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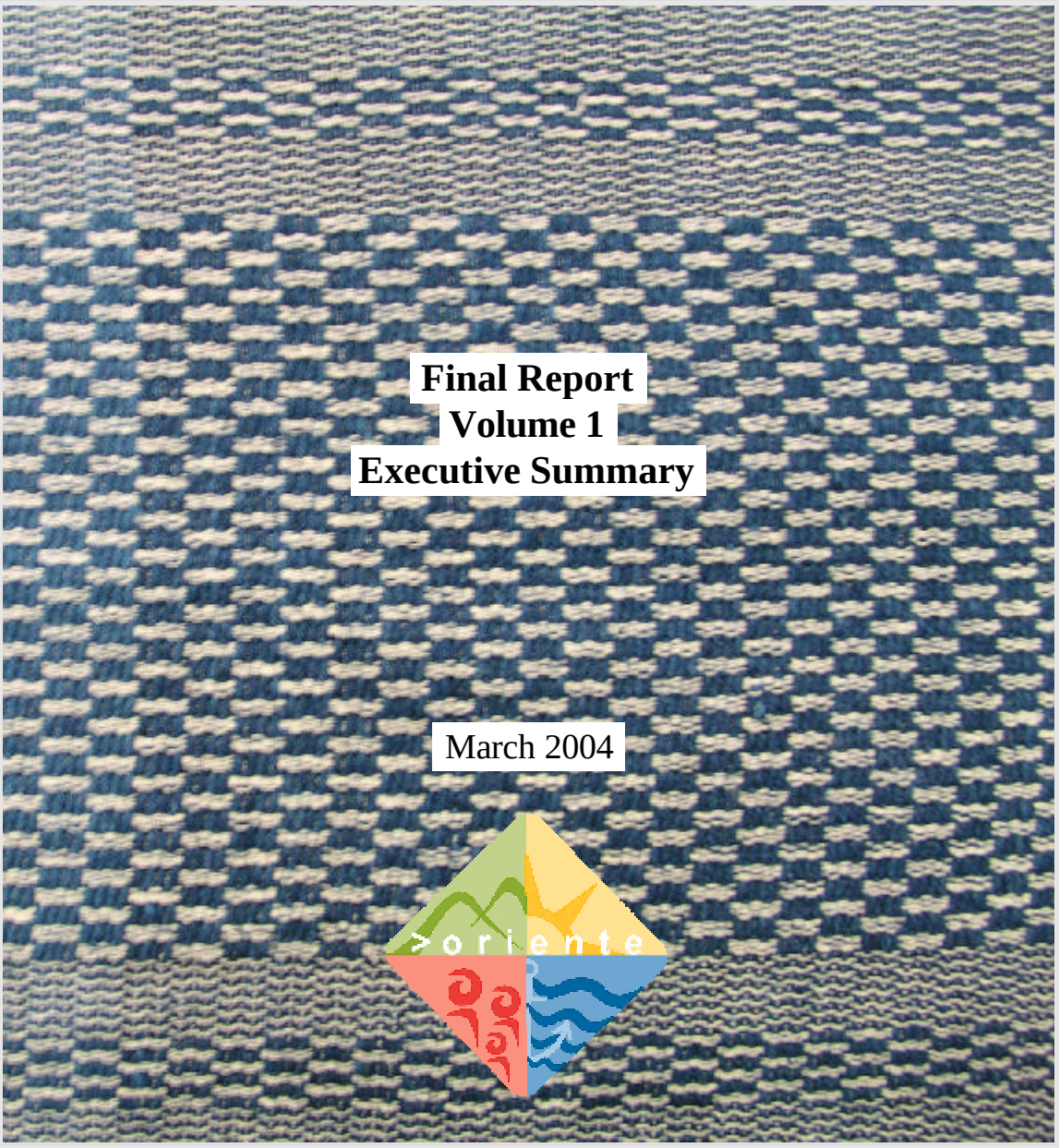
Japan International Cooperation Agency (JICA)

Comisión Nacional de Desarrollo
The Republic of El Salvador

The Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador



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Japan International Cooperation Agency (JICA)

Comisión Nacional de Desarrollo
The Republic of El Salvador

The Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador

Final Report
Volume 1
Executive Summary

March 2004

RECS International Inc.
Nippon Koei Co., Ltd.
UNICO International Corp.

PREFACE

Upon the request by the Government of the Republic of El Salvador, the Government of Japan decided to conduct the Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador. The Study execution has been entrusted to the Japan International Cooperation Agency (JICA), the implementing arm of the Government of Japan for technical cooperation under its ODA policy.

JICA selected a team of consultants to undertake the Study through a competitive bidding. Consequently, the team of consultants nominated by RECS International Inc. in association with Nippon Koei Co., Ltd. and UNICO International Corp. was contracted by JICA as the JICA Study Team.

The Study Team headed by Dr. Tsuyoshi Hashimoto of RECS International Inc. visited and stayed in El Salvador several times during the period of November 2002 through January 2004. While in El Salvador, the Study Team had numerous discussions with officials of the Salvadoran Government and other individuals in the public and the private sectors, including various groups of local people, and conducted field surveys in the Study Area as well as data analyses.

The Final Report of the Study, presented herewith, was prepared in Japan, compiling the results of all the works during the study period. I sincerely wish that the Report would contribute not only to the economic development of El Salvador but also to the further enhancement of friendly relationship between El Salvador and Japan.

Finally, I would like to express my deepest appreciation to the officials of the Government of El Salvador and other concerned individuals for their cooperation and supports extended to the Study.

March 2004

Kazuhisa Matsuoka
Director in charge
Japan International Cooperation Agency

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Mr. Kazuhisa Matsuoka
Director in Charge
Japan International Cooperation Agency (JICA)
March 19, 2004

Letter of Transmittal

Dear Sir:

It is our great pleasure to submit herewith the Final Report of the Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador. A team of experts organized by RECS International Inc. in collaboration with Nippon Koei Co., Ltd. and UNICO International Corp. was contracted with JICA as the JICA Study Team to carry out the Study. The Study has been conducted through a series of field works from November 2002 to January 2004 as well as limited works in Japan for a total of 17 months with 65 person-months. In El Salvador, the JICA Study Team worked closely with the National Development Commission (Comisión Nacional de Desarrollo/CND) on a daily basis sharing office spaces in San Salvador and San Miguel. The participatory planning was effected through not only the four rounds of the central seminars and the regional workshops but also numerous consultative meetings with various local groups in the Eastern Region.

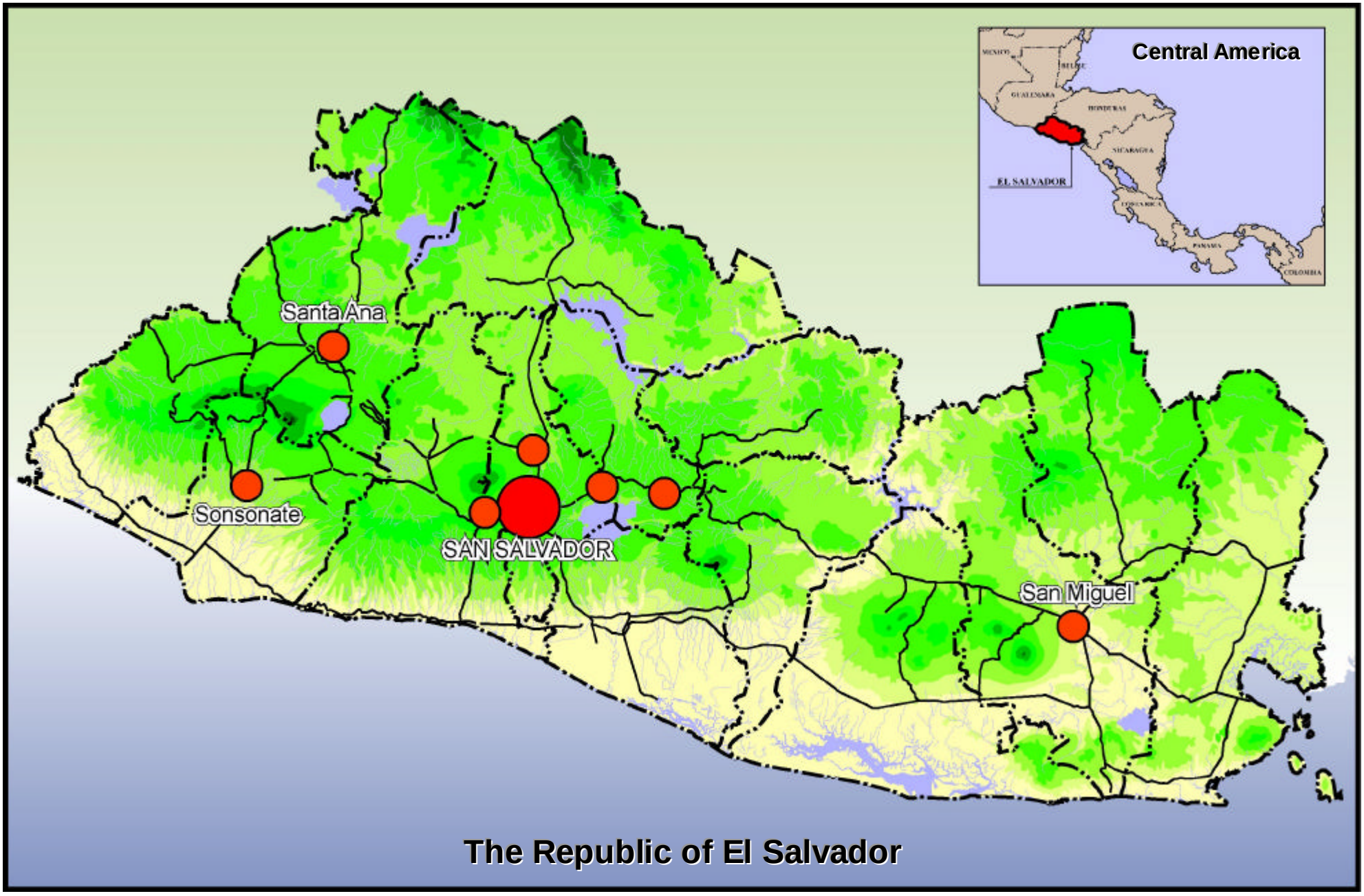
The Study represents good partnership between JICA and the team of development consultants in all the aspects of the Study execution, supported also by individual experts dispatched by JICA to various organizations in El Salvador, the JICA Advisory Committee chaired by Prof. K. Tsunekawa and the Embassy of Japan in El Salvador. We are proud to have performed as the core experts in such an all-Japan team for technical cooperation.

The Study has established a master plan for the Eastern Region development, which would make effective use of the La Union port to be established with a concessional loan by the Japan Bank for International Cooperation (JBIC). The master plan includes complementary projects and related institutional measures to support the livelihood and economic activities of the people in the most deprived region of El Salvador. Many projects and programs have been further elaborated for early implementation, including a few pilot projects. The pilot project for indigo industrialization has been implemented with very encouraging results. In addition, a workshop trip to Japan and Thailand was conducted in September 2003 for seven key Salvadoran experts involved in the Study, and counterparts training was offered in February 2004 for two staff members of CND.

It has been our honor to serve the people and the country of El Salvador through the execution of this important study. I would like to take this opportunity to express our deepest gratitude for all involved in this undertaking. I sincerely wish that the Study and the Final Report would continue to serve as an important base for further cooperation between El Salvador and Japan.

Very truly yours,

Tsuyoshi Hashimoto
Team Leader
JICA Study Team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EL SALVADOR
Santa Ana
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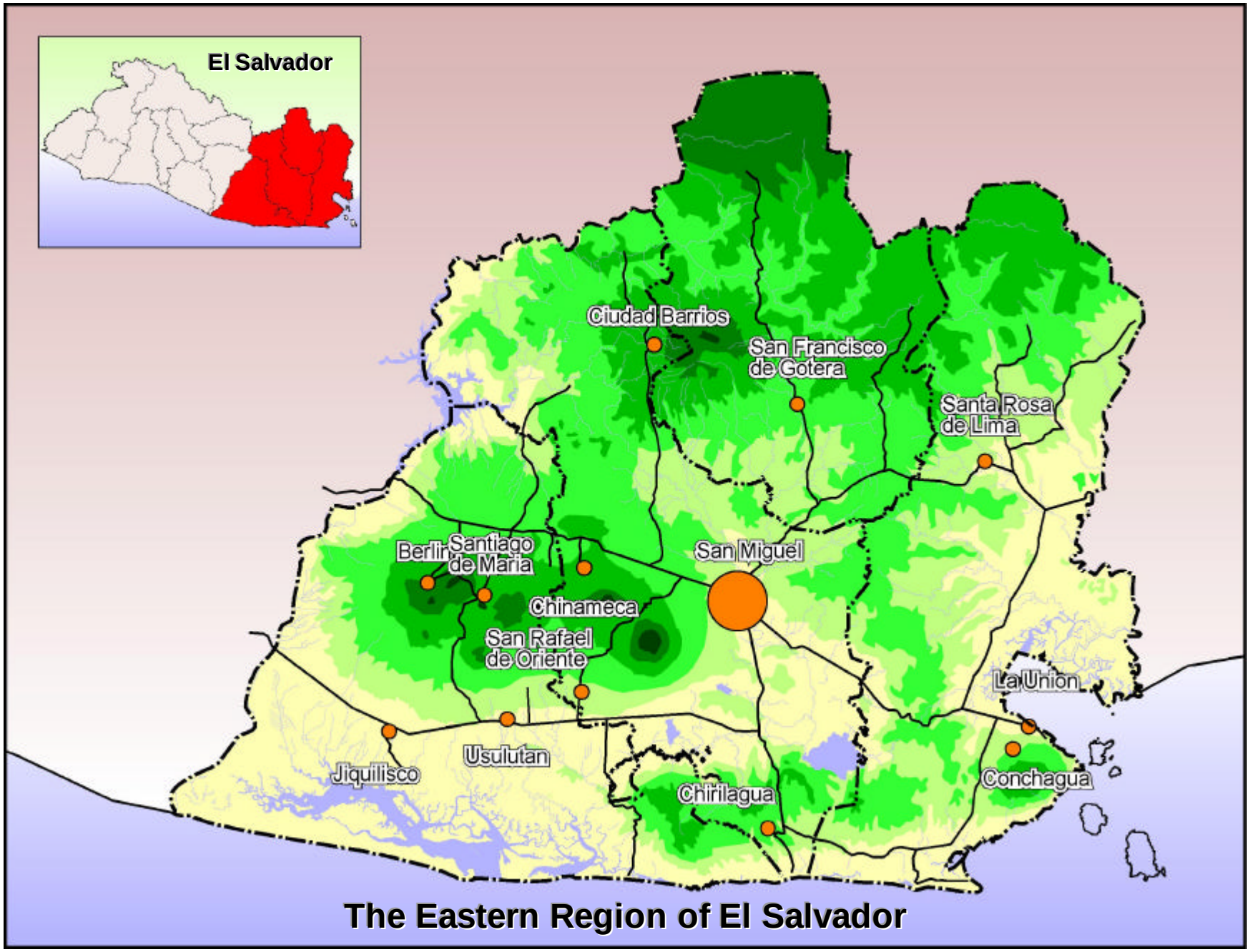
San Miguel
The Republic of El Salvador



The Eastern Region of El Salvador

The Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador

Final Report
Volume 1: Executive Summary

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Abbreviations

AIC	Agro-industrial complex
ANDA	National Water Supply and Wastewater Administration
APREMAT	Technical Medium Education Reform Process Assistance
BPO	Business process outsourcing
CBD	Commercial and business district
CEL	Executive Commission of Lempa River Hydropower
CENDEPESCA	Fishery and Aquaculture Development Center
CENTA	Center for Agriculture and Forestry Technology
CEPA	Executive Commission for Autonomous Ports
CND	National Development Commission
CONACYT	National Council for Science and Technology
CONAMYPE	National Commission for Micro and Small Enterprises
CORSATUR	Salvadoran Corporation of Tourism
CRM	Customer relationship management
ETESAL	Private Power Transmission Company
FPEZ	Free port and economic zone
FTZ	Free trade zone
GDP	Gross domestic product
GRDP	Gross regional domestic product
GESAL	National Geothermal Company
GIS	Geographic information system
ICT	Information and communication technology
IDB	Interamerican Development Bank
INSAFORP	Salvadoran Institute of Professional Formation
IQF	Individually quick frozen
IRR	Internal rate of return
IT	Information technology
ITCA	Central American Institute for Technology
JICA	Japan International Cooperation Agency
LASF	Dry fertilizer family latrine
LMU	Local management unit
MAG	Ministry of Agriculture and Livestock
MARN	Ministry of Environment and Natural Resources
MINED	Ministry of Education
MOP	Ministry of Public Works
NGO	Non-governmental organization
PROCAFE	Coffee Producers Association
R&D	Research and development
SME	Small and medium enterprise
SNET	National Service for Territorial Studies
USAID	United States Agency for International Development

The Study on Economic Development, Focusing on the Eastern Region, of the Republic of El Salvador

Final Report
Volume 1: Executive Summary

1. Study Objectives

Upon the request by the Government of the Republic of El Salvador, the Government of Japan, through the Japan International Cooperation Agency (JICA), has been carrying out a planning study (the Study, hereafter) in cooperation with the National Development Commission (CND) to prepare an economic development master plan focusing on the Eastern Region of the Country. The objectives of the Study as agreed between CND and JICA are:

(1) To formulate a master plan for the balanced economic development of El Salvador aiming at strengthening the competitiveness of El Salvador through promoting export and foreign direct investment and developing the Eastern Region of the Country; and

(2) To enhance the capacity of the national and regional counterparts to promote and lead the economic development, assuring the ownership by the Government of El Salvador in the implementation of the master plan.

2. Main Directions for National Development of El Salvador

(1) Main directions after the civil war

The structural adjustment policy and the economic stabilization program adopted in 1989 aimed to restore macroeconomic stability and establish market-oriented economy. This basic policy was taken over by successive administrations, and various measures were taken for deregulation of the trade and the financial sectors, tax reform, privatization of state banks and public utilities, and dollarization.

While a sound and stable macroeconomic framework was largely established during the 1990s, the Salvadoran economy faced difficulty in establishing competitiveness in the rapidly globalizing economy. Though increasing overseas remittances helped maintain macroeconomic stability, reliance on them undermined the competitiveness of most domestic commodities, particularly consumer goods. Also, widening disparities between regions and widespread poverty became another focus of the national development as the society recovered from the civil war.

(2) CND initiative

CND was created in May 1997, tasked to fill in various gaps existing and seemingly developing at that time. These gaps, as mentioned already, are represented by the gap between the

macroeconomic performance and the microeconomic difficulty, the gap in income levels among different segments of the society, and disparities between regions. Naturally from its beginning, CND has adopted a participatory mechanism in preparing a National Plan that should be broadly supported by all the segments of the society.

The vision for national development articulated by CND encompasses the value that the Nation should pursue in social, economic, institutional and political aspects: 1) social inclusion to overcome poverty, 2) self-reliance, 3) society of law, 4) competitive economy, 5) borderless society, 6) rational environmental idea, and 7) family value. These are in line with the consistent development strategy of the Government with four pillars: (i) poverty reduction through investment in human capital, (ii) strengthening economic competitiveness under free trade and open economy policy, (iii) improving public services and judicial systems, and (iv) ensuring environmental sustainability.

Under the vision, CND identified priorities along the lines of principal preoccupations of people: unemployment, social exclusion and marginalization. Initial actions of the National Plan identified three structural development axes: regional development and decentralization, restructuring of productive base, and Central American integration. Continued CND efforts with extensive consultation with various groups of people resulted in specific proposals for five geographic areas in the Country constituting "Territorial Actions". Unfortunately, the earthquakes in 2001 forced the reconsideration of priorities for national development. *A Strategy for Development*, published after the earthquakes, reconfirmed the territorial focus. A takeoff strategy was set out for the Eastern Region as it was planned to establish a new port in La Union, which would contribute to strengthening the competitiveness of the Salvadoran economy.

3. Objectives and Basic Strategy for the Eastern Region Development

(1) Regional development objectives

Three objectives have been defined for the Eastern Region Development addressing to the major problems identified in the economic, social and environmental sectors.

1) Economic objective: to strengthen the regional economic structure through enhancing agricultural productivity for price competitiveness, establishing competitive industries, and promoting service linkages with stronger urban functions;
2) Social objective: to alleviate poverty and reduce unemployment through human and institutional development that will allow utilization of emerging opportunities associated with the La Union port revitalization; and
3) Environmental objective: to restore and enhance the environmental quality and resource capacity to support indigenous industries, to reduce vulnerability to natural disasters, and to

enhance amenity for local people and visitors.

(2) Basic strategy for the Eastern Region Development

The basic strategy for the Eastern Region Development has been established to cope with more fundamental problems at the root of many specific problems. These fundamental problems that the Region faces are: (i) inadequate land and water resources development and management, (ii) insufficient provision of basic infrastructure and services, and (iii) weak local administration and finance. Corresponding to these, the basic strategy has the following three components:

1) Land and water resources development and management particularly of the Río Grande de San Miguel and the upper catchment areas in the north,
2) Spatial structure strengthening with the establishment of key infrastructure facilities, selective strengthening of urban functions, and rationalization of land use, and
3) Human and institutional development based on local government strengthening and people organizing and participation.

4. Development Frameworks for El Salvador and the Eastern Region

(1) National socioeconomic framework

A socioeconomic framework specifies the expected level of the development in the target year of 2019 by a set of socioeconomic indices projected in a mutually consistent way. A national socioeconomic framework has been examined based on the existing works, and the consistent projections are summarized in Table 1.

Table 1. Projections of GDP and Employment by Sector, 2000-2019

	GDP (US$10^6)		Growth rate (% p.a.)	Labor productivity ($/cap)		Employment (10^3)	
	2000	2019	2000-18	2000	2019	2000	2019
Agriculture	1,300	1,800	1.8	1,700	2,400	775	750
Industry	4,000	9,200	4.5	6,000	8,700	658	1,060
Services	7,800	16,700	4.1	6,300	9,200	1,247	1,820
Total	13,100	27,700	4.0	-	-	2,680	3,630

Source: JICA Study Team.

(2) Socioeconomic framework for the Eastern Region development

Within the national framework, a socioeconomic framework for the Eastern Region development has been worked out. It is expected that the economy of the Eastern Region will attain much higher growth performance than the national economy. The projections of the GRDP and employment in the Eastern Region are summarized in Table 2.

The population in the Eastern Region is projected to increase from 1,281,428 at the 2000 census

to some 1.7 million by 2019. The per capita GRDP is expected to increase from US$1,380 or 66.1% of the per capita GDP to US$2,788 corresponding to 89.1% of the projected per capita GDP in 2019.

Table 2. Projections of GRDP and Employment in the Eastern Region, 2000-18

	GRDP (US$10^6)		Growth rate (% p.a.)	Labor productivity ($/cap)		Employment (10^3)	
	2000	2019	2000-18	2000	2019	2000	2019
Agriculture	367	587	2.5	1,530	2,400	240	245
Industry	324	980	6.0	5,400	8,700	60	113
Services	1,077	3,563	6.5	5,670	9,200	190	387
Total	1,768	5,130	5.8	-	-	490	745

Source: ibid.

(3) Spatial framework for the Eastern Region

The existing Pan American and Pacific coastal highways should be strengthened as the east-west arteries. Links between them should be improved to ensure the availability of alternative routes between the La Union port and the Central region under any conditions. The northern longitudinal road should be established in steps to serve as the third artery. North-south links should be selectively improved to inter-connect tourism areas and to improve access between primary production areas and markets.

Logistic circuits

Logistic circuits are defined, which interlink San Miguel, La Union, Usulutan and a few other secondary towns as shown in Figure 1. The idea is to guide the location of various logistic facilities at nodal points of the circuits, such as regional markets, processing plants, industrial/commercial estates, and other trade and distribution facilities. Practically all the areas in the Eastern Region will be within easy access from/to the logistic circuits so that even the remotest areas can be integrated into the main economy of the Region. North-south links and rural roads should be improved to realize the easy access.

Future land use

Land use distribution expected in 2019 is shown in Figure 2 and Table 3. As seen in the table, the area for basic grains occupies 125,670ha, just sufficient for self-sufficiency in staple maize and production of green maize and sorghum to support dairy farming. Irrigated agriculture is found only in 7,257ha but portions of land for intensive upland and lowland agriculture may be devoted to irrigated agriculture as well. The area for managed pasture exceeds the need to support the livestock development.

Figure 1. Logistic Circuits of the Eastern Region

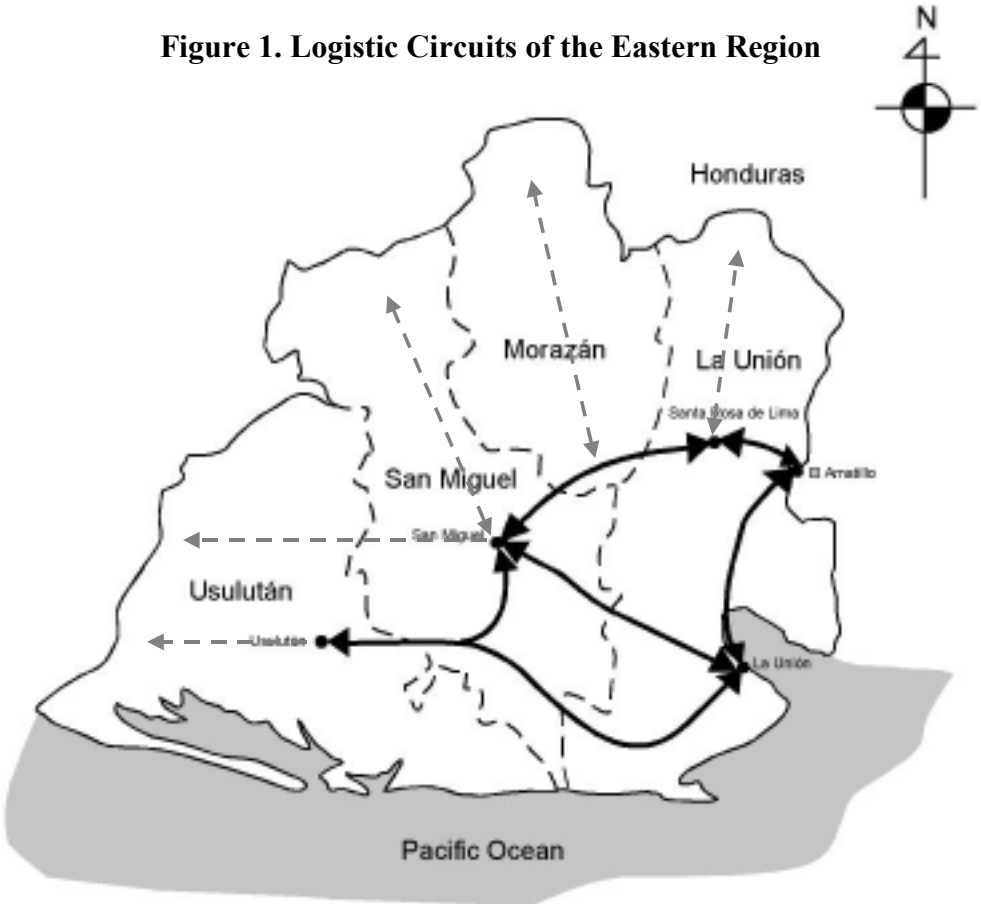
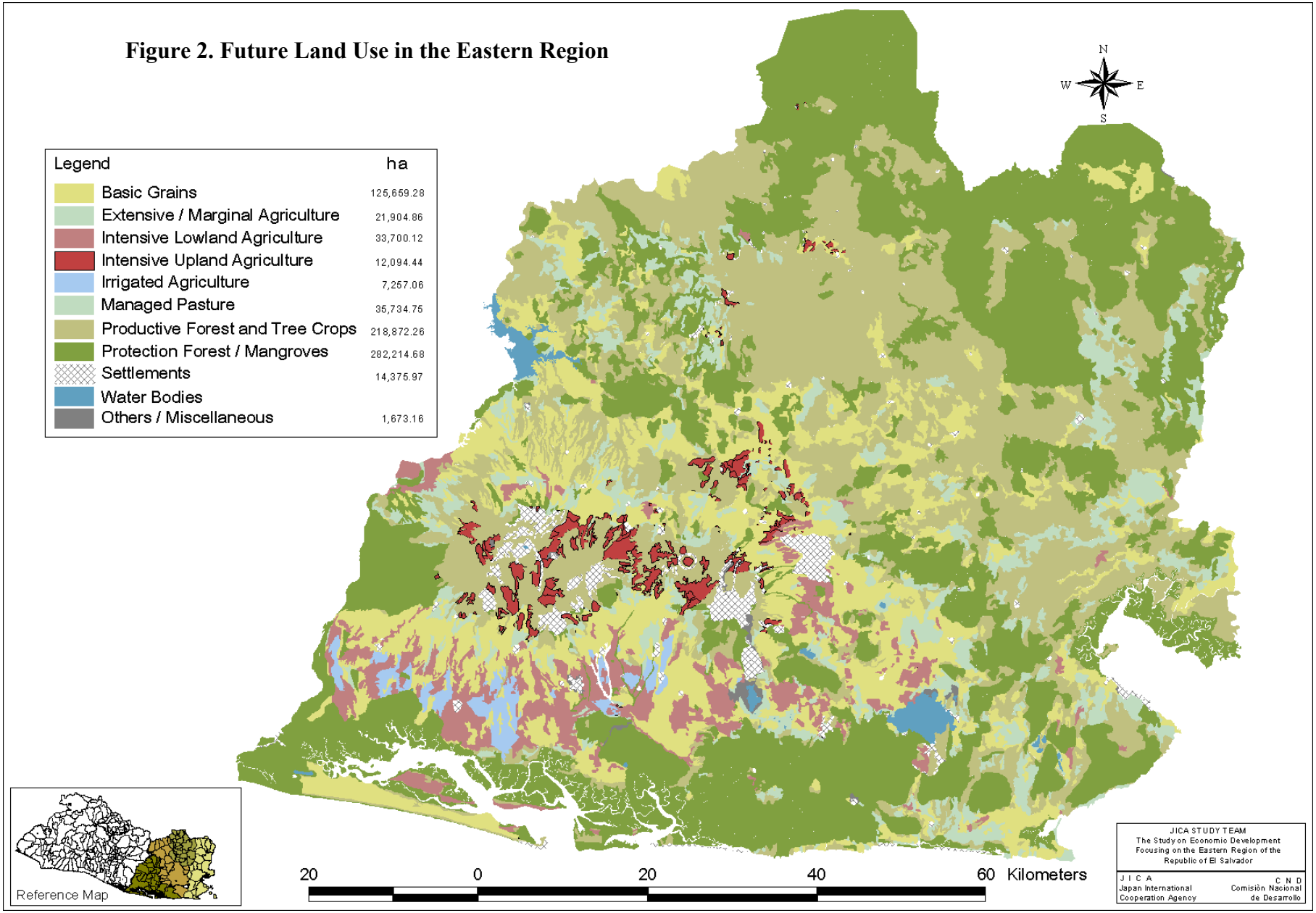


Table 3. Future Land Use in the Eastern Region

Land use	Area (ha)	Share (%)
(1) Irrigated agriculture	7,257	1.0
(2) Basic grains	125,659	16.6
(3) Intensive lowland agriculture	33,700	4.4
(4) Intensive upland agriculture	12,094	1.6
(5) Extensive/marginal agriculture	21,905	2.9
(6) Managed pasture	35,735	4.7
(7) Tree crops and pastures	218,872	28.9
(8) Protection forests/mangroves and bush/shrubland	282,215	37.2
(9) Settlements and tourism areas	14,376	1.9
(10) Other/miscellaneous	5,979	0.8
Total	757,793	100.0

Source: GIS map (Figure 2).

Figure 2. Future Land Use in the Eastern Region



5. Development Scenario for the Eastern Region with La Union Port Revitalization

(1) La Union port revitalization by phase

Basic concepts applicable to La Union port and its hinterland development

The La Union port is expected to trigger the renewed growth of the economy of El Salvador as a whole through boosting trade, particularly by container-based long distance shipment. To promote trade-related economic activities, a free zone is to be designated in the port area. There are various types of free zones established in the world with different functions and area coverage as well as management organizations. A few viable concepts applicable to the La Union port area are first clarified.

First, the free zone should be established as a growth center with multiple functions rather than just a port for free trade near a small town. It should be equipped with urban functions and various facilities from an early stage of the development. To allow the location of various functions and facilities expected for a growth center, a large area needs to be designated for special purposes. The port area and the large hinterland area may be called the free port and economic zone (FPEZ).

Second, a free trade zone (FTZ) should be established in the immediate hinterland of the port. While the exemption of custom duties tends to become less attractive for investors to locate in a FTZ as free trade agreements are promoted, introduction of value-added tax, local taxes and other measures to secure sufficient national revenue under free trade makes their exemption in the FTZ still attractive. Also, the FTZ allows free transaction and treatment of goods within its territory such as labeling, cleaning, re-packing, selection, repair and disposal. Common service facilities provided by the FTZ offer additional incentives for investors in the FTZ. They include processing facilities, storage and distribution facilities such as warehouses and a truck yard, facilities for exhibition of goods and other functions, and an information center as well as a customs office. Moreover, as more industries locate in the FTZ, they enjoy generally both the scale economy due to efficiency by large-scale operation and the scope economy through effective combination of goods and services.

Third, the FPEZ should serve increasingly as an international logistic center linked with free zones in other regions and countries, offering storage, transport and distribution, packing and re-packing, and processing functions for goods from many countries. As the international division of work proceeds, transport and distribution functions become increasingly more important part of manufacturing industry. Good and reliable logistic functions alone can attract some industries.

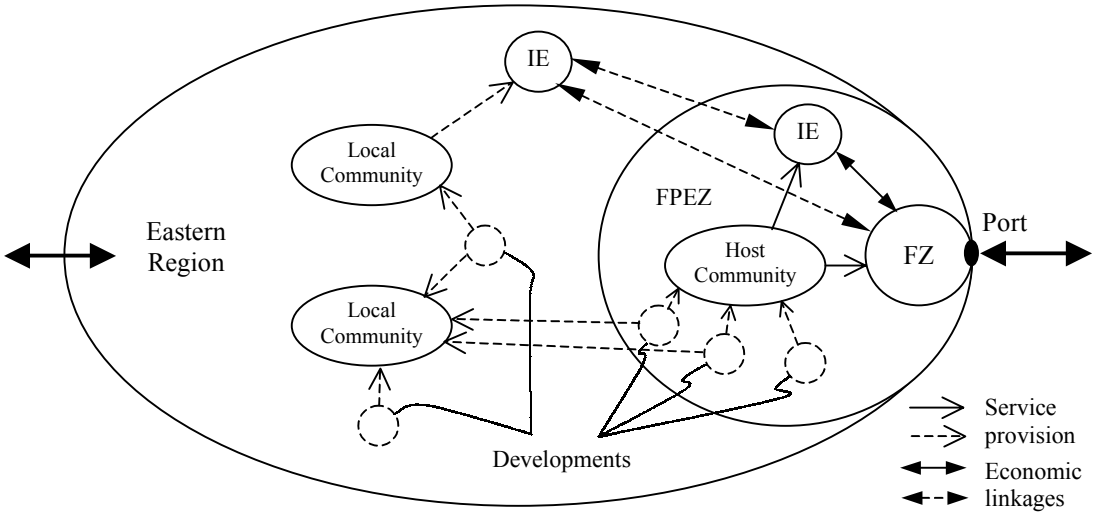
Characterization of the FPEZ

The FPEZ is to be established to offer internationally first-class business environment to satisfy all the locational conditions described above and more. To ensure comfortable living

environment for foreign investors and their families as well as local people to live and work with them, various amenity facilities should also be provided within the FPEZ. They include beach and mountain resorts, recreational facilities (e.g., indigo museum, tourist orchard, picnic areas, etc.), and an urban park as well as high-grade urban services. Only the port and the FZ areas will be segregated to enjoy special zone status. For other areas within the FPEZ, limited control should be imposed on land use and transactions, development and landscaping. In return, investors should be able enjoy limited benefits related to local taxes, staff recruitment and labor management.

The FZ in the FPEZ would enjoy the full special zone status. The industrial estate (IE) would enjoy limited benefits allowed for other developments in the FPEZ. As such, individual industries to locate in the FPEZ would enjoy the same benefits as long as they conform to the limited control imposed on any development within the FPEZ. A wider range of industries would locate outside the FZ in the FPEZ. They would develop interactions with enterprises in the FZ on business or joint venture bases and contribute to accumulating economic activities for the economic development drive in the Eastern Region (Figure 3).

Figure 3. Image of Eastern Region Development with FPEZ



Initial development

It is expected that the La Union port will be commissioned by the middle of 2007. Along with the port construction, related projects and institutional measures need to be implemented to ensure proper operation of the port from the beginning. Related projects include the bypass for La Union city, wastewater treatment plant for La Union and Conchagua, and other utilities for the port and its immediate vicinity. Border facilities at El Amatillo should be improved, starting with the relocation of the bridge. Improvement of living conditions in La Union city should also be initiated, including waterfront rehabilitation as currently planned by CND, improvement of solid waste management, establishment of municipal market and slaughterhouse, and water supply expansion.

The FPEZ will be designated, including a conservation area around the Fonseca gulf and the Conchagua volcano, and the FTZ will be established in the port area. Local communities and people including indigenous minorities should participate in the preparation of the Fonseca gulf-Conchagua conservation area management plan. Cooperative management of the Fonseca gulf with Honduras and Nicaragua should be institutionalized extending the Progolfo initiative.

La Union port revitalization by phase

The revitalization of the La Union port would be realized through a sequence of activities to develop and events to take place after the new port facilities are established. Export and import would expand and diversify, and other port-related activities would develop in steps. To create a growth center as conceived above, the port city of La Union would develop rapidly with improved infrastructure and services including some high-grade services to establish in time. The La Union port revitalization would be supported by the Eastern Region development and vice versa, for which the strengthening of spatial structure is necessary as a component of the basic strategy presented above.

Main activities and events to be observed in these aspects are presented in Table 4 for the three phases: the second half of Phase 1 for 2007-09, Phase 2 for 2010-14, and Phase 3 for 2015-19. Export, import and other port-related activities are presented to indicate expected performance and characterization of the port revitalization in each phase rather than specific activities to be promoted with policy targeting.

Additional products to be produced in the Eastern Region as envisioned will generate more cargoes than projected by the previous studies. The export volume of these products is roughly estimated to be 170,000MT in 2019. Also, a comparative analysis on freight transport costs has clarified the possibilities of La Union port for transshipment (Figure 4). This potential may add some 100,000MT to the export cargo demand at the La Union port.

Figure 4. Transshipment through La Union Port

Table 4. La Union Port Revitalization by Phase

	Second half of Phase 1: 2007-09	Phase 2: 2010-14	Phase 3: 2015-19
Export	- Goods to be diverted from Acajutla or ports of Guatemala and Honduras: e.g., textiles and clothing, coffee, sugar, etc. - Processed fish - Products of initial export processing in port area and Concordia	- Products of export processing at other inland free zone/IEs as well - Specialty products: e.g., fiberboard, dairy products, processed or IQF fruits/vegetables, organic cashew	- New products combining imported raw materials and intermediate goods - Expansion of specialty products with increased raw materials from Honduras and Nicaragua
Import	- Some mass consumption goods - Intermediate goods for processing in the ER: e.g., cement for cement products, steel bars for multiple uses, etc.	- More intermediate goods for export processing	- Goods to transship through the port and the dry canal
Other port-related activities	- Marina for pleasure boats - Commercial fishery - Domestic tourism - Tripartite events in the Fonseca gulf (e.g., inter-island yacht race) - Ferry services to Nicaragua	- Expansion of commercial fisheries with fish from neighboring countries - Local cruise industry - Ship chandling	- International cruise industry
Port city of La Union	- Continuation of city beautification - Enhancement of watershed areas - New residential development - Fully operational FTZ in port area - Designation of conservation area in Fonseca gulf-Conchagua volcano	- Water supply expansion with new water source - New sanitary landfill site - Waterfront development - City beautification with urban parks and greenery network - Establishment of nature park	- Satellite towns development - Major recreational facilities: e.g., amusement park, marine park with oceanarium
Spatial development	- Strengthening of regional center and sub-centers (polar development) - Completion of border facilities at Amatillo - Bypass for Usulutan city - Northern longitudinal road: Oscicalla-San Simón improvement	- Establishment of logistic circuits linking San Miguel, La Union and other secondary towns - Bypass for San Miguel - CA1-CA2 link - Strengthening of secondary urban centers - Establishment of El Amatillo-Comayagua road link (dry canal) - ı longitudinal road: San Simón-San Luis de la Reina improvement	- E1 Divisaledo-Comacaran-San Alejo road - Establishment of alternative link with Honduras through north - Northern longitudinal road: San Luis de la Reina-Nuevo Edén de San Juan improvement

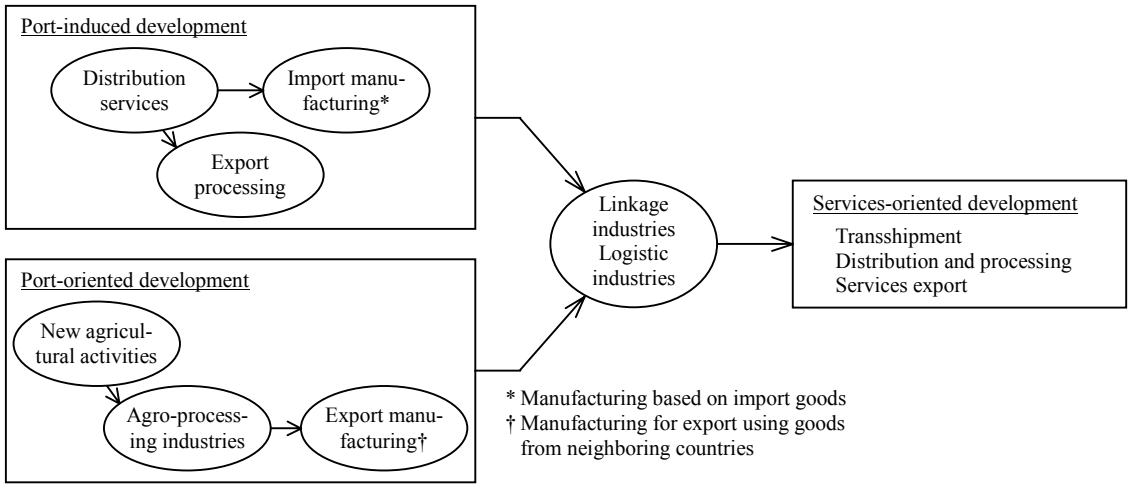
Source: JICA Study Team.

The volume of container cargoes is projected by the previous studies at some 930,000MT for import and 400,000MT for export in 2015. The additional export cargoes estimated above would improve the balance between import and export, and thus contribute to the reduction of freight costs. The additional import and export cargoes can be handled at the La Union port as the berth occupancy rate of the container berth is estimated at 43% even in 2015.

(2) Scenario for the Eastern Region development

A series of activities to develop and events to take place over the planning period up to 2019 is described here by phase as the development scenario for the Eastern Region. The Eastern Region development scenario is strongly linked with the La Union port revitalization. Some economic activities are induced by the port while other activities are strategically initiated, oriented to the port. In either way, a wider range of activities will establish, facilitated by related linkage and logistic industries. As these linkage and logistic functions develop, the Eastern Region development will be supported more and more by service-oriented activities (Figure 5).

Figure 5. Evolution of the Eastern Region Development Centering on La Union Port Utilization



Phase 1: 2004-09

1) Overview

This phase is characterized by restoration and enhancement of resources capacity as well as preparation for the commissioning of the La Union port in mid-2007. Human resources necessary for the operation and management of the port will be trained as a matter of urgency at existing institutes and a new technological institute to be established in La Union. Farmers will be organized to prepare for new agricultural activities to develop in response to increasing trade opportunities with the port. Land productivity will be enhanced through watershed

management, particularly in the Rio Grande de San Miguel, including expansion of high elevation coffee under cover shade trees, small-scale irrigation with ponds, planting of cashew and other fruit trees (e.g., avocado, citrus and mango) in uplands, and adoption of better farming practices.

Institutional development also characterizes the Eastern Region development during this phase. An intermediate level of administration between the Central Government and municipalities will be effectively institutionalized in the form of municipal associations, first for the Fonseca gulf and the Rio Grande de San Miguel. Administrative functions for agricultural extension and support to SMEs will be substantially transferred to this level as well as those for social services and environmental management. In response to this transfer, people's participation will be enhanced and institutionalized as well. The FPEZ will be designated in the La Union-Conchagua area, and a FTZ established in the port hinterland. A development corporation will be established by public-private partnership to take charge of the FPEZ. The operation and management of most port facilities will be entrusted to private operators.

2) Socio-economy

After the decades of stagnation, the agricultural sector will start renewed growth during this phase. Fruits and vegetables will be selectively promoted, and new commercial crops introduced/strengthened, such as indigo, kenaf and cashew. Formation and strengthening of farmers' associations are the prerequisite to these activities for joint procurement and marketing, and possible joint venture arrangements with foreign partners. The Eastern Region may join an existing cluster/complex for apiculture and sugar-related processing. A prerequisite would be enhancement of resources base for production increase as well as technical extension by the existing cluster and industries. The expansion of high elevation coffee will be supported as part of a reforestation program.

Livestock development will pursue increasingly high input-high yield mode of production, particularly for cattle. It will be supported by increasing production of green maize and sorghum for silage production and increasing import of feed grains and supplements.

New agro-processing industries will establish based on new and strengthened crops to be produced, for instance, indigo dye and dyed products, kenaf fibers, organic cashew, and fruits preserves. For organic or gourmet coffee, original brands of the Eastern Region will be developed for export market. The initial export processing will establish as the port is commissioned, and the processing of imported intermediate goods will start for some consumer goods and construction materials.

Trucking and warehousing services will be improved through restructuring of the industry organizing service operators. Various business services will develop associated particularly with new and strengthened agricultural and processing activities. BPO services will develop

rapidly, particularly front BPO services led by CRM including call centers. Tourism products will be developed mainly for the domestic market, including local recipes, dyed products and other handicrafts, tour circuits, and some artificial tourist attractions.

3) Spatial development

Spatial development during this phase is basically polar development centering on a few larger urban centers, viz., San Miguel, La Union, Santa Rosa de Lima, and Usulutan. At the same time, major bottlenecks in inter-regional and international transportation should be removed. Following the construction of the La Union bypass, a bypass for Usulutan city will be completed. Border facilities at El Amatillo will be upgraded, starting with the establishment of a new bridge downstream of the existing one.

Rural roads will be improved steadily during this phase, which would allow expansion of areas for new commercial crops subsequently. Ongoing self-help efforts by rural communities will be strengthened, supported by skill training and provision of simple tools and equipment.

New residential development will take place in the La Union-Conchagua area to accommodate increasing flow of people from other regions and countries. The urban road system will be substantially strengthened, associated with the residential development as well as the new bypass. Other infrastructures and utilities will also be developed to bolster the La Union port and the port city development.

Phase 2: 2010-14

1) Overview

This is the phase for accelerated growth in all the sectors. Human and institutional development with IT will take place actively to introduce innovations for export drive. Vocational training will be undertaken dominantly by the private sector, supported by tax reduction and other incentives provided by the Government and municipalities. New institutions for entrepreneurial development will be fully operational, including a skill development fund and an incubation center. Active private investments will be directed also to some infrastructure facilities including those for the FPEZ.

This phase is also characterized by the substantiation of the Central American integration. El Salvador will benefit particularly from the interconnected telecommunication system with fiber optic circuits and the integrated power supply system. Also the completion of the El Amatillo-Comayagua road link in Honduras will trigger trade expansion between El Salvador, Honduras and Nicaragua to enlarge processing and export opportunities in the Eastern Region. Continued cooperative management of the Fonseca gulf will be further substantiated with institutionalized people's participation in environmental monitoring and management under a formal agreement between the three countries.

2) Socio-economy

Areas for new and strengthened crops will expand to support the accelerated growth of the agricultural sector. Fruits and vegetables will be supplied to growing urban markets, particularly in San Miguel and La Union with increasing expatriate communities. The export market will be well established for some IQF fruits and vegetables. The Eastern Region will become integral part of the existing cluster/complex for apiculture and sugar-related processing rather than the suppliers of raw materials.

The high input-high yield dairy farming will be firmly established in areas where water shortages are largely solved by early development efforts for watershed management. More green maize and sorghum will be produced for silage to support dairy farming in combination with managed pastures and import feed grains and supplements. Poultry farming will develop rapidly, partly shifting from the Western region and taking advantage of grains import through the La Union port. Commercial fisheries will also expand with fish supply from neighboring countries. Fishmeal plants will be established and will in turn supply to the poultry industry.

Not only apiculture and sugar with its derivatives, agro-processing will produce diversified products, such as light construction materials from kenaf, cashew apple wine and various processed cheeses. As the incentive for farmers to enhance agricultural productivity increases with expanding urban and export markets, irrigation and farm mechanization will proceed rapidly. This will lead to the establishment of the agricultural machinery and equipment industry. This may start with assembly operations at FTZ and manufacturing of agricultural implements and equipment from intermediate goods to be imported. These agricultural and processing activities and supporting industries will form in totality what may be called an agro-industrial complex (AIC). The AIC would effectively extend the cluster strategy through broader and deeper opportunities for inter-industry linkages with indigenous and supporting industries (refer to the box on the next page).

Export processing of the portside FTZ will be fully developed. Additional export processing will start at another inland FTZ. Export of specialty products will increase, benefiting from supply of additional raw materials from neighboring countries, such as fiberboard, dairy products, and processed or IQF fruits and vegetables.

Distribution and marketing services will be upgraded with IT. Both BPO back and front services will be further promoted. BPO back services will contribute to employment generation and skill training. For BPO front services, CRM services for Central America will further develop.

The local cruise industry will be fully established, supported by core tourism facilities in the La Union-Conchagua area. Tour itineraries will be developed jointly with tour operators in Honduras and Nicaragua.

Agro-Industrial Complex and Industrial Clusters

Conceptual background of the agro-industrial complex

The agro-industrial complex (AIC) proposed here is a set of agro-based economic activities, which are interrelated directly or indirectly through chains of input-output relationships. This is similar to the more popular concept of industrial clusters popularized recently by Michael Porter. The cluster is now a technical term, while the complex is not. More promising economic activities are proposed in the form of the complex for three reasons:

(i) To increase and internalize value-added, while minimizing wastes and leakages,
(ii) To allow the Government to take effective measures for agricultural development without direct interventions in the sector, and
(iii) To motivate local people to produce for larger markets including export markets by making linkages visible.

The first reason is common to the cluster strategy as well. The second and the third reasons are pragmatic, representing the planning strategy.

Cluster strategy in the context of Eastern Region development

The concept of industrial clusters may facilitate the understanding of ideas built into the AIC, particularly in the context of the economic development of El Salvador focusing on the Eastern Region with the La Union port. The four key determinants of industry competitiveness identified by Michael Porter are:

(1) factor conditions – availability and quality of production factors such as resources, infrastructure and capital,
(2) home demand conditions – existence of domestic market responsive to such high quality products that may be demanded in the international market as well, and
(3) related and supporting industries, and
(4) industry strategy, structure and competitiveness.

The existing conditions of these determinants are not all favorable in El Salvador and even less so in the Eastern Region. The situation may change drastically with the establishment of the La Union port. The Eastern Region development may be seen as a process to cause favorable changes to these determinants to enhance competitiveness of the Salvadoran economy. Main changes expected in the Eastern Region with respect to each determinant are as follows.

Determinant of competitiveness	Expected changes in the Eastern Region
(1) Factor conditions	Increased availability of raw materials and intermediate goods through import; improved port and related infrastructure; inflow of investment capital and technology
(2) Home demand conditions	Increased demand for high quality products linked through processing and services to export market; growing urban markets
(3) Related and supporting industries	Establishment of port-oriented industries in FTZ; development of indigenous industries linked to FTZ
(4) Industry strategy, structure and competitiveness	Coherent industry strategy across subsectors; “coopetition” among industries under the regional development strategy

The success of any industrial cluster depends on effective utilization of external economy due to the agglomeration of industries by means of some joint actions of inter-related industries in the competitive environment. For this to be possible, the cluster needs some depth to allow the division of works, accumulation of technologies, and intensive information flow between the industries. It is well known, however, that those industries to locate in FTZ do not develop initially strong linkages with indigenous industries. This means that the determinant (3) above would not improve much with the establishment of the La Union port alone.

Applicability of cluster strategy

There are different ways to apply the cluster strategy to economic development in any country or region. A typical way is to take a primary good that has the competitive advantage and promote related economic activities with forward or backward linkages to internalize and increase value-added and strengthen the competitive advantage for a whole set of goods involved in the chain of economic activities. This may not be widely applicable to the economy of El Salvador having limited primary goods with the competitive advantage. Indigo and cashew may prove to be exceptions, but with these primary goods alone indigenous industries may not be fully developed to have sufficient impact on the Salvadoran economy as a whole.

The existing sugar industry in El Salvador, on the other hand, has established a sort of cluster based on sugarcane, a primary good having relatively low competitive advantage. Through a chain of processing activities to increase value-added, the industry has established comparative advantages for various processed goods including molasses, feed and liquor as well as brown and refined sugar.

Some products are exported; hence, the comparative advantage. Maize is another primary good having relatively low competitive advantage, but is processed into feed to serve the livestock industry for much higher overall value-added. Competitive advantage of livestock products, typically cheese, however, is threatened by import from neighboring countries including smuggling.

Extensions of cluster strategy to the AIC

For effective utilization of external economy, some depth should be ensured to allow inter-industry interactions. As clarified above, the La Union port alone would not contribute much to increasing the depth. Therefore, the existing and potential indigenous industries would have to be utilized to internalize and increase value-added. There exist, however, only limited primary and processed goods in El Salvador and in the Eastern Region having the competitive advantage. To establish comparative advantages of those primary and processed goods having relatively low competitive advantage, a wider range of economic linkages should be effectively utilized. This would require extending the cluster strategy beyond a horizontal cluster of a single economic activity or a simple vertical cluster centering on a single primary good. A whole set of interrelated economic activities, existing and potential, defines the AIC, encompassing both horizontal and vertical clusters.

"If local industries are unproductive, they are going to bring down the export industries as well." – Michael Porter.

"Porter cautioned governments (of Latin American countries) against focusing on specific clusters, encouraging them instead to allow all clusters, in both traditional and nontraditional industries, to participate in the development process."

References:

1. Website of the Institute for Strategy and Competitiveness, Harvard Business School accessed on April 1, 2003.
2. JICA, *Industrial Projects Follow-up Study, I. Cluster Analysis*, draft report (in Japanese), Industrial Development Studies Dept., July 22, 2002.
3. C. Quesada, "The Productivity Marathon," IDB America, April 24, 2002, posted in IDB America Online, December 2002.

3) Spatial development

Physical and economic linkages between larger urban centers for the polar development during Phase 1 will become stronger, and logistic circuits will be formed linking other secondary towns as well. A bypass for San Miguel and a new link between the highways CA1 and CA2 to shortcut the travel between La Union and Usulutan will be constructed. Continued improvement of rural roads and stepwise establishment of the northern longitudinal road will

improve access from other parts of the Eastern Region to the logistic circuits.

A major breakthrough will be attained for the management of water and related land resources in the Rio Grande de San Miguel basin by the construction of a multipurpose dam, the first of the kind in El Salvador. This will change the land use pattern and spatial development as a whole as the dam provides better flood protection along the middle reach of the Rio Grande, combined with dykes and embankment.

Phase 3: 2015-19

Resources-based development during Phase 1 in combination with IT-oriented human resources development particularly associated with the La Union port development will induce the development of broad logistic functions through Phase 2. Through this process, capital and technical expertise will accumulate and markets expand. Based on these, sustainable growth will be attained during Phase 3 by increasingly service-oriented development.

Continual innovations will allow El Salvador and the Eastern Region to enjoy international fame for quality agro-products and other specialty products. Human resources equipped with IT will support high grade, human oriented services, such as BPO operations, higher education and training, and advanced medical services. Some of them will become export industries serving other countries in Central America as well.

As logistic functions become increasingly an integral part of manufacturing in the free trade regime, a logistic center will best characterize the Eastern Region with the La Union port. Transshipment of goods to/from neighboring countries by the port and the dry canal, export processing, and services export will eventually become main activities for sustainable growth of the Region.

(3) Value-added, employment generation and migration

Port-related activities and FTZs

According to the current plan, the establishment of the La Union port will generate some 450 employment opportunities during the construction period, and additional 1,500 jobs will be created for port operation. Port-related activities may generate some 2,500 jobs, and employments to be generated in free zones may be up to 10,000. In total, some 15,000 employment opportunities may be generated in the port area and its immediate hinterland alone. Of the total employment, 6,000 may be in the industry sector and 9,000 in the services sector. Applying the projected labor productivity, the value-added generation by port-related activities and FTZs is estimated to be US$43.5 million in industry and US$82.8 million in services for a total of US$126.3 million. This may be realized over a 10 to 15-year period starting in 2007.

Agro-industrial complex (AIC)

The value-added and employment due to the AIC are estimated in line with the socioeconomic

framework. Only the representative subsector industries and products are taken for the estimate. The results are summarized in Table 5. As seen in the table, the AIC is expected to generate the total value-added of US$453.6 million and 57,200 employment opportunities in 2019.

Table 5. Estimate of Value-added and Employment Generation by AIC

	Agriculture		Manufacturing		Total	
Activities & products	Value-added (US$10^6)	Labor	Value-added (US$10^6)	Labor	Value-added (US$10^6)	Labor
Dairy farming & processing						
Green maize & sorghum (69,800ha)	104.2	19,500				
Managed pasture	14.2	3,900				
Meat & milk	152.9	5,500				
Cheese			13.8	1,600	285.1	30,500
Complete cycle processing						
Cashew (5,000ha)	7.8	1,200				
Processed nuts			26.4	3,100		
Cashew wine			24.0	2,800		
Sugarcane (12,500ha)	15.9	3,500				
Refined sugar			7.2	800		
Liquor			3.9	400	85.2	11,800
Niche market-oriented industries						
Kenaf (5,000ha)	6.2	4,000				
Kenaf fibers			15.4	1,800		
Indigo (3,000ha)	3.7	1,600				
Indigo dye			2.0	200		
Honey	2.4	1,000				
Refined honey			9.6	1,100	39.3	9,700
Supporting industries						
Construction materials			29.0	3,400		
Agricultural machinery & equipment			15.0	1,800	44.0	5,200
Total	307.3	40,200	146.3	17,000	453.6	57,200

Source: Interim Report.

Migration pattern

The Eastern Region has been a net outmigrating region. Even in the post civil war period, when many refugees and some migrants returned to the Country, the population growth in the Region was lower than the rate of natural increase. Although both death and birth rates have been reduced significantly, crude birth rates are still high in the four departments of the Eastern Region, ranging from 27.4 per 1,000 in Usulutan to 32.3 per 1,000 in Morazan in 1998. Consequently, the natural population increase in the Region is still high at 2.2% per annum. The natural population increase exceeds the overall population growth in three departments except San Miguel. For the Eastern Region as a whole, the difference between the natural population increase and actual growth is about 0.6%, indicating that some 8,000 people outmigrate annually at present.

The two kinds of new economic activities analyzed above will generate incremental value-added of US$580 million in total and incremental employment of 72,200 in 2019. The incremental employment corresponds to the population of 165,800 by applying the labor force coefficient and the labor participation ratio expected in 2019. That is, over 10,000 people will be attracted annually on average by the new economic activities alone. Thus, the Eastern Region is expected to turn into a net immigrating region in 15-year time.

6. Development Programs and Projects

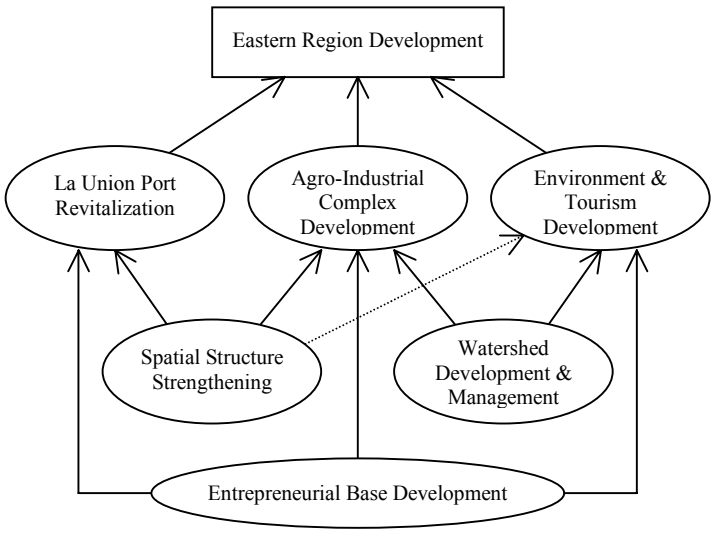
Under the basic strategy, specific programs and projects have been formulated. They are packaged into six broad programs. The correspondence between the basic strategy and the broad programs is indicated below.

	Basic strategy*		
Broad program	Land and Water	Spatial structure	Human and institutional
1. Agro-industrial devt.	✓		
2. Watershed devt. and mgt.	✓	✓	
3. Environment-tourism devt.		✓	✓
4. Spatial structure strengthening		✓	
5. La Union port revitalization		✓	✓
6. Entrepreneurial base devt.			✓

* ✓ denotes strong relevance.

The structure of the Eastern Region development master plan with the six broad programs is illustrated in Figure 6.

Figure 6. Structure of the Eastern Region Development Master Plan with Six Broad Programs



6.1 Agro-Industrial Complex (AIC) Development

This broad program consists of the following program and projects:

1.1 AIC support program,
1.2 One village-one product pilot implementation,
1.3 Agro-business center establishment,
1.4 Organic fertilizer R&D and production,
1.5 San Miguel sugar mill power generation, and
1.6 Fishery support program.

The first program provides a comprehensive package of support measures for most promising industries/commodity groups identified in the Eastern Region. The next four projects facilitate the establishment of individual activities involved in the AIC. The sixth program supports the fishery sector to diversify the regional economy for various linkages development.

(1) AIC support program

The AIC development is naturally based on expansion and diversification of agricultural production. Therefore, the main agro-products that can be produced in the Eastern Region in significant quantities are assessed by 1) land suitability, 2) economy of production based on crop budgets, 3) contribution to related economic activities such as agro-processing industries, and 4) marketing prospects. These agro-products and their target markets are summarized in Table 6. More specific target markets should be identified subsequently.

Among the processing industries with the respective target markets indicated in Table 6, most promising industries/commodity groups are identified by several criteria including existing and potential markets, production technology and experiences, employment impact, raw materials availability, product/industry management, and export prospects. Those identified as most promising in the Eastern Region are: (1) apiculture, (2) sugar and confectionary, (3) cashew, (4) organic coffee, (5) indigo, (6) kenaf, (7) poultry farming, and (8) dairy farming. Of these, apiculture and sugar-related industries may be promoted most effectively by associating with existing cluster/complex. Apiculture forms a most successful cluster in El Salvador, consisting of honey suppliers, processors, traders and support agencies for technical extension, products development and quality control. Apiculture industry in the Eastern Region may start as suppliers to this cluster. A sugar-related complex already exists based in San Salvador to produce not only raw and refined sugar but liquors and ethanol from molasses. Associating with this, a similar complex operation may develop centering on the existing sugar mill in San Miguel. Organic coffee is to be promoted under another broad program.

Poultry farming is expected to develop in the Eastern Region, partly shifting from the Western region as the availability of import feed improves with the La Union port. This may depend primarily on the private sector. In addition, the program supports small farmers to organize

Table 6. Main Agro-products in the Eastern Region and Their Target Markets

Agro-products	Man production areas	Market*	Possible target markets
Vegetables	- Highland in Morazan and La Union - Rio Grande basin under irrigation	C	- Port city of La Union - San Miguel
Sugarcane	- Lowland in Usulutan and San Miguel	B	- Existing and new processing industries for complete cycle processing
Kenaf	- Basin areas in upland - Coastal lowland	B	- New processing industries (fibers and non-tree paper)
Cotton (sea island long fiber)	- Coastal lowland	B	- New processing industry
Indigo	- Marginal agricultural land in upland (up to 800m el.) and lowland	A, B	- Export as dye - Apparel and handicraft industries
Staple maize	- Existing cultivation areas	C	- Throughout the Region
Green maize	- Existing cultivation areas except marginal agricultural land	B	- Silage production for cattle industry
Rice	- Rio Grande basin under irrigation - Basin areas in combination with kenaf	C	- National market - Expatriate communities
Cashew	- Mid and downstream areas of river basins, including slope land	A, B	- Processing of nuts for export - Processing of apple into wine for national market
Fruits (avocado, citrus, mango, etc.)	- Slope land - Existing low elevation coffee areas	B, C	- La Union and San Miguel - National market - New processing industries
Coffee	- Highland	A, B, C	- Organic/gourmet coffee for export - Expatriate communities
Milk	- Mid and upstream areas of river basins	B, C	- New dairy industry (cheese for export) - La Union and San Miguel
Honey	- Throughout the Region	A, B, C	- Existing processing industries in other regions - New processing industry

*A: Niche markets of specialty products / B: Supply to processing industries / C: Urban markets

Source: JICA Study Team.

them for poultry farming in combination with cultivation of vegetables. This integrated farming scheme would increase the value-added for vegetable production through reduction in production costs and production of organic vegetables as a result of application of chicken wastes for fertilizer. The scheme would also reduce risk associated with overproduction of perishable products. Moreover, small farmers would be prepared to link up with large-scale commercial poultry operators expected to establish as the La Union port becomes operational.

For the indigo industry, a pilot project has been implemented as part of the Study covering indigo plants production, indigo dye extraction, dying with indigo, products development and marketing. The program supports extension of these efforts for indigo industrialization. For dairy, cashew and kenaf industries, specific support programs are developed as outlined below.

To develop these industries, a pilot project approach should be taken to create many cores of development in the Eastern Region. Organizations of farmers and producers would be formed or strengthened, and technical and other support measures would be provided to these organizations. Pilot projects should be replicated; the organizations would expand; and

inter-industry linkages would develop to form eventually the agro-industrial complex. Various pilot projects may be supported by different donor agencies and NGOs.

Dairy industry

Support components for this industry include the following:

1) expansion/strengthening of existing dairy farmers/organizations including small farmers,
2) technical extension for high input-high yield dairy farming in areas with improved water availability,
3) joint procurement of import feed grains and supplements,
4) associations of maize and sorghum producers for silage production,
5) school milk program, and
6) establishment of a dairy plant.

Cashew industry

Support components for this industry include the following:

1) cashew producers' organizing (expansion of existing organizations),
2) provision of saplings,
3) technical extension for grafting and organic fertilization,
4) products development through R&D,
5) establishment of processing plants, and
6) associations among exporters, confectionery industry, etc. (for a cluster).

Kenaf industry

A strategic approach should be taken to the establishment of kenaf industry in the Eastern Region. Initially, kenaf fibers may be produced for export to market where products development is more advanced (e.g., the U.S. and Germany). At the same time, R&D for products development should be undertaken in El Salvador aiming at complementary products to support other industries. Depending on the development of international market for non-tree pulp as well as success of the products development for kenaf fibers, a judgment may be made for further development of the kenaf industry.

Kenaf fibers production may start at a pilot scale based on kenaf cultivation in some 100ha, where farmers may be more easily organized. Products development should be carried out vigorously supported by the Government until 50% import duties on gunnysacks are removed in three years.

(2) One village-one product pilot implementation

One effective way to promote new agricultural activities constituting the AIC and establish specialty products that may be exported is to apply the famous one village-one product approach. Applicability of this approach to rural development in the Eastern Region should be

examined through pilot implementation. A key for the success of this approach is information. A mobile or stationary agricultural information network may be established to support this approach.

The network provides farmers with technical and marketing information to encourage them to produce non-traditional crops, and teaches them to use the Internet and search for the information pertaining to their concerns. Moreover, the network allows the farmers to emit information to attract other farmers for possible cooperation and exchange information among themselves to learn from one another.

(3) Agro-business center establishment

The successful development of the AIC depends on promotion of local products, particularly new ones, and enhancement of industrial linkages between enterprises in the Eastern Region. To facilitate these, an agro-business center should be established with exhibition facilities for local products and database of producers and related enterprises. Development of technical linkages with local institutions is another important function of the center. The center will develop links with foreign organizations and companies as well.

The center will provide the following services:

1) provision of market information and market promotion of local products,
2) introduction of related local enterprises and foreign partners,
3) facilitating information exchange and business transactions among local industries, and
4) provision of business services such as interpretation, translation, use of the Internet, etc.

(4) Organic fertilizer R&D and production

The project will establish small-scale organic fertilizer plants of various types, and support R&D for development of appropriate organic fertilizer for various crops. They may include composting plants, biogas digesters and fishmeal plants. Technical institutions may be accredited by the Government to undertake a basic study to examine existing technologies and select those that are more appropriate in the Eastern Region. Private enterprises and NGOs are invited to submit proposals to establish pilot or small-scale plants. The technical institutions evaluate the proposals, and provide technical assistance to successful applicants for the implementation.

(5) San Miguel sugar mill power generation

As part of the complete cycle processing for sugar-related products included in the AIC, byproducts of sugar manufacturing may be used to produce power not only to be used at the sugar mill but also to be sold to the grid. The Chaparrastique sugar mill currently has two units for a total of 3.5MW generating capacity. This may be increased to 8MW, also replacing one unit. The new addition of 6MW would cost about US$4.8 million.

(6) Fishery support program

Fishermen of small-scale operation need to be mainstreamed in the development drive in the Eastern Region. Their livelihood activities should be developed into economically viable ones to increase their income levels. This would also contribute to the diversification of the regional economy and the development of linkages with other economic activities of the AIC. The program will support more promising fishery-related activities identified in the Eastern Region. They include aquaculture in the Jiquilisco and the La Union bay areas, integrated farming combining fishery and other agricultural activities, some small-scale marine fishery activities, and value-added fish processing.

6.2 Watershed Development and Management

This broad program consists of the following program and projects:

2.1 Río Grande de San Miguel water resources development and management,
2.2 Small and micro irrigation,
2.3 High elevation coffee expansion and improvement program,
2.4 Lower Lempa re-regulating dam and irrigation, and
2.5 Urban and rural water supply improvement.

(1) Río Grande de San Miguel water resources development and management

This is a complex project consisting of the following component projects (Figure 7):

- El Guayabal multipurpose dam,
- San Miguel irrigation (9,000ha)
- Río Grande midstream river improvement,
- Olomega diversion,
- Jocotal irrigation (3,000ha), and
- flood plain management.

<u>El Guayabal multipurpose dam</u>

There are more than a few potential dam sites examined along the Río Grande de San Miguel by previous studies. Most recently, another JICA study examined a dam at San Esteban on the main stream but dropped this option from the perspective of flood control. Another dam at El Guayabal on a main tributary would create comparable storage volume as the San Esteban dam with much smaller embankment volume. Although the catchment area at El Guayabal is much smaller with 443km^2 than at San Esteban with 825km^2 and so is the flood peak reduction capacity, it would allow to contain flood water more cost effectively than the San Esteban dam. The water stored in the reservoir may be used to irrigate the large irrigation area along the middle reach of the Río Grande. It may be used also as a source of water for supply to San Miguel city. Small hydropower plant may be installed as well.

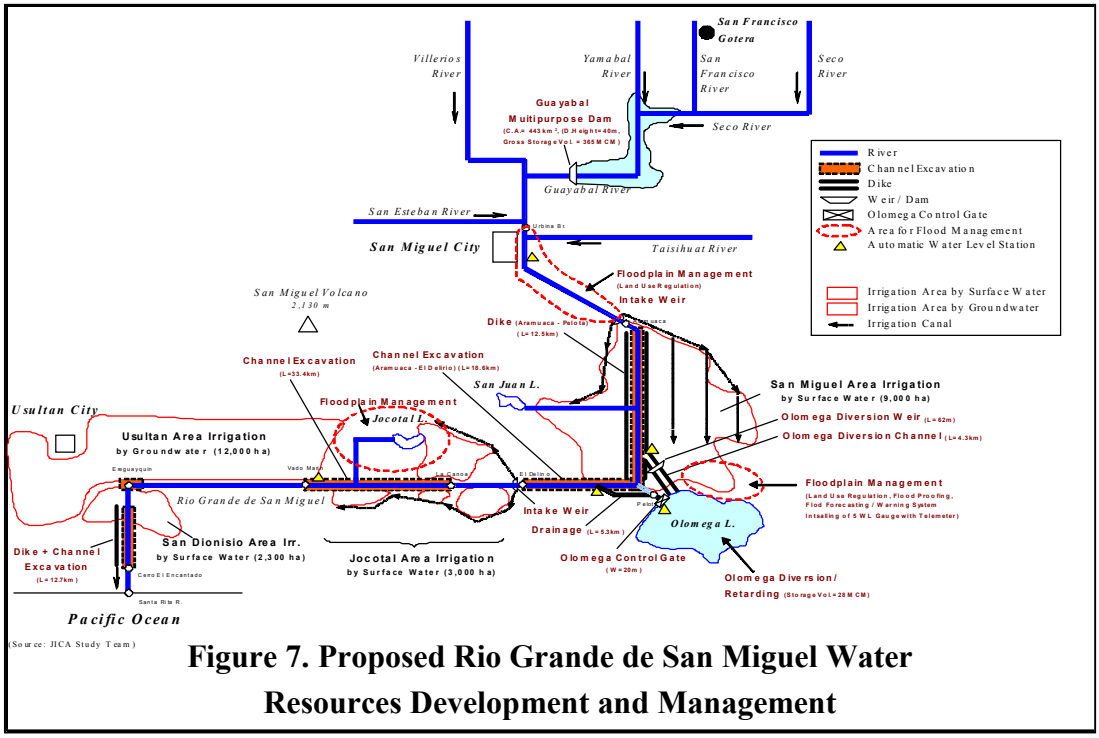


Figure 7. Proposed Rio Grande de San Miguel Water Resources Development and Management

The most serious problems associated with any dam project are related to its impact on the natural and social environment. The El Guayabal dam, 42m in height, will involve relocation and resettlement of some 350 households in the reservoir area as estimated. A comprehensive environmental impact assessment should be conducted in the next stage. Also, alternatives should be examined by the participatory approach to build consensus among stakeholders, including local people and NGOs.

San Miguel irrigation

The previous studies identified potential irrigation areas of 9,000ha along the middle reaches of the Río Grande, and a total of 29,000ha extending from the Olomega valley to the downstream Río Grande in Usulutan. The San Miguel irrigation area with 9,000ha can be protected from medium floods of over 10 years return period by the El Guayabal dam in combination with the dikes and channel excavation along middle reaches of the Río Grande. This area, in turn, can be irrigated by the water to be released from the El Guayabal dam. More promising cropping patterns under irrigation have been worked out at this time in view of new market opportunities. Under such cropping patterns, the El Guayabal dam with the San Miguel irrigation is assessed at a preliminary level to yield an economic internal rate of return of 26.6% with estimated annual irrigation benefit of US$103.6 million.

Río Grande midstream river improvement

The 1997 JICA study recommended as a priority project a combination of dikes and channel excavation along the middle and the downstream reaches of the Río Grande and diversion of

flood water into the Olomega lagoon, which would serve as a retarding basin to provide protection against floods of 10 year return period. The combination of the proposed dikes and channel excavation along the middle reach and the El Guayabal dam is expected to provide much more effective flood protection.

Olomega diversion

A portion of the floodwater is to be diverted to the Olomega lagoon through a diversion weir and 4.3km-long channel. The Olomega lagoon is expected to serve as a retarding basin with storage volume of some 25 million m^3. A control gate will be installed at the outlet to regulate the water level in the lagoon at 200m. The water stored in the lagoon is to be used for irrigation in Jocotal and other areas downstream.

Jocotal irrigation

Channel excavation is provided for 33.4km along the Jocotal irrigation area extending in 3,000ha. The area can be irrigated by surface water of Río Grande to be supplied partly from the Olomega lagoon. Under the new cropping patterns, the Jocotal irrigation is assessed at a preliminary level to yield an estimate of annual irrigation benefit at US$38.0 million.

Flood plain management

While a reasonable level of flood protection is provided by the measures outlined above for most areas, flood plain management is equally important to support the livelihood adapted to flooding. Proper land use should be promoted in flood-prone areas. Guidance should be provided for construction of houses with elevated floors and provision of flood shelters on high grounds to protect property including cattle. These measures should be combined with an early flood warning system to reduce damages by habitual floods. Recent efforts by SNET to establish the early flood warning system in the Río Grande basin, supported by USAID, should be strengthened.

(2) Small and micro irrigation

Small-scale irrigation by small reservoirs and ponds would contribute not only to increasing agricultural productivity but also to enhancing water retention capacity and soil conservation. Some of them may be interconnected horizontally through contour canals and vertically in cascades to enhance overall water use and soil conservation efficiency. Such an interconnected system is called a tank system in southern India and Sri Lank, which has been successfully utilized for many centuries. Planning for an elaborate tank system may be conducted particularly for upper and middle catchment areas of river basins. At the same time, priority schemes of small-scale irrigation should be implemented to realize irrigation benefits earlier to convince more farmers to undertake irrigated agriculture particularly for new crops.

Small-scale irrigation schemes consist of the following four types, depending on the source of

irrigation water:

1) surface water irrigation in southern part of San Miguel, Usulutan and La Union,
2) small reservoir irrigation in upstream and midstream areas of small tributaries in the northern La Union, Morazan, and middle part of San Miguel,
3) spring water irrigation at the foot hills of the San Miguel volcano, and
4) groundwater irrigation in the northern La Union, Morazan, and Usulutan.

Micro irrigation may combine a simple weir possibly made of gabions or sand bags, PVC channels to convey water, small ponds (tanks) waterproofed with rubber sheets, and drip irrigation (Figure 8). The same channel may feed a few or more ponds. The cropping pattern is assumed to be a combination of maize during the rainy season and vegetables during the dry season. For a hypothetical case of a small river with the catchment area of 1.0km^2 as a water source, the unit construction cost of the micro irrigation scheme and the internal rate of return (IRR) are calculated for different areas as follows.

Location	Storage volume (m^3)	Pond surface area (ha)	Unit construction cost (US$/ha)	Internal rate of return (%)
La Union north	1,242	0.05	31,000	15.2
central	3,434	0.14	45,000	8.9
south	3,126	0.13	43,000	9.5
Morazan south	3,404	0.14	44,000	9.1
San Miguel south	2,049	0.08	36,000	12.5

If the catchment area is larger than 1.5km^2, IRR becomes higher than 11% at all the locations. Thus, this micro irrigation scheme is assessed to be reasonably feasible at a preliminary level.

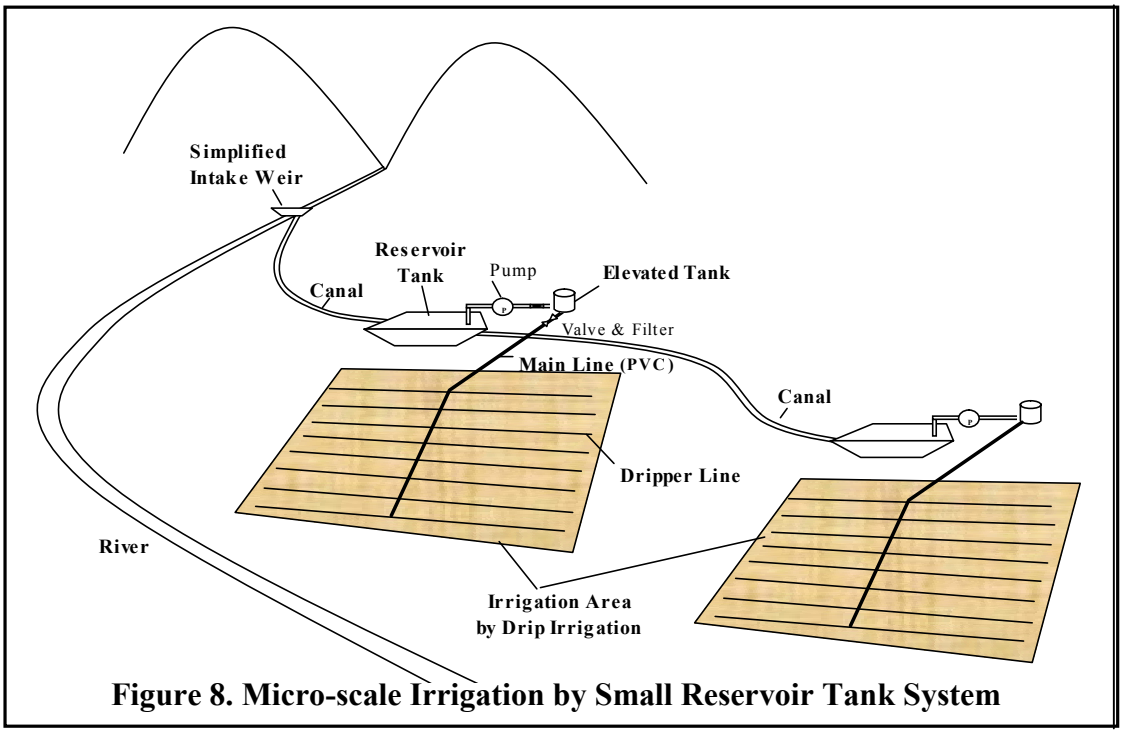


Figure 8. Micro-scale Irrigation by Small Reservoir Tank System

(3) High elevation coffee expansion and improvement program

This program consists of the following components:

1) expansion of high elevation coffee with shade trees as part of reforestation program,
2) promotion of organic coffee,
3) establishment of small processing facilities to produce high quality coffee by organized coffee growers, and
4) development of original coffee brands.

High quality organic coffee should be processed locally and marketed as final products mainly for export. Organized coffee farmers should establish improved processing facilities for operation under technical guidance. Original coffee brands should be developed to market high quality organic coffee in the Eastern Region under the common strategy.

(4) Lower Lempa re-regulating dam and irrigation

The existing The September 15 Dam is used almost exclusively for hydropower generation. The water released for power generation varies widely especially during the dry season when the power plant operates only for load increments. As water situations become tight with increasing water demand for irrigation and urban water supply, El Salvador would not be able to afford single purpose operation for hydropower for any existing and future dams. In the case of the September 15 dam, a flow re-regulating dam may be constructed downstream at San Marcos Lempa. This dam can be planned for multiple purposes including irrigation (23,000ha), additional hydropower, fisheries and tourism.

(5) Urban and rural water supply improvement

Six cities have been selected for improving urban water supply systems expanding their coverage to neighboring communities as well: San Miguel, Usulutan, La Union, San Francisco Gotera, Santiago de María, and Santa Rosa de Lima. Of these, priority may be given to San Miguel, La Union and San Francisco Gotera. The first two cities already face water shortages, and the third city has the lowest population coverage for water supply by ANDA of the six cities.

Rural water supply and sanitation will be improved consistently as important part of basic human needs. Of the total population in the Eastern Region, about 60% or 769,000 are rural as of 2000. The rural population not covered by water supply system is about 538,000. As the population increases and the urbanization proceeds, the rural population will decrease slightly to 714,000 by 2019. To attain complete coverage of the rural population by water supply system by 2019, additional 483,000 rural people need to be covered by the program.

6.3 Environment and Tourism Development

This broad program consists of the following components programs:

3.1 Cooperative tourism promotion program,
3.2 Fonseca gulf joint environment and tourism development program,
3.3 Environmental awareness program, and
3.4 Solid wastes management program.

(1) Cooperative tourism promotion program

This program extends the ongoing promotion activities by local tourism groups coordinated by CND with the following components:

- Tourism circuits formation,
- Tourism products development,
- Local tour operators training, and
- Strategic alliance promotion.

In addition, a tourism core should be established in the La Union-Conchagua area.

Tourism circuit formation

To market the Eastern Region tourism widely, several tourism itineraries should be prepared aiming at different market segments. To attract cruise passengers, short tour itineraries should be prepared for a half to one day in and around the La Union-Conchagua area with artificial attractions and environmental amenity. La Union and Fonseca gulf based tour itineraries may be developed jointly with tour operators in Honduras and Nicaragua. Tourism objects in the northern area may be packaged mainly for domestic tourists interested in history and socio-cultural inheritances. Itineraries for sports and adventure tourism may be prepared for younger generations in El Salvador and the U.S., combining opportunities for land and air based adventures to be created with surfing, windsurfing, diving and other water sports.

Tourism products development

The Eastern Region tourism should develop its brand for environment-friendly and health-oriented tourism. Recipes for healthy dishes should be developed using local organic products through a contest to be organized by CND/CONSATUR. Unique handicrafts and specialty products should be developed combining local materials and supplemental materials to be imported, such as clothing dyed with indigo and other dye materials and jewelry. Experience-oriented tours should be developed in association with indigenous industries, such as those through which to experience dye works.

Local tour operators training

The number of tour conductors increased from mere five during the civil war to over 100 at present. Most of them, however, do not speak English. The number of English-speaking tour conductors and operators need to be much increased. The proposed La Union technological institute would contribute to generating quality managers and operators for

tourism. Training by INSAFORP and other organizations should expand to train tour guides and other service personnel at hotels and restaurants.

Strategic alliance promotion

A strategic alliance should be sought with San Salvador-based tour conductors to promote the Eastern Region brand of tourism and to accommodate tourists right at the beginning. Proactive promotion campaigns should be conducted when the La Union port is commissioned both in the Eastern Region and in San Salvador as the first step to form a strategic alliance.

(2) Fonseca gulf joint environment and tourism development program

This program seeks tourism development and environmental management in the Fonseca gulf in a complementary manner. The cruise industry and other related tourism development as well as fishery in the Fonseca gulf area would provide employment and livelihood opportunities for many local residents. These opportunities would make the local residents more conscious about the environmental quality of the Fonseca gulf and coastal areas.

The PROGOLFO initiative for environmental management of the Fonseca gulf should be extended, and the monitoring system for the gulf and coastal areas strengthened with more substantive participation of coastal municipalities and people. As the first step, a management plan for the Fonseca gulf and coastal areas should be prepared by the participation of the local people through their municipalities coordinated by CND. Opportunities for tourism and other livelihood activities should be reflected in the management plan through CND's guidance. Improvement of the monitoring system would be an important part of the plan. The plan on the Salvadoran side should be presented as a model to induce the same activities on the Honduran and the Nicaraguan sides. Opportunities for joint tourism development should also be clarified.

(3) Environmental awareness program

This program aims to enhance the awareness of people particularly about proper solid wastes disposal and rural sanitation by the use of LASF (letrina abonera seca familiar or dry fertilizer family latrine). The integrated solid waste management plan for the municipal associations of Fonseca gulf should be implemented as the model with a component of environmental awareness campaign. Solid waste collection with separation of organic wastes should be experimented with guidance, and the most effective practice established. Guidance for composting should be also provided. An NGO or other organizations having experience in environmental education would facilitate the process through various meetings and workshops and preparation of education materials. Field visits to landfill sites and participation in city/coast cleanup activities would also help raise the awareness.

(4) Solid wastes management program

The integrated solid waste management plan currently prepared for the municipal associations of Fonseca gulf should be implemented in its entirety with waste reduction measures and sanitary landfill as the model for any solid waste management in the Eastern Region in the future. Collection, transport and final disposal at a sanitary landfill of wastes may be entrusted to private companies through bidding. At the same time, local communities should monitor these practices.

To promote recycling of solid wastes as part of waste reduction measures, San Salvador-based recycling companies should be invited to establish operations in the Eastern Region. Municipalities and local chambers should support them to facilitate collection to make initial operations financially viable. It may help to give the operators franchises to ensure their long-term commitment and sustainable operations with increasingly more lucrative waste materials.

6.4 Spatial Structure Strengthening

This broad program consists of the following program and projects:

4.1 Logistics circuits strengthening,
4.2 Logistics facilities location planning and guidance,
4.3 El Amatillo border facilities improvement,
4.4 Northern longitudinal artery establishment, and
4.5 Rural road program.

(1) Logistic circuits strengthening

Logistic circuits of the Eastern Region have been defined linking San Miguel, La Union, Usulutan and a few other secondary towns. Practically all the areas in the Eastern Region will be within easy reach from/to the logistic circuits once some access roads are improved. Even remotest areas, therefore, can be integrated into the main economy of the Region centering around San Miguel and La Union. This project will strengthen physical links between cities in the logistic circuits through the following component projects (Figure 9):

- construction of bypass roads (La Union, Usulutan and San Miguel),
- San Alejo-El Divisadero radial road construction, and
- CA1-CA2 link road construction (to reduce the travel distance from CA2 to La Union by 20km).

(2) Logistic facilities location planning and guidance

The idea of logistic circuits is to locate various logistic facilities at nodal points within the circuits. They include regional markets, processing facilities, and other trade and distribution facilities (Figure 10). Inland container depots, truck yards and industrial/commercial estates

may also be included. Since even the remote areas in the Region are expected to be within easy access to the logistic circuits, it would make sense to establish marketing and processing facilities there to handle supply from production areas. Conversely, consumer goods imported through the La Union port will be traded in the logistic circuits for distribution throughout the Region.

Figure 9. Logistic Circuits Strengthening

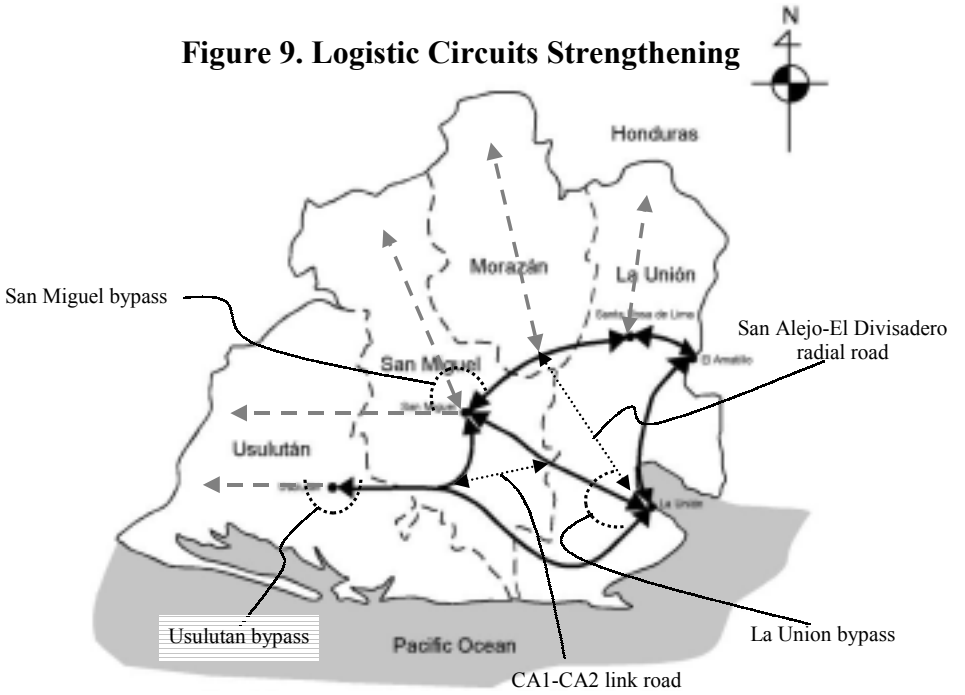
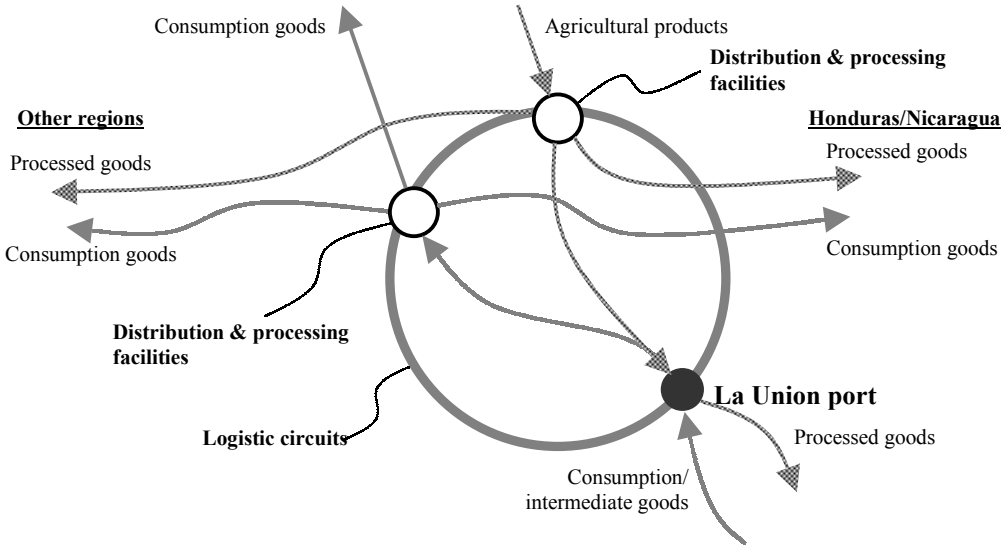


Figure 10. Commodity Flows with Logistic Circuits



(3) El Amatillo border facilities improvement

The existent border facilities at El Amatillo are inadequate, e.g., the narrow access road, the old bridge with limited capacity, and the lack of sufficient truck yard. Combined with the

complexity of customs procedure, large losses are incurred to traffic crossing the border due to long waiting time.

The existing bridge constructed in 1932 for traffic of the HS-15 cargo type needs to be replaced by a new one to accommodate high level of heavy traffic of the HS20-44 cargo type. The new bridge should be constructed some 3km downstream from the existing one, where an improved alignment of the access road would be allowed as well as much larger truck yards on both sides of the crossing. Customs facilities should be re-established with high-grade telecommunications and other utilities to expedite customs procedure.

(4) Northern longitudinal artery establishment

The proposed northern longitudinal road crosses the Lempa river into the Eastern Region at Nuevo Edén de San Juán, passes through San Luis de la Reina, San Simón and Osicala, to reach the primary road CA7. The exact alignments are still to be worked out as the road goes through mountainous areas. A stage-wise development of the road should start from CA7 with the view to expanding the catchment area for the La Union port.

The road may be extended from Osicala, through Corinto and Nueva Esparta, to Concepción de Oriente on the border with Honduras. With a bridge crossing the Goascorán river, this road may link to the El Amatillo-Comayagua road. This road would not only serve the least accessible northern part of La Union and Morazan, but also facilitate transportation of agricultural products from the least developed southern part of Honduras. As it passes through mountainous areas, disaster prevention measures should be incorporated in the alignment selection and the construction.

(5) Rural road program

At present, maintenance and improvement of municipal roads are undertaken by mobilizing voluntary works of local communities. These efforts need to be expanded with supports to improve rural access roads so that even the remotest areas in the Eastern Region would be integrated into the main economy of the logistic circuits.

The program will provide (1) simple machinery and tools for road works, (2) training of community leaders for people organizing, and (3) technical guidance and training for stabilization, repair and maintenance, drainage improvement, and surfacing of rural roads. Further improvement of selected roads will be subject to the performance of the self-help efforts by local communities.

6.5 La Union Port Revitalization

This broad program comprises the following programs and projects:

5.1 Free port and economic zone (FPEZ) establishment program,

5.2 La Union port city development program,

5.3 Conchagua geothermal prospecting, and
5.4 La Union power transmission.

The macrozoning for land use in the La Union-Conchagua area is shown in Figure 11.

(1) FPEZ establishment program

This program has the following components:
- free trade zone (FTZ) and open factory areas,
- core facilities for logistic functions,
- conservation of upper catchment areas,
- amenity facilities such as indigo museum, waterfront development, picnic areas, etc., and
- institutional and organizational development.

(2) La Union port city development

This program has the following components:
- infrastructure and utilities including `bypasses, water supply, sewerage and drainage, solid waste management, power supply, telecommunications and urban roads,
- residential development,
- social and cultural facilities such as hospital, schools, technological institute, sporting facilities, urban parks, etc.,
- municipal market and slaughterhouse, and
- development of a new central business district (CBD).

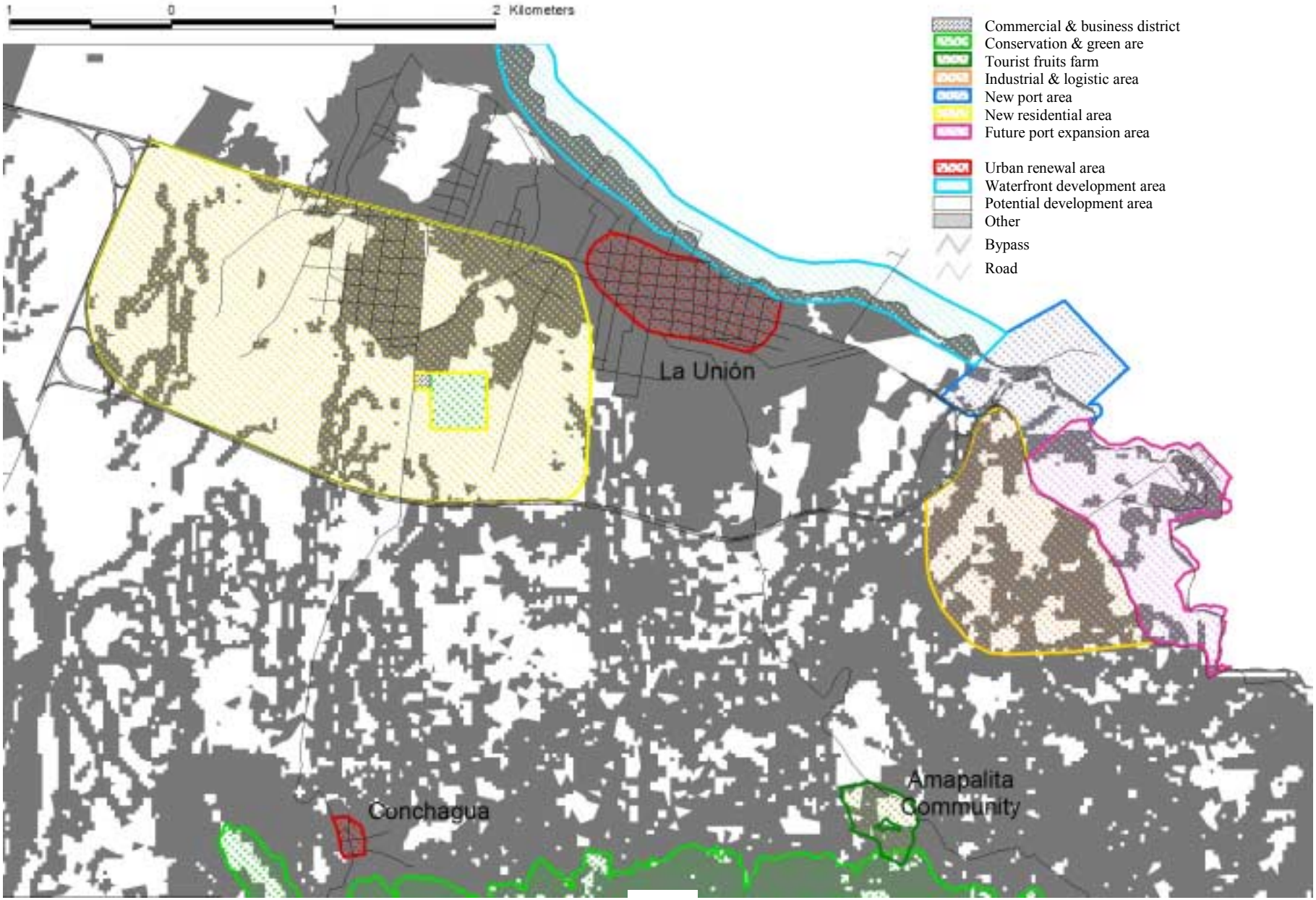
(3) Conchagua geothermal prospecting

While geothermal generation already plays an important role in El Salvador's power sector, no systematic exploration has been made for geothermal resources. GESAL is preparing to study several promising sites in addition to continued development of the areas already developed. The Conchagua site should be prioritized for prospecting in view of its proximity to the La Union port. Clean and renewable local energy at possibly 10MW would contribute to stable and reliable power supply in the La Union-Conchagua area. An environment-friendly model of the Berlin geothermal plant should be replicated, and a geothermal-environment tourism park established as an additional attraction for foreign and domestic tourists, and investors as well as local residents.

(4) La Union power transmission

As the La Union port is expected to be operational in the mid-2007, a bid needs to be called to supply power to the port area. The transmission line of 60km at 380kV and a substation would be required. Since the port would be a huge consumer, the port authority has leverage to tender for the lowest cost energy possible for the benefit of local consumers.

Figure 11. Macrozoning for La Union-Conchagua Area



6.6 Entrepreneurial Base Development

This broad program consists of the following projects and programs:

6.1 Secondary and higher education strengthening program,
6.2 SMEs support program,
6.3 ICT human resources development program, and
6.4 Agro-industrial technology center.

(1) Secondary and higher education strengthening program

This program comprises the following components:

- secondary and higher education scholarship in the Eastern Region,
- establishment of a technological institute,
- expansion of APREMAT, and
- Eastern Region research center.

Eastern Region secondary and higher education scholarship

To increase the enrollment rate for secondary schools significantly and also to subsidize high cost of attendance at tertiary education, a scholarship fund should be established by MINED. Operation of the fund may be entrusted to a third party having experiences in fund raising and management for efficiency. At the same time, a fundraising unit should be established in the U.S. as an NGO. Fundraising activities are to be conducted both in the U.S. and El Salvador. Main sources of fund would be membership fees, government grants and subsidies, and donations from individuals and enterprises.

Technological institute establishment

The project consists of the following components:

- construction of a new technological institute in La Union,
- provision of necessary equipment,
- training of professors,
- curriculum development, and
- development of vocational training courses.

APREMAT expansion

The ongoing APREMAT represents a successful model for improving secondary education in technical fields, focusing on curriculum development, instructor training, and installation of facilities and equipment. Its expansion should cover comparatively more schools in the Eastern Region to broaden human resources base in these fields for new economic activities.

Eastern Region research center

Five research institutes in the Eastern Region have agreed to establish a regional research

system with assistance of CND. They will share facilities and resources and coordinate research activities. To support their activities, an initial database with GIS should be established, transferring the one created by the JICA Study. The database will be expanded in steps comprising additional socioeconomic data generated by surveys to be conducted by the institutes of the regional research system. Useful data for potential and prospective investors will be compiled, including business information for training opportunities, potential markets and partners, and available technologies and resources.

The database will be easily accessible with a network linking research institutes, business communities, and support agencies. The network will allow the users exchange information freely and easily. This will strengthen research-business linkages to allow and facilitate technological innovation to support the Eastern Region development.

(2) SMEs support program

This program comprises the following components:

- Eastern Region skill development fund establishment,
- incubation centers,
- introduction of modern corporate management,
- training for micro entrepreneurs, and
- establishment of business associations.

Eastern Region skill development fund establishment

A skill development fund should be established to significantly increase the number of vocational training courses and improve their quality. The fund is established by subsidies from the central and local governments, employees' contributions from their payrolls, and contributions by international donors. Training vouchers are issued by INSAFORP, and used by trainees to cover part of course fees. Training institutes return the vouchers to INSAFORP for payment. INSAFORP establishes eligibility requirements, and monitor quality and compliance.

Incubation centers

Incubation centers should be established, capitalizing on the existing Infocentros to be selected by their headquarters. Each center offers office spaces, meeting rooms, computers with Internet access, telephones and facsimiles, copy machines, other office equipment and furniture, and secretarial services. The headquarters recruit advisors necessary for enterprise establishment specialized in law, accounting, corporate management, business planning, training, etc. They also maintain a database of financial sources, governmental and other support available, training opportunities, etc. Each Infocentro incubator invites entrepreneurs to become its tenants. If there are too many applicants, priority will be given to those submitting more creative and marketable business proposals. Office spaces will be leased at

low rents for one year, after which entrepreneurs are expected to leave to establish their own office elsewhere. The headquarters should conduct an entrepreneur contest once a year for tenants and reward the most successful one. Winners may receive reward such as access to "Fondo de Asistencia Técnica".

Modern corporate management introduction

This program supports small and medium enterprises to modernize corporate management. A technological institute or an international NGO would provide corporate diagnosis, and provide entrepreneur training and skill training based on the diagnosis. The process of diagnosis itself provides training for managers and workers. Continual guidance and consultancy would help to strengthen the competitiveness of their products.

Micro entrepreneur training

This program establishes services to provide business information through the Internet as a first step of business training for micro entrepreneurs. An existent foundation or NGO would become the executing agency supported by the Government, donors and the private sector including IT companies. Computers and associated facilities and services are provided to municipal offices, at which micro entrepreneurs have access to business information.

Business associations establishment

This program supports the establishment of new businesses through business associations by facilitating the acquisition of their facilities and factories by their members. A leasing company would procure loans to construct factories and provide production equipment and facilities for SMEs, based on consultation with the corporate associations. This would consolidate the operation of the corporate associations on the one hand, and ensure stable clientele for the leasing company on the other. Each SME rents a factory together with production equipment and facilities, and thus new businesses are more easily established by reduced initial investment costs.

(3) ICT human resources development program

The program aims to improve skills of ICT-related personnel at all the levels with the following four components:

- ICT policy makers strengthening,
- ICT engineers and technicians strengthening,
- ICT end-users training, and
- Model e-community center.

ICT policy makers strengthening

This project aims to train government officers in charge of ICT policy making both at the national and at the municipal levels. Foreign experts may be dispatched for technology

transfer in the following:

- ICT-related laws and policies,
- planning, documentation and implementation of policies for socio-economic activities using ICT,
- dissemination of successful and unsuccessful cases of ICT promotion policies,
- dissemination of market needs for ICT in developed countries, and
- consideration of rural areas and the socially disadvantaged to avoid the digital divide.

ICT engineers and technicians strengthening

This project aims to develop engineers and technicians in the ICT sector. As ICT skills go out of date quickly, it is essential to establish a system to train ICT teachers periodically. During the project implementation, a committee comprising MINED, foreign experts, ITCA staff in San Miguel and the private sector would develop curricula and methods of ICT teachers training to ensure continued training even after the project.

Foreign ICT experts are dispatched to ITCA San Miguel together with necessary equipment to train ITCA staff, who, in turn, provide training to ICT teachers at universities, technological institutes, high schools and vocational training institutes throughout the Country. Short-term vocational training courses are also offered to the unemployed and enterprise workers.

ICT end-users training

This project aims to train ICT end-users by using the Eastern Region skill development fund or through conventional INSAFORP training.

Model e-community center

This project is designed to expand the e-culture and e-services throughout local communities, starting with an existing Infocentro. Following the two Infocentro-based projects, various services are to be provided for the public under the concept of e-government.

(4) Agro-industrial technology center

An agro-industrial technology center (AITC) should be established based on the existing technological institute in the Eastern Region. Objectives are to (1) create industrial environment conducive to developing new industries, (2) support technological capability for development of new products by local industries, and (3) promote introduction of advanced technology for existing industries.

7. Institutional and Financial Measures

(1) Institutional arrangements for the Eastern Region development with La Union port

Conditions for the Eastern Region development with the La Union port

Continued priority policy and commitment by the Government for the Eastern Region would be an essential condition for the Eastern Region development in order to fill in the existing infrastructure gaps as well as to maintain peace and order. The establishment of the La Union port symbolizes such priority but effective utilization of the port for the Eastern Region development needs to be ensured. Initially, complementary projects and programs to be proposed by the ongoing CND/JICA Study would be implemented for the most part by relevant government agencies within the framework of the existing development administration.

In parallel with this, the capacities of local governments would continue to be enhanced for development planning, implementation and management. This can be accomplished most effectively through planning and implementation of the increasing number of projects in various sectors with the local initiative. This would call for the mobilization of more local resources in the public and the private sectors, including overseas Salvadorans and their remittance. Projects to be implemented by government agencies, local governments and the private sector need to be coordinated to ensure effective realization of the Eastern Region development objectives.

In view of the above, the following conditions need to be satisfied by institutional arrangements for the long-term development of the Eastern Region.

1) Stronger planning and coordinating functions at both local and regional levels;
2) New funding mechanism to increase regional fund mobilization in a significant way;
3) Enhanced and institutionalized participation by the local people in the development; and
4) Active participation by the private sector in the development not only for a wide range of development activities but also for development management.

Options for institutional arrangements

Several options are conceived for institutional arrangements for the Eastern Region development with the La Union port to achieve the conditions specified above. Four distinct alternatives are summarized in Table 7 with the advantages and disadvantages of each.

The existing ministerial task force is a variant of the option 4, with stronger authority but without a project management office and funding from participating agencies and local governments. The option 1, the regional development authority, may become a viable option as more substantive decentralization is realized after completion of the ongoing administrative restructuring. Different options may be combined for effective management of the Eastern Region development and the development of La Union port and its hinterland.

Table 7. Alternative Institutional Arrangements for the Eastern Region Development

Option	Basic features	Advantages	Disadvantages
1. Regional Development Authority	- Created by congress through legislation - Independent or attached agency with minimal supervision - Mandates, power and functions defined as created	- Very stable organizational structure - Full authority to ensure coordinated developments	- Need for tedious and meticulous process to establish - Danger of being politicized
2. Development Corporation	- Created under relevant corporation laws - Require initial Government capitalization - Capitalization by local governments and the private sector as well	- Relatively easy to establish - Less likely to be politicized - Management flexibility due to corporate nature	- Difficulty in sourcing private sector funds due to lack of track records - Difficulty in coordinating public projects of line agencies
3. Project office	- Office created by executive order of the President - Funding from the Government with direct supervision by the lead agency - Commission or board for policy making and development project office for implementation	- Assurance of funding - More stable than council/commission - Powerful enough if placed under the Office of the President	- Difficulty in ensuring balanced development due to biased supervision by the agency to which it is attached - Needs an executing arm if placed under the Office of the President
4. Council or commission	- Project-oriented organization with a project management office - Funding from participating agencies and local governments - Mainly for coordination, monitoring and project/investment promotion	Easier and faster to establish	- Unstable for its existence likely to be threatened by leadership turnover by elections - Difficulty in securing funds for operation and maintenance

Source: JICA Study Team.

Recommended immediate actions

The establishment of the Eastern Region Development Authority may be a long-term option to be further examined. With or without such an authority, a separate entity for development management would be required for the La Union port and its hinterland, and a development corporation by public-private partnership may be an option to be pursued. While the establishment of such a development corporation may involve political issues that may not be easily resolved, immediate actions need to be taken to ensure timely implementation of priority projects within a few years time, ensuring also subsequent developments in a coordinated manner.

The existing ministerial task force may have strong enough authority but it does not extend to future development areas. Municipalities have authority in principle to regulate land use in their respective jurisdictions through approvals according to their land use plans. To extend effective land use control over a larger area including future development areas of the La Union port and its hinterland and also conservation areas to ensure comfortable living environment for residents and visitors, two conditions need to be met in the nearest future. First, a formal land

use plan needs to be prepared for an area large enough for the purposes. Second, the land use control function of the La Union and the Conchagua municipalities should be made effective. A possible way to pursue the latter is to allow the mayors of the two municipalities to represent in the ministerial task force for its authority. Another more subtle way is to cultivate public acceptance from the local people and governments for the planned development of the La Union port and its hinterland so that they can check undesirable developments in their territories and neighborhoods.

In sum, the immediate actions recommended are:

1) Representation of the mayors of the La Union and the Conchagua municipalities, or CND on their behalf, in the ministerial task force,
2) Preparation and formal adoption of a land use plan for the La Union port and its hinterland, and
3) Establishment of a local management unit (LMU) based on the existing management groups for cultivation of public acceptance and coordination of development activities at the local level.

In parallel with these, the ministerial task force may initiate discussions with related agencies on more permanent institutional arrangements for the La Union port and its hinterland and also the Eastern Region development, including the Eastern Region Development Authority and the Development Corporation for the La Union port and its hinterland.

(2) Funding for the Eastern Region development

Possible funding sources

Regional development is realized by public and private investments in economic activities, support infrastructure, and human capital as well as resources and environmental capacity. The sources of investment funds for the Eastern Region development are the Government and municipalities, private individuals and enterprises, and external contributions including international donors and NGOs, and overseas Salvadorans. While continued commitment and support by the Government is expected as mentioned in the previous section, significant increase in Government contributions is not likely in view of the needs to maintain macroeconomic stability, an important factor to attract foreign direct investments. Thus, increased funding from other sources should be sought.

New funding schemes should be introduced to increase regional fund mobilization in a significantly way. Funds so secured would be directed to economic activities, support infrastructure and human capital. For human capital, two new schemes have been proposed: the Eastern Region secondary and higher education scholarship fund with the establishment of a fundraising unit in the U.S. as an NGO, and the Eastern Region skill development fund based on employees' contributions from their payrolls as well as government and other donors. New

schemes for the other two aspects are proposed for further examination.

Credit guarantee fund

Small enterprises face difficulty in gaining access to credit from formal financial institutions due to collateral requirements. Financial institutions tend to avoid the high risk and low profitability associated with small lending for administration costs partly caused by poor managerial capability of small enterprises. While the managerial capability of small enterprises should be improved, other risks need to be minimized.

A credit guarantee fund should be established by the Government to support a portion of the total credit granted. Such a fund has been created in Taiwan to support credits to overseas Taiwanese. The guarantee fund is managed by a prestigious bank in the U.S. providing good and transparent management.

The guarantee fund in El Salvador should be used to give incentives for overseas Salvadorans and their remittance recipient families to use the remittance for investment in economic activities. Remittances themselves would work as guarantee for the remaining portion of the credit. As long as investments are made in lucrative economic activities, the fund can be made self-revolving without continuous contribution by the Government.

Organizing remittance recipient families

At present, the monthly remittance received per family is relatively small. The average monthly remittance in the Eastern Region was US$126 per family. Also, decisions on the use of remittances are made individually.

To support the credit program, community development should be promoted and remittance recipient families organized by municipality, business community or any other group. These organizations would allow the use of the credit guarantee fund in a more sustainable way, offering joint guarantee as well as much larger remittance pooled among the respective organizations.

Investment promotion centers

While many overseas Salvadorans obtain information on the needs of their home communities in El Salvador through personal channels and hometown associations, information on broad investment opportunities is usually not available for them. An investment promotion center should be established in each of the major cities in the U.S. with a concentration of Salvadorans to provide the following functions:

1) to generate information necessary to identify low risk and high profitability investment sectors and projects,
2) to conduct feasibility or pre-investment studies and then to disseminate their findings to the Salvadoran community in each city and also financial institutions,

3) to provide technical assistance and training necessary for small enterprises and entrepreneurs to improve their managerial capacity and also to formulate projects,
4) to establish contacts with financial institutions necessary for possible returnees to seek finance for new undertakings, and
5) to establish an ICT network of overseas Salvadoran communities linking investment promotion centers in different cities.

To establish the centers, different actors need to work together, including consulates and the embassies, hometown associations of overseas Salvadorans, Government institutions, business associations, and local financial institutions as well as local governments and people.

To work with these centers, a counterpart institute should be organized in the Eastern Region. It would disseminate information on investment opportunities in the Region and available funding and other support measures, promote export of nostalgic products, and organize other promotional activities. It should be tied up with the proposed Eastern Region research center.

Capitalization for the development corporation

It is recommended that a development corporation be established by public-private partnership to take charge of the proposed FPEZ. Local people and enterprises may be invited to subscribe to shares of the corporations. Although the corporation would develop into a most lucrative entity as it is in charge of the most rapidly developing area, its initial financial performance may be relatively low. To encourage participation from a wide range of people and enterprises, including contributions by overseas Salvadorans, the Government should ensure an adequate dividend on shares during the initial years of the corporation. The capital of the corporation would be used for investments in economic activities and infrastructure as well for high returns. Thus, relatively small Government contributions can be used to support infrastructure development as compared with the direct public investment in infrastructure.

(3) Indicative investment schedule

Within the framework of projected public investment allocation to the Eastern Region, an indicative investment schedule is prepared, including all the proposed projects and programs. Investment costs of all the proposed projects and programs are roughly estimated, and the investment schedule is constructed in line with the project prioritization.

Estimated investment costs include initial investments and some other development expenditures to be incurred in the implementation of some projects and programs. A limited number of proposed projects are to be implemented by the private sector but included in the investment schedule. Some other projects would have components to be undertaken by the private sector.

The indicative investment schedule is presented in Table 8. The total investment costs for all the proposed projects and programs are US$313.8 million in Phase 1 (up to 2009), US$437.2 million in Phase 2 (2010-14), and US$551.5 million in Phase 3 (2015-19). These estimates

Table 8. Indicative Investment Schedule for Eastern Region Development

(Unit: US$10^6)

No.	Project title	Status*	Implementing agencies	Investment Phase 1	Phase 2	Phase 3	Total
1.	Agro-Industrial Complex Development						
1.1	AIC support program						
	- Pilot projects	Ongoing	MAG-CENTA, CND	2.4	8.0		10.4
	- Dispatch of foreign experts	New	MAG/CND	1.2	1.2		2.4
1.2	One village-one product model	New	MAG, municipalities, NGOs	1.0	2.0		3.0
1.3	Agro-business center	New	MAG-Agronegocios	0.5			0.5
1.4	Organic fertilizer R&D & prod.	New	Research institute, NGOs, private	0.1	0.4		0.5
1.5	San Miguel sugar mill power generation	New	Private sector		1.2	3.6	4.8
1.6	Fishery support program	Extended	CENDEPESCA, private sector	0.9	1.3		2.2
			Subtotal	6.1	14.1	3.6	23.8
2.	Watershed Development & Management						
2.1	Rio Grande de San Miguel water resources devt. & mgt.						
	- El Guayabal multipurpose dam	New	CEL, inter-ministerial	28.8	37.0		65.8
	- San Miguel irrigation	New	MAG	10.0	60.0		70.0
	- Olomega diversion	New	MOP, MARN		10.0	12.0	22.0
	- Rio Grande midstream river imp.	New	MOP, MARN	40.0	40.0		80.0
	- Jocotal irrigation	New	MAG		13.0	14.0	27.0
	- Flood plain management	Ongoing	MARN-SNET, MAG, municipalities	6.0	10.0	11.0	27.0
2.2	Small & micro irrigation	Ongoing	MAG-CENTA, municipalities	5.5	7.0	10.0	22.5
2.3	High elevation coffee improvement	New	PROCAFE, MARN, Trade Point, CND	0.3			0.3
2.4	Lower Lempa re-regulating dam & irrigation	New	CEL, inter-ministerial			226.0	226.0
2.5	Urban & rural water supply						
	- Urban water supply	Ongoing	ANDA, municipalities	17.3	25.0	30.0	72.3
	- Rural water supply	Ongoing	ANDA, municipalities	5.4	13.0	14.0	32.4
			Subtotal	113.3	215.0	317.0	645.3
3.	Environment & Tourism Development						
3.1	Cooperative tourism devt. program						
	- Tourism circuits formation	Ongoing	CORSATUR, CND	0.3	0.5		0.8
	- Tourist attractions creation	New	CORSATUR	2.0	5.0		7.0
3.2	Fonseca gulf joint environment & tourism development						
	- Fonseca gulf participatory mgt. planning	Extended	Municipalities, MARN, CND	0.5	1.0	1.0	2.5
	- La Union tourism core devt.	New	CEPA, CND	1.0	3.0		4.0
3.3	Environmental awareness program	New	MARN, municipalities, NGOs, CND	0.3	0.2		0.5
3.4	Solid waster management program	New	MARN, municipalities	2.0	10.0	15.0	27.0
			Subtotal	6.1	19.7	16.0	41.8
4.	Spatial Structure Strengthening						
4.1	Logistics circuits strengthening						
	- Bypass roads construction	Extended	MOP	16.0	19.2		35.2
	- San Alejo-El Divisadero radial rd.	New	MOP		13.1	15.0	28.1
	- CA1-CA2 link road construction	New	MOP		10.3	5.0	15.3
4.2	Logistic facilities location planning & guidance	New	Municipalities, SNET, MOP	0.5			0.5
4.3	El Amatillo border facilities imp.	New	MOP, Customs	7.6			7.6
4.4	Northern longitudinal artery establishment						
	- Northern longitudinal road devt.	Ongoing	MOP	14.4	25.0	35.0	74.4
	- Alternative northern road establishment	New	MOP		30.0	72.0	102.0
4.5	Rural road program	Ongoing	MOP	7.0	15.0	15.0	37.0
			Subtotal	45.5	112.6	142.0	300.1

(Unit: US$10^6)

No.	Project title	Status*	Implementing agencies	Investment Phase 1	Phase 2	Phase 3	Total
5.	La Union Port Revitalization						
5.1	FPEZ establishment						
	- La Union free trade zone	New	CEPA, private sector, CND	38.9			38.9
	- La Union distribution core devt.	New	Private sector				
	- FPEZ institutional development	Extended	CND, inter-ministerial	2.5			2.5
5.2	La Union port city development						
	- Water supply & sewerage			14.7	10.0		24.7
	- Transport infrastructure			33.2	26.4	39.6	99.2
	- Social & other infrastructure			8.9	8.9	8.9	26.7
5.3	Geothermal prospecting	New	GESAL	0.2			0.2
5.4	La Union power transmission	Ongoing	Private sector/ETESAL, CEPA	13.6			13.6
			Subtotal	112.0	45.3	48.5	205.8
6.	Entrepreneurial Base Development						
6.1	Secondary & higher education strengthening program						
	- Eastern Region scholarship	New	MINED, NGOs	8.2	8.2	8.2	24.6
	- Technological institute establishment	Ongoing	MINED	2.5	3.5		6.0
	- APREMAT expansion	Extended	MINED	5.0	5.0		10.0
	- Eastern Region research center	New	Universities, CND	0.5	1.0	1.0	2.5
6.2	SMEs support program						
	- Eastern Region skill devt. fund	New	Min. of Labor, INSAFORP	7.4	7.4	7.4	22.2
	- Incubation centers	New	Infocentro	1.1	1.1	2.2	4.4
	- Modern corporate management	Extended	CONAMYPE	1.1	1.1	2.2	4.4
	- Micro entrepreneur training	New	Infocentro, municipalities, NGOs	0.3	0.2	0.4	0.9
	- Business associations establishment	New	INSAFOCOOP	0.7	1.0	1.0	2.7
6.3	ICT human resources development						
	- Policymakers strengthening	New	CONACYT	0.5			0.5
	- Engineers & technicians	New	MINED, ITCA	1.1	2.0	2.0	5.1
	- End-users training	New	INSAFORP	0.5			0.5
	- Model e-community center	New	Infocentro, ITCA	0.4			0.4
6.4	Industrial technology center	Extended	CONACYT	1.5			1.5
			Subtotal	30.8	30.5	24.4	85.7
			Total	313.8	437.2	551.5	1302.5
			Projected public fund allocation	461	578	755	1,794

*New: newly formulated by Master Plan; Ongoing: already partly implemented; Extended: extending ongoing effort

Source: JICA Study Team.

correspond to 68.1%, 75.6% and 73.0% of the projected public investment allocations in Phase 1, Phase 2 and Phase 3, respectively. The total estimated investment cost during the three phases is US$1,302.5 million, which corresponds to 73.0% of the projected total public investment allocation to the Eastern Region over the 15-year period.

Considering other regular development expenditures that would have to be covered by the allocated public investments, the investment fund availability is rather tight. However, comparatively more public investments should be allocated to the Eastern Region during Phase 1 in view of the expected contribution of the Eastern Region to the national development. This would induce more private investments in Phase 2 to ease the tight public fund during this phase.