0)	0	(0.0)	0	(0.0)	4	(100.0)	4	(100.0)
385	0	(0.0)	2	(66.7)	0	(0.0)	1	(33.3)	3	(100.0)	3	(100.0)
390	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
Others	5	(41.7)	1	(8.3)	3	(25.0)	3	(25.0)	12	(100.0)	12	(100.0)
Total	29	(50.0)	17	(29.3)	3	(5.2)	9	(15.5)	58	(100.0)	58	(100.0)

Capital (Yen)	1 Mfg. (CBF)		2 Mfg. (SF)		3 Services		4 Others		No. of Answers		No. of Answerers	
~ 3 million	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)	1	(100.0)
3~10 mil.	0	(0.0)	2	(100.0)	0	(0.0)	0	(0.0)	2	(100.0)	2	(100.0)
10~30 mil.	1	(33.3)	2	(66.7)	0	(0.0)	0	(0.0)	3	(100.0)	3	(100.0)
30~100 mil.	4	(44.4)	3	(33.7)	1	(11.1)	1	(11.1)	9	(100.0)	9	(100.0)
100~500 mil.	6	(40.0)	4	(26.7)	1	(6.7)	4	(26.7)	15	(100.0)	15	(100.0)
500 mil. ~	17	(60.7)	6	(21.4)	1	(3.6)	4	(14.3)	28	(100.0)	28	(100.0)
Total	29	(50.0)	17	(29.3)	3	(5.2)	9	(15.5)	58	(100.0)	58	(100.0)

Remark: No. of No Answerers is 59.

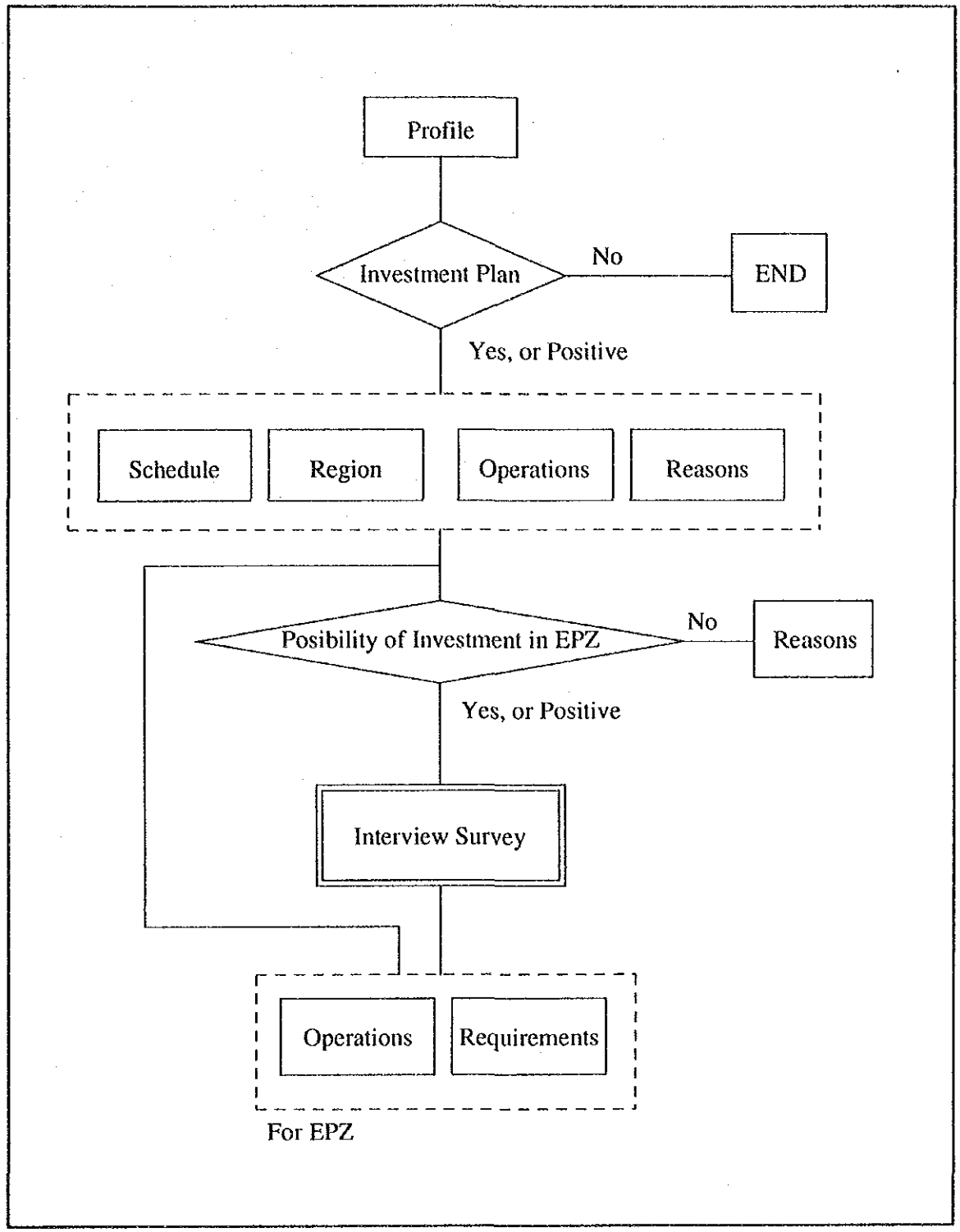
Table D-14 REQUIREMENTS FOR INVESTMENT IN THE EPZ BY ISIC AND SIZE OF CAPITAL (QUESTION NO. 9)

Quantity (Share %)

ISIC	1 Land Price	2 Wage Rate	3 Price for Utility	4 Rental Price	5 Recre. Facilities	6 Tax Incentives	7 Quality of Labor	8 Market Assist.	9 Infra-structure	10 Local Partner	11 Auton-omy	12 Others	No. of Answers	No. of Answerers
311/12	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
313/14	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
321	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
322	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (300.0)	2 (100.0)
332	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
341	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
342	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
351/52	1 (12.5)	2 (25.0)	3 (37.5)	0 (0.0)	0 (0.0)	4 (50.0)	4 (50.0)	0 (0.0)	4 (50.0)	4 (50.0)	0 (0.0)	1 (12.5)	23 (287.5)	8 (100.0)
355	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	6 (300.0)	2 (100.0)
356	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
372	2 (50.0)	2 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	2 (50.0)	0 (0.0)	2 (50.0)	2 (50.0)	0 (0.0)	0 (0.0)	11 (275.0)	4 (100.0)
381	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	2 (66.7)	0 (0.0)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	8 (266.7)	3 (100.0)
382	1 (11.0)	2 (22.2)	1 (11.1)	2 (22.2)	0 (0.0)	4 (44.4)	6 (66.7)	2 (22.2)	3 (33.3)	2 (22.2)	0 (0.0)	0 (0.0)	23 (255.6)	9 (100.0)
383	1 (12.5)	2 (25.0)	0 (0.0)	1 (12.5)	0 (0.0)	1 (12.5)	5 (62.5)	2 (25.0)	4 (50.0)	1 (12.5)	2 (25.0)	2 (25.0)	21 (262.5)	8 (100.0)
384	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	3 (100.0)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	8 (266.7)	3 (100.0)
385	0 (0.0)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	3 (100.0)	1 (33.3)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	8 (266.7)	3 (100.0)
390	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (250.0)	2 (100.0)
Others	1 (9.1)	4 (36.4)	0 (0.0)	0 (0.0)	0 (0.0)	3 (27.3)	8 (72.7)	2 (18.2)	6 (54.5)	5 (45.5)	3 (27.3)	0 (0.0)	32 (290.9)	11 (100.0)
Total	8 (13.1)	18 (29.5)	7 (11.5)	6 (9.8)	0 (0.0)	22 (36.1)	43 (70.5)	8 (13.1)	31 (50.8)	17 (27.9)	6 (9.8)	3 (4.9)	169 (277.0)	61 (100.0)

Capital (Yen)	1 Land Price	2 Wage Rate	3 Price for Utility	4 Rental Price	5 Recre. Facilities	6 Tax Incentives	7 Quality of Labor	8 Market Assist.	9 Infra-structure	10 Local Partner	11 Auton-omy	12 Others	No. of Answers	No. of Answerers
~ 3 million	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (300.0)	1 (100.0)
3~10 mil.	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	2 (100.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (300.0)	2 (100.0)
10~30 mil.	0 (0.0)	2 (66.7)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	8 (266.7)	3 (100.0)
30~100 mil.	2 (18.2)	1 (9.1)	0 (0.0)	1 (9.1)	0 (0.0)	6 (54.5)	9 (81.8)	2 (18.2)	4 (36.4)	3 (27.3)	1 (9.1)	0 (0.0)	29 (363.6)	11 (100.0)
100~500mil.	1 (6.3)	3 (18.8)	4 (25.0)	2 (12.5)	0 (0.0)	2 (12.5)	12 (75.0)	1 (6.3)	10 (62.5)	6 (37.5)	2 (12.5)	2 (12.5)	45 (281.3)	16 (100.0)
500 mil. ~	5 (17.9)	10 (35.7)	3 (10.7)	1 (3.6)	0 (0.0)	12 (42.9)	18 (64.3)	5 (17.9)	14 (50.0)	8 (28.6)	1 (3.6)	1 (3.6)	78 (278.6)	28 (100.0)
Total	8 (13.1)	18 (29.5)	7 (11.5)	6 (9.8)	0 (0.0)	22 (36.1)	43 (70.5)	8 (13.1)	31 (50.8)	17 (27.9)	6 (9.8)	3 (4.9)	169 (277.0)	61 (100.0)

Remarks: (1) No. of No Answerers is 56.
(2) Plural Answers



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. D-1 Flow Chart of Questionnaire and Interview Surveys
	JAPAN INTERNATIONAL COOPERATION AGENCY

Attachment Mail Questionnaire Form

Q1. Firm profile

A: Name of the Company :
B: Address :
C: Paid-up Capital :
D: Number of Employees :
E: Industrial Category :
F: Major Product :
G: Name of Respondent :
H: Position with Company :
I: Telephone :
J: Has your firm invested abroad in production, in joint-venture, or partnership with foreign investors ? Yes No
K: Has your firm transacted direct or indirect export or import ? Yes No
L: Does your firm have subsidiaries abroad ? Yes No

Q2. Overseas Investment Plans

(1) Have a concrete plan for investment abroad
(2) Do not have a plan, but an interest in investment abroad
(3) Need to take into account investment abroad
(4) No plan for investment abroad
(5) Already finished investment abroad

Q3. Schedule of Investment Abroad

(1) Within 1(one) year
(2) 1 - 2 year(s)
(3) After 3 years
(4) Not yet decided
(5) Already finished

Q4. Region of Investment

(1) North America (U.S.A. and Canada)
(2) Central and South America
(3) Europe and U.S.S.R.
(4) Asian NIES and Southeast Asia
(5) Australia and New Zealand
(6) Middle East and Africa
(7) Others
(8) Not yet decided

If you have concrete ideas of country(s) for investment, please specify it(them).

Q5. Planned Operations Abroad

(1) Manufacturing of product in factory (major product)
(2) Processing on commission
(3) Technical Cooperation
(4) Supporting business such as transportation or commerce
(5) Others (specify)

Q6. Major Reasons for Investment Abroad

(1) Request from the country which you plan to invest
(2) Make a image of the firm in the country
(3) Low prices for raw materials and parts
(4) Lower price for utilities such as energy
(5) Large amount of land lots with lower prices
(6) Lower wage rate
(7) Save the cost for exports
(8) Increase the market share in the country
(9) Advantage for the market in the third country
(10) Secure the market share in Japan through import from the country
(11 Following the affiliated companies
(12 Others (Specify)

Q7. Likelihood of Investment in Esmeraldas EPZ

(1) Yes or most likely (concretely)
(2) Worth studying
(3) No possibility

If you're not interested in locating your new facility in the Esmeraldas EPZ, please complete the following:

(a) Already decided to invest in another location
(b) Esmeraldas EPZ in not attractive for my company
(c) Others (Specify)

Q8. Planned Operations in the EPZ

(1) Manufacturing of product in custom built factory
(2) Manufacturing of product in standard factory
(3) Supporting business such as transportation or commerce
(4) Other (specify)

Q9. Requirements for Investment in the EPZ

(1) Land price
(2) Wage rate
(3) Price for utilities
(4) Lower standard factory rental price
(5) Cultural and recreational facilities
(6) Tax incentives
(7) Quality of labor/employment incentives
(8) Export marketing assistance
(9) Infrastructure availability
(10) Local partner
(11) Guaranteed managerial autonomy
(12) Others (Specify)

ANNEX E

LEGAL AND INSTITUTIOANL FRAMEWORK AND PROMOTIONAL MEASURES

ANNEX-E

LEGAL AND INSTITUTIONAL FRAMEWORK AND PROMOTIONAL MEASURES

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E.1 INTRODUCTION

The overall objective of Annex-E is to provide legal and institutional framework, operation and management system, as well as promotional measures in the context of the Esmeraldas EPZ Development.

At the section of legal and institutional framework, law and regulations for free zones and other related factors are reviewed and assessed. Likewise, in order to identify superiority and disadvantages of incentives over these offered in other Central and South American countries, comparative analysis has been executed. Further, institutional and legal reinforcement will be proposed as recommendations for the efficient execution of the Esmeraldas EPZ.

Management and operation systems are proposed in the subsequent section, in line with discussions with CENDES and ZOFREE. Training programs for workers are also prepared.

In addition, recommendable measures for promotional activities have been also studied with regard to strategy and means of achieving attraction of investors.

Further, some criteria for admission to the EPZ have been provisionally proposed for reference purpose.

E.2 LEGAL AND INSTITUTIONAL FRAMEWORK

E.2.1 Institutional Aspects for Industrial Development

1) Major Development Laws

The Government of Ecuador intends to promote and develop the productive sectors of the economy, and enacted laws that encourage local and foreign investment through incentives such as tax and customs duty deduction or exemption. Major development laws are listed up hereunder.

- Law of Industrial Development
- Law of Development of Small Industry
- Law of Crafts Development
- Law of Industrial Parks
- Law of Fisheries and Fishing Development
- Law of Agricultural and Livestock Development
- Law of Mining
- Law of Tourism Development

According to the classification or the categories under major development laws, companies are encouraged to invest in their respective fields of activities. Industry, agro-industry and mining-industry have special benefits when located in certain regions of the country and when they are involved in activities considered as high priority sectors such as processing of new types of fruits, vegetables and other products.

In 1991, the Government of Ecuador took various steps to reinforce laws and regulations to attract foreign investment. Those are issues of:

- Law of Free Zones
- Law of Maquila
- Law of New Foreign Investment Regulation

2) Institutions supporting foreign investors

In legal and institutional systems of Ecuador, major institutions which support foreign investors, are summarized hereunder.

(1) National Development Council (CONADE)

This council plans the country's economic and social development and

coordinates the activities in these fields, including industrial activities, as well as technical and financial cooperation from abroad.

(2) Ministry of Industry, Trade, Integration and Fishery (MICIP)

The Ministry is the entity that authorizes foreign investment. Its main functions include the formulation, direction and execution of the national policy in the fields of industry and trade, including foreign investment.

(3) Development Center of Ecuador (CENDES)

CENDES is the organization officially responsible for promoting the country's development, and it is the contact points for investors in establishing industries in Ecuador. Its functions include (i) identifying investment opportunities in priority sectors, (ii) elaborating studies on those projects, (iii) promoting, locally and internationally, the projects and channeling national and foreign investment towards them, (iv) facilitating contact and inter-relationships among local and foreign companies and investors, and so forth.

(4) National Finance Corporation (CFN)

As the nation's largest financing institution, its main functions cover the extension of credit to productive activities such as manufacturing industry, agro-industry, fishing, tourism, small industry, export of non-traditional products and so forth.

E.2.2 Law and Regulation of Free Zones

The Law of Free Zones was enacted in February 1991. Through the Law, the Government of Ecuador intends to promote foreign trade, especially non-traditional exports, to stimulate foreign investment and technology transfer, as well as to develop production activities that generate jobs and foreign exchange for the country's benefit.

The Law, which shall supersede any other norms of other laws, offers many incentives from the points of customs and foreign trade procedures, tax procedures, currency exchange, as well as labor procedures. These points are summarized in Table E-1, comparing with the norms in the existing laws.

Pursuant to the Law of Free Zones, the Regulations for the Law was issued in September 1991. The major points of laws and regulations are summarized hereunder.

Further, institutional relations on EPZ system designated by the Law are illustrated in Figure E-1.

1) Purpose

The norms of this Law are special in nature, and aim to create, encourage and regulate the system of the free zones in Ecuador, within a clear, stable, workable legal framework that guarantee their optimal operation (Article 1, the Law).

2) Overall objectives

Free zones will have the objective of promoting employment, foreign exchange generation, foreign investment, technology transfer, increased exports of goods and service, and the development of geographical zones of Ecuador that are lagged behind (Article 2, the Law).

3) Definitions

A free zone is a area of territory, the boundaries of which are determined and the authorization for which is granted by the President of the Republic by means of an Executive Decree, subject to the special procedures hereby stipulated, in the fields of foreign trade, customs, taxes, currency exchange, financing, regulation of capital management, and labor relations. Duly authorized users are engaged therein in the production and marketing of goods for export or reexport, as well as rendering the services related to international trade (Article 3, the Law).

4) Free Zone Users

Three kinds of companies may operate in the free zones; (a) industrial firms, (b) commercial firms, and (c) services firms. Users of the free zones are individuals or corporate bodies, whether Ecuadorian or foreign, who set up in the free zones to perform duly authorized activities (Article 4 and 5, the Law).

All individuals or corporate bodies, whether Ecuadorian or foreign, who wish to set up in the free zone, may present their applications to the respective administration company formed in each free zone, which in turn shall prepare and submit reports to CONAZOFRA (Article 16, the Law).

Applications to attain the status of Users shall contain such information as the activities to be carried out in the free zone, the products to be manufactured, the raw materials and containers to be used, the machinery, equipments and other inputs to be imported, and so forth (Article 17, the Regulations).

When free zone users are foreign corporate bodies, they shall be exempted from the requirements and formalities established in the Law of Companies, the regulations thereof and other corporate legislation in regard to the establishment of legal domicile for establishment of offices. They must only prove that they are legally constituted in their countries of origin and accredit their legal representative in Ecuador according to the law (Article 17, the Law).

5) Administration companies

Free zone administration companies are those public, private or mixed public and private corporate bodies that obtain concessions to operate the free zone mechanisms in the country (Article 6, the Law).

Duly authorized administration companies must comply with CONAZOFRA resolutions, as well as the provisions of the Law of Free Zones and its regulations. The internal regulations for the operation of each free zone must be examined and approved by CONAZOFRA (Article 14, the Regulations).

6) National Free Zone Council (CONAZOFRA)

National Free Zone Council (CONAZOFRA) is created as a dependency of the Ministry of Industry, Trade, Integration and Fishery, comprising the representatives of the President of the Republic, the Minister for Industry, Trade, Integration and Fishery, the Minister for Finance and Public Credits, the Minister for Defense, the President of the Central Bank of Ecuador, as well as representative of the free zone administration companies and the free zone users (Article 7, the Law).

CONAZOFRA shall have the exclusive power to dictate the general policies for the operation and supervision of free zones, to propose the issues, modifications or repeal of legal norms of regulations regarding free zones and the activities and to approve or monitor all related matters on the free zones (Article 8, the Law).

Free Zone Users shall pay CONAZOFRA a single rate of two percent of the value of all foreign exchanges that the users require for the expenses of operation, administration, services, salaries and daily wages, excepting those amounts used to purchase machinery, raw materials or inputs. (Article 9, the Regulations) This regulation will be further discussed in Section E.2.5 hereinafter.

7) Customs Procedures

The territorial spaces within the boundaries and limits outlined for each free zone are considered as primary zones, subject to customs jurisdiction. Imports and exports made by

free zone users shall be authorized by the administration company (Article 33 and 34, the Regulations).

The customs administration of the corresponding district shall verify the authorization beforehand and then give it to the administration company to allow the merchandise to enter the free zones (Article 41, the Regulations).

Exports of merchandise from the free zone to the rest of Ecuadorian territory shall pay the corresponding import duty, excluding the value of national value added (Article 44, the Regulations).

8) Labor Procedures

The remuneration shall be agreed to in US dollars for the labor contracts, but shall be paid in the equivalent sucres, calculated at the free-market purchase exchange rate in effect on the day of payment. Remuneration shall not be lower than the sectoral minimum wage nor the basic minimum monthly wage plus ten percent in either case (Article 51 and 52, the Regulations).

Free zone workers are entitled to receive 15% of the profits obtained by users, as provided for in the Labor Code and pertinent regulations (Article 56, the Regulations).

9) Others

The Ministry of Finance shall allocate the extra-budgetary amount of one hundred million sucres for CONAZOFRA's operation. This amount shall be delivered to the Executive Secretary of CONAZOFRA (Transitory Provision, the Regulations).

E.2.3 Other Related Laws

In relation to the Law of Free Zones, the two relevant laws and regulations are focused. They are New Foreign Investment Regulation and the Maquila Law, and they are in the same context of the Law of Free Zones from the view point of inducement of foreign investment.

1) New Foreign Investment Regulations

The foreign investment policies, which are the common standards approved under Decision 220 of the Commission, prevailing in the Subregion of the member countries of the Cartagena Agreement, was revised and updated in order to encourage and promote the flow of

foreign capital and technologies to Andean economies in March 1991. These new policies were approved as Decisions 291 and 292.

In line with these Decisions, the regulations regarding the treatment of foreign capital, trademarks, patents, licenses and royalties in Ecuador was updated in June 1991. Major points, which were updated, as well as differences between new and old regulations are summarized as follows:

(1) Direct foreign or subregional investments may be in all sectors of the economy, without prior authorization by MICIP (Article 5). According to the old regulations, direct foreign investment was restricted in some economic sectors.

(2) Direct foreign or subregional investments in the sectors of mining, fishing, maquila and free zones shall be subject to the provisions of the respective laws (Article 7).

(3) The owners of direct foreign or subregional investment shall be entitled to transfer abroad the net profits generated by their registered investment, in freely convertible foreign currency (Article 12). According to the old regulations, there were restrictions to profit remittances in proportion to the export rates and other factors.

(4) Foreign companies that have a transformation agreement currently in force, in terms of Chapter II of Decision 220, may apply to the respective cognizant national bodies for the said agreement to be annulled (Article 14). The old regulations stated that enterprises must become national over a period of up to 37 years, through a fade-out (transformation) agreement.

(5) Contracts for transfer of technology, as well as the use and exploitation of trademarks and patents shall be registered in MICIP, providing that they comply with the provisions of Articles 12 through 15 of Decision 291 (Article 16).

2) Maquila Law

The Maquila Law and Regulation were issued in August 1990 and October 1990, respectively. According to the Law, a maquila operation is the industrial or services process involving the processing, finishing, transformation or repair of goods from foreign origins, imported under the Special Temporary Entry System established in this Law. This law has many points similar to the regulation of the Law of Free Zones. The comparative analysis of

both Laws is summarized in Table E-2.

Maquila operations will be directed toward the objectives of (a) updating and upgrading the technical capabilities and performance of the productive sectors, (b) investing in advanced technology industries or service sectors, (c) employing and training manual labor, (d) fostering the greatest incorporation of national components into maquila operations, and (e) encouraging direct foreign investment in the country.

The Maquila Law offers important incentives to prospective investors: i.e. exemptions from import taxes, free repatriation of profits, as-needed temporary labor contracting, free access to competitive sea/air freight services, and so forth.

According to the information by MICIP, 13 enterprises have so far operated or have concrete plan to begin Maquila operation. List of companies are shown in Table E-3.

E.2.4 Comparison with Other EPZs in Central and South American Countries in Terms of Institutional Framework

The results of the comparative analysis of existing EPZs in Central and South American countries are summarized in Table E-4~E-5. On tax/duty exemptions, all kinds of income tax and local taxes are exempted in Ecuador within a time period of 20 years, while users in Colombia and Dominican Republic can enjoy income or local tax exemption without limit in a time period.

As for foreign currency handling and capital or profit repatriation, EPZ users in the countries except Bolivia are in a position to freely handle and repatriate. Likewise, they have their hands free on foreign capital investment. Concerning access to local market, the laws in Andean Countries admit introduction of products to local market by paying duties. The laws or regulations in other countries restrict the share of production in the local market.

With respect to the foreign investment regulations, Andean Countries follow most of Decisions by Cartagena Agreement. Concerning freedom from labor management, only laws in Ecuador, Peru and Dominican Republic are flexible from labor law (admitting temporary employment), while users in other countries are rigid.

As a result, institutional incentives provided by the Government of Ecuador appear to be favorable and advantageous to investors, and they will be competitive to other EPZs in Central and South American countries, except for some aspects to be pointed out in the

subsequent Section E.2.5.

E.2.5 Institutional and Legal Reinforcement

Although incentives through the Law of Free Zones enacted in February 1991 are welcomed by potential investors, it would be suggestible that the following points may be reinforced from the viewpoint of institutional and legal aspect in order that the Esmeraldas EPZ will be more attractive and competitive:

1) A uniform fee

The Law of Free Zones and Regulations state that free zone users must pay to the National Free Zone Council (CONAZOFRA) a uniform fee. (Two percent of the value of the foreign currency that the users required for their operating, administrative, service, wage and salary expenses, excepting expenses for the purchase of machinery, raw materials or inputs.)

On this uniform fee, since some potential investors ask to decrease the rate or annul this fee, it would be suggestible that CONAZOFRA and MICIP would reconsider the imposition of this fee. The establishment of the exemption period for imposition of this fee (for instance, applicable after five years of operation) will be an idea to decrease the financial burden and negative impact on the potential investors.

2) 10% higher minimum wage

The regulations state that the wage rate of workers engaged in the free zones must be higher than the minimum wages or sectoral minimum wage, plus ten percent. Since the stipulation may give negative image to the potential investors, it may be recommendable to reconsider the stipulation in the regulations.

3) Profit-sharing

According to the Law of Free Zones, free zone user's workers shall be entitled to profit-sharing (15% of liquid profits obtained by users) as provided for under the Labor Code. At this point, investors are not free from the Labor Code. Since the profit-sharing system would give negative image to the foreign investors, it would be suggestible to reconsider it or to define it in a more understandable way to the investors.

4) Preferential credit

In order to lessen the financial burden of the free zone users for the investment, it

would be suggestible to extend a preferential credit, which would upgrade further the incentives currently given to the users. Another alternative is to set up Free Zone Development Fund" as explained in Section E.3.4.

5) Preferential tariff of utilities

In order to reduce the burden of running cost of the free zone users specially during the initial stage of their operation, it would be suggestible that preferential tariff of utilities including water supply and electricity should be applied to the free zone users for certain period after the start of their operation.

6) Grandfather's clause

According to the result of investment demand survey in the United States in particular, the potential investors ask assurance that current regulations shall not be modified adversely in the future. One suggestible measure to this issue would be to guarantee a "grandfather clause" for any investment against future change.

In general a grandfather clause is a provision in a specific law (either phrase or a complete statement), allowing those to whom that law applies to accept the provisions of an earlier law or condition instead of or in addition to those of the new law.

Therefore, in the reinforcement of the Law of Free Zones, it would be recommendable to incorporate a grandfathers clause as an assurance to the potential investors.

E.3 MANAGEMENT AND OPERATION SYSTEM

E.3.1 Legal Aspects on Management and Administration

By the Law of Free Zone, role and activities of administration company, which has responsibilities for management of the free zones, are designated as follows:

1) Type of Free zone administration companies

Free zone administration companies are those public, private or mixed public and private corporate bodies that obtain, under an Executive Decree, the concession to operate the free zone mechanisms in the country (Article 6, the Law).

2) Role of administration company

The operation and control of each free zone shall be the responsibility of the respective administration company and under the supervision of the National Free Zone Council (CONAZOFRA) (Article 13, the Law).

3) Activities of administration company

The administration company of each free zone is entitled to undertake the following activities (Article 14, the Law):

(1) To administer the free zone granted under the concession, according to the Law and its regulations;

(2) To construct the basic infrastructure in the area defined,and to rent the premises with utilities, so that the free zone users can build their facilities according to their own needs;

(3) To erect buildings for offices, storehouses or warehouses, in order to rent or sell them;

(4) To provide, directly or through third parties,the services of water, electric power,telecommunications or any other sort of public or private services;

(5) To enter into any kind of arrangement and contract involving the operations, transactions, dealings and activities pertaining to the establishment and operation of a free zone;

(6) To prepare the internal regulations for the operation of the free zones,which shall be submitted to CONAZOFRA for analysis and approval;

(7) To report infractions of this law and its regulations to CONAZOFRA; and

(8) To approve the type of construction and utilities of users in each free zone.

In addition to these, according to Article 16 of the Law, ZOFREE shall assume the responsibility of receive the application of the investors and prepare and submit the report thereon to CONAZOFRA for final ruling.

4) Obligation of administration company

Administration companies shall also be obliged to submit an annual report to CONAZOFRA regarding the production, trading operations, foreign exchange movement and manpower usage of each free zone (Article 15, the Law).

E.3.2 Proposed Organization and Functions on ZOFREE

1) Organization

ZOFREE was established as the first free zone administration company in Ecuador in 1986, in accordance with the executive decree No.1267. The paid-up capital of the company amounts to S/.208 million, which are currently hold by the Port Authority of Esmeraldas (75%) and other official and private institutions and individuals. According to the Port Authority, the stock of ZOFREE will be gradually transferred to private enterprises.

At present, the organization of ZOFREE consist of the Board of Directors including the President of the Board, a general manager, an administrator, a legal advisor and a secretary.

The organization of ZOFREE should be made in the most efficient way with least number of staff. It is proposed that ZOFREE is organized under the general manager and the board of directors to have four departments, i.e. (1) Administrative Department; (2) Financial Department; (3) User Service and Promotion Department and (4) Operation and Maintenance Department. The proposed organization chart of ZOFREE is shown in Figure E-2.

2) Functions

With respect to the ZOFREE organization, proposed functions of each department are summarized as shown below. Total proposed number of permanent staff will be 14, including general manager and two secretaries.

Departments	Functions	Staff
Administrative	Planning (within ZOFREE)	Chief
	Personnel matters	Economist
	Training	
	Budget control	
Financial	Accounting	Chief
	Payment	Accountant
	Charging fees	
User-service & Promotion	One-stop services	Chief(legal)
	Information desk	2 Economists
	Sales promotion	
	Selection of user companies	
Operation &Maintenance	Control of goods	Chief
	Maintenance services	Economist
	Technical services	2 Engineers

Number of permanent staff should be gradually increased as shown below in accordance with the development progress of EPZ.

		1991	1992	1993	1994	1995	1996~
General Manager		-	-	-	-	O	O
Administrative	Chief	O	O	O	O	O	O
	Economist	-	-	-	O	O	O
Financial	Chief	-	-	O	O	O	O
	Accountant	-	-	O	O	O	O
User-Service &	Chief	O	O	O	O	O	O
Promotion	Economist A	-	O	O	O	O	O
	Economist B	-	-	O	O	O	O
Operation &	Chief	-	-	O	O	O	O
Maintenance	Economist	-	-	-	O	O	O
	Engineer A	-	-	-	O	O	O
	Engineer B	-	-	-	-	-	O
Secretary A		O	O	O	O	O	O
Secretary B		-	-	-	O	O	O
Total number of personnel		3	4	8	12	13	14

Remark: Some employees as guards and drivers will be necessary in addition.

(1) Administrative Department

This Department will be in charge of overall management on the free zone such as planning, personnel matters, training of staff, budget control, etc.

(2) Financial Department

This Department will handle accounting matters and borrowing and repayment of loans. They will make financial statement and reports to CONAZOFRA. Likewise, they will pay maintenance and utility fee to agencies or companies concerned instead of free zone users. Moreover, they will collect general maintenance fee (ex. guards) from users.

(3) User-services and Promotion Department

This Department will provide one-stop services for free zone users in order to simplify the procedures such as establishment of factories, import, export and reexport, banking transaction and custom related registrations. Moreover, they will offer business services such as reproduction, communications and other services. Further, they will introduce local partners and workers to free zone users.

Although functions on sales promotion are imposed to this Department, promotional activities are not exclusively covered by a free zone administration company. Therefore, cooperation by CENDES and other institutions are indispensable for promotional activities. For the time being, a coordinating officer should be appointed for this purpose at CENDES and MICIP.

Further, this Department will be responsible for the first selection of user companies when the applications are filed.

(4) Operation and Maintenance Department

This Department will handle control of merchandise, goods and raw materials in the free zone under the supervision of Customs Office in Esmeraldas. Likewise, the Department will be in charge of maintenance of utilities and other technical matters.

3) Relations between ZOFREE and Port Authority

Those four Departments are administered and managed under the General Manager of ZOFREE and the Board of Directors. At present, the positions of the General Manager and

four directors out of five of the Board, including the president of the Board, are occupied by the staff of the Port Authority of Esmeraldas.

However, it is desirable that the position of the General Manager will be transferred to the ZOFREE originated person in the near future. It is also desirable that the seats of the Board of Directors will be gradually transferred as the Port Authority transfer its capital stock to private sector. Moreover, all the staff of ZOFREE will be ultimately seated from the ZOFREE originated persons.

It is additionally noted that the General Manager of ZOFREE, as well as officers of the User-service and Promotion Department, is desirably a personnel who has accumulated experience in management and business promotion in the private business, and is capable to manage international business administration.

E.3.3 Specific Issues on Management and Operations

1) Establishment of Coordination Committee

For the well coordinated management and operation of the Esmeraldas EPZ, it is proposed to establish a Coordination Committee in the following contexts. The proposed relation of the Coordination Committee with other related institutions are illustrated in Figure E-3.

(1) Objectives

Major objectives of the establishment of the Coordination Committee are to strengthen the coordination among ZOFREE, CENDES, the Port Authority of Esmeraldas and other related institutions in the development and operation of the Esmeraldas EPZ.

(2) Members

CENDES, ZOFREE, and Port Authority of Esmeraldas should be permanent members of the Committee. Provincial Government, Municipality, Customs office, EMELESA, IEOS, IETEL, SECAP, are asked to join the Committee if and when needed.

(3) Functions

Major functions of the Committee are to promote the development of EPZ, to

exchange the issues and problems on free zone for smooth solution, to provide information to free zone users, and to support promotion activities.

2) Procedures of Customs

Customs procedures are one of the key factors for successful operation of free zones. The Government of Ecuador should make entry of materials and equipments as simple as possible.

According to ZOFREE and Custom's office in Esmeraldas, the most appropriate procedures are that merchandise and raw materials once shipped to the port area (warehouse at the port authority) are inspected by Customs office, and then transferred to plants site in the free zone by ZOFREE.

In the long term, however, a part of the role of customs office should be transferred to the administration company for smoother transaction of merchandise after they accumulate the knowledge of documentation and other related works. At some of free zones in the United States, the administration companies check and control the merchandise on behalf of the customs office, although the custom office may inspect irregularly.

3) Promotion

Overall promotion activities should not be considered only from the viewpoint of the Esmeraldas but from the perspectives of the nation as a whole. Not only sales of free zones but maquila system and industrial parks would be promoted at the same time. In order to activate promotion, cooperation among CENDES, MICIP, Ministry of Foreign Affairs, and other authorities concerned with foreign investment is essential. Activities of embassies and consulates will also be important. For instance, in case of Colombia, PROEXPO (Fondo de Promocion de Exportaciones de Colombia, official body for export promotion) is mainly in charge of this kind of promotion.

4) Subletting works

As for operation and maintenance of water supply, power and telecommunications, the administration company will sublet the works to such other organizations as IEOS (water supply), EMELESA (electric power), and IETEL (telecommunications). Also, concerning guards and cleaning, the works may be sublet to private companies. Operation and maintenance works of sewerage and solid waste treatment will be the responsibility of ZOFREE for the time being.

E.4 TRAINING OF WORKERS

E.4.1 Training System of SECAP

SECAP (Ecuadorian Vocational Training Services), which was established in 1966, is a public institution with administrative and financial autonomy for vocational training, capacitation and education to administrators of small businesses, mid-level supervisors, laborers and operators, especially in the industrial and service sectors.

At present, a technical advisor is stationed at SECAP in Esmeraldas,while most of instructors are coming from Quito when the training courses are held. Training courses cover about 8 fields such as personnel computer, electrical appliances, automobile mechanics, etc. Each course provides 50-60 hours training per month for approximately 15-25 trainees. Number of courses and participants by region and training centers in the nation including Esmeraldas is shown in the Table E-6.

The number of participants at SECAP in Esmeraldas is still within the capacity of the institution. In the future, however, it may be necessary to expand and strengthen the training programs in SECAP in line with the categories of industries located in the Esmeraldas EPZ to meet the training requirements.

E.4.2 On-the-job Training in Esmeraldas EPZ

According to results of interview with companies in Ecuador, USA, Mexico and Japan, most of private companies do not always count on official vocational training, but count more on on-the-job training by themselves. Therefore, training will be carried out in the most part by each user company within its factory. Training for the EPZ's workers by SECAP in Esmeraldas will be confined to training at the initial stages.

In addition to the initial training by SECAP and on-the-job training by the free zone users, vocational training programs in the college or high school in Esmeraldas should be considered for providing capable labor force to the Esmeraldas EPZ.

E.5 PROMOTIONAL MEASURES

E.5.1 Examples of Investment Promotion Programs in Latin America

Success of this project depends heavily on promotion activities for attracting investors. Therefore, sales promotion programs should be carefully planned in order to invite foreign investment in the Esmeraldas EPZ. As examples of the investment promotion programs in Latin America, the programs in Puerto Rico, Costa Rica, and Chile are briefly introduced hereunder.

1) Puerto Rico

Puerto Rico began its investment incentive program in 1948. The Puerto Rico Economic Development Administration (Fomento) administrates the entire program, directly promoting individual investors domestically and abroad, recommending incentive types, and designing the promotion and incentive programs.

Promotion of individual investors is carried out on a person-to-person basis, beginning with individual visits to investors in their home countries and continuing with assigned individual promoter for each investor while in Puerto Rico. Most basic promotion services are offered free of charge by Fomento. Puerto Rico maintains a network of overseas promotion offices, five in the United States, one in Japan, and several in Europe.

2) Costa Rica

Costa Rica's promotion program is similar to that of Puerto Rico in many aspects, the major exception being the large amount of funding offered by USAID. The Costa Rican promotion agency (CINDE) includes separate promotion projects for industrial and agricultural investors and exporters. Its promoters know the tax incentive system and free zone system quite well and present them as a basket of incentives for attracting investment.

Although CINDE is a "private sector" agency, it works closely with the Government of Costa Rica and could not exist without the definitively public sector support of USAID and the active cooperation of the Government.

3) Chile

Chile began its promotion program in 1973. The Government and private sector created several new institutions dedicated to investment and export promotion. Among them, the two most important institutions are ProChile, the government export promotion agency, and Fundacion Chile, a semiprivate foundation dedicated to export promotion, technology transfer and new investment promotion.

ProChile, a government agency, promotes Chilean exports abroad, disseminate market information, holds seminars on production, organize trade fairs and so on, while Fundacion Chile, created by an endowment by private and public sectors, plays a role of an independent promoter of exports and investment in Chile.

E.5.2 Institutional Entity for Promotion

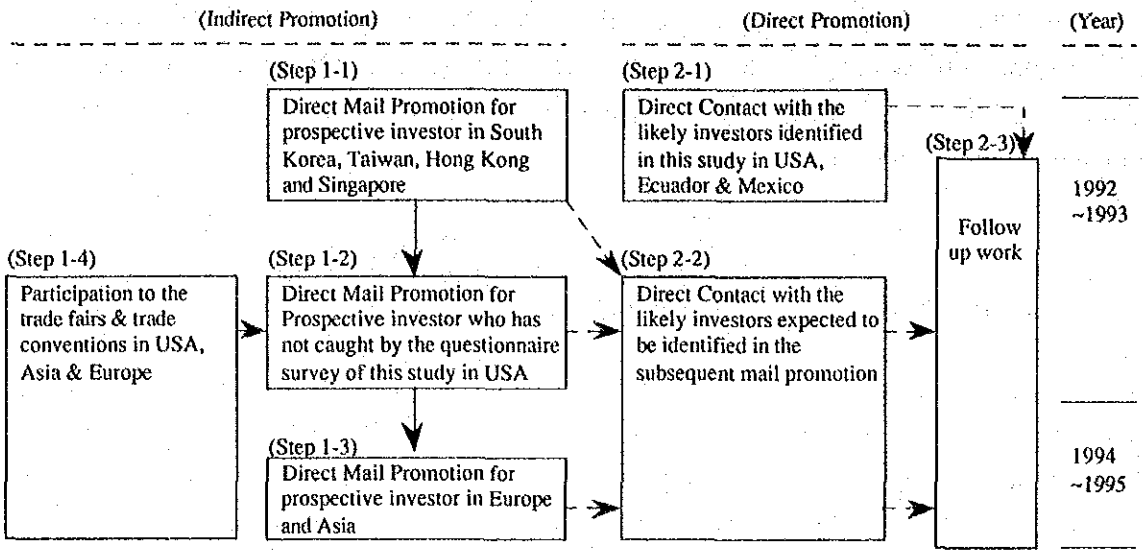
In Ecuador, promotion activities are executed separately by CENDES, MICIP, Fedexport, and other institutions. In order to promote the Esmeraldas EPZ, it may need to establish the new investment promotion agency. According to the interview with USAID in Ecuador, they have a plan to establish a semiprivate institution for export promotion, institutional policy making and investment promotion. This institution, which may be called "Foundation of Ecuador" or "Fundacion Ecuador" shall have similar functions to Fundacion Chile.

However, since it takes time to establish such kind of new institution, for the time being the cooperation among existing institutions including CENDES, ZOFREE and MICIP will be imperative for promotion of the Esmeraldas EPZ. The Government, therefore, should take measures to strengthen promotional activities especially from the points of personnel and budget.

E.5.3 Recommended Investment Promotion Activity

1) Promotion procedure

Investment promotion procedures and integrated promotion schedule recommendable for CENDES, ZOFREE and MICIP in particular, are explained hereunder.



Integrated Promotion Schedule

Item	1992	1993	1994	1995
1. Preparation of materials for promotion	⊢—⊣			
2. Establishment of promotion offices abroad	⊢———	———	———	———
3. Additional direct mail promotion to USA, Mexico	⊢—⊣			
4. Direct mail promotion to NIES	⊢—⊣			
5. Person-to-person promotion in USA	⊢———	———	———	———
6. Person-to-person promotion in Ecuador	⊢———	———	———	———
7. Person-to-person promotion in NIES	⊢———	———	———	———
8. Participation to the trade fairs & conventions in USA, Asia and Europe	⊢- - -	- - -	———	———
9. Direct mail promotion to Europe			⊢—⊣	
10. Person-to-person promotion in Europe				———
11. Follow up work			———	———

(1) Preparatory work

• Preparation of materials

It is also necessary to prepare brochures, introducing the Esmeraldas EPZ as well as providing general information on industries about Ecuador. Presentation by video tape will be effective and attractive for promotion meetings.

• Development of database

Development of investor-specific information is a primary task of the promotion agent. At initial contact, promoters develop an "investors profile", specifying the background, objectives, prospects, requirements and constraints of the individual prospect.

At every stage of the promotion process, CENDES and ZOFREE representative should offer investor-relevant information, in both general and tailored form.

• Establishment of promotion offices abroad

Temporary offices for the promotion works could be established in a small space in Ecuadorian Embassy or Consulate and they could be utilized for the promotion office.

- USA 2 offices (west and east coast)
- East Asia 1 office
- Europe 1 office

(2) Direct contact with the high-probability investors

A person-to-person promotion to the high-probability investors identified in this study is indispensable. The high-probability investors are:

Ecuador	:	50	(Pichincha 22, Guayaquil 25, Azuay 3)
USA	:	4	(New York, Alabama & Ohio)
Mexico	:	1	
Total	:	55	

The practical materials including the land use plan, the land and standard factory rents cost, detailed explanation of incentives for investment, development schedule of the EPZ and others should be prepared for the person-to-person

promotion work.

(3) Direct mail promotion

Additional mail promotion to prospective investors not covered in this study is necessary to accelerate the investment in the EPZ. Prospective investors in NIES who show interests of the investment in Latin America recently are the first target for the additional mail promotion.

The database of firms for mail promotion shall be available in the following agencies of each country.

- Korea Trade Corporation
- Korea Trade Center
- Chinese National Federation of Industries
- China Credit Information Service, Limited
- Hong Kong Trade Development Council
- Hong Kong General Chamber of Commerce
- Singapore Fed. of Chamber of Commerce & Industry
- Singapore Economic Development Board

Since the sample size was quite limited relative to the size of the inventory, an additional mail promotion in USA should, therefore, be continued in parallel with the promotion in NIES. The apparel industry which showed the strong interest in the the EPZ should be further promoted in particular. The following associations of apparel industry would augment the database for the mail promotion.

- American Apparel Manufacture Association
- American Apparel contractors Association
- Greater Clothing Contractors Association
- Federation of Apparel Manufactures
- New York Clothing Manufacturers Association
- Metropolitan Area Apparel Association

(4) Participation in the trade fair and convention

Trade fairs and conventions will give opportunities to advertise not only the Esmeraldas EPZ but the environment of investment in Ecuador. The following exhibitions, trade fairs and conventions to be held in USA, Japan and Europe should fully be utilized:

USA	:	- Bobbin Show (Atlanta, every September) - Bobbin Contexto (Miami, every March) - International Consumers Show (Las Vegas & Chicago, twice a year organized by Electric Industries Association
Japan, Europe	:	- Trade Shows Worldwide, an international directory of events, facilities and suppliers, edited by Martin Connors and Charity Anne Dorgan identifies worldwide opportunities of the trade fairs and conventions.

(5) Follow-up work

Follow-up after the person-to-person promotion should be carried out in the following manner:

- The promoter should organize and arrange for site visits for the prospective investors;
- During site visits, the promotion agency introduce prospective investors to private sector representatives;
- All approvals and requirements necessary for finally locating a plant on a particular site are coordinated through one public agency, known commonly as a "one-stop shop"
- All the procedures to be followed by the investors should not be complicated and through one-stop-service system.

2) Advantages of the Esmeraldas EPZ to be emphasized

The following advantages of the Esmeraldas EPZ as well as of the country as a whole should be emphasized in the promotion work.

(1) Political stability of Ecuador

Investors are conscious of the influence of the political instability on the success of the business activity in the recent tumult in Latin America. The political stability of Ecuador is a charm for investors and should be emphasized during person-to-person promotion.

(2) Safe situation in Ecuador

No drug nor guerrilla which threaten the safe business activity exist in Ecuador. This is big advantages of Ecuador against Peru, Colombia and Venezuela.

(3) Location of EPZ

The Esmeraldas EPZ is located next to the port of Esmeraldas and the cargo transportation service to and from the port is sufficient. This advantage should be emphasized.

(4) Adequate infrastructure

Adequate and inexpensive water, as well as electricity supply, should be emphasized in promotion work. The stable and reliable electric supply is a strong advantage for investors, in particular apparel enterprises.

(5) Freedom on labor arrangement

Investors who establish the labor intensive industries such as apparel manufactures are quite sensitive to the labor law applied in Latin America. The arrangement for the labor relations applied to the EPZ users will provide strong incentive for investors.

(6) Preferential measures

Preferential measures provided to the Free Zone users including tax exemptions should be explained in detail.

E.6 ADMISSION CRITERIA FOR FREE ZONE

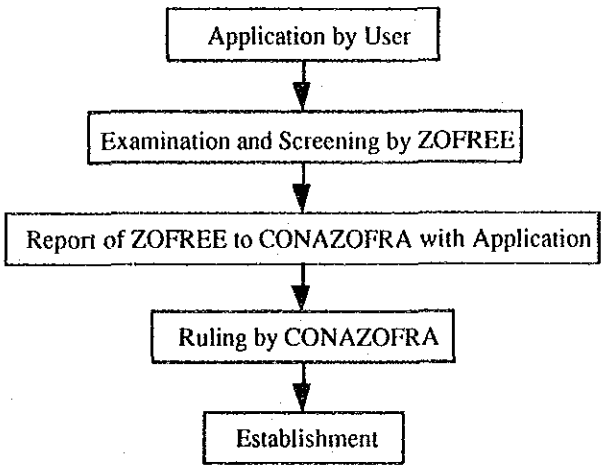
E.6.1 Application for admission

The Regulations for the Law of Free Zones (Article 17) stipulates that applications for obtaining the status of free zone users shall contain the following information:

(a) The activity to be carried out in the free zone;
(b) The procedure/process of manufacturing or trading or rendering services;
(c) The raw materials, containers and packing materials to be used;
(d) The machinery, equipment, raw materials and other inputs to be imported;
(e) The estimated number of Ecuadorian and foreign workers to be employed; and
(f) The period of duration for the activity.

The application shall also include the information about the utility requirement including water, electricity, sewage, solid waste and drainage. Besides, legal and financial information about the company including legal domicile of the company, type of company, type of capital (Ecuadorian or foreign), financial statements and other relevant information/data of the applicant shall also be clearly written in the application form.

Application shall be forwarded to the User-service and Promotion Department of ZOFREE. After study and examination on the application, ZOFREE shall prepare report and submit it to CONAZOFRA for final ruling as shown below.



E.6.2 Admission criteria

1) Legal requirements

According to the Law of Free Zones (Article 19), free zone users are not allowed to enter and process (a) weapons, explosives and ammunitions; (b) narcotics of any kind; and (c) products that are hazardous to health, the environment and the public security or morality. Therefore, these types of enterprises will not be accepted in the Esmeraldas EPZ.

As stipulated in Article 32, the goods produced in the EPZ shall totally be exported overseas except these to which CONAZOFRA give special permission for marketing within Ecuador.

2) Desirable requirements

a) Soundness of legal and financial status

For the successful implementation of the investment of the free zone users, their legal and financial status should be judged sound. When the free zone users are foreign corporate bodies, they only need to prove that they are legally constituting in their countries of origin through a consular certificate. As to Ecuadorian enterprises, their legal and financial status should be checked.

b) Categories of industries

As explained in Annex B.2, 33 categories of industries have been selected as priority industries for locating in the Esmeraldas EPZ, which are considered promising for export market and conform to the objectives of the development of the EPZ. These can be defined as :

(a) labor intensive type;
(b) export-oriented type;
(c) local resource utilization type

In principle, these applicants which fall under these categories will be placed priority for admission. Among these, labor intensive ones will be given first attention for the admission considering the significance of the employment generation.

c) Limitation of utility supply

Owing to the well planned development of infrastructure and utilities in

Esmeraldas, limitation is not so serious. Intensive consumption of particular utilities by the EPZ user is, however, not desirable and consideration will be made for the admission to the EPZ.

d) "Pollution free/low pollution" industries

Though some protection measures will be taken to protect the environment of the region from pollution including the secondary treatment facilities for sewage disposal and sanitary landfill with primary incinerator, pollution free or low pollution type industries will be given higher priority for giving admission to the EPZ.

Table E-1 COMPARATIVE ANALYSIS ON MAJOR ISSUES BETWEEN THE LAW OF FREE ZONES AND THE RELATED EXISTING LAWS

Items	Law of Free Zones	Existing Laws
Customs and Foreign Trade Procedures	The import and export of merchandise, goods, raw materials and other items are exempted from customs taxes, duty and fees.	All imports are subject to ad valorem duties on the bases of their CIF value with the exceptions provided for in the law.
Tax Procedures	Users of the Free Zones are exonerated from income tax, value added tax, the payment of provincial, municipal or any other taxes.	The annual income obtained are the object of the income tax. The law established progressive and proportional taxes.
	Users are exempted from taxes on patents and all taxes in force regarding production, use of patents and trade marks, technology transfers and profit repatriation (remittance abroad).	There are other taxes on trade marks, patents, sales on foreign currency, selective consumption, and so forth. Municipal taxes are paid on real estates, excise taxes and so on.
Currency Exchange and Financial Procedures	Users shall enjoy complete freedom in all currency exchange transactions among each other between free zones and abroad. Local commercial banks may provide endorsements for credit granted by banks abroad to free zone users.	The law on International Exchange establishes the official intervention exchange market, and orders to deposit in that market the foreign currency originating from exports and such foreign currency received by public and private institutions.
Procedures for Treatment of Capital	Foreign investment in free zones shall not be subject to existing foreign capital treatment procedures.	Legal regulations concerning foreign investment are set in a general manner under the Andean Pact's Decision 220. Under the Pact, there are some requirements for investment such as future nationalization through a fade-out agreement, minimum investment, transfer of foreign currencies.
Labor Procedures	Labor relations between free zone users and their workers shall be subjected to the labor laws in force, with the modifications - Labor contracts in free zones are by nature temporary. Therefore, they shall not be the provision of Article 14 of the Labor Code.	The Labor Code, which contains labor regulations and develops the constitutional principles, are applied. The following are the principal obligation of employers towards their workers: to pay the compensation owned; to protect the worker's health and safety; to establish dining hall, elementary school, stores and so on with conditions.
Labor Procedures	The wages of workers engaged by free zone users must be at least 10% higher than the minimum wages received by workers of the same sector.	The employer or the company will distribute 15% of the net profits among workers. In addition there are minimum wages for certain categories of workers.
	Free zone user's workers shall be entitled to profit-sharing as provided for under the labor code.	15 or more workers may organize a labor committee with a minimum of one-half of the workers of the company with the purpose of entering into collective labor contracts.

Source : The Law of Free Zones, The Labor Code, "Legal Aspects of Doing Business in Ecuador" (1989), "Guide for Investment in Ecuador" (by CENDES), and other related information on laws

Remark : Article 14 of the Labor Code shows that no contract shall be less than one year.

Table E-2 COMPARATIVE ANALYSIS ON SYSTEMS OF FREE ZONE (EPZ) AND MAQUILA

Items	Free Zone	Maquila
Operation	Free zone users display, manufacture, market, package, unpack, assemble, refine and handle all types of merchandise, inputs and machinery, and carry out all other activities.	A maquila operation is the industrial or services process involving the processing, finishing, transformation, or repair of goods from foreign origins, imported under the Special Temporary Entry System.
Customs Procedures	Free zone users shall enjoy 100% exemption from customs taxes, duty and fees.	Importation on Maquila system will be subject to the Special Temporary Admission System. (Freedom from trade tariffs and duties) Maquilators shall render a specific guarantee enough cover the 100% of the required taxes on importation.
Labor Contracts	Labor relations between free zone users and their workers shall be subject to the Labor Code with the modification. Labor contracts are by nature temporary. They shall not be subject to the provision of Article 14 of the Labor Code.	Maquila operation will be subject to the Labor Code. Maquila labor individual contracts shall not be understood to establish stability provided by Article 14 of the Labor Code. Therefore, the maquila contractor shall contract for labor for the time required for operation.
Transportation	Transportation of cargo belonging to users may enjoy total exoneration from the restrictions provided by the cargo reserve and civil aviation laws.	The legal disposition on maritime cargo and others are not applicable in maquila system.
Remittances	Free zone users shall enjoy free repatriation of profits. (remittances abroad)	Remittances of foreign investors produced by maquila is not subject to foreign currency limitations established by Cartagena Agreement.

Source: The Law of Free Zones and the Maquila Law

Table E-3 MAQUILA COMPANIES AUTHORIZED BY MICIP

Location	Country of Investor	Activity	Personnel	Process	Materials to be admitted for reexport
Manta	USA	Disassembly & classification of different materials	80 laborers & 20 administrators and technicians	Disassembly & classification of different materials	Electronic and computer scrap, equipment and tools
Manta	USA	Garment-making (clothing)	44 workers	Sewing of pieces, lining buttons, etc.	Cut parts, pieces, accessories, etc.
Quito	France	Decoration of mural appliques and clothings, etc.	33 workers	Preparation of clay, placing it in silicon molds	
Quito	Bahama	Garment-making disposable industrial and medical cloth	329 persons	Sewing of the cut polypropylene, etc.	Extruded polypropylene cloth in precut pieces and rolls
Quayaquil	USA	Garment-making	70 persons	Cutting, sewing zippers, etc.	Cloth, threads, zippers, etc.
Manta	USA[1)]	Processing of tuna fish and tuna based products			
Cuenca	USA	Production of wooden furniture, parts & pieces			
	USA[1)]	Making of T-shirts and other knit garments			
	USA	Garment-making	40 workers	Put springs, buttons, etc.	Parts and pieces of stuff accessories
Quito	USA[1)]	Garment-making			
Quito	USA	Making of ribbons for typewriter, printer, etc	44 workers	Tape cut, assemble, and pack	Polyethylene film, cartridges boxes
Guayaquil	USA	Making of suitcases, backpacks & nylon bags	80 workers	Cut the stuff, cover with plastic	Oxford nylon, nailing line, zipper, etc.
Quito	France	Production of flowers etc.			

Remark : 1) They have only obtain the qualification and registration, but have not yet applied for authorization to begin maquila programs.

Table E-4 LEGISLATION AND REGULATIONS ON FREE ZONES IN LATIN AMERICA

Country	Tax/Duty Exemptions				Foreign currency handling	Capital repatri-ation
	Import tax	Income tax	Export tax	Local tax		
1. Colombia	yes	permanent	yes	yes	free	free
2. Costa Rica	yes	100% 1st 6 years 50% next 4 years	yes	yes	free	/4
3. Rep. Dominica	yes/1	100%/1	yes/1	yes/1	free/3	free
4. Mexico	yes	no	no	no	free	/5
5. Ecuador	yes	20 years/2	yes	yes	free	free

Country	Foreign capital investment	Access to local market	Freedom on labor management
1. Colombia	free	yes by paying duty	no
2. Costa Rica	n.a.	Up to 49% of production	no
3. Rep. Dominica	free	Up to 20% of production	Flexible
4. Mexico	/6	Up to 20% of production for items not produced in Mexico	no
5. Ecuador	free	yes by paying duty	Flexible from labor law

Remarks /1: The exemption's duration(8~20 years) depends on the region of the country where the free one is located.

/2: National products subject to tax and duty or foreign products that have undergone some sort of transformation, incorporating national materials, shall pay tax on the part of the national product incorporated, if subject to taxation. ?

/3: Local cost paid in Pesos should be purchased from Central Bank.

/4: 100 % of original capital may be repatriated after 4 years' operation.

/5: No special provisions.

/6: Maquila plants must be established as Mexican companies, although they may have national, foreign or mixed capital.

/7: A bond equal to 1 % of the import value is required.

Source: "Study of Industrial Free Zone in the Andean Countries and in Costa Rica, Mexico and Dominican Republic, The Andean Development Corporation, Oct. 1989"
A part of information was updated by JICA study team

Table E-5 LEGISLATION AND REGULATIONS ON FREE ZONES IN THE ANDEAN COUNTRIES

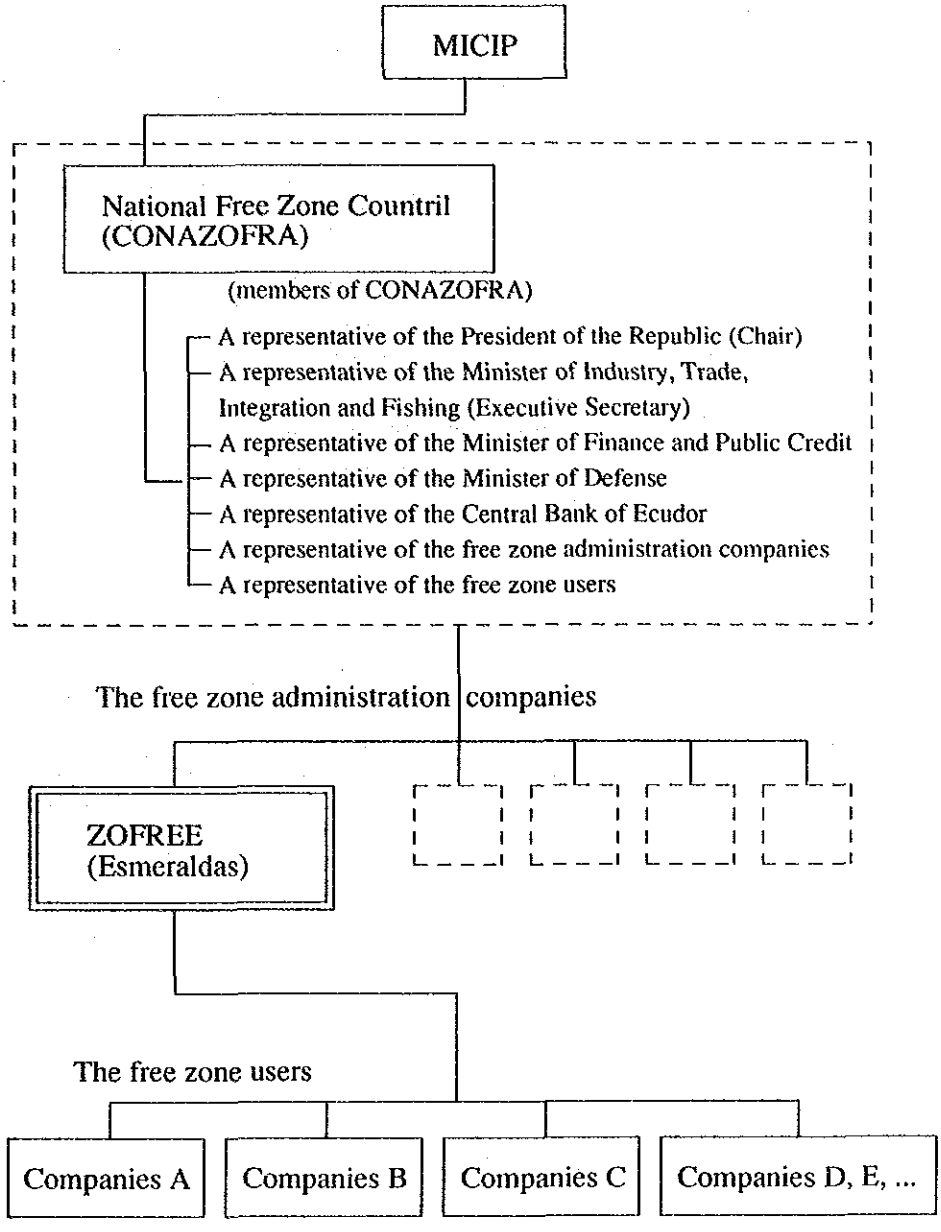
	Ecuador	Bolivia	Colombia	Peru	Venezuela
Legislation					
Law/Decree	Yes	Pending	Yes	Yes	Yes
Date	1991	-	1985-86	Pending	1974
Administration	Mixed	Private	State	State	State
Objectives	Foreign trade	Exports; Jobs	Foreign trade; industry; regional developm't	Foreign industry; foreign exchange	Foreign trade; industry; regional developm't
Sectors	Trade & industry	Industry	Trade & industry	Trade & industry	Trade & industry
Incentives					
Tax/duty exemptions on imports of:					
Merchandise	Yes	Yes	Yes	Yes	Yes
National inputs	Yes	Yes	Yes	Yes	Yes
Equipment, machinery	Yes	Yes	Yes	Yes	Yes
Inputs, raw materials	Yes	Yes	Yes	Yes	Yes
On income tax	20 yrs	20 yrs	Permanent	15 yrs	5 yrs
On export tax	Yes	20 yrs	Yes	No	Yes
On local taxes	Yes	10 yrs	Yes	15 yrs	10 yrs
Foreign currency handling	Free	No	Free	Free	Through Central Bank
Customs procedures	More flexible	No	More flexible	More flexible	More flexible
Access to local market	Conditional/1 Paying duty	Yes, Paying duty	Yes, paying duty	Yes, Paying duty	Yes, for national products
Requirements	Not specified	Minimum $250,000 capital	Not specified	Not specified	Not specified
Foreign Investment					
Decision 24/220; Cartagena Agreement	Follows Decisions	Follows most of Decisions	Follows most of Decisions	Hasn't be regulated	Follows all Decisions
Other laws/decrees	Foreign investm't law	Foreign investm't law	Decrees	Supreme Decree	-
Labor laws					
Special system for EPZ	Temporary hiring	No	No	Temporary hiring	Fixed-term contracts

Remark: /1: Subject to the approval by CONAZOFRA
Source : CAF, "Study of Industrial Free Zones in the Andean Countries and in Costa Rica, Mexico and the Dominican Republic", 1989 (A part of information was updated by the JICA Study Team.)

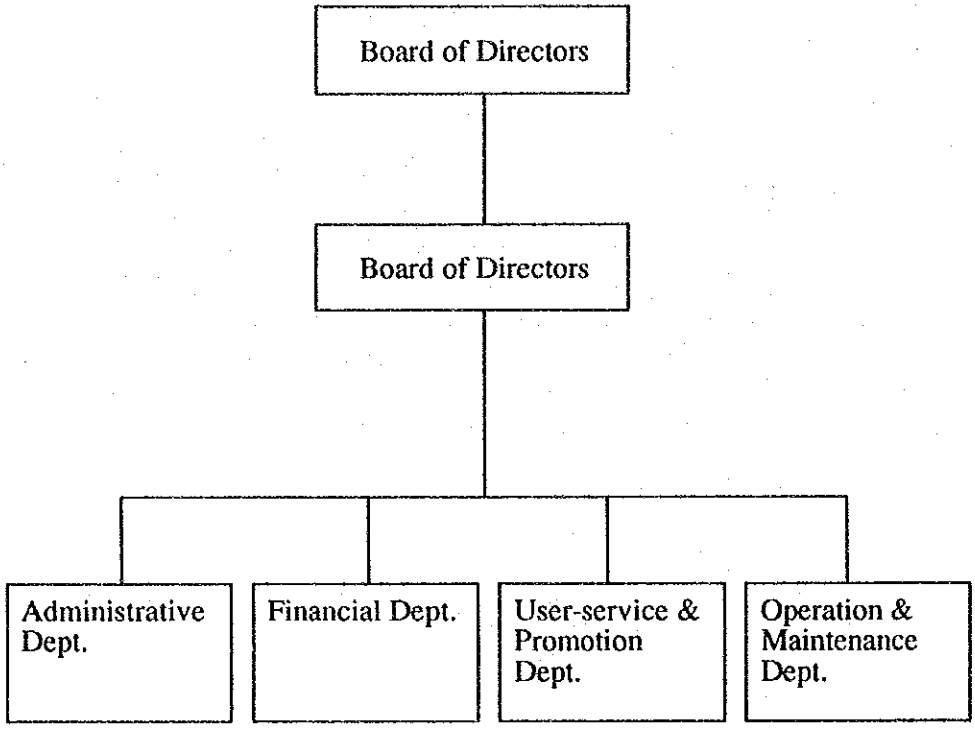
Table E-6 NUMBER OF COURSES AND PARTICIPANTS AT SECAP TRAINING CENTER (1990)

Regions/Centers	Courses		Participants	
	Complete	Not Com.	Finished	Not Fin.
North Region	204	88	3776	1709
Quito (Industry)	80	35	1218	566
Quito (Services)	70	12	1586	364
Ibarra	17	16	371	315
Santo Domingo	8	7	163	134
Tulcan	14	11	241	203
Esmeraldas	5	3	77	50
Others	10	4	120	77
Central Region	104	40	1872	739
Ambato	76	32	1411	565
Riobamba	28	8	461	174
South Region	74	33	1269	625
Cuenca	61	25	1009	434
Loja	13	8	260	191
Coastal Region	154	67	2799	1420
Guayaquil (Industry)	95	32	1532	616
Guayaquil (Services)	37	17	892	413
Manta	12	7	235	147
Others	-	11	-	244
Total	536	228	9716	4493

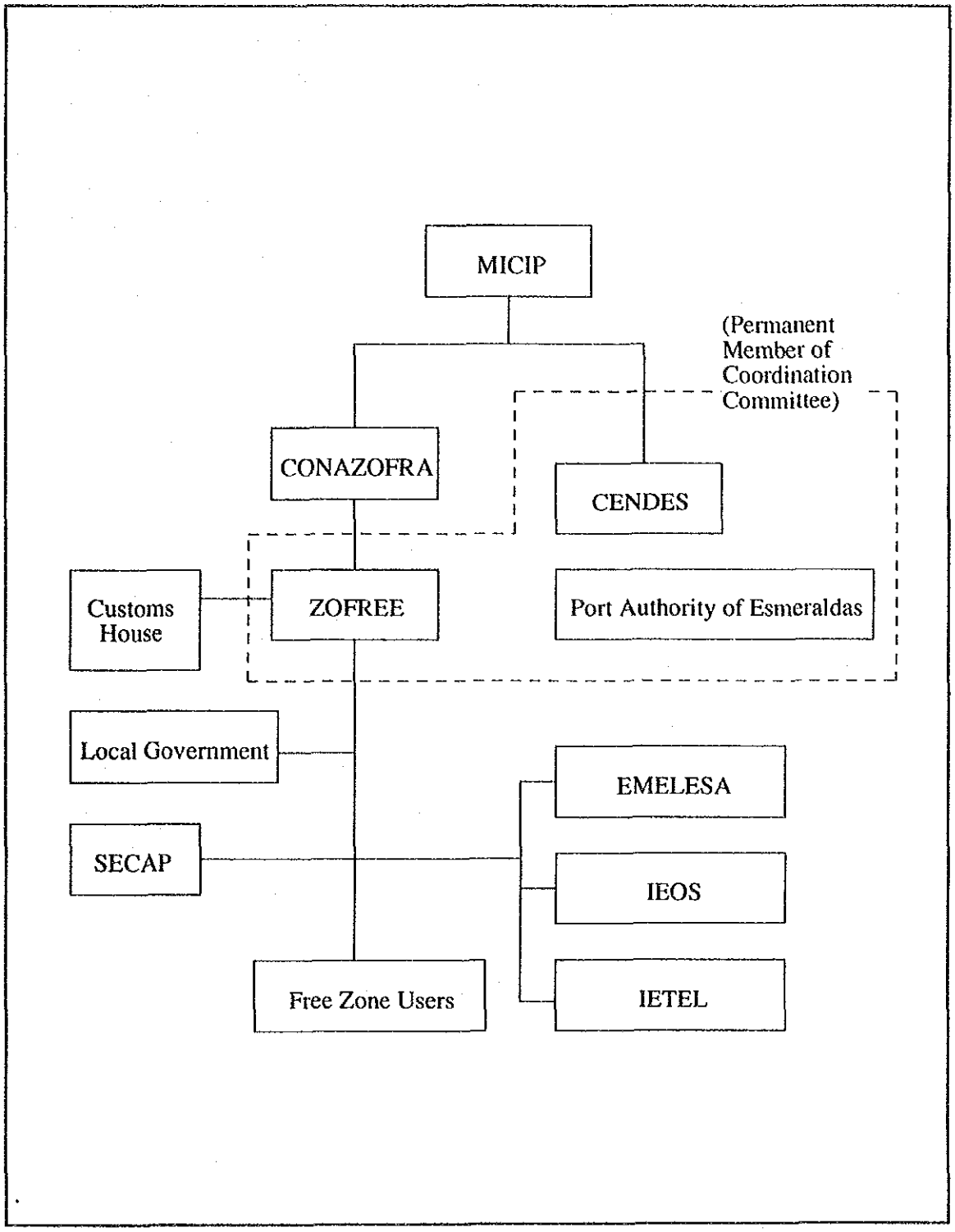
Source: SECAP, Departments of Region and Planning, 1991



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. E-1 Organization Chart of EPZ System
	JAPAN INTERNATIONAL COOPERATION AGENCY



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. E-2 Organization Chart of ZOFREE
	JAPAN INTERNATIONAL COOPERATION AGENCY



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. E-3 Overall Institutional Setting
	JAPAN INTERNATIONAL COOPERATION AGENCY

ANNEX F

PORTS AND PORT BASED EPZ

IN ECUADOR

ANNEX-F

PORTS AND PORT BASED EPZ IN ECUADOR

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F.1 PORTS

F.1.1 General

In Ecuador, there are four (4) commercial ports, i.e. Esmeraldas, Guayaquil, Manta and Pto. Bolivar. They are operated under the administration of the "Direccion de la Marina Mercante y del Litoral". In addition, there are two (2) oil terminals at Balao (near Esmeraldas) and La Libertad. These ports are geologically scattered over the country as shown in Figure F-1.

In 1989, the four commercial ports handled a total of 4.3 million tons of commercial cargo as shown in Table F-1. Out of total commercial cargo, the port of Guayaquil handled about 2.8 million tons or 66.4% of the total cargo. On the other hand, the port of Esmeraldas handled 0.2 million tons or 4.8% of the total cargo. Coastal trade is not frequent in the country.

It is reported that total number of ship calls in Ecuador was approximately 2,000 in 1989.

F.1.2 Port Activities

1) Port of Esmeraldas

The construction of the Esmeraldas port was completed in 1979. The port has also the facilities of fishing port located to the south of the commercial port area (Refer to Figure F-2). Presently, the Esmeraldas port has two (2) berths or 350 m of quaywall to accommodate maximum ship size of 25,000 DWT, as well as Ro-Ro facility at the end of the existing berth as shown in Figure F-2. Major facilities of the Esmeraldas Port is summarized in Table F-2.

The cargo handled at the Esmeraldas port increased from 149,000 tons in 1985 to 206,000 tons in 1989. The major cargoes of the port are composed of import of steel products and machinery. Containerization rate is still low in this port. Cargo volume and shipcall at the port is shown in Table F-3. The ships called for the Esmeraldas port are mostly international liner with an average ship size of 12,000 DWT. Berth occupancy rate was 23% in 1989. Assuming the maximum berth occupancy rate of 65%, it is estimated that the cargo handling capacity of the present port facility is about 600,000 tons per year.

The port has no stationed crane along quayside, but it is equipped with mobile cranes (Max. 60 tons capacity), and forklift (Max. 10 tons capacity). Containers are loaded/unloaded

mainly by utilizing ship's gear. In the port, reef containers are not accommodated, as there is no electrical facility in the container yard. The port charge at the Esmeraldas port is shown in Table F-4.

The port has an expansion plan to construct additional general cargo berth of 175 m in length at the north side of the existing berths, as well as one (1) container berth of 175 m in length at the south side of the existing berths. Last dredging work was executed in 1985 and it is expected to perform next dredging in 1994.

2) Port of Guayaquil

The present commercial port of Guayaquil was constructed in 1959~63 to replace of old river port along Guayas river. The port is located to the south of Guayaquil city and about 50 nautical mile from the sea. The approach channel, maintained with a depth of 32 feet, is navigable for the maximum ship size of about 20,000 DWT with an assistance of pilot boat.

The port of Guayaquil, as shown in Figure F-3, has berth facilities as listed up hereunder. Features of major port facilities are listed up in Table F-5.

- 5 general cargo berths (925 m in total)
- 3 container cargo berths (555 m in total)
- 1 bulk berth (151 m) : T-head pier type
- 1 berth for small craft including service boats

Total cargo volume handled in the Guayaquil port was decreased from 3.2 million tons in 1985 to 2.8 million tons in 1989, due mainly to significant decrease in import. The cargo and shipcalls at the port is shown in Table F-6. Rate of containerization was 24% in 1989 and 27% in 1990.

Average ship size called at the Guayaquil port is 12,000 DWT. Average duration of port time per ship was about 42 hours which was much longer than the other ports. Waiting time includes ship maneuvering time (42%), custom processing time (32%) and others (26%). Berth occupancy rate was 51% in 1989.

The port has one container gantry crane with the capacity of 40 tons, as well as 2 units of 30.5 tons container transtainers and other cargo handling equipment. Facilities for reef container, mainly used for banana containers, are available at the port.

The port has an area of about 215 ha in total, but about 40% of the area is presently used. The port has a plan to construct additional berth adjacent to the western part of the existing berths. To cater for the increased container cargo, the back yard of the present

container terminal is better to be reserved for the future expansion. However the north-western part of planned berths, is one of the possible site for EPZ in the future.

3) Port of Manta

The port of Manta was constructed offshore with a shelter of breakwater. Fishing port is located about 1 km southeast of the commercial port. Since the fishing port is heavily silted, the commercial port is currently utilized by both cargo ships and fishing boats. The port is frequently called by large fish carriers.

The commercial port of Manta has four (4) berths in two (2) piers, as well as two (2) Ro/Ro facilities and two (2) marginal wharves as shown in Figure F-4. Marginal wharves are mainly used by fishing boats currently. Features of the major port facilities are summarized in Table F-7.

In the center of Pier 1 & 2, transit sheds are provided. It is difficult to handle large volume of container cargo, as the port hasn't enough space for handling and storing such cargoes. There are no regular ship calling this port. The port is only called by ship when certain volume of cargo is scheduled to load/unload. From 1985 to 1988, the cargo volume was in the range of 90,000 to 130,000 tons per year, but it increased to 158,000 tons in 1989 mainly due to urgent import of cereal (65,000 tons) in 1989. The cargo volume and shipcalls at the Manta port is shown in Table F-8.

Average ship size called at the port is 11,000 DWT. The maximum ship size is 15,000 DWT. Duration of port time per ship was 36 hours on an average. Berth occupancy rate was 15% in 1989.

The port has mobile cranes with a capacity of 15 to 35 tons. Special facilities for container vessels are not available at the Manta port.

4) Port of Pto. Bolivar

The port of Bolivar is located in Machala city, about 3 nautical miles upstream of Estero Santa Rosa. The port has two (2) berths of marginal wharf and two (2) berths in a pier. Port facilities is summarized in Table F-9 and illustrated in Figure F-5.

Major commodity of the port is banana export, accounting for 94% of total cargo handled in 1989, as shown in Table F-10. The ships are mostly chartered by banana exporter like Dole. Considering characteristic of the commodity, priority of berthing is given to the banana ships.

Average size of ship called at the Bolivar port is 9,500 DWT. Port time per vessel

was 61 hours 10 minutes in 1989, increased from 48 hours 36 minutes in 1985. Berth occupancy rate was 82% in 1989, reaching almost saturate level of berth usage. Maximum ship size to accommodate in the port is 14,000 GT.

Pier side cargo handling is mainly performed by the banana exporter utilizing their own equipment. Thus, it is functioned like a private port. The port has only one cargo handling equipment for container (40 tons forklift). However, the container cargo is limited in volume in this port.

The port has physical problem of sediment along the pier and the wharf. The maintenance dredging is periodically performed. The dredged materials are deposited on land adjacent to the northern part of the marginal wharf for possible use for future expansion of the port. About 25 to 30 ha of land was already reclaimed. Though the land is not consolidated yet as the port yard at present, it will be possible to locate future port facility on it.

F.1.3 Shipping Route and Freight

Major shipping lines called the Ecuadorian ports are listed up in Table F-11, except for the chartered banana ships. Since the use of Ecuadorian ships (TRANSNAVE) is preferential in Ecuador, utilization of foreign ships has been rather limited.

As shown in Table F-11, almost all the ships call Guayaquil port. The ships calling Esmeraldas port are rather limited. They include:

- A part of TRANSNAVE's Far East route ships
- All TRANSNAVE's Gulf route ships
- TRANSNAVE's Brasil route ships
- NAVCONSA's Gulf route ships
- K-Line's Far East route ships

On the other hand, the regular commercial ships calling Manta port are limited to NAVCONSA's Gulf route ships.

Shipping freight from Esmeraldas port to the east coast and the west coast of USA is shown in Table F-12. For instance, apparel to be shipped in 20 ft. container will cost about US$1,800 per container to the east coast and US$1,900 to the west coast. There is no substantial difference in shipping freight from Esmeraldas port and Guayaquil port.

It is reported that nearly 40% of cargo handled at Guayaquil port is originated and

destined to and from Quito and Pichincha Province. Despite the facts that the inland transport between Quito and Esmeraldas is much shorter than the transport between Quito and Guayaquil, that the shipping freight to and from Esmeraldas port and Guayaquil port has little difference, and that Guayaquil port is over congested, Esmeraldas port has remained under utilized for shipping cargoes to and from Quito and Pichincha Province. The reason for such phenomena has not been clarified during the period of this study. It is reportedly said, however, that some political reasons are hided behind.

As pointed out in Annex C.3.2, frequent shipments and reliable cargo lines are crucial for the users in the EPZ. In this context, measures should be taken to improve the current situation and to attract more frequent shipments to Esmeraldas port for the effective development of the Esmeraldas EPZ.

F.1.4 Port Based EPZ

This study has been made to evaluate the technical and financial feasibility to establish the Esmeraldas EPZ near the port of Esmeraldas. It has been additionally requested, however, to execute a preliminary study on the possibility to establish other EPZs near the port of Guayaquil, Manta and Bolivar. The possible location of EPZs in these port areas is briefly explained hereunder.

1) Esmeraldas Port and EPZ

Port Authority of Esmeraldas reserves 22 ha of reclaimed land, adjacent to the existing port zone for development of the Esmeraldas EPZ, on which feasibility study is being executed.

2) Guayaquil Port and EPZ

Guayaquil Port authority has a developed area of 95.4 ha. Aside from this existing port area, about 125 ha of area is reserved for future expansion and utilization for the port related activities. They have an immediate plan to expand its wharf at the western corner of port zone with an area of 50 ha. Possible location for EPZ is found on the eastern part and behind the existing container terminal. Judging from its location, a part of the reserved area should be kept for future expansion of container yard. However, as the reserved land has an area of 125 ha, it is possible to utilize it for EPZ, as well as for the expansion of container yard.

3) Manta Port and EPZ

Manta port has not sufficient space for EPZ within the port area. Since the port was developed in the area adjacent to Manta city, it is difficult to obtain land for industrial zone near the port. Possible site for EPZ is found around Montecristi, about 11 km from Manta port, where various factories are established. Consequently, an inland type EPZ is conceivable near the port of Manta.

4) Bolivar Port and EPZ

The Bolivar port has a reclaimed land of about 25 ha at the northern side of the existing port area. The reclaimed land has not been consolidated yet. This area is reserved for future expansion of port facilities. Since the major cargo of the port is banana for export, it will not require large spaces for back-up area except for warehouse. Therefore, this reclaimed land could be utilized for EPZ. The port management is eager to invite EPZ in this area.

Table F-13 summarizes the characteristics of port facilities and EPZ at Esmeraldas, Guayaquil, Manta and Bolivar.

From the view point of availability of land for EPZ and the related port facilities, Guayaquil port and Esmeraldas port have advantages over other port areas. Major problems in port facilities are shipping chance at Esmeraldas, unfavorable custom clearance system at Guayaquil and berthing priority at Bolivar. In the case of Manta, an inland type EPZ will have to be located far from the port area.

From the view point of availability of labor force, Guayaquil port and EPZ will have much more advantage over the other port and EPZ areas, since it has a large urban center to provide any level of labor force, including skilled labors. Availability of existing industries and availability of raw materials, as well as availability of public services and utilities, in Guayaquil area will also favor location of EPZ in this port area.

According to the short-interview survey with the Ecuadorian industries, as noted in Annex B.2, about 55% of the enterprises that indicated interest in establishing EPZ in other areas than Esmeraldas, prefered to locate their factories in EPZ in Guayaquil area. There exists stronger interest in establishing EPZ in Guayaquil port area.

Characteristics of industrial location in each EPZ will differ one by one. However, such categories of industry as apparel/textile and food processing industries would be rather common to each EPZ in view of the characteristics of EPZ and requirement to introduce labor intensive industries in the Ecuadorian EPZ.

F.2 AIRPORTS

F.2.1 General

There are two (2) international airports at Quito and Guayaquil and 208 airports in the country as a whole. Three major international and domestic scheduled airlines, as well as several commuter airlines, are operating scheduled flights to connect major cities and local towns.

The number of international passenger at Quito and Guayaquil reached approximately 606,600 in 1989 (300,537 entries and 306,049 exits). On the other hand, the number of domestic passenger by commercial lines including commuters reached 1,491,447 in 1989 (Refer to Table F-14). Figure F-6 and F-7 show major routes of both international and domestic flights.

In this Annex F.2, outline of the airport facilities at Quito and Guayaquil, as well as facilities at Esmeraldas, Manta and Machala, is briefly introduced. Possibility of establishing the airport based EPZ in Quito and Guayaquil will then be discussed preliminarily.

F.2.2 Outline of Airport Facilities

1) Quito airport

Quito airport, having a runway of 3,120 m in length, serves for international and domestic commercial flights, commuter and general aviation. The airport is located in the center of Quito city.

Number of landing and passenger/cargo traffic at Quito airport are summarized in Table F-15. Number of international passenger increased steadily, while domestic passenger decreased from 1987. Volume of export cargo increased substantially, from 3,000 tons in 1986 to 8,900 tons in 1989. Import and inward cargo volume in 1989 was almost same as the level in 1986.

DAC (Civil Aviation Department) is planning to relocate all airport facilities to the eastern part of Quito city to meet the increasing traffic demand (Refer to Figure F-8). Study on this new airport has been completed and financial arrangement is being made for construction. New airport plan envisages a large airport compound enough to accommodate an area for export processing zone within the airport boundary.

2) Guayaquil airport

The airport of Guayaquil, with a runway of 2,400 m in length, is located in the northern part of the city and near the right bank of Guayas river. It serves for both international and domestic lines including general aviation.

Annual number of landing, as shown in Table F-16, exceeded 4,200 for international flight and 7,400 for domestic flight in 1988. International passenger increased from 230,000 in 1986 to 271,000 in 1989, while domestic passenger decreased from 1.1 million in 1986 to 1.0 million in 1989. As for the international cargo traffic, export volume increased substantially from 6,900 tons in 1986 to 11,600 tons in 1989 (Refer to Table F-16).

As in the case of Quito airport, Guayaquil airport has also a plan to be relocated to the western part of the city. Financial arrangement is being made for the construction of the new airport facilities of Guayaquil..

3) Esmeraldas airport

Esmeraldas airport is located on the right bank of Esmeraldas river, or on the opposite side of the urban center. It takes about 40 minutes from the city of Esmeraldas to the airport. With a runway of 2,400 m in length, airport is served to accommodate B-707 class aircraft.

The commercial airliner of TAME is operating between Quito and Esmeraldas six (6) times a week. Besides, the commuter air company of AECA connecting Esmeraldas and Guayaquil via Manta. The number of passengers reached about 50,000 in 1989.

Beach resorts are located near Esmeraldas which receive tourists from Quito and other cities. DAC has a plan to convert this airport to international airport to open new international flight routes connecting Esmeraldas to Colombian airport.

4) Manta airport

Manta airport is primarily functioning as domestic airport, but it is also functioned as an alternative international airport to Guayaquil. The airport facilities meet the international airport standard, with a runway and taxiway length of 2,500 m. The airport is located to the east of Manta city and near the beach.

Manta airport is connected with Quito and Guayaquil airports. In 1986, the passenger between Manta and Guayaquil shared about 30% of passenger, but it fell down to about 5% of total passenger in Manta airport, as a new highway was constructed between two cities. Cargo volume has also been decreased with the new highway construction.

5) Machala airport

Machala airport, with a runway of 1,200 m in length, is located in the city of Machala serving basically for commuter planes.

Number of landing and traffic data, as shown in Table F-17, shows significant decrease of both passenger and cargo volume. Presently, regular commuter plane is only flying between Machala and Guayaquil.

F.2.3 Airport Based EPZ

Possibility of establishing airport based EPZs has been preliminarily studied, in relation to the airport relocation in Quito and Guayaquil. At Quito, a new airport is planed to locate about 15 km to the east of the existing airport, while at Guayaquil, a new airport is planned to be relocated to the west of the urban area.

At the new airport in Quito, some areas have been reserved for development of industrial zone under the general layout of the new airport plan though it has not been disclosed by the authority concerned. Anyway, the land is available to contemplate the establishment of EPZ in Quito new airport area. On the other hand, DAC reported that it would be possible to accommodate an industrial zone in the vicinity of the new airport in Guayaquil.

According to the short-interview survey with Ecuadorian enterprises, as noted in Annex B.2, about 20% of 75 companies that prefer to locate industry in EPZ in other city than Esmeraldas, selected Quito as a preferred location of EPZ,. On the other hand, about 55% of 75 companies preferred to locate EPZ in Guayaquil area. This demonstrates that a fairly large number of enterprises are interested in establishing EPZ in Quito and Guayaquil.

The categories of industries to be located in the airport based EPZ is different from those in the port based EPZ. Transportation of products and raw materials is mainly executed by air transport. It is preliminarily envisaged that the following type of industries would be considered to be located in the airport based EPZs in Quito and Guayaquil (Refer to Table F-18):

- Textile/Apparel
- Chemical/Plastics
- Electronics
- Scientific equipment

Selection of industrial categories to be located in each EPZ should be further studied through market survey on potential investors. Anyway, it is considered as worth studying to establish airport based EPZs in Quito and Guayaquil in line with the implementation of the airport relocation at these cities.

Table F-1 CARGO AND SHIPCALL IN ECUADORIAN PORTS

Item	1985	1986	1987	1988	1989
1. Cargo (1,000 t/year)					
Total	4,314	4,244	3,993	4,267	4,267
1) Esmeraldas	149	136	135	183	206
2) Guayaquil	3,225	3,017	2,761	2,927	2,837
3) Manta	107	130	101	94	158
4) Pto. Bolivar	833	961	996	1,063	1,068
2. Shipcall (ship/year)					
Total	1,930	1,970	1,978	2,097	2,202
1) Esmeraldas	73	145	118	168	169
2) Guayaquil	1,087	1,086	1,132	1,150	1,173
3) Manta	163	152	155	155	147
4) Pto. Bolivar	430	405	419	435	471

Table F-2 MAJOR FACILITIES OF ESMERALDAS PORT

Facility		Description	
1. Wharf (Commercial Port)			
Berth No.1	:	Length Depth Ship Size	175 m 11 m 25,000 DWT
Berth No. 2	:	Length Depth Ship Size	175 m 11 m 25,000 DWT
Ro/Ro Berth	:	Depth Ship Size	11 m 25,000 DWT
(Fishing Port)			
Pontoon No. 1 Pontoon No. 2	:	30 m x 9 m 3.5 m x 4.0 m	
2. Breakwater			
Main Breakwater Secondary Breakwater	: :	550 m 450 m	
3. Warehouse & Transit shed			
Warehouse Transit shed	: :	25 x 40 m (for Banana) 6,000 sq.m (for Vehicle parts)	
4. Open Storage	:	66,000 sq.m	

Source: Port Authority of Esmeraldas

Table F-3 CARGO AND SHIPCALL AT ESMERALDAS PORT

Description	1985	1986	1987	1988	1989
1. Cargo Handled (1000 tons/year)					
Total	149	136	135	183	206
1) Import	148	124	123	159	158
2) Export	-	12	12	24	48
2. Major Commodities					
1) Import	Steel, Knockdown vehicle parts, Machine				
2) Export	Banana, Wood				
3. Number of Shipcall (Number/year)					
Total	73	145	118	168	169

Source: Port Authority of Esmeraldas

Table F-4 PORT CHARGES OF ESMERALDAS PORT

Item		Cost
1. Harbor fee		0.05 US$ x (Gross weight ton) x 2
2. Pilot charge		0.05 US$ x (Gross weight ton) x 2
3. Berthing fee	:	(Port time) x (LOA) x 65 Port time (day) :Duration of time at berth 1 to 24 hours considering as 1 day, 25 to 48 hours as 2 days. LOA(m): Length overall

Source: Port Authority of Esmeraldas, as of March 1991

Table F-5 MAJOR FACILITIES OF GUAYAQUIL PORT

Facility		Description			
1. Wharf					
Berth No. 1A	:	Length	185 m	Depth	9.7 m
Berth No. 1B	:	Length	185 m	Depth	9.4 m
Berth No. 1D	:	Length	155 m	Depth	9.8 m
Berth No. 1	:	Length	185 m	Depth	9.6 m
Berth No. 2	:	Length	185 m	Depth	9.2 m
Berth No. 3	:	Length	185 m	Depth	9.6 m
Berth No. 4	:	Length	185 m	Depth	10.5 m
Berth No. 5	:	Length	185 m	Depth	9.7 m
Berth No. 6	:	Length	185 m	Depth	9.4 m
2. Warehouse	:	22 nos		Total	37,320 sq.m
3. Transit Shed	:	8 nos		Total	51,752 sq.m
4. Open Storage	:			Total	243,479 sq.m

Source: Port Authority of Guayaquil

Table F-6 CARGO AND SHIPCALL AT GUAYAQUIL PORT

Description	1985	1986	1987	1988	1989
1. Cargo Handled (1000 tons/year)					
Total	3,225	3,017	2,761	2,927	2,837
1) Import	2,205	2,083	1,830	1,914	1,737
2) Export	1,021	933	932	1,013	1,100
2. Major Commodities					
1) Import	Wheat, Paper, LPG, Steel, Sugar, Sorghum				
2) Export	Banana, Steel, Fertilizer, Chemical product				
3. Number of Shipcall (Number/year)					
Total	1,087	1,086	1,132	1,150	1,173

Source: Port Authority of Guayaquil

Table F-7 MAJOR FACILITIES OF MANTA PORT

Facility		Description			
1. Wharf					
1) Pier 1					
- Berth No. 1	:	Length	200 m	Depth	10 m
- Berth No. 2	:	Length	200 m	Depth	10 m
2) Pier 2					
- Berth No. 3	:	Length	200 m	Depth	10 m
- Berth No. 4	:	Length	200 m	Depth	10 m
3) Ro-Ro Ramp	:	2 nos			
4) Marginal wharf 1	:	Length	150 m	Depth	7.5 m
5) Marginal wharf 2	:	Length	150 m	Depth	5.7 m
6) Marginal wharf 3	:	Length	150 m	Depth	3.8 m
2. Breakwater	:	Length	about 280 m		
3. Open Storage	:	100,000 sq.m			

Source: Port Authority of Manta

Table F-8 CARGO AND SHIPCALL AT MANTA PORT

Description	1985	1986	1987	1988	1989
1. Cargo Handled (1000 tons/year)					
Total	107	130	101	94	158
1) Import	43	64	40	43	100
2) Export	64	66	61	51	58
2. Major Commodities					
1) Import	Cereal, Vegetable, Paper, Hardware				
2) Export	Fish, Coffee, Cement, Balsa				
3. Number of Shipcall (Number/year)					
Total	163	152	155	155	147

Source: Port Authority of Manta

Table F-9 MAJOR FACILITIES OF BOLIVAR PORT

Facility		Description			
1. Wharf					
1) Marginal Wharf					
- Berth No. 1	:	Length	180 m	Depth	8.5 m
- Berth No. 2	:	Length	180 m	Depth	7.0 m
2) Pier					
- Berth No. 3	:	Length	120 m	Depth	9.0 m
- Berth No. 4	:	Length	120 m	Depth	9.0 m
2. Warehouse	:	6 nos			
3. Open Storage	:	12,000 sq.m (150 m x 80 m)			

Source: Port Authority of Pto. Bolivar

Table F-10 CARGO AND SHIPCALL AT BOLIVAR PORT

Description	1985	1986	1987	1988	1989
1. Cargo Handled (1000 tons/year)					
Total	832	961	996	1,063	1,068
1) Import	62	59	45	51	59
2) Export	771	902	951	1,012	1,010
2. Major Commodities					
1) Import	Paper for banana box, Fertilizer				
2) Export	Banana				
3. Number of Shipcall (Number/year)					
Total	430	405	419	435	471

Source: Port Authority of Pto. Bolivar

Table F-11 SHIPPING ROUTES

Name of Ship	Route	Duration of Round Trip
[TRANSNAVE]		
(1) Japan - Far East Route		
a) Vesta 1:	Busan - Kobe - Nagoya - Yokohama - Esmeraldas - Guayaquil	(36 to 37 days)
b) El Dorado:	Kobe - Nagoya - Yokohama - Busan - Keelung - Hongkong - Guayaquil	(42 days)
c) Liroay:	Guayaquil - Yokohama - Nagoya - Kobe - Busan - Keelung - Hong Kong	(57 to 58 days)
(2) South Africa - Argentin Route		
a) T.B.N.:	Durban - Cape Town - Bs. Aires - Valparaiso - Antofagasta - Iquique - Callao - Guayaquil - B'tura	(50 - 54 days)
b) Great Universe:	Durban - Bs. Aires - Valparaiso - Iquique - Callao - Guayaquil - B'tura	(48 to 53 days)
(3) Brasil Route		
a) Isla Santay:	Santos - Rio de Janeiro - Canal - Esmeraldas - Guayaquil	(27 to 28 days)
(4) USA Gulf Route		
a) Isla Baltra:	Miami - New Oreleans - Houston - Tampico - Cristobal - Esmeraldas - Guayaquil	(20 to 21 days)
b) Isla Puna 1:	Miami - New Orleans - Houston - Tampico - Cristobal - Esmeraldas - Guayaquil	(20 to 21 days)
c) Isla Puna 2:	Miami - New Orleans - Houston - Tampico - Cristobal - Esmeraldas - Guayaquil	(20 to 21 days)
(5) East Coast Route		
a) Potomac:	New York - Canal - Guayaquil - Canal - New York - Miami - Canal - Guayaquil	(33 days)
b) Pocahontas:	New York - Miami - Canal - Guayaquil - Canal - New York	(21 to 22 days)
c) Pocantico:	Guayaquil - Canal - New York - Canal - Guayaquil	(23 days)
(6) Mediterranean Route		
a) Candelaria:	Canal - Guayaquil - Callao - Arica - Iquique - Valparaiso - Antofagasta - Cristobal - Guayaquil	(27 days)
b) Cordigliera:	Genova - Marsella - Barcelona - Cadiz - Canal - Guayaquil	(27 to 28 days)
c) Clipper Majestic:	Canal - Valencia - Barcelona - Salemo - Livorno - Genova	(27 days)
d) Istrian Express:	Guayaquil - Callao - Matarani - Ilo - Arica - Valparaiso	(13 to 14 days)
e) Presidente Ibanez:	Guayaquil - Canal - Valencia - Barcelona - Salemo - Livorno	(30 to 31 days)
(7) Europe Route		
a) Andes:	Liverpool - Amsterdam - Hamburg - Bremen - Amberes - Le Habre - Panama - B'tura - Guayaquil	(28 days)
b) Maipo:	Guayaquil - B'tura - Panama - Amsterdam - Gutengerg - Humberg	(26 to 27 days)
[NAVCONSA]		
(1) USA Gulf Route		
a) Meghan A:	Guayaquil - Manta - Buenaventura - Miami - New Orleans - Houston - Tampico - Puerto Limon - Esmeraldas - Guayaquil	(30 to 32 days)
[K-LINE]		
(1) Japan - Far East Route		
a) Vesta:	Kobe - Nagoya - Yokohama - Esmeraldas - Guayaquil - Arica - Valparaiso	(36 to 37 days)

Table F-12 SHIPPING FREIGHT FROM ESMERALDAS PORT

Destination / Commodity	Freight		
	20 ft. Container (per cont)	40 ft. Container (per cont)	Break Bulk (per ton)
1. East Coast (Miami port)			
(1) General Cargo, Appliances	US$3,560	US$4,900	NA
(2) Furniture	US$2,260	US$2,940	NA
(3) Cotton	US$1,850	US$3,260	NA
(4) Apparel	US$1,800	NA	NA
(5) Elec. parts	US$1,900	NA	NA
2. West Coast (Los Angeles)			
(1) Apparel	US$1,900	NA	NA
(2) Foods	US$1,600	NA	NA
(3) Ceramic Tile	US$2,000	NA	NA
(4) Furniture	NA	NA	US$115
(5) Elec. parts	NA	NA	US$220

Source: Europacifico/TRANSEC, as of March, 1991

Table F-13 PORTS AND PORT BASED EPZ

		Esmeraldas Port - EPZ	Guayaquil Port - EPZ	Manta Port - EPZ	Bolivar Port - EPZ
Available land:	Area	22 ha.	approx. 50~70 ha	approx. 20~30 ha	approx. 25 ha
	Location	Within the port boundary	Within the port boundary	approx. 11 km from Port (Inland type EPZ)	Within the port boundary
Port facilities:	Access to port	Excellent	Excellent	Far from Port	Excellent
	Shipping chance	Fair, but much to be improved	Excellent	Poor	Poor
	Ship size accommodation	Good (Max. 25,000 DWT)	Good (Max. 20,000 DWT)	Small (Max. 15,000 DWT) insufficient for large container	Small (Max. 14,000 DWT) insufficient for large container
	Berthing priority	Excellent	Fair	Fair	Poor
	Container handling	Good (Minimum requirement)	Excellent	Poor (No container facility)	Poor (No container facility)
	Reef container	Unavailable	Available	Unavailable	Unavailable
	Custom clearance	Fair	Poor	Fair	Fair
Labor force:	Urban center	Esmeraldas city (pop. 98,000)	Guayaquil city (pop. 1.5 million)	Manta city (away from EPZ)	Machala city (away from EPZ)
	Unemployment rate	High	High	Fairly high	High
	Skilled labor	Not easily available	Available	Not easily available	Not easily available
Public services:	Inland transportation	Fair	Excellent	Fair	Poor
	Communications	Poor (at present)	Fair	Poor	Poor
	Power supply	Excellent	Excellent	Fair	Fair
	Water supply	Poor (at present)	Fair	Poor	Poor
Existing industry:	Availability in urban center	Limited	Abundant	Limited	Limited
	Availability of raw materials	Limited	Abundant	Limited	limited
Possible industrial categories to be located in EPZ:		Apparel Food processing Wood/furnitures Plastic/cosmetic Metal Others	Apparel Food processing Chemical Metal Electric device Transportation machinery Others	Apparel Food processing Others	Apparel Food processing Others
Interest of local enterprises in locating industries in EPZ:		Fair	Strong	Fair	Slight

Table F-14 AIR PASSENGER IN ECUADOR (1985 - 1989)

Description	1985	1986	1987	1988	1989
International					
1. Embarkation/Disembarkation Passenger					
1) Embarkation	229,295	253,728	274,034	278,059	306,049
2) Disembarkation	223,602	254,530	272,887	270,996	300,537
2. Transit Passenger	152,893	252,466	269,577	224,103	177,228
Domestic					
3. Domestic Passengers	1,224,277	1,583,565	1,746,584	1,514,265	1,491,447

Source: DAC

Table F-15 TRAFFIC AT QUITO AIRPORT

Description	1986	1987	1988	1989
1. Number of landing (commercial flight only, plane/year)				
1) International	2,100	2,175	2,145	2,341
2) Domestic	6,747	7,208	6,642	6,763
2. Passenger (number/year)				
1) International				
- Embarkation	135,136	139,426	143,136	165,471
- Disembarkation	142,530	142,726	152,004	170,092
- Transit	43,184	33,388	23,898	21,955
2) Domestic				
- Embarkation	655,369	719,065	640,765	643,161
- Disembarkation	670,847	759,491	647,623	645,195
3. Cargo (ton/year)				
1) International				
- Import	5,844	4,569	3,426	5,666
- Export	2,997	3,579	5,627	8,900
2) Domestic				
- Inward	3,029	2,726	2,828	2,915
- Outward	3,096	3,809	3,642	4,123

Source: DAC

Table F-16 TRAFFIC AT GUAYAQUIL AIRPORT

Description	1986	1987	1988	1989
1. Number of landing (commercial flight only, plane/year)				
1) International	3,753	4,044	4,226	3,922
2) Domestic	6,574	8,351	7,466	7,407
2. Passenger (number/year)				
1) International				
- Embarkation	118,592	134,608	134,923	140,578
- Disembarkation	111,986	130,161	118,994	130,445
- Transit	209,282	236,189	200,205	155,273
2) Domestic				
- Embarkation	566,847	574,728	519,729	502,806
- Disembarkation	543,634	529,296	491,534	479,172
3. Cargo (ton/year)				
1) International				
- Import	6,157	6,558	6,768	7,032
- Export	6,960	10,631	13,343	11,602
2) Domestic				
- Inward	2,815	2,718	2,807	3,156
- Outward	4,098	3,579	4,016	4,003

Source: DAC

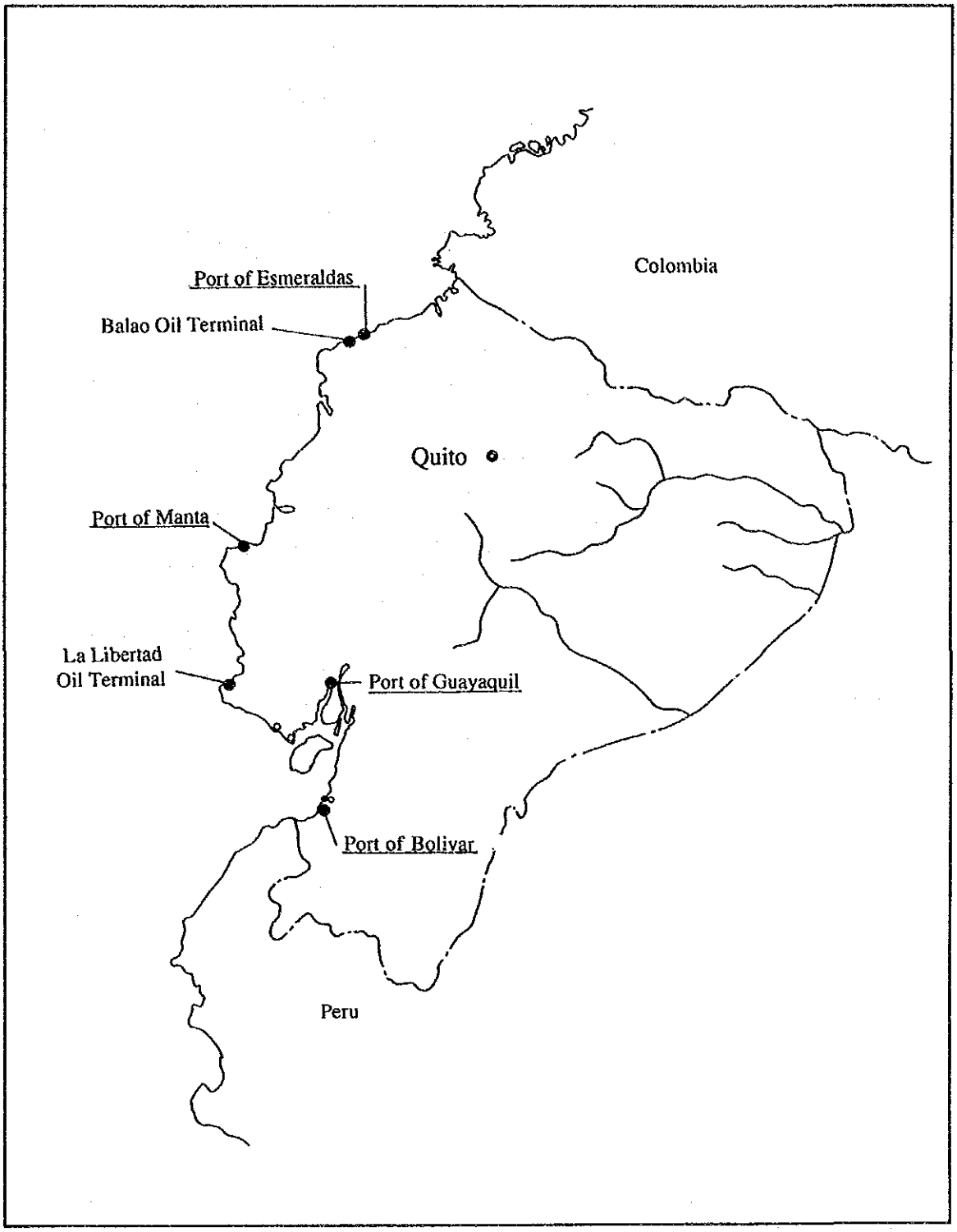
Table F-17 TRAFFIC AT OTHER AIRPORTS

Description	1986	1987	1988	1989
Esmeraldas Airport				
1. Number of landing (plane/year)	653	894	796	595
2. Passenger (number/year)				
- Embarkation	24,034	25,896	24,175	24,348
- Disembarkation	25,048	25,430	25,043	26,838
3. Cargo (ton/year)				
- Inward	64	77	81	85
- Outward	7	19	15	22
Manta Airport				
1. Number of landing (plane/year)	873	721	726	689
2. Passenger (number/year)				
- Embarkation	45,642	36,386	36,122	30,622
- Disembarkation	41,580	36,849	39,372	30,200
3. Cargo (ton/year)				
- Inward	222	180	211	171
- Outward	218	79	61	73
Machala Airport				
1. Number of landing (plane/year)	291	2,217	1,661	1,210
2. Passenger (number/year)				
- Embarkation	20,137	21,293	14,588	8,164
- Disembarkation	19,793	21,044	14,116	12,785
3. Cargo (ton/year)				
- Inward	146	105	68	29
- Outward	78	50	36	8

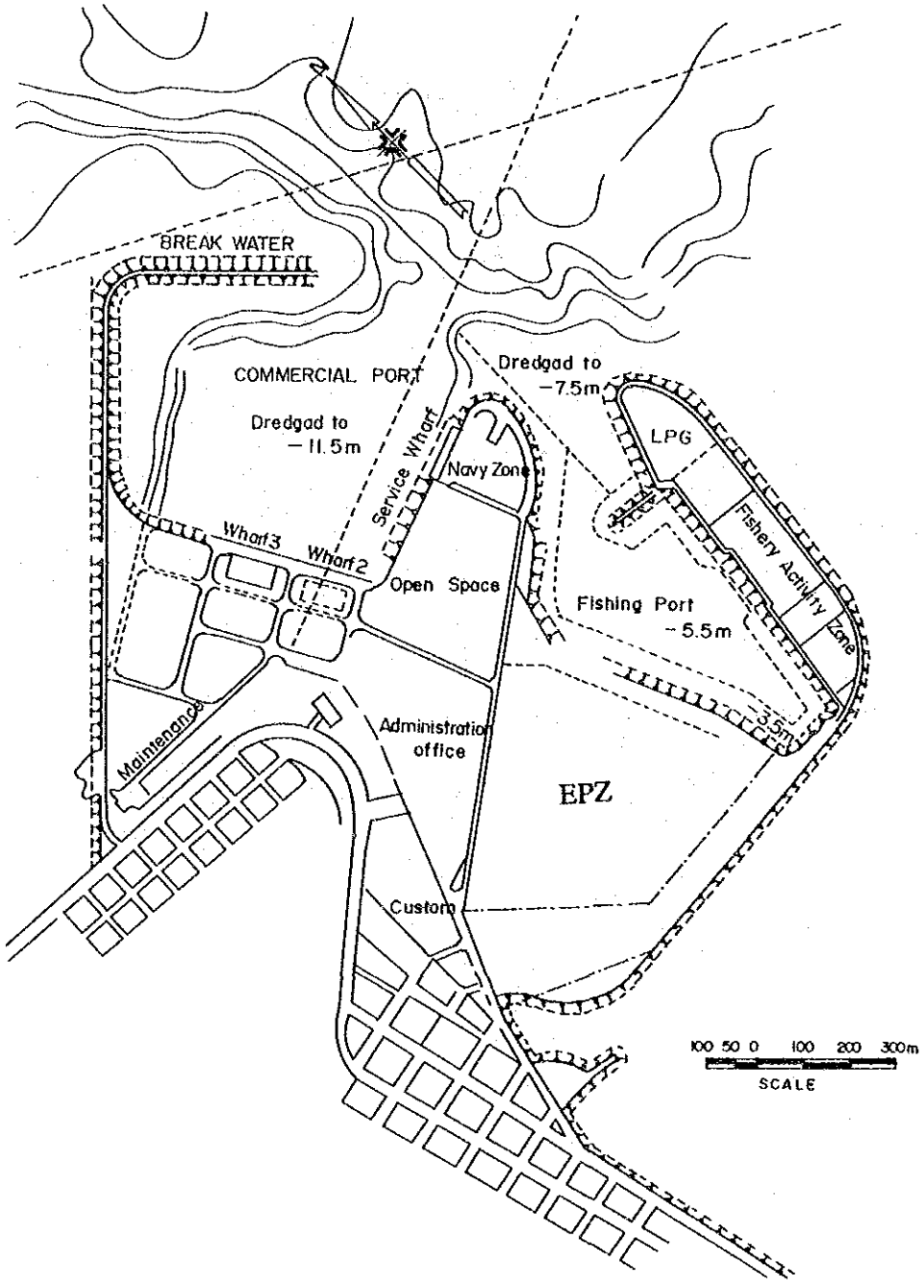
Source: DAC

Table F-18 NEW AIRPORT AND AIRPORT BASED EPZ

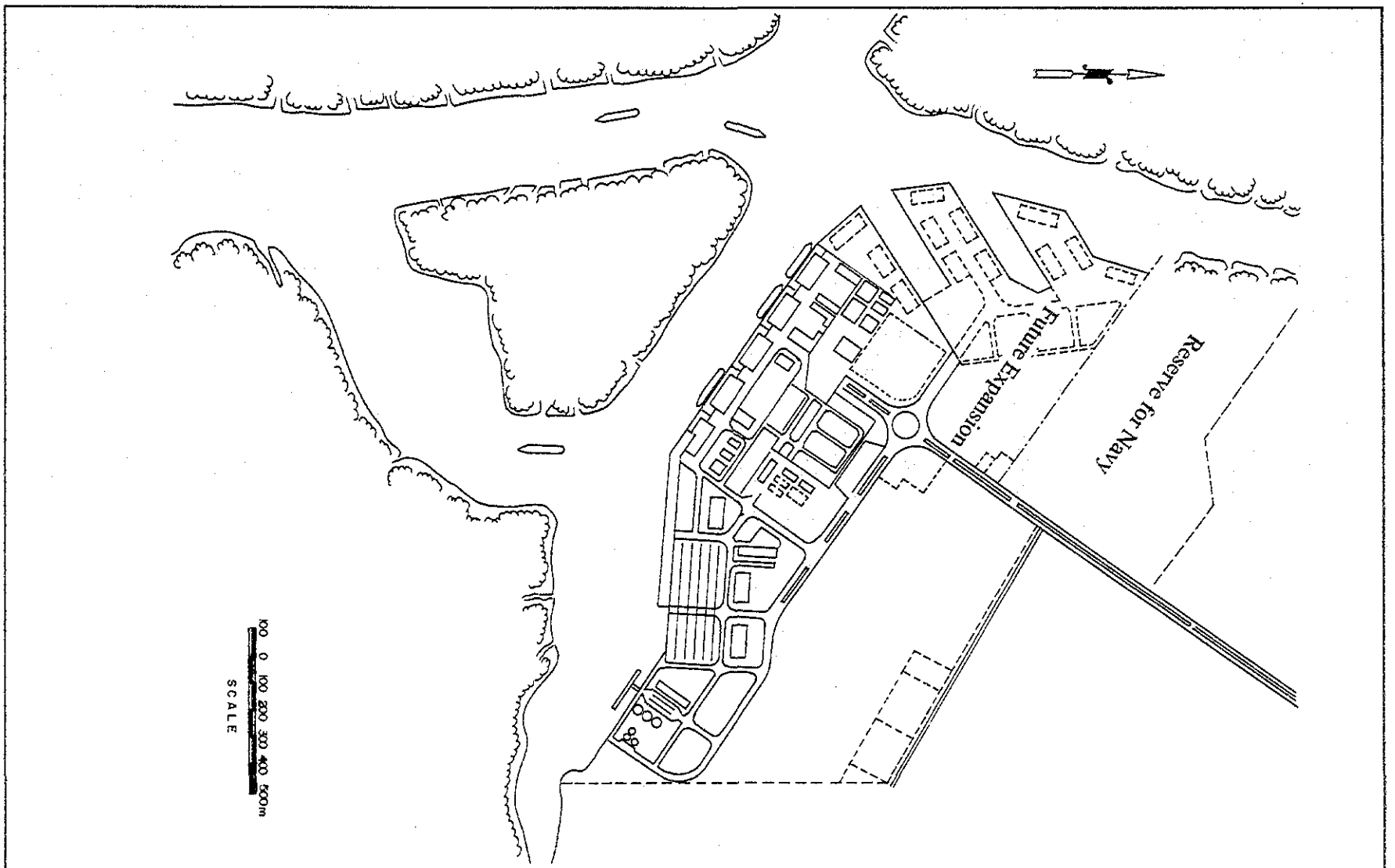
		Quito Airport - EPZ	Guayaquil Airport - EPZ
Available land:	Location	15 km east of Quito	West of Guayaquil city
	Area	10~30 ha	10~30 ha
New airport facilities:		3,120 m	2,400 m
	Runway Length		
	Estimated number of passengers (1995)	1.6 million	1.4 million
	Estimated volume of cargo (1995)	8,900 tons	11,600 tons
Labor force:	Urban center	Quito (pop. 1.1 million)	Guayaquil (pop. 1.5 million)
	Unemployment rate	High	High
	Skilled labor	Available	Available
Public services:	Inland transport	Fair	Excellent
	Communications	Fair	Fair
	Power supply	Excellent	Excellent
	Water supply	Poor	Fair
Existing industry:	Availability in urban center	Abundant	Abundant
	Raw materials	Fair	Abundant
Possible industrial categories to be located in EPZ:		Apparel (high quality) Plastic/cosmetic Pharmaceutical Electronics Precision machine Jewellery	Apparel (high quality) Food processing Plastic/cosmetic Pharmaceutical Electronics Precision machine Jewellery
Interest of local enterprises in locating industries in EPZ		Fair	Strong



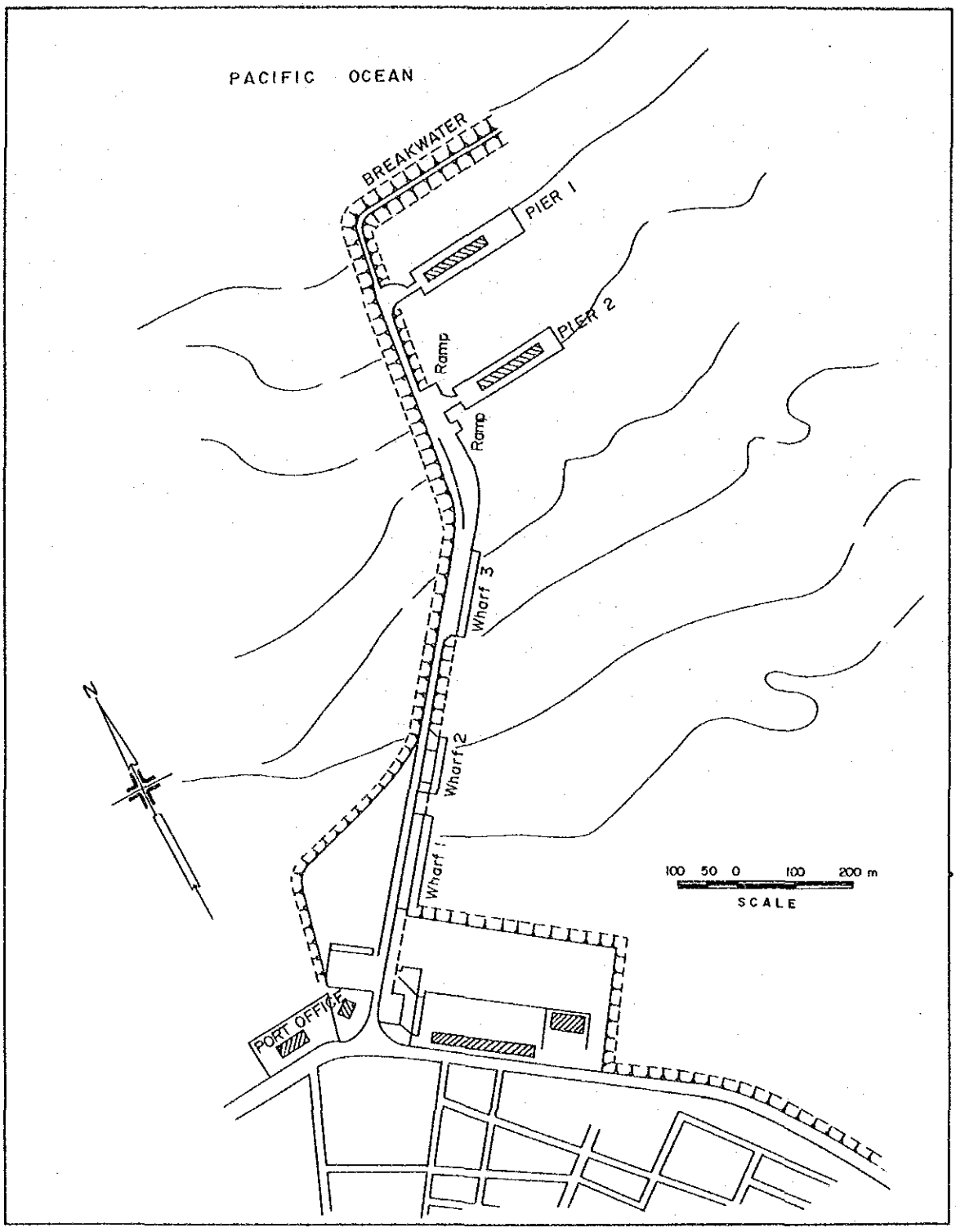
	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. F-1 Location Map of Ports
	JAPAN INTERNATIONAL COOPERATION AGENCY



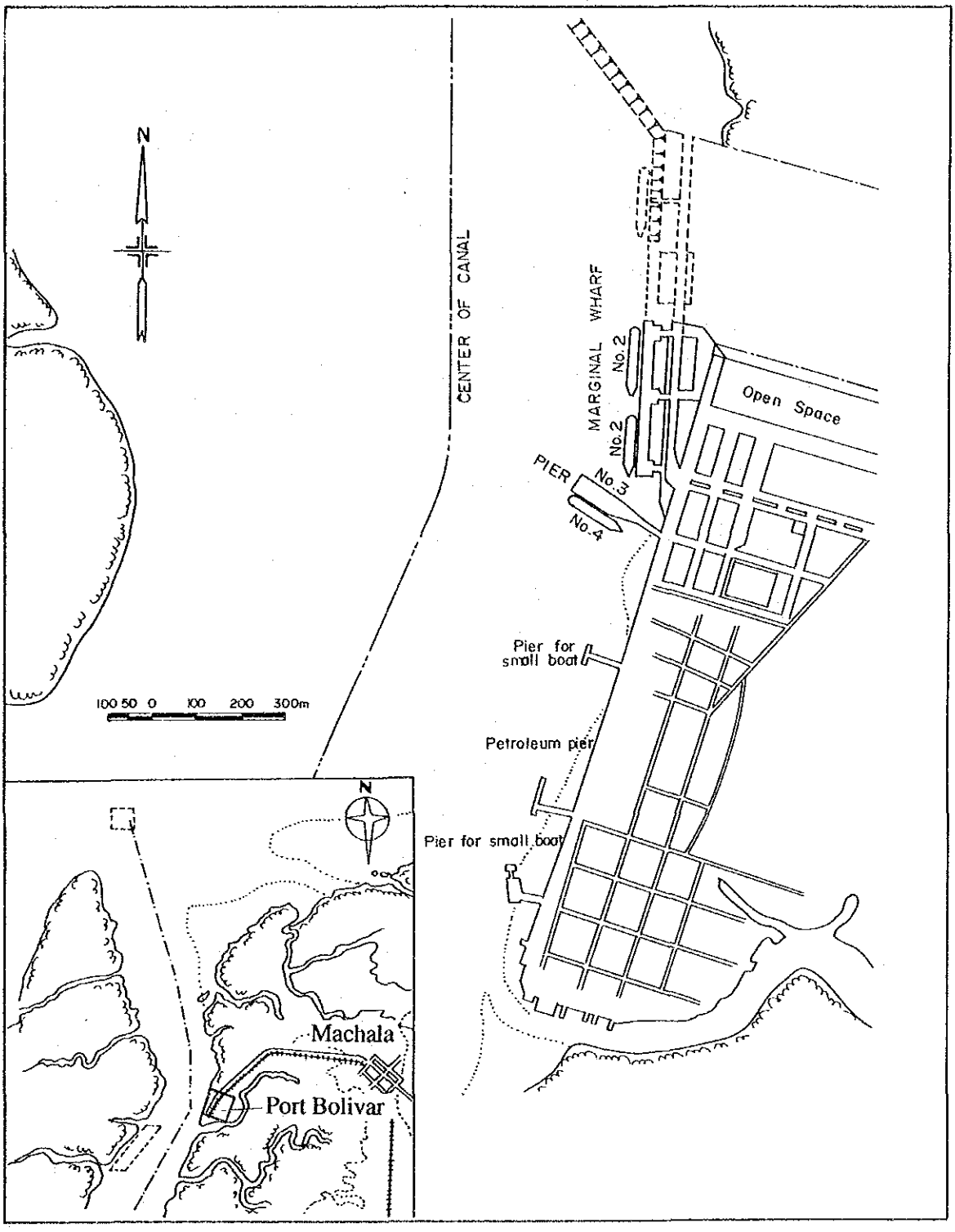
	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. F-2 Plan of Esmeraldas Port
	JAPAN INTERNATIONAL COOPERATION AGENCY



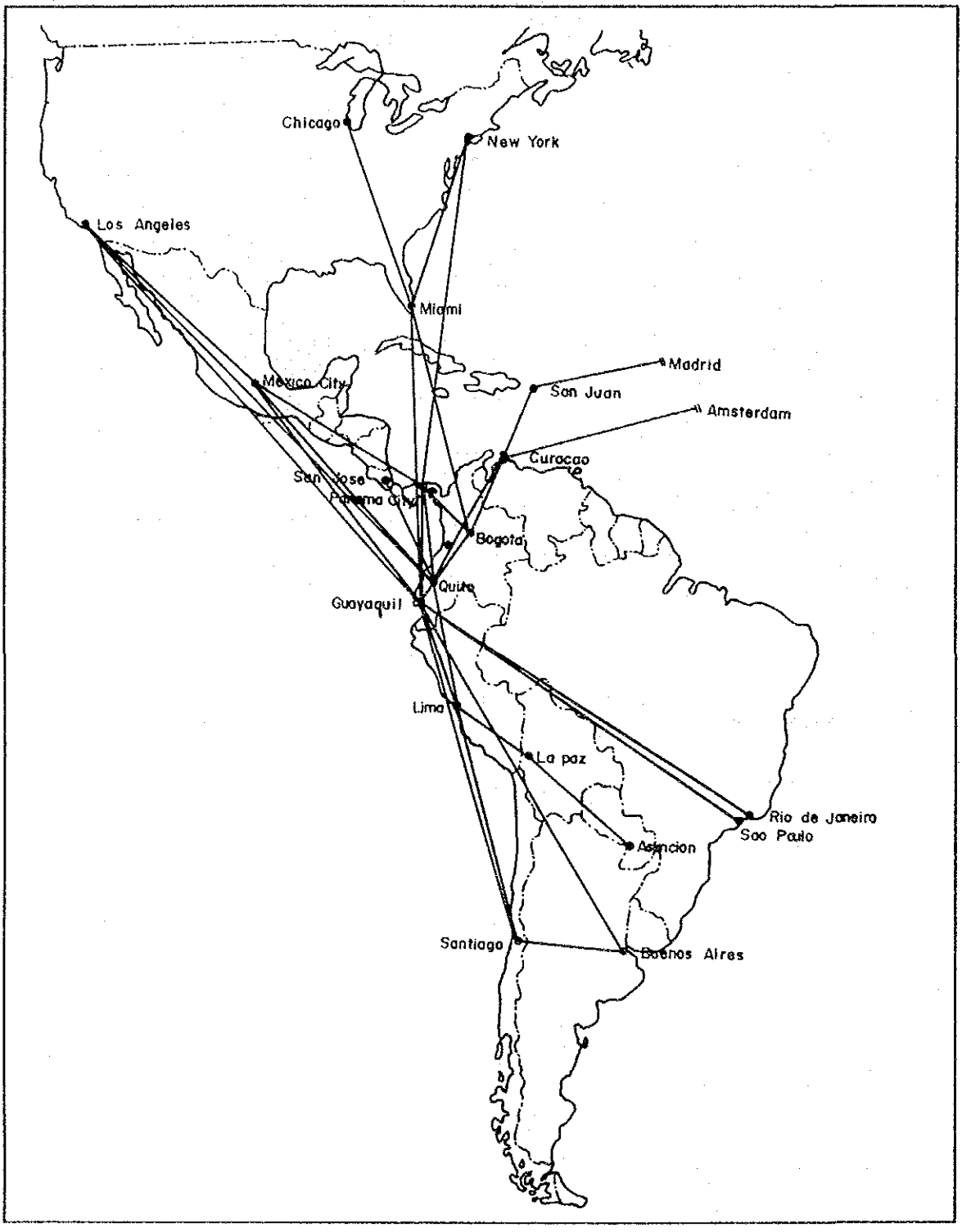
JAPAN INTERNATIONAL COOPERATION AGENCY	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT	Fig. F-3 Plan of Guayaquil Port



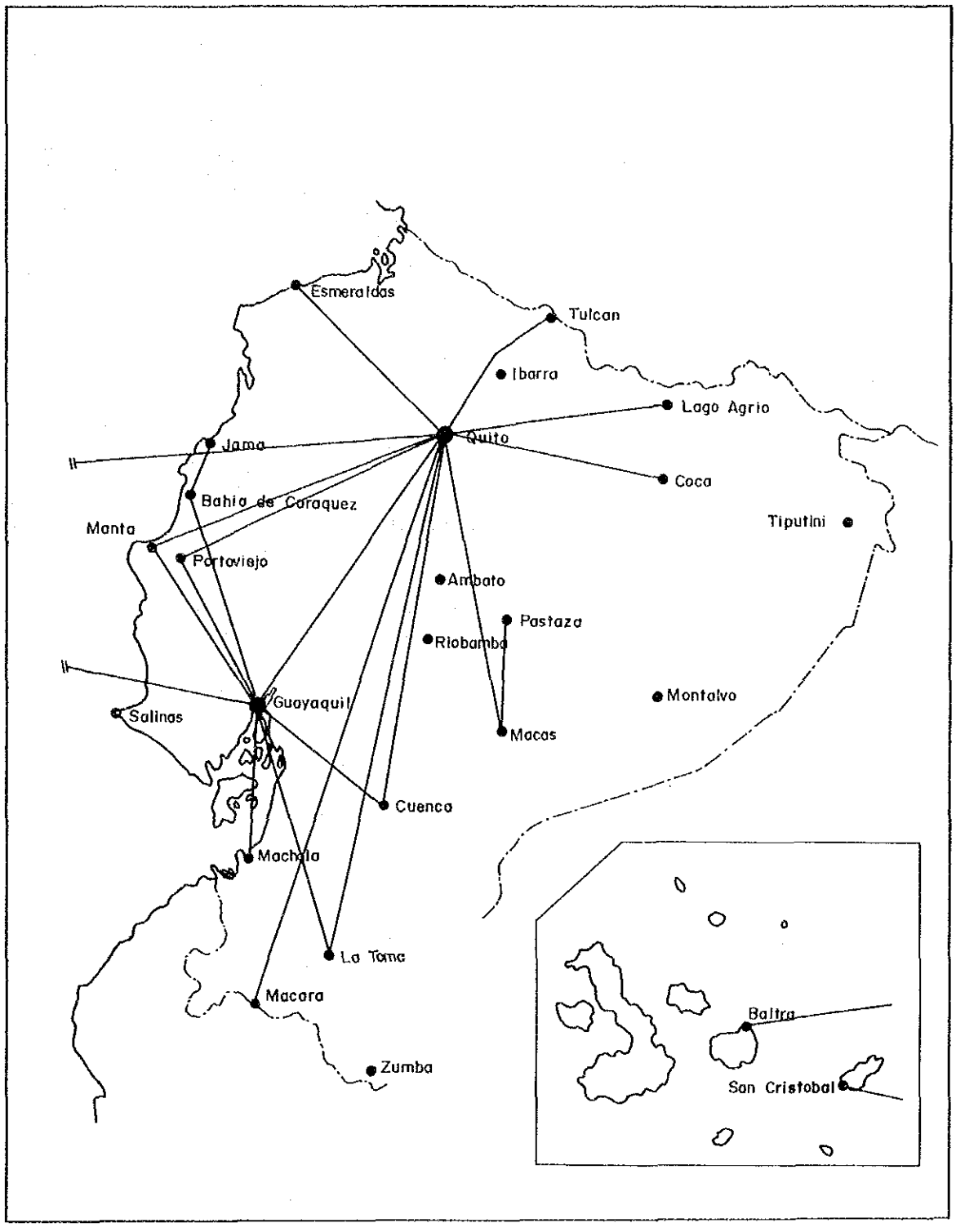
	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. F-4 Plan of Manta Port
	JAPAN INTERNATIONAL COOPERATION AGENCY



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. F-5 Plan of Pto. Bolivar
	JAPAN INTERNATIONAL COOPERATION AGENCY



	ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT
	Fig. F-6 International Flight Routes
	JAPAN INTERNATIONAL COOPERATION AGENCY



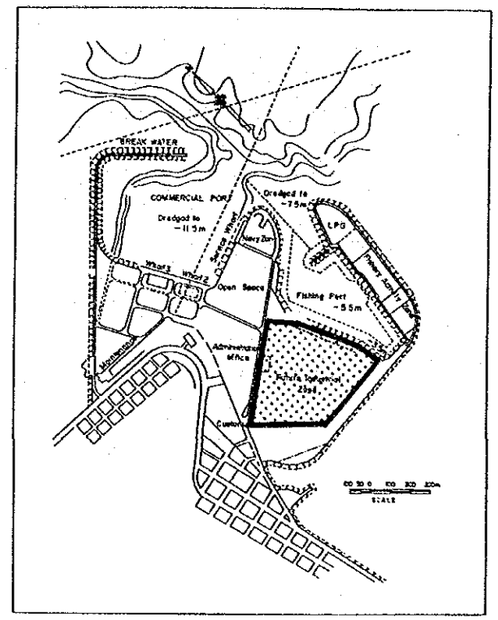
Note : Domestic commuter flights (air taxi) are excluded.

ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT

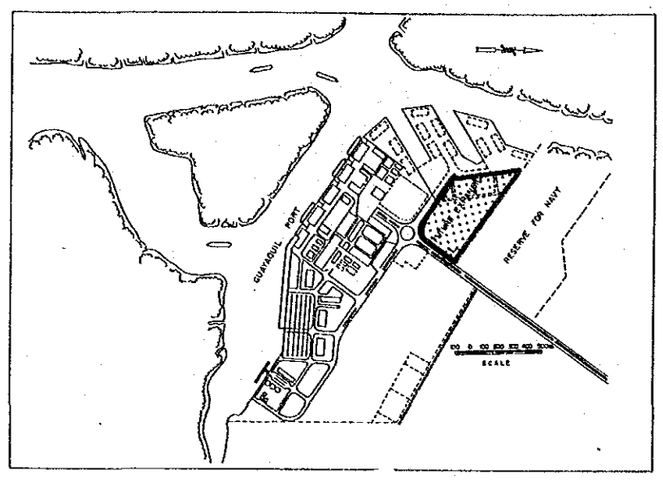
Fig. F-7

Domestic Flight Routes

JAPAN INTERNATIONAL COOPERATION AGENCY



Port of Esmeraldas



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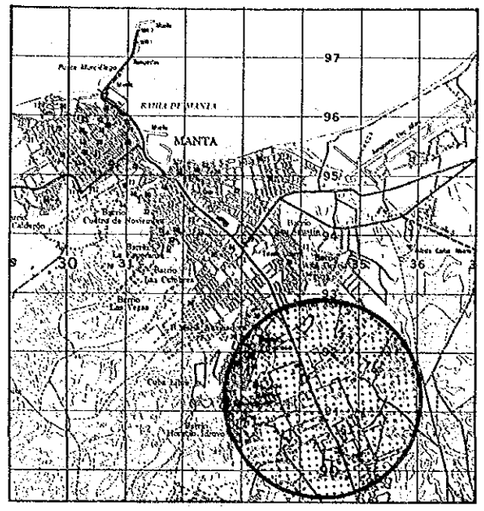
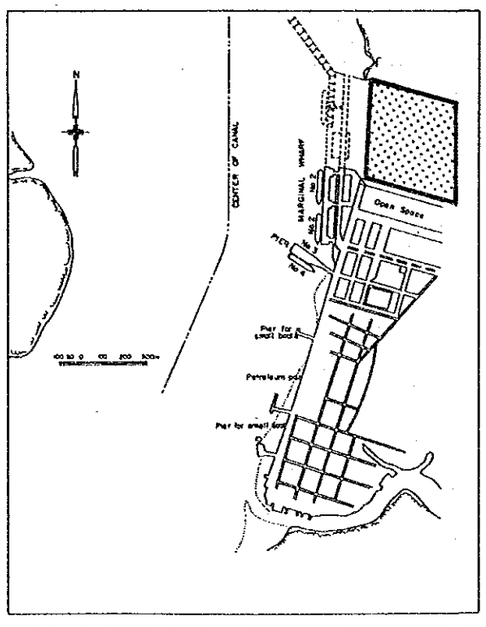
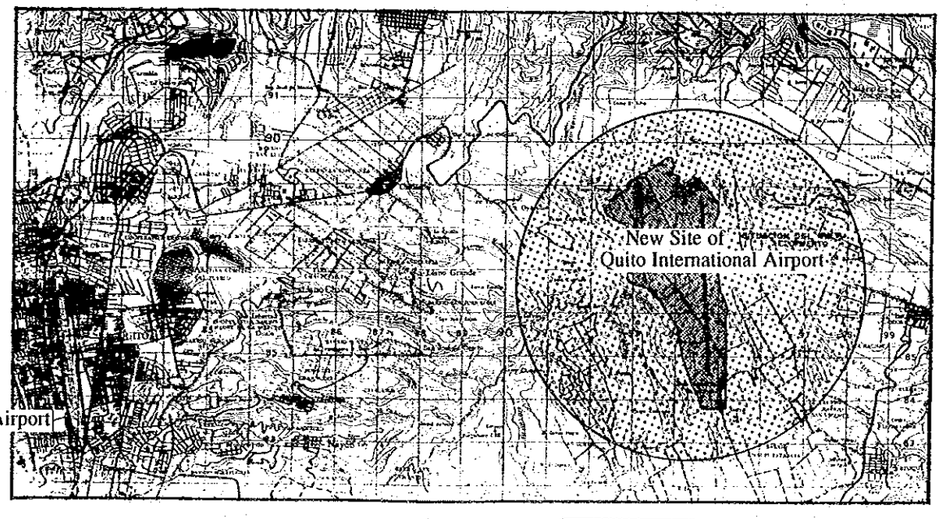


Port of Manta



Port of Bolivar



New Site of Quito International Airport

ESMERALDAS EXPORT PROCESSING ZONE DEVELOPMENT PROJECT

Fig. F-8
Possible Site for EPZ
in Ports of Ecuador

JAPAN INTERNATIONAL COOPERATION AGENCY

ANNEX G

NATURAL CONDITIONS

ANNEX - G

NATURAL CONDITIONS

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G.1 GENERAL

The establishment of the first Export Processing Zone (EPZ) in Ecuador is planned at Esmeraldas, where the port facilities facing the Pacific Ocean are readily available nearby. It is located at the estuary of the Esmeraldas river. As noted in a study conducted by Industrial Development Center (CENDES) in 1984, a reclaimed land of about 22.7 ha, just beside the Esmeraldas port, is offered for establishment of the Esmeraldas EPZ by ZOFREE.

The study by JICA study team has been performed for the purpose of reviewing the previous studies and updating the feasibility study on the establishment of the Esmeraldas EPZ.

The survey on natural conditions aims at confirming climatic conditions around the project area, and clarifying geotechnical conditions in the project area. The geotechnical survey has been mainly conducted for analyses of the settlement of original ground and the bearing capacity of structure foundation in the project area, through field investigation, laboratory tests and analyses of structure foundation. The field investigation and collection of available data of climatic and geotechnical conditions were carried out from February to March in 1991 in Ecuador, and the analyses were performed in Japan from May to June in 1991.

This Annex G presents all the results of the survey on climatic and geotechnical conditions for the Esmeraldas EPZ Development Project.

G.2 CLIMATIC CONDITIONS

Climate in Esmeraldas is complex and full of variety, which is directly and substantially influenced by appearance of marine climate controlled by the Humbolt cold current, as well as Niño phenomenon.

All the data of climatic conditions have been obtained from the annual reports (1977 to 1986) of Instituto Nacional de Meteorologia y Hidrologia (INAMHI). Through analysis on the available data, climatic conditions in Esmeraldas, or at Tachina meteorological station located at north latitude 0° 58' 45" and west longitude 79° 37' 28", are characterized as summarized hereunder.

(1) Temperature

Temperature in Esmeraldas, measured from 1977 to 1986, is summarized in Table G-1. Seasonal variation of monthly mean temperature is relatively small, from 25 to 27 °C. Changes of annual mean temperature are also small, or about 26 °C, judging from the data from 1977 to 1986. And daily fluctuation of temperature is about 10 °C.

(2) Humidity

Humidity in Esmeraldas, measured from 1977 to 1986, is summarized in Table G-2. Seasonal variation of monthly mean humidity is relatively small, ranging from 77 to 86 % throughout the year. Changes of annual mean humidity are also small, or from 77 to 86 %, judging from the data from 1977 to 1986.

(3) Rainfall

Rainfall in Esmeraldas, measured from 1977 to 1986, is summarized in Table G-3. The rainfall fluctuates seasonally and yearly. The rainy season is from January to May and the dry season is from July to November. The months of June and December are shifting period to rainy season and dry season, respectively. Annual rainfall shows wide variation, from 432 mm to 924 mm in the period from 1977 to 1986. Rainy days are also widely fluctuated annually, ranging from 52 to 140 days.

(4) Wind

Wind in Esmeraldas, measured from 1977 to 1986, is shown in Tables G-4 to G-10. Directions of wind are predominantly west, south and southwest, and

there is northern wind sometimes in the rainy season. Since the urban area of Esmeraldas city develops to the west and southwest of the Esmeraldas EPZ, winds are mainly from the urban area and the hilly areas in the hinterland. Velocity of wind is relatively small, or less than 5 m/sec.

G.3 GEOTECHNICAL CONDITIONS OF THE PROJECT AREA

G.3.1 Field Reconnaissance

Esmeraldas EPZ is located behind the Port of Esmeraldas and the fishery port, at the left bank of the estuary of Esmeraldas river. The land prepared for the Esmeraldas EPZ is reclaimed ground by pump dredger. It has an area of about 22.7 hectares. Topographically, the land is flat, and its elevation ranges from 2 to 4 m above mean sea level.

According to the investigation by CENDES, underground gas pipes are existing in the Esmeraldas EPZ area as shown in Figure G-1. However, the pipes are not being used at present, and they will be abandoned for development of the Esmeraldas EPZ.

Surface of the land in the Esmeraldas EPZ is sandy material, so that reclaimed material will be sandy material. There are some 2 and 4 storied buildings constructed on the reclaimed ground to the south of the Esmeraldas EPZ. Judging from the results of the field reconnaissance, structure foundation in the project area will not have serious problems. Precise investigation and analyses have been conducted through boring investigation and laboratory tests.

G.3.2 Boring Investigation

Boring investigation has been carried out to assess settlement and bearing capacity of structure foundation in the reclaimed ground. Core boring has been performed at five (5) holes, P1 to P5, as shown in Figure G-2, to the depth ranging from 6.5 to 33.5 m. Standard penetration tests were carried out at every meter in each bore hole. Likewise, observation of groundwater level was carried out at all bore holes.

Boring logs are shown in Figures G-3 to G-7. Soil profiles prepared on the basis of the boring logs are illustrated in Figures G-8 to G-13. Groundwater level is about 2.5 m below the original ground level.

In general, the ground has complex strata due to alluvial soils in the estuary of Esmeraldas river. However, the ground in the project area consists mainly of 8 strata as follows:

- Top soil — Less than 0.1 m in thickness, dark or greenish gray and yellowish brown in color, sand and sand with gravel, containing organic matter such as plant roots.

- Sand with gravel — 2.0 to 2.5 m in thickness, dark or greenish gray and yellowish brown in color, sand with gravel or silty soil interbedded partly, containing fragments of shells, 3 to 34 numbers in N value.

- Sandy silt — 0.5 to 2.0 m in thickness, dark or yellowish or greenish gray in color, sandy silt of low plasticity, 2 to 12 numbers in N value.

- Sand with silt - 1 — 5.5 to 8.0 m in thickness, gray and dark or greenish gray in color, sand or sand with silt, 7 to more than 50 numbers in N value.

- Gravelly sand — 0 to 2.0 m in thickness, gray and greenish gray in color, gravelly sand or sandy gravel, 24 to more than 50 numbers in N value.

- Silty sand — 0 to 3.5 m in thickness, greenish gray and grayish green in color, silty sand or sandy silt, 5 to 27 numbers in N value.

- Silt — 1.0 to 15.5 m or more in thickness, greenish gray and grayish green in color, silt of medium to high plasticity, 3 to 17 numbers in N value.

- Sand with silt - 2 — Gray and greenish gray, sand with silt or silty sand or sand with gravel, more than 50 numbers in N value.

Top soil is very thin stratum because the ground is reclaimed, the reclaimed material is sandy material and the ground surface has a little organic matter. N values of the sandy silt stratum are low due to low overburden pressure and fine material. The sand with silt - 1 stratum is relatively thick and its N values range widely. The gravelly sand stratum is thin, but its N values show high values. The silty sand stratum shows middle properties between the sand with silt - 1 stratum and the silt stratum. The silt stratum is thick and shows medium to high N values due to clayey soil. And the sand with silt - 2 stratum indicates N values of more than 50. There are some lenses in the above strata as shown in Figures G-8 to G-13.

G.3.3 Laboratory Tests

The laboratory tests consist of physical property tests and consolidation tests. Disturbed samples for the physical property tests were taken from split spoon sampler of standard penetration tests (SPT) and undisturbed samples for the consolidation tests were taken by Shelby tube sampler in 2 depths of the silt stratum of the bore hole P3. The laboratory tests were performed in compliance with the standardized testing method such as ASTM (American Society for Testing and Materials), etc.

Results of physical property tests are shown in Tables G-11 to G-15. Soil property charts are also illustrated in Figures G-14 to G-18. Properties of each stratum are summarized hereunder.

(1) Sand with gravel stratum

Grading curves of samples of the sand with gravel stratum are shown in Figure G-19. Sand content of the samples is 73 % on an average. It ranges from 53 to 94 % excluding some minor samples. Natural moisture content of the samples ranges from 4.7 to 47.3 % and it is 12.7 % on an average. Plasticity chart is shown in Figure G-27. The samples are mainly classified into S-M or SM in the method of classification of soils for engineering purposes.

(2) Sandy silt stratum

Grading curves of samples of the sandy silt stratum are shown in Figure G-20. Fine content of the samples, which is clay and silt contents, is 62 % on an average, and it ranges from 24 to 91 %. Natural moisture content of the samples is 43.8 % on an average, and it ranges from 26.9 to 59.1 %. Liquid limit is 42.1 % on an average, while plasticity index is 13.7 on an average excluding samples of non plastic (NP). Plasticity chart is shown in Figure G-27. The samples are classified into CL or ML or SM in the method of classification of soils for engineering purposes.

(3) Sand with silt - 1 stratum

Grading curves of samples of the sandy silt stratum are shown on Figure G-21. Sand content of the samples is 83 % on an average, and it ranges from 53 to 99 % excluding some minor sample. Natural moisture content of the samples is 20.4 % on an average, and it ranges from 12.1 to 33.1 %. The samples are classified into SP or S-M or SM in the method of classification of soils for engineering purposes.

(4) Gravelly sand stratum

Grading curves of samples of the sandy silt stratum are shown on Figure G-22. Coarse content of the samples, which is sand and gravel contents, is 92 % on an average, and it ranges from 79 to 100 % excluding some minor sample. Natural moisture content of the samples is 16.6 % on an average, and it ranges from 8.5 to 36.0 %. The samples are classified into SW or S-M or SM or GW or G-M in the method of classification of soils for engineering purposes.

(5) Silty sand stratum

Grading curves of samples of the sandy silt stratum are shown on Figure G-23. Fine content of the samples, which is clay and silt contents, is 46 % on an average, and it ranges from 34 to 60 %. Natural moisture content of the samples is 29.7 % on an average, and it ranges from 24.9 to 32.3 %. Liquid limit is 58.2 %, while plasticity index is 24.6 excluding samples of non plastic (NP). Plasticity chart is shown in Figure G-27. The samples are mainly classified into SM in the method of classification of soils for engineering purposes.

(6) Silt stratum

Grading curves of samples of the sandy silt stratum are shown in Figure G-24. Fine content of the samples, which is clay and silt contents, is 95 % on an average, and it ranges from 80 to 100 %. Natural moisture content of the samples is 52.9 % on an average, and it ranges from 43.3 to 68.6 %. Liquid limit is 55.3 % on an average, and it ranges from 37.4 to 76.5 %. Plasticity index is 22.3 on an average, and it ranges from 12.4 to 36.1. Plasticity chart is shown in Figure G-27. The samples are mainly classified into ML or MH in the method of classification of soils for engineering purposes. Relation between consolidation pressure and void ratio of the undisturbed samples is shown in Figure G-28. Relations between consolidation pressure and coefficient of consolidation, and coefficient of volume compressibility are shown in Figures G-29 and G-30 respectively. Consolidation yield stress of the samples taken in the depths of GL-16.5 to 17.0 m and GL-20.0 to 20.5 m is 1.67 and 2.06 kgf/cm^2, respectively. Overburden pressure in the depths is about 1.66 and 1.96 kgf/cm^2 respectively, assuming that wet and submerged density are 1.80 and 0.85 kgf/cm^2 respectively. These values indicate similar to overburden pressure in each depth, so that consolidation of the silt stratum has almost finished. The coefficient of consolidation (c_v), which is an indicator to show the speed of consolidation, is relatively large, or about 250 cm^2/day for fine materials.

(7) Sand with silt - 2 stratum

Grading curves of samples of the sandy silt stratum are shown in Figure G-25. Sand content of the samples is 82 % on an average, and it ranges from 66 to 92 %. Natural moisture content of the samples is 19.4 % on an average, and it ranges from 14.4 to 25.5 %. The samples are mainly classified into S-M or SM in the method of classification of soils for engineering purposes.

(8) Others

Grading curves of other else samples are shown in Figure G-26. Fine content of the samples is 55 % on an average, and it ranges from 22 to 86 %. Natural moisture content of the samples is 43.0 % on an average, and it ranges from 21.9 to 49.0 %. The samples are mainly classified into GM or MH in the method of classification of soils for engineering purposes.

G.4 ANALYSES OF STRUCTURE FOUNDATION

Analyses of structure foundation has been performed for the purpose of estimating settlement and bearing capacity. Settlement of foundation and bearing capacity for structure foundation are analyzed for study of structure foundation treatment.

G.4.1 Settlement

1) Assumptions of Analysis

Analysis of settlement consists of quantity of settlement and settling velocity. Settlement without fill is nothing, because consolidation of foundation has finished at the present overburden pressure. If fill is conducted for land readjustment, settlement caused by the fill but not caused by structure will occur. Fill is considered for analysis of settlement. However, in this chapter, settlement caused by the fill is only considered for the purpose of analysis. Because settlement caused by the structure is relatively small in case that buildings and facilities in the Esmeraldas EPZ are not heavy structure. Assumptions applied for the analysis are summarized as follows:

(1) Thickness of the fill is about 1 m,
(2) Analysis is conducted by analyzed model as shown on Figure G-31,
(3) Terzaghi's one dimensional consolidation theory is adopted for wide loaded area (22.7 ha) in the light of the consolidation thickness (17 m),
(4) Settlement of the sandy silt stratum is not estimated, because the settlement of the stratum may finish earlier than that of the silt stratum, in view of gradation and thickness of both strata,
(5) Analysis is only performed for the silt stratum, because settlement of other strata may immediately finish by the fill,
(6) Settlement of the silt stratum has finished at the present overburden pressure and it will occur only for the fill in the future,
(7) The silty sand stratum is dealt with the same as the silt stratum in the analysis, because the silty sand stratum has much fine particles and it may not work for drainage layer for consolidation,
(8) There are no stress history except the present overburden pressure,
(9) Drainage layers for analysis of consolidation are the gravelly sand stratum and the sand with silt - 2 stratum,
(10) Groundwater level is GL-2.5 m and the silt stratum is perfectly saturated, and
(11) Following values are adopted for the analysis on the basis of the test results:

wet density	1.80 tf/m^3
submerged density	0.85 tf/m^3
initial void ratio (e_0)	1.57
compression index	0.66
coefficient of consolidation	250 cm^2/day

2) Quantity of Settlement

Quantity of settlement is estimated on the basis of the laboratory consolidation test results. Thickness of consolidated layer is more than 15.5 m, according to the boring investigation.

The analysis is performed by using the following formula:

$$S = (Cc / (1 + e_0))\ h\ log((p_v + \Delta p) / p_v)$$

where S : Quantity of settlement (m)
Cc : Compression index
e_0 : Initial void ratio
h : Consolidated thickness (m)
p_v : Effective overburden pressure (tf/m^2)
Δp : Change of effective overburden pressure (tf/m^2)

Quantity of settlement is estimated to be 16 cm, on the basis of the afore-mentioned assumptions.

3) Settling Velocity

Settling velocity is estimated on the basis of the laboratory consolidation test results. Coefficient of consolidation, which is an indicator to show the speed of consolidation, is defined on condition that mean consolidation pressure between before and after the fill is about 250 cm^2/day as shown in Figure G-29.

The analysis is preformed by using the following formula:

$$T = c_v / H^2 t$$

where T : Time factor

c_v : Coefficient of consolidation (cm^2/day)

H : Minimum thickness of drainage (cm)

t : Time (day)

Degree of consolidation (U) relates to time factor (T). Degree of consolidation means percentage of ratio of quantity of settlement at the time to total quantity of settlement. Time factor is 0.197 in case of U = 50 %, and time factor is 0.848 in case of U = 90 %. Settling velocity is about 569 days in case of U = 50 %, which means 8 cm, and about 6.7 years in case of U = 90 %, which means 14.4 cm. Relation between time and settlement is shown in Figure G-32.

G.4.2 Bearing Capacity

1) Assumptions of Analysis

Analysis of bearing capacity for structure foundation has been performed on the basis of the following assumptions:

(1) Foundation is raft foundation,

(2) The analysis is conducted by analyzed model, considering revised N values against length of rods and saturated silty sand strata, as shown in Figure G-33,

(3) Empirical equations of relations between N value and strength parameters (c, ϕ) are as follows:

for sandy soil stratum

$$\phi = \sqrt{12N} + 20$$

for clayey soil stratum

$$c = N / 16$$

where c : Cohesion (kgf/cm^2)

ϕ : Internal friction angle (degree)

N : N value

(4) Shape of foundation is square and width of foundation (B) ranges from 10 to 100 m,

(5) In principle, Terzaghi's bearing capacity formula on general shear failure is adopted for analysis of ultimate bearing capacity:

$$q_d = 1.3\ c\ N_c + 0.4\ \gamma_1\ B\ N_\gamma + \gamma_2\ D_f\ N_q$$

where q_d : Ultimate bearing capacity (tf/m^2)
c : Cohesion below base of foundation (tf/m^2)
γ_1 : Unit weight of soil below base of foundation (tf/m^3) (submerged unit weight is taken in case of below groundwater)
γ_2 : Unit weight of soil above base of foundation (tf/m^3) (submerged unit weight is taken in case of below groundwater)
1.3, 0.4 : Shape factors for a square
N_c, N_γ, N_q : Bearing capacity factors as shown on Figure G-34
D_f : Depth of foundation (m)
B : Width of foundation (m)

(6) Groundwater level is GL-2.5 m, and

(7) Following values are adopted for the analysis on the basis of the test results:

wet density	1.80 tf/m^3
submerged density	0.85 tf/m^3

2) Policy of Analysis

The analysis is performed in consideration of the following items:

(1) Method of estimate of ultimate bearing capacity

Since the ground is assumed to be multi-layered ground as shown in Figure G-33, ultimate bearing capacity is estimated in accordance with the following method:

Boston code method is adopted for load distribution method as shown in Figure G-35 ($\alpha = 30°$). Estimate of the ultimate bearing capacity depends on relation between thickness of sandy soil stratum (Ds) without D_f and width of foundation.

$Ds \geq 2\ B$: bearing capacity of upper sandy stratum

2 B > Ds > 1.5 B	:	smaller value between bearing capacity of upper sandy soil stratum and that of lower clayey soil stratum considering load distribution
1.5 B ≥ Ds	:	bearing capacity of lower clayey soil stratum

Ultimate bearing capacity is estimated for the following three (3) cases:

(i) Ultimate bearing capacity of the sand with gravel stratum
(ii) Ultimate bearing capacity of the sandy silt stratum considering load distribution
(iii) Ultimate bearing capacity of the silty sand and the silt strata considering load distribution

Smallest value of the above will be adopted for design of structure foundation.

(2) Formula for estimate of ultimate bearing capacity

In principle, Terzaghi's bearing capacity formula is adopted for the analysis. However, following formula is adopted when thickness of clayey soil stratum (H) is less than $B / \sqrt{2}$. It is because Terzaghi's bearing capacity formula can not be used, as squeeze failure, which is not general shear failure, may occur in case of $H < B / \sqrt{2}$.

$$q_d = 4\, c_u + c_u\, B / 2\, H$$

where	q_d	:	Ultimate bearing capacity (tf/m^2)
	c_u	:	Undrained shear strength (tf/m^2)
	B	:	Width of foundation (m)
	H	:	Thickness of clayey soil stratum (m)

3) Results of Analysis

Results of analysis is summarized in Tables G-16 to G-18. Ultimate bearing capacity of the sand with gravel stratum is larger than other strata. Relation of ultimate bearing capacity between the sandy silt stratum and the silty sand/silt strata is shown in Figures G-36 to G-38.

Ultimate bearing capacity of the sandy silt stratum increases in line with increase in width of foundation, but that of the sandy silt and silt strata differs in type of failure in width of foundation. As shown in Figures G-36 to G-38, the curves of ultimate bearing capacity of the silty sand and silt strata remarkably change in width of foundation of about 24 m. It is

general shear failure in case that width of foundation is less than 24 m, but squeeze failure occurs in case that width of foundation is more than 24 m. The curves of the sandy silt stratum and the silty sand/silt strata intersect in the width of foundation of about 50 m. This means that the sandy silt stratum will be critical in case of the width of less than 50 m, while the silty sand/silt strata will be critical in case of the width of more than 50 m. The tendency is similar to $D_f = 1$ and 2 m.

G.5 CONCLUSION AND RECOMMENDATIONS

Geotechnical conditions of the project area, as well as settlement and bearing capacity of structure foundation, have been analyzed, and they lead to the conclusion and recommendations as summarized hereunder.

(1) The Esmeraldas EPZ is a reclaimed land, and the ground surface is flat. Stratification conditions of the ground is complex due to alluvial soils in the estuary of Esmeraldas river. Harmful soft stratum is thin, and consolidation of clayey strata has already finished at the present overburden pressure. N values of sandy soil strata have wide variation.

(2) The depth of reclamation is uncertain, but the sand with gravel stratum are reclaimed material in the light of low N values of the sandy silt stratum.

(3) With respect to the settlement of structure foundation, it will only occur by the structure in case of the ground without fill, because consolidation of the ground has already finished at the present overburden pressure. Consequently, substantial settlement and differential settlement will not occur if buildings and facilities in the Esmeraldas EPZ are not heavy structures, and they are limited to one or two storied buildings.

(4) However, consolidation of clayey strata should be considered in case of the ground with fill, because residual settlement may remain after completion of the fill. The residual settlement may have a hampering effect on the structure. Accelerated consolidation method such as pre-loading method for countermeasure will be required under certain circumstances.

(5) The bearing capacity of structure foundation appears to be sufficient if buildings and facilities in the Esmeraldas EPZ are not heavy structure, and they are limited to one or two storied buildings. However, it will be necessary to pay attention to width of foundation, because type of failure is different by the width. Safety factor between ultimate bearing capacity and allowable bearing capacity for design should be more than three.

Table G-1 TEMPERATURE IN ESMERALDAS (TACHINA)

Unit : degree

		1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	max.	31.4	30.3		33.0	32.0	31.0			31.3	29.8
JAN.	min.	20.8	19.0		21.2	21.4	21.0			21.2	21.6
	mean	25.8	25.6		26.0	25.5	25.9			25.0	25.1
	max.		31.6		31.5	30.0	31.3			30.8	31.4
FEB.	min.		22.0		21.0	21.8	20.0			20.9	21.1
	mean		26.2		25.9	25.5	26.2			25.5	25.8
	max.				31.3	32.0	30.3			30.4	30.6
MAR.	min.				20.6	21.2	21.0			20.8	21.2
	mean				25.9	26.6	26.2			25.8	26.0
	max.		35.0		32.4	30.2	32.0			30.6	30.6
APR.	min.		21.0		21.0	22.4	17.8			20.9	21.9
	mean		25.9		26.5	26.3	26.2			26.0	25.8
	max.		30.2		32.0	32.0	32.2			31.5	31.3
MAY	min.		20.0		21.9	19.7	20.0			20.2	21.0
	mean		25.9		26.4	26.1	26.4			25.9	25.9
	max.		31.3		31.0	31.5	32.8			30.7	30.8
JUN.	min.		19.0		21.0	19.3	19.9			21.5	20.5
	mean		25.9		26.3	26.3	26.7			26.1	25.6
	max.	29.8	31.0		32.0	31.3	31.8			30.4	31.3
JUL.	min.		20.0		20.5	19.6	20.2			20.3	20.2
	mean	25.5	25.7		26.0	25.8	26.5			25.3	25.9
	max.		30.6	32.0	31.6	31.0	31.5			31.8	31.4
AUG.	min.	20.6	20.0	21.4	19.5	20.0	20.5			20.9	20.6
	mean	25.5		25.5	25.6	25.5	26.3			25.3	25.8
	max.		31.0	31.0	32.0	30.3	32.6			31.6	31.5
SPT.	min.		20.0	21.0	19.0	20.4	20.2			20.6	21.0
	mean		25.2	25.5	25.8	25.5	26.5			25.4	25.7
	max.		31.2	31.5	32.0	31.4	32.2			31.7	31.8
OCT.	min.	20.6	20.0	20.0	20.5	19.3	22.5			20.0	20.8
	mean	25.7	25.8	26.4	26.0	25.6	26.6			25.7	25.9
	max.		31.0	31.7	33.0	31.4	31.2			31.4	32.6
NOV.	min.	19.6	20.0	20.4	17.5	20.0	22.1			20.1	20.7
	mean	25.8	25.9	25.9	25.6	26.0	26.8			25.6	26.4
	max.		31.4	31.0	31.5	31.7	31.7			29.9	31.2
DEC.	min.		21.0	21.0	20.0	19.5	21.0			21.5	21.0
	mean	25.9	26.0	26.2	26.1	25.9	26.6			25.3	26.4
Annual mean		25.6	25.8	25.9	26.0	25.9	26.4			25.6	25.9

Source: INAMHI

Table G-2 HUMIDITY IN ESMERALDAS (TACHINA)

Unit : %

		1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	max.									98	97
JAN.	min.									52	63
	mean		87		82	81	83			84	86
	max.									98	97
FEB.	min.									57	58
	mean		88		84	87	83			84	82
	max.									99	98
MAR.	min.									50	49
	mean				83	82	82			83	84
	max.									98	97
APR.	min.									57	67
	mean		87		84	85	82			81	85
	max.									98	98
MAY	min.									58	65
	mean		88		83	80	84			82	84
	max.									97	98
JUN.	min.									56	58
	mean		85		82	76	80			82	82
	max.									97	97
JUL.	min.									55	50
	mean	82	83		77	80	79			78	79
	max.									96	98
AUG.	min.									53	61
	mean	79		79	79	79	76			79	79
	max.									96	96
SPT.	min.									54	55
	mean		78	79	77	82	76			79	77
	max.									95	96
OCT.	min.									53	53
	mean	79	78	78	79	78	79			77	78
	max.									95	96
NOV.	min.									55	55
	mean	80	78	74	78	75	83			77	78
	max.									97	97
DEC.	min.									57	56
	mean	83	76	77	78	79	85			81	79

Source: INAMHI

Table G-3 MONTHLY RAINFALL AND ANNUAL RAINY DAYS IN ESMERALDAS (TACHINA)

Unit : mm

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	mean
JAN.	287.3	159.4	24.6	84.2	59.7	99.9			50.1	373.7	142.4
FEB.		82.8	60.9	54.6	217.7	120.7			185.4	56.4	111.2
MAR.			126.1	118.9	35.6	146.5			47.2	262.6	122.8
APR.	7.3	28.5	109.4	111.1	99.8	78.1				116.6	78.7
MAY	3.8	16.5	26.8	30.3	6.4	63.2			53.5	17.6	27.3
JUN.	61.9	20.6	23.2	13.6	27.5	15.1			18.8	30.0	26.3
JUL.	0.0	2.1	25.1	1.0	64.4	30.3			2.2	9.5	16.8
AUG.	2.7	0.0	54.3	9.9	13.0	7.3			6.4	0.9	11.8
SPT.	21.3	5.8	14.0	0.0	32.8	1.8			14.6	5.2	11.9
OCT.	23.0	9.2	24.8	17.0	2.6	15.9			2.5	23.6	14.8
NOV.	9.2	4.3	63.9	14.1	4.9	127.2			42.6	11.2	34.7
DEC.	15.3	0.0	4.1	12.1	78.9	99.2			65.4	17.1	36.5
Annual Rainfall	431.8	329.2	557.2	466.8	643.3	805.2			488.7	924.4	580.8
Annual Rainy Days	52	57	71	114	127					140	

Source: INAMHI

Table G-4 WIND IN ESMERALDAS IN 1977 (TACHINA)

			1977								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)									
	Frequency	(%)									
FEB.	Velocity	(m/s)									
	Frequency	(%)									
MAR.	Velocity	(m/s)									
	Frequency	(%)									
APR.	Velocity	(m/s)									
	Frequency	(%)									
MAY	Velocity	(m/s)									
	Frequency	(%)									
JUN.	Velocity	(m/s)									
	Frequency	(%)									
JUL.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	1	14	27	16	11	17
AUG.	Velocity	(m/s)									
	Frequency	(%)	2	1	3	1	6	27	16	17	13
SPT.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	8	37	19	4	8
OCT.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	9	27	10	12	12
NOV.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	13	25	13	15	12
DEC.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	10	26	11	21	13
Annual mean frequency			1	0	1	0	10	28	14	13	13

Source: INAMHI

Table G-5 WIND IN ESMERALDAS IN 1978 (TACHINA)

			1978								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)									
	Frequency	(%)	8	2	0	0	7	9	6	31	30
FEB.	Velocity	(m/s)									
	Frequency	(%)	11	0	1	0	5	14	9	14	30
MAR.	Velocity	(m/s)									
	Frequency	(%)									
APR.	Velocity	(m/s)									
	Frequency	(%)	10	0	0	0	11	4	30	10	25
MAY	Velocity	(m/s)									
	Frequency	(%)	2	0	0	0	2	6	41	5	37
JUN.	Velocity	(m/s)									
	Frequency	(%)	2	0	0	1	9	18	23	15	22
JUL.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	10	30	17	15	20
AUG.	Velocity	(m/s)									
	Frequency	(%)	2	0	0	4	17	29	19	9	13
SPT.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	1	10	31	18	12	18
OCT.	Velocity	(m/s)									
	Frequency	(%)	1	0	1	0	23	17	24	18	8
NOV.	Velocity	(m/s)									
	Frequency	(%)	0	0	1	1	14	27	18	11	18
DEC.	Velocity	(m/s)									
	Frequency	(%)	2	0	2	0	12	12	18	27	21
Annual mean frequency			4	0	0	1	11	18	20	15	22

Source: INAMHI

Table G-6 WIND IN ESMERALDAS IN 1979 (TACHINA)

			1979								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)									
	Frequency	(%)	9	0	1	0	19	3	31	6	24
FEB.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	15	11	27	11	19
MAR.	Velocity	(m/s)									
	Frequency	(%)	6	0	0	0	18	12	21	16	20
APR.	Velocity	(m/s)									
	Frequency	(%)	12	0	1	0	10	1	32	9	25
MAY	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	31	7	34	4	16
JUN.	Velocity	(m/s)									
	Frequency	(%)	8	0	0	0	20	9	30	2	21
JUL.	Velocity	(m/s)									
	Frequency	(%)	4	0	0	0	23	14	33	1	18
AUG.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	27	13	33	1	18
SPT.	Velocity	(m/s)									
	Frequency	(%)	4	0	0	0	30	6	36	2	12
OCT.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	34	6	40	3	9
NOV.	Velocity	(m/s)									
	Frequency	(%)	2	0	0	0	41	7	37	0	3
DEC.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	38	6	37	2	9
Annual mean frequency			4	0	0	0	26	8	33	5	16

Source: INAMHI

Table G-7 WIND IN ESMERALDAS IN 1980 (TACHINA)

			1980								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)									
	Frequency	(%)	8	0	0	0	25	3	33	6	18
FEB.	Velocity	(m/s)									
	Frequency	(%)	12	0	0	0	20	0	27	7	21
MAR.	Velocity	(m/s)									
	Frequency	(%)	17	1	0	0	17	2	30	4	22
APR.	Velocity	(m/s)									
	Frequency	(%)	13	2	0	0	21	0	19	10	25
MAY	Velocity	(m/s)									
	Frequency	(%)	3	0	0	3	20	5	36	6	20
JUN.	Velocity	(m/s)									
	Frequency	(%)	3	0	0	1	26	8	34	1	17
JUL.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	51	12	25	2	2
AUG.	Velocity	(m/s)									
	Frequency	(%)	3	0	0	0	36	12	30	2	10
SPT.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	40	11	34	3	1
OCT.	Velocity	(m/s)									
	Frequency	(%)	2	0	0	0	40	12	30	2	7
NOV.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	37	5	39	0	9
DEC.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	28	8	44	3	10
Annual mean frequency			5	0	0	0	30	7	32	4	14

Source: INAMHI

Table G-8 WIND IN ESMERALDAS IN 1981 (TACHINA)

			1981								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)									
	Frequency	(%)	1	0	1	0	28	1	35	12	15
FEB.	Velocity	(m/s)									
	Frequency	(%)	11	0	0	0	30	1	22	1	19
MAR.	Velocity	(m/s)									
	Frequency	(%)	16	0	0	0	17	0	32	3	25
APR.	Velocity	(m/s)									
	Frequency	(%)	6	0	0	0	28	0	34	1	21
MAY	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	24	12	33	3	20
JUN.	Velocity	(m/s)									
	Frequency	(%)	1	0	0	0	27	6	30	7	19
JUL.	Velocity	(m/s)									
	Frequency	(%)	4	0	1	0	19	10	32	3	24
AUG.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	20	14	35	1	23
SPT.	Velocity	(m/s)									
	Frequency	(%)	1	0	1	0	28	9	28	3	20
OCT.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	39	10	27	3	14
NOV.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	34	11	35	1	9
DEC.	Velocity	(m/s)									
	Frequency	(%)	0	0	0	0	19	3	48	2	21
Annual mean frequency			3	0	0	0	26	6	33	3	19

Source: INAMHI

Table G-9 WIND IN ESMERALDAS IN 1985 (TACHINA)

			1985								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)	3.4	1.0			2.7	1.0	3.9	2.8	0.0
	Frequency	(%)	18	1	0	0	29	2	35	5	9
FEB.	Velocity	(m/s)	2.5				4.5	2.1	3.1	2.6	0.0
	Frequency	(%)	23	0	0	0	25	6	23	5	17
MAR.	Velocity	(m/s)	3.9		0.7		1.8	1.6	3.4	3.2	0.0
	Frequency	(%)	34	0	1	0	19	3	23	6	13
APR.	Velocity	(m/s)	2.4				1.9	0.8	2.7	3.3	0.0
	Frequency	(%)	21	0	0	0	24	3	38	4	9
MAY	Velocity	(m/s)	2.8			0.7	2.6	2.4	2.9	1.6	0.0
	Frequency	(%)	11	0	0	1	35	2	34	8	9
JUN.	Velocity	(m/s)	3.4				2.7	3.1	3.2	3.7	0.0
	Frequency	(%)	8	0	0	0	19	12	28	11	22
JUL.	Velocity	(m/s)	1.7			1.0	3.2	3.5	2.8	3.4	0.0
	Frequency	(%)	5	0	0	1	40	11	32	5	5
AUG.	Velocity	(m/s)	2.6				3.4	3.9	3.2	4.5	0.0
	Frequency	(%)	4	0	0	0	51	8	25	7	5
SPT.	Velocity	(m/s)	1.7				3.5	2.9	3.1	2.1	0.0
	Frequency	(%)	1	0	0	0	53	6	28	6	7
OCT.	Velocity	(m/s)	1.7				3.6	3.6	4.2	3.5	0.0
	Frequency	(%)	3	0	0	0	48	8	27	13	1
NOV.	Velocity	(m/s)	3.3				3.5	3.6	3.7	3.5	0.0
	Frequency	(%)	10	0	0	0	29	7	43	7	4
DEC.	Velocity	(m/s)	2.4				3.3	2.6	3.4	3.3	0.0
	Frequency	(%)	8	0	0	0	24	3	42	8	16
Annual mean frequency			12	0	0	0	33	6	32	7	10

Source: INAMHI

Table G-10 WIND IN ESMERALDAS IN 1986 (TACHINA)

			1986								
			N	NE	E	SE	S	SW	W	NW	No Wind
JAN.	Velocity	(m/s)	1.8				3.0	1.6	3.0	2.3	0.0
	Frequency	(%)	17	0	0	0	8	5	27	4	39
FEB.	Velocity	(m/s)	2.2	1.0			2.1	1.0	3.5	0.7	0.0
	Frequency	(%)	19	1	0	0	15	1	29	4	31
MAR.	Velocity	(m/s)	3.0				1.4		2.0	3.2	0.0
	Frequency	(%)	31	0	0	0	13	0	24	10	23
APR.	Velocity	(m/s)	1.8				1.5		3.2	1.9	0.0
	Frequency	(%)	26	0	0	0	7	0	17	11	40
MAY	Velocity	(m/s)	2.1				2.4	1.7	2.7	2.4	0.0
	Frequency	(%)	11	0	0	0	12	4	34	6	32
JUN.	Velocity	(m/s)				1.8	2.4	2.6	1.9	3.2	0.0
	Frequency	(%)	0	0	0	2	12	32	16	9	29
JUL.	Velocity	(m/s)	0.7				2.3	2.6	2.2	2.2	0.0
	Frequency	(%)	1	0	0	0	10	30	17	14	28
AUG.	Velocity	(m/s)	1.1			0.4	2.4	3.4	3.1	2.8	0.0
	Frequency	(%)	3	0	0	1	5	35	17	28	10
SPT.	Velocity	(m/s)	0.7	1.1			0.8	3.0	3.1	3.0	0.0
	Frequency	(%)	1	1	0	0	8	36	13	32	9
OCT.	Velocity	(m/s)	1.1				2.4	3.2	1.9	2.7	0.0
	Frequency	(%)	1	0	0	0	10	39	10	27	14
NOV.	Velocity	(m/s)	0.4				2.1	2.4	2.2	2.3	0.0
	Frequency	(%)	1	0	0	0	3	13	12	33	37
DEC.	Velocity	(m/s)					1.1	2.5	0.8	2.8	0.0
	Frequency	(%)	0	0	0	0	10	12	12	38	29
Annual mean frequency			9	0	0	0	9	17	19	18	27

Source: INAMHI