3. POLICIES AND PROJECTS FOR NATIONAL AND REGIONAL ECONOMIC DEVELOPMENT

3.1 Economic Development Policies

3.1.1 Economic, Social and Financing Plan with Human Capital Investment

The *Plan de Desarrollo Economico, Social y Financiero con Inversión en Capital Humano (2001)* (Economic, Social and Financing Plan with Human Capital Investment - the Plan) updates the first version made public in March 2000. The objectives of the Plan are to address a variety of social and economic problems among which poverty and unemployment and therewith related low purchasing power. The Panamanian economy is confronted with export deficiency and reduced international competitiveness due to significant changes in the global markets, creating little growth and stagnation.

The guiding principles for the development and implementation of the National Government's Economic Plan are summarized in its *Vision 2020: Development, Equity, Sustainability, Auto-determination and Democracy*[69].

Since the beginning of the nineties, different analysis and development programs identified the major social and economic problems of the country. These programs include the "Program of Develop and Economy Modernization" (October, 1991), the "Document on Public Policies for the Comprehensive Development" (September, 1994) and the "Program for Social Development with Economical Efficiency" (1997). These programs diagnosed that the economic and social problems are the result of "a combination of incentives and regulations to structure economic activities to install a competitive economic market environment"[70]. The strategy applied at that time was to establish a centralized policy according to the defined principles of a market economy without state intervention. Although that approach worked and works perfectly for the service sector, it has not done so for the agricultural and industrial sectors. The new economic objectives can be resumed in three fundamental principles of economic policy[71]:

- Macroeconomic and Juridical Stability;
- Economy Growth;
- Social Development and Employment.

[69] « Plan de Desarrollo Economico, Social y Financiero con Inversión en Capital Humano (2001) » ; October 2001 ; Ministro De Economía Y Finanzas, Republica de Panama; p 8

[70] « *Plan de Desarrollo Economico, Social y Financiero con Inversión en Capital Humano (2001)* » ; October 2001 ; Ministro De Economía Y Finanzas, Republica de Panama; Section II, p 10

[71] « *Plan de Desarrollo Economico, Social y Financiero con Inversión en Capital Humano (2001)* » ; October 2001 ; Ministro De Economía Y Finanzas, Republica de Panama; Section III, p 15

Stimulating the economy and improving export performance will be done via the development of economic clusters as dynamic vehicles to stimulate economic activities[72]. Special programs are also foreseen for the development of the tourism sector, the agricultural sector, transportation, and the Panamanian industry as a whole.

In function of this reality and in line with the Vision 2020, the government pursues an aggressive economic policy to introduce more macroeconomic stability in the country and introduce fiscal and financing reforms to optimize the state's financial resources. The package of reform programs includes the commercial integration with the Central American countries and the United States via bilateral Free Trade Agreements as an extension of the Free Trade Agreement signed with Mexico in 2002. The package of measures also includes more drastic changes such as the improved use of the "Fund for Sustainable Development ("*Fondo Fiduciario para el Desarrollo*" - FFD)[73], reforms in public spending and in the Tax Reform Project.

The "Fondo Fiduciario para el Desarrollo" (the Fund) was created through Ley No. 20 of 15 May 1995, modifying Decreto Ley Nº 1 of 7 January 1997, Ley No. 37 of 12 August 1999 and regulated by Decreto Ejecutivo No. 31 of 5 February 1996. The Fund is at present managed by the Ministry of Economy and Finances (Ministerio de Economía y Finanzas - MEF) and most of its revenues come from the privatization of public companies and the selling of concessions realized by the Autoridad de la Región Interoceánica (ARI). The conditions of the Fund were further changed by Ley No. 22 of 27 June 2000 that modified Ley No. 20 of 1995, and regulated by Decreto Ejecutivo No. 40 of 27 March 2001.

3.1.2 The Tax Reform Project

The "*Tax Reform Project*", introduced the 26th of December 2003, intents to have more developed sectors being part in justice and solidarity with Panama's destiny[74]. According to the Ministries presentation on the new law, Law Nº 61 introduces a more just, equal and simplified tax system that would bring "*Equidad y Justicia Tributaria para las personas naturales, en especial aquellas con menor capacidad contributiva*"[75].

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[72] « *Plan de Desarrollo Economico, Social y Financiero con Inversión en Capital Humano (2001)* » ; October 2001 ; Ministro De Economía Y Finanzas, Republica de Panama; Section III, p 28. The implementation of the cluster strategy is realized in the *Compite Panamá* program (see further in this chapter for details)

[73] Ley Nº 20 of 15 May 1995, modified by Decreto Ley Nº 1 de 7 January 1997, Ley Nº 37 of 12 August 1999 and regulated by Decreto Ejecutivo Nº 31 of 5 February 1996. The Fiduciary agreements with the National Bank of Panama organized according to the "Convenio de Fideicomiso" signed in May 1996, confirming the dispositions as stated in Ley Nº 20 of 15 May 1995, the Decreto Ejecutivo Nº 31 of 5 February 1996, and modified by the Decreto Ejecutivo Nº118 of August 1998. The fund became operational on the 3rd of May 1996. Through Ley Nº 22 of 27 June 2000, modifying Ley Nº 20 of 1995, the "Fondo Fiduciario para el Desarrollo" is created and its operational framework defined by Decreto Ejecutivo Nº 40 of 27 March 2001.

[74] Ley Nº 61, Official Journal Nº 24.702 of 27/12/03. The plan was called "*Simplificación Tributaria en Panamá*" and was developed and formally introduced by the Ministerio de Economía y Finanzas, Dirección General de Ingresos

[75] "*Simplificación Tributaria en Panamá: Ventajas que ofrece la Reforma Tributaria (Ley Nº 61 de 26 de diciembre de 2003*"; Presentation by the Ministerio de Economía y Finanzas, Dirección General de Ingresos, slide nº 4 (http://www.dgi.gob.pa/documentos/ventajas)

The main innovation is that taxes are distributed over the population in respect to the capacity to pay of individuals and that a higher level of neutrality is observed in approving tax incentives / exemptions so that overall purchasing power of households increases and consumption is stimulated. According to the government's calculations, a total of 193 thousand Panamanians will directly have a maximum benefit of the new tax exemption.

In that context, the IDB approved on March 26th, 2003 a 10 million USD loan to Panama[76] for a program to improve fiscal and economic management in the public sector, making tax collection more efficient and effective, expanding management and oversight capacity of the customs administration and strengthening the land registry. According to the project terms, more efficient governance, higher levels of tax collections, and lower costs for public administration should make more resources available for financing the government's social programs.

3.1.3 Compite Panamá

Panama's economy shows little dynamism[77]. To face this challenge, the Panamanian Government, in cooperation with the private sector and with the financial and technical support from the Banco Interamericano de Desarrollo (Inter-American Development Bank), established *Compite Panamá* to set in motion a participative process for the formulation of strategies and projects that promote competitiveness.

Compite Panama supports drastic changes for successful integration in global markets in four initial sectors that are presently considered engines of economic growth in Panama:

- Agricultural-industrial;
- Logistics / transportation;
- Technology;
- Tourism.

The Program brings financial and non-financial assistance to install "*development clusters*" in the identified sectors to improve the productivity of the sectors. The cluster technique includes the use and dissemination of evidence and experiences of its participants to promote the cooperation between businesses of one sector at a specific geographic location with the objective of:

- Improving economic production;
- Provide high quality business procedures and structures;
- Develop and accumulate human resources;
- Provide technical assistance.

[76] IDB Press Release, March 26th, 2003 (see http://www.iadb.org/NEWS)
[77] Information provided by Ministry of Economy and Financing; Compite Panamá

At this time, the organization has established 6 formal clusters:

- Two clusters in the tourism sector:
  - Colon;
  - Bocas del Toro.
- Two clusters in the agricultural sector:
  - Chiriqui area;
  - Azuero area.
- One cluster in technology sector located in the Panama City area;
- One cluster for logistics in the Panama City area.

The Tourism Cluster for Bocas del Toro has been selected by Compite Panamá because of the strategic importance of tourism for the future of Panama and of Bocas del Toro in particular[78]. The tourism cluster stimulates actions that increase the sustainability of the tourism sector as future catalyst for the sustainable development of the tourism product and finally, it urges for the establishment of mechanisms for commercialization and promotion of tourism in the region. The same objective exists for Colón, where the tourism cluster is operational since October 2002. The vision for Colón is to increase the number of visitors to 140,000 visitors per year to 1 million visitors in 2020[79]. To achieve this increase, the tourism sector will stimulate all kinds of tourism, in particular beach tourism, eco-tourism and cultural tourism. It will also focus on Colón Free Zone and on more attractive tourism infrastructure in the region.

The agricultural export cluster (*Cluster de Agroexportación*) focuses on new agricultural fields with a high export potential[80]. The cluster targets to cultivate 35,000 hectares with new fruits (melons, mango, lemons, etc…), vegetables (onions, spices, cucumbers, pumpkins, etc…) as well as flours and medicinal plants. Targeted export markets include the U.S.A. (Miami, Los Angeles), Spain (Bilbao) and the Netherlands (Rotterdam).

The objective of the Technology and Information Cluster is to increase its present export level from 15 million USD to more than 50 million dollars in 2010 through increased investments in innovative applications, both by national and international investors. Targeted applications are call centers, software development, telecommunications and value added services.

Finally, a transport and logistics cluster (Cluster de Logistica y Transportación) has been established with the objective of supporting and stimulating the position of Panama as leader in maritime transport (services) and become one of the leading logistics centers in America by paying particular attention to the quality of services and transparency of rules and regulations, strengthening the competitiveness of the Panamanian transport sector in the international markets.

[78] "*Cluster de Turismo Bocas del Toro*"; information brochure; Ministerio de Economía y Finanzes MEF/BID, programa para el Fomento de la Competitvidad

[79] "*Cluster de Turismo Colón*"; information brochure; Ministerio de Economía y Finanzes MEF/BID, programa para el Fomento de la Competitvidad

[80] "*Cluster de Agroexportación*"; information brochure; Ministerio de Economía y Finanzes MEF/BID, programa para el Fomento de la Competitvidad

Compite Panamá will continue to promote the formation of additional clusters in sectors and areas where companies are associated in a similar business field as supplier or consumer or have in common groups of clients, technologies, channels of distribution or other factors. For that purpose, the Compite Panamá Fund will be established as an instrument for fast and flexible responsiveness to the needs of the clusters as well as the implementation of the National Competitive Strategy. The initiative is still in the beginning phase and will require further structuring and planning before it will fully be operational.

3.1.4 Multi-Phased Municipal Development and Decentralization Program

As strongly suggested by the IADB[81] and with its support[82], a *Municipal Development and* Decentralization *Program* is ongoing with the objective to reduce the centralization of decision-making processes and to stimulate regional economic independence and self-sustainability. According to government specialists, excessive centralism has until recently hampered the development of the Interior of the country, making decentralization a fundamental requirement. The concentration of public and administrative functions as well as economic activity in Panama City (and the province) is one of the major reasons explaining the existing disparities between the Metropolitan Region and the Interior area, making the former a pole of permanent attraction of economic resources and population.

Administrative centralism represented a fundamental obstacle for the Interior of country because there has never been any consistent state policy or sufficient action that responded to the specific characteristics and needs of the different provinces. The centralized decision-making process did not take into account both the potentialities and divergences of the different provinces because centralization excluded local citizens from participating in the identification of regional opportunities. Furthermore, an ineffective and excessively large bureaucracy controlled from Panama City did never stimulate administrative and operative experts of the regional governments to increase their knowledge. In most cases, the expertise was therefore absent to face the economic and social problems of the Interior of the country.

The objective of the de-centralization program is to establish the necessary political – juridical requirements for increasing the independence of local governments from central government in governing local resources[83].

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[81] "Country Paper April 200 : Panama"; Document of the Inter-American Development Bank, Regional Operations Department 2, Country Division 2, p. 8: "Drawing up a municipal development agenda is a priority for governance. The creation of the Decentralization Commission was a crucial step in designing and implementing a comprehensive strategy and strengthening municipal government."

[82] Banco Interamericano de Desarrollo, Project Nº PN-0143 : "Programa Multifase de Desarrollo Municipal y Apoyo a la Descentralización". The budget for phase 1 is 10 million USD and for phase 2 15 million USD, of which 20 million USD in total will be provided by the bank. The counterpart for the project is the Ministry of Economy and Financing (MEF)

[83] At present, 15 pilot municipal governments have been selected for the introduction during Phase 1 of the Program of the foreseen necessary changes. The lessons-learned can be used to improve the conditions for a full-scale implementation during phase 2.

This program will be supported by a comprehensive capacity building program to guarantee that the necessary expertise will be available.

If successful, the decentralization program will[84]:

- Reduce poverty and increase equality in the Interior area;
- Stimulate economic reforms that increase competitiveness and growth;
- Decrease the dependency of local governments from central government;
- Contribute to institutional reforms that will increase good governance and transparency.

The decentralization process will in time generate a financial policy to increase the resources of the Interior of the country, in particular by reverting local and regional taxes to the place where they have been generated, without neglecting the design and execution of a system of subsidies for those zones extremely depressed. In achieving these financial reforms, the present budget allocation to the different regions could be modified, settling down a countable and transparent mechanism that grants a budget to the provinces, based on the taxes or the resources that are generated in the different areas in the country.

The government and IADB hope that with the decentralization program fully implemented, greater resources to the Interior of the country would

- Contribute to the rupture of the historical dual character of Panama's economy;
- Increase the perspective of more homogenous economic development;
- Contribute to a more equal distribution of wealth;
- Benefit the Metropolitan Area because it would reduce the migration of people towards the capital, with all its negative social implications.

3.1.5 Rural Development Plan 2001 – 2004

In its social and economic program of 2001, the government recognizes the importance of the rural areas and the need for those areas to achieve sustainable development. The objective of the Rural Development Plan is to introduce new concepts and ideas regarding poverty and competition to obtain progress and well-being of the rural areas. In the new approach, everybody will participate in the decision-making processes in order to obtain a coherent and feasible strategy that facilitates change, transformation and progress. The government hopes to establish a "new rural area", implying the establishment of new institutions, new functions and improved relationships between the public and private sector. The creation of new institutions oriented towards sustainable development implies new types of social organization and "intelligent companies" in which human expertise is the most important resource.

The rural development plan is the expression of the government's Vision 2010, visioning a rural environment in which poverty has been substantially reduced via a balanced development of the

[84] Banco Interamericano de Desarrollo, Project Nº PN-0143 : "Programa Multifase de Desarrollo Municipal y Apoyo a la Descentralización"; Project Paper; Ex Sum. p. 3 and Section D p. 9

regions and an improved habitable environment. This new approach should permit a variety of economic, agricultural and non agricultural initiatives, which generate competition in internal and external markets. In this context, the Vision is organized into 3 major objectives that synthesize the government's strategy for change in the agricultural sector and rural areas:

- Competition in agricultural production and rural areas;
- Equality in rural areas;
- New public and private institutions.

The first objective is to consolidate in the rural areas a productive system in which every part of the territory efficiently integrates producers of different sizes. These producers can be orientated towards the export of their products or focusing on internal consumption. Panama's exporters of agricultural products compete on international markets with differentiated products. But it is at the same time important that products that at present are intended for the internal market achieve production levels that allow the producers also to compete in international markets, build pressure on prices and increase profitability levels. Competitiveness of the agricultural sector focuses four production activities:

- Agricultural, fishing and forest production;
- Aqueous Production (fish, crustaceans, mollusks, and other species in marine environments, estuaries and continental seawater);
- Non-agricultural, such as services, handcrafts, and processing industries connected to rural production;
- Use of the biodiversity, the natural environment and landscapes, such as agro-tourism, ecotourism, adventure tourism, and health and beauty products based upon natural processing, etc.

The vision of equality also means the elimination of socio-economic and cultural discrimination that affects women, young people and the Indian population. It also suggests a better use of human capacity that is present in rural areas to introduce modern production techniques and allow more women participating in production and labor. It also means that the Indian population continues occupying their own productive land, without loosing their values and cultural beliefs.

Finally, modernizing productivity and overcoming poverty will require an upgrade in the institutional sector. This renewed institutionalism needs developing technical and professional capacities, therewith "inverting the pyramid" from a historic culture in which the decision-making process is centralized in Panama towards a structure where people in local areas take the decisions.

3.1.6 Regional Development Plans

Following up on the Rural Development Plan, two IDB-supported regional development plans for the Provinces of Darian and Bocas del Toro have been developed. These two plans find their

roots in the national development plans and translate these general concepts in concrete actions for the regions. In the description of their goals and objectives, these two plans take into consideration their integration with other local initiatives and can be considered as a comprehensive "translation" of the national guidelines into concrete regional action plans.

Darién Regional Development Plan

The 16th of December 1998, the Inter-American Development Bank approved a loan of more than 70 million USD for the regional development of the Darién Province[85]. This program will contribute to ensure a sustainable social and economic development of the Province, and to improve the management and protection of the region's natural resources[86].

The bank's Project description clearly describes the five program components that include:

(a) Land use planning, land titling, management and protection of natural resources;
(b) Institutional strengthening to implement the Land Use Management Plan effectively, with the involvement of local communities;
(c) Support for sustainable production;
(d) Rehabilitation of the transportation system;
(e) Improving basic services.

The strengthening component of the project consists of improving the quality of national institutions and the intensification of provincial, commercial and municipal governments and NGOs while sustainable production activities relate to:

(a) Transfer of modern farming, forestry and fishery technology to promote diversification away from low-productivity traditional farming methods;
(b) Management of critical areas such as providing incentives or direct grants to small farmers compensating for the opportunity cost of conserving and protecting the tropical rain forest;
(c) Strategic activities, including feasibility studies, to help improve productivity through support for small community projects.

Transport in the region will be improved through a program infrastructure rehabilitating, improving or constructing small ports, airports, feeder roads and sections of existing highways. These improvements are essential to support the development of fishing, forestry and farming which are the main economic activities in the region. Improved infrastructure and better services will also support and intensify the notable growth in tourists coming to the Danrién Province to visit the tropical rain forest (eco-tourism and adventure tourism). The potential of tourism as catalyst for economic growth should not be underestimated: "With the establishment of the Darien National Park, the tourist opportunities of the province have been recognized… tourism

[85] IDB Project Code 1160/ OC – PN
[86] see for details on the program: http://www.mef.gob.pa/programadarien

can give a valuable contribution to the local economy. … tourism offers tremendous opportunities to the small businesses of the region…"[87].

The hoped-for economic and social development of Darién Province is subject to a substantial increase of security in the region. If any relevant number of tourists will once visit the region, there should be sufficient guarantees for their safety. This fact has been recognized by the U.S. Agency for International Development (USAID) by its decision to help funding a community development project in Panama's Darien region that would serve as a buffer against the spillover of violence and narco-trafficking activities from neighboring Colombia[88]. The program will provide small grants, technical assistance, training, and commodities to Darien communities.

In order to ensure the full cooperation of the indigenous population and to maximize the program's efficiency, the implementation of the program applies a participatory process involving local indigenous populations to participate in the projects decision-making processes.

Bocas del Toro Regional Development Plan

With the objective of improving the use of the highly valuable natural resources of the region, a "Multiphase Program for Sustainable Development of Bocas del Toro" has been established, supported by the IDB[89]. The program plans to fund innovative pilot projects that increase economic diversification, increase the conservation of natural resources and promote rational and sustainable land use.

Because of the ethnic and cultural diversity of the people of the region, emphasis is placed on participation by the residents in the decision-making process and in the drafting of annual operating plans.

The financing of the first part of the Program was approved on the 26th of March 2003, during the bank's annual meeting of the Board of Governors in Milan (Italy). IDB granted a 15.2 million USD loan to Panama to help finance the first phase of the 46.9 million dollar program to promote sustainable development in Bocas del Toro. The IDB loan for the second phase of the program, equal to 27 million USD, will be approved by the bank's Board of Executive Directors at the time the project qualifies for additional financing.

The program's objective is to foster activities and investments that will yield economic, social and environmental benefits. The activities are structured in three program components:

- Strengthening management capacity;
- Sustainable management of natural resources and productive development;
- Basic services and transport infrastructure.

[87] "Diagnostic of Aquatic Transportation and action Plan", Henry Copestake; Co Pro Limited, Ottawa, Ontario Canada 1998-1999, p 8

[88] The "*Washington File*", Eric Green, Washington File Staff Writer 05 February 2003 Office of International Information Programs, U.S. Department of State.

[89] Loan proposal document reference PN – 0149

The program aims to attack poverty and improve equity; introduce economic reforms that will spur competitiveness and growth; consolidate the regulatory and institutional framework for sustainable growth; and induce institutional reforms to strengthen governance and improve transparency.

The program consists of two phases. Phase I will take 3 years and priority will be given to the strengthening of public institutions at the regional and local levels, as the cornerstone for the region's sustainable development. The second phase will last during five years and is predominantly designed to consolidate the institutional, financial and environmental reform program initiated under phase I, and to promote and expand investments in productive economic and in infrastructure development.

One of the key issues to address in the program is the uncontrolled economic growth and expansion of the population which has generated rising volumes of solid and liquid wastes, loss of reefs and other natural resources, over-fishing, etc… "*Unless action is taken, the threat to resources will grow, and damage could be irreversible*"[90]. Some of the most noted problems include the over-exploitation in the forestry sector, treat of fish stock by artisanal and unregulated fishing, continued dominance of banana plantations that conflict with small scale uncontrolled agricultural production and livestock farms, and a growing tourism sector.

3.2 Ongoing Developments

3.2.1 Darién Regional Development Plan

The 16th of December 1998, the Inter-American Development Bank approved a loan of more than 70 million USD for the regional development of the Darién Province[91]. This program will contribute to ensure a sustainable social and economic development of the Province, and to improve the management and protection of the region's natural resources[92].

The bank's Project description clearly describes the five program components that include:

- Land use planning, land titling, management and protection of natural resources;
- Institutional strengthening to implement the Land Use Management Plan effectively, with the involvement of local communities;
- Support for sustainable production;
- Rehabilitation of the transportation system;
- Improving basic services.

[90] "Tourism, Regional Development Strategy of the Province of Bocas del Toro", IDB document PN- 0149 for the loan proposal; Section IB: Major Problems facing the Region, p. 3
[91] IADB Project Code 1160/ OC – PN
[92] see for details on the program: http://www.mef.gob.pa/programadarien

Under the Land Use component of the program, four specific projects will be implemented:

- Regulatory reform of land use planning, the forestry sector and the fishery sector. Development of a framework law for Darién to ensure for the future a coherent approach to land use planning (Land Use Management Plan - POT);
- Implementation of the POT, with specifications for three zones (the National Park and the Serranía de Darién, the Valle del Chucunaque, and the Estuary of the Gulf of San Miguel) and three specific areas (the Hydrological Reserve and the Forest of the Serranía de Cañazas, the Hydrological Reserve and Forest of the Serranía de Filo del Tallo, and the Comarca Emberá-Wounaan in the Districts of Cemaco and Sambu);
- A land survey for demarcation and titling of private land to stabilize occupancy and utilization of zones suitable for farming;
- An inventory and analysis of the natural resources, that includes:
  - Forestry inventories on land made available for commercial concessions;
  - Inventory of fishery resources in the Gulf of San Miguel;
  - Support for creating a scientific center to conduct and coordinate research.

In addition, the bank will support the implementation of a Bi-national Plan between Colombia and Panama for cooperation in scientific studies and research on biodiversity, conservation, and other areas of common interest in the bio-geographical area of Darién.

The strengthening component of the project consists of the strengthening of national institutions and the strengthening of provincial, commercial and municipal governments and NGOs while sustainable production activities relate to:

- Transfer of modern farming, forestry and fishery technology to promote diversification away from low-productivity traditional farming methods;
- Management of critical areas such as providing incentives or direct grants to small farmers compensating for the opportunity cost of conserving and protecting the rain forest;
- Strategic activities, including feasibility studies, to help improve productivity through support for small community projects.

In the field of basic services, the program funds the pre-investment and investment in new works, and in expanding, upgrading and equipping existing facilities in water, sanitation and electricity and in health, education and urban planning.

Finally, transport in the region will be improved through a program infrastructure rehabilitating, improving or constructing small ports, airports, feeder roads and sections of existing highways. The transportation study was conducted by the Canadian-based consulting company Co Pro Limited[93]. According to the study results, transportation in the region is in a better than expected

[93] See for a review of the study: "Diagnostic of Aquatic Transportation and action Plan", Henry Copestake; Co Pro Limited, Ottawa, Ontario Canada 1998-1999

shape, although several improvements are necessary both in administration and in infrastructure. These improvements are essential to develop in the future intermodal transport and to support the development of the economy of the province. The economy of the province is focused on fishing, forestry and farming. Although overall commercial production is low and international export absent, efficient transport infrastructure that focuses on air- and water-based transportation is needed to support the transport of products to Panama City. The study also recognized the notable growth in tourists coming to the Darién Province to visit the tropical rain forest (eco-tourism and adventure tourism). In particular rivers are used to travel between the various tourist destinations. The potential of tourism as catalyst for economic growth should not be underestimated, according to the study: "With the establishment of the Darien National Park, the tourist opportunities of the province have been recognized… tourism can give a valuable contribution to the local economy. … tourism offers tremendous opportunities to the small businesses of the region…"[94].

The IADB Regional Development Program also includes the staged implementation of the intermodal Transport Plan, including the completion of the Pan-American Highway in the Darién Province. The intermodal transport Plan[95] issued out of a very detailed intermodal transport study, conducted by the Coordinator Unit of the Transportation Sector – UCST of the Public Work Ministry – MOP[96].

The objectives of this study could include the following components:

- Identification and evaluation of the different transportation ways in the province of Darién;
- Analysis of accessibility conditions to the province as well as of the internal mobility;
- Definition of feasible alternatives to improve the transport sector in the region;
- Development of action plan to improve the mobility of goods and persons in the province, taking into consideration the specifications of the sustainable development program;
- Specify required actions to execute the rehabilitation of the Pan American Highway.

The hoped-for economic and social development of Darién Province is subject to a substantial increase of security in the region. If any relevant number of tourists will once visit the region, there should be sufficient guarantees for their safety. This fact has been recognized by the U.S. Agency for International Development (USAID) by its decision to help funding a community development project in Panama's Darien region that would serve as a buffer against the spillover of violence and narco-trafficking activities from neighboring Colombia[97]. The program will provide small grants, technical assistance, training, and commodities to Darien communities.

[94] "Diagnostic of Aquatic Transportation and action Plan", Henry Copestake; Co Pro Limited, Ottawa, Ontario Canada 1998-1999, p 8

[95] The study for the development of the intermodal transport plan was financed by the Darién Regional Development Plan under loan 769/ OC – PN

[96] The Study was conducted through the PNUD, Project No. PAN/95/001.

[97] The "*Washington File*", Eric Green, Washington File Staff Writer 05 February 2003 Office of International Information Programs, U.S. Department of State.

USAID contributes 5 million USD for the project and works together with the Panamanian Fundacion Pro-Niños del Darien. One of the reasons for this additional and specific support is because most Darien communities are vulnerable to what is quoted in the text as "a*dverse external effects*", cultivated by the region's isolation and poverty of its indigenous population.

A priority objective is to reduce frequent incursions from Colombia by the leftist Revolutionary Armed Forces of Colombia (FARC) and the right-wing paramilitary United Self-Defense Forces of Colombia (AUC)[98]. In that context, United Nations High Commissioner for Refugees (UNHCR) expressed its concern over a recent attack by the AUC on villages in the Darien, driving hundreds of indigenous people from their homes.

The attack involved the killing of four Kuna indigenous authorities and the kidnapping of two US and one Canadian reporters after an assault by "paramilitaries" on the villages of Paya and Pucuro during the weekend of the 18th – 19th of January 2003[99]. The paramilitaries, in addition to the killings, robbed all of the belongings of the only radio station office in Paya as well as chickens, ducks and pigs while murdering the dogs. Upon leaving the village, the attackers destroyed the local trucks with explosives to avoid being followed.

In order to ensure the full cooperation of the indigenous population and to maximize the program's efficiency, a participatory process has been strongly stimulated by the IADB. Since the 1994 Eighth Replenishment Meeting of the IADB's Board of Governors, the bank has promoted civil society participation in its investment based lending operations. The bank increasingly includes local indigenous populations to participate in the projects decision-making processes, in particular when substantial social and environmental impacts are expected. This consultation process is execution in conjunction with a Strategic Environmental Study (SEA) that needs to identify the long-term cumulative social and environmental impacts and at the same time develop detailed environmental and social Action Plans to minimize negative effects of the project. For the Darién project, the consultation process was considered at the higher levels of being extremely important and was intended to "***…****to be on the side of the social sectors of the province… at the consulting stage of the participation process, oriented toward the search of internal consensus within the community and agreements between them, to materialized this proposals, environmental, economic, organizational, legal design and institutional adjustment of the Program, that takes into account the ethnic and cultural particularizes, establishing strategies and making a set of draft proposals, matching those strategies, as resources for preparing the second and later stage of engagement with the institutions and the private sector that will search the required consensus for the execution of the Program*"[100].

[98] The U.S. State Department identifies both groups as terrorist organizations.
[99] See for full report La Prensa of 1/21/03
[100] "Consulta comunitaria: El caso de Darién, Panamá"; Carlos Perafán & Heli Nessim; February 2001; Banco Interamericano de Desarrollo, Washington, D.C. in the "Serie de informes de buenas prácticas del Departamento de Desarrollo Sostenible" p. 17

Although The IADB's Department on Good Practice later praised the Project's efforts to integrate the concerns of the indigenous population, the appreciation of such approach (be it in a different project than the Darién Development Program) is not overall positive: *"Despite the Bank's … effort to apply a theoretically effective approach … parties need to be aware of the cultural, political and social limitations presented by the current reality….. Given the situation, it is most useful to identify the barriers and to work on these, establishing minimum benchmarks on which it is possible to develop this type of a project, before trying to construct a complex model whose application is difficult*."[101]

3.2.2 Bocas del Toro Regional Development Plan

Several studies regarding the development potential of the region all came to the same conclusion that the Bocas del Toro region is undergoing intensive change at the economic, environmental, social and ethnic level as chaotic settlement patterns and the uncontrolled exploitation of natural resources continue to generate environmental pollution, conflicts over land use, unemployment and marginality. In addition, deficient infrastructure and public services as well as weak management by all levels of government aggravate the situation and generate increasing unrest among indigenous and local communities.

With the objective of changing the tide, a "Multiphase Program for Sustainable Development of Bocas del Toro" has been established, supported by the IADB[102]. The program plans to fund innovative pilot projects that increase economic diversification, increase the conservation of natural resources and promote rational and sustainable land use. Because of the ethnic and cultural diversity of the people of the region, emphasis will be placed on participation by the residents in the decision-making process and in the drafting of annual operating plans. Interesting to note is that the program incorporates lessons learned in previous projects, in particular the IADB-financed program for sustainable development of Darién region.

The financing of the first part of the Program was approved on the 26th of March 2003, during the bank's annual meeting of the Board of Governors in Milan (Italy). IADB granted a 15.2 million USD loan to Panama to help finance the first phase of the 46.9 million dollar program to promote sustainable development in Bocas del Toro.

The IADB loan for the second phase of the program, equal to27 million USD, will be approved by the bank's Board of Executive Directors at the time the project qualifies for additional financing.

In developing the region, the bank hopes to strengthen the fragile economic, environmental and social balance and to eradicate the ongoing uncontrolled development, which threatens the sustainability of the region's environmental attributes, its cultural wealth and its natural resources and consequently, its potential economic growth and social welfare.

[101] "The Santa Cruz – Puerto Suárez Transportation Corridor Project: A Case Study": Maria Teresa Vargas Ríos & Kari Hamerschlag; Bank Information Center (BIC) ; USA July 2001; p 16
[102] Loan proposal document reference PN – 0149

The program's objective is to foster activities and investments that will yield economic, social and environmental benefits. The activities structured in three program components:

- Strengthening management capacity;
- Sustainable management of natural resources and productive development;
- Basic services and transport infrastructure.

The implementation of the program aims to attack poverty and improve equity; introduce economic reforms that will spur competitiveness and growth; consolidate the regulatory and institutional framework for sustainable growth; and induce institutional reforms to strengthen governance and improve transparency.

The program consists of two phases. Phase I will take 3 years and has an estimated budget of 16.9 million USD and priority will be given to the strengthening of public institutions at the regional and local levels, as the cornerstone for the region's sustainable development. The budget for phase II is estimated at 30 million USD and the second phase will last during five years. Moving from Phase I to Phase II will require analysis of lessons learned and indicators established in phase I. The program of phase II is predominantly designed to consolidate the institutional, financial and environmental reform program initiated under phase I, and to promote and expand investments in productive economic and in infrastructure development. In addition to the urgently needed institutional improvements, the future of the region also depends upon the many economic and urban problems that will have to be addressed.

In general, uncontrolled economic growth and expansion of the population has generated rising volumes of solid and liquid wastes, loss of reefs and other natural resources, over-fishing, etc… "*Unless action is taken, the threat to resources will grow, and damage could be irreversible*"[103]. Some of the most noted problems include the over-exploitation of in the forestry sector, treat of fish stock by artisanal and unregulated fishing, continued dominance of banana plants combined with small scale agricultural production and limited livestock farms, and a growing tourism sector.

The Framework of the development program for Bocas del Toro is specified by the IADB as follows[104]:

PHASE I

1) Strengthening Management Capacity

a) The Local Level

Technical assistance (advisory services, training and equipment) will be provided in the municipalities of Changuinola, Chiriquí Grande and Isla Bocas, and urban planning, studies will prepare urban development plans for Changuinola, Almirante, Chiriquí Grande and Isla Bocas.

[103] "Tourism, Regional Development Strategy of the Province of Bocas del Toro", IADB document PN- 0149 for the loan proposal; Section IB: Major Problems facing the Region, p. 3

[104] "Tourism, Regional Development Strategy of the Province of Bocas del Toro", IADB document PN- 0149 for the loan proposal; Section IIC: Description of the Program, p. 12 - 22

b) The Regional or Provincial Level

Technical assistance will be provided for the Administrative and operational strengthening of the regional offices of ANAM, AMP, IPAT and MIDA,; and to strengthen the provincial governor's office to serve as the two-way communications link between local governments and third parties.

c) The National and Bi-national Level

At the national level, technical assistance will be provided to the MEF in coordination with the respective agencies for strategy dialogues with the private sector. At the bi-national level, technical assistance will be provided to the Executive Secretariat of the Bi-national Commission of the MEF, the provincial governor's office and the institutions involved, for implementing the Costa Rica-Panama border agreement agenda.

2) Sustainable Management of Natural Resources and Productive Development

Under this program section, financing will be provided for:

- Advisory services and studies;
- Experimental pilot projects;
- Small demonstration projects selected by competition.

a) Natural Resource Management and the Prevention and Mitigation of Natural Disasters

Categories of projects eligible for funding include the restoration of critical areas associated with micro-watersheds and rural roads and co-management of protected areas with community participation.

b) Development and Diversification of Agriculture and Forestry Activities

Advisory services will be funded to strengthen the business management capacities of farmers and small producers. Financing of pilot projects could be considered in the areas of modernizing the production and marketing of bananas, improving cattle feeding, and sustainable forestry for small producer organizations. Financing may also be provided for the preparation and implementation of land use plans in buffer zones around the protected areas.

c) Subsistence-Fishery Conservation and Sustainable Tourism Development

Advisory services will be provided for a census of subsistence fishing families and a registry of fishing vessels, and for the development and implementation of a participatory subsistence fishing model as an aid to the sustainable management of the archipelago's marine resources. Next, training and "tourism culture" modules will be developed for guides and operators, local businesses, municipal officials, community associations, etc., to improve the quality, productivity and security of tourism services. Financing may also be provided for small projects in tourism information centers, craft markets, basic infrastructure (sanitary services, information boards or signage etc.) and small-scale community wharves.

As one of the first concrete initiatives, a project was proposed[105] to improve the local "port" infrastructure via the construction of new community docks. The project hopes improving the accessibility of the coastal communities as well as stimulating the tourism sector. The Master Tourism Plan (IPAT), the Sustainable Development Program of Bocas del Toro, and the Tourism Diagnostic all identified the need to construct the necessary basic facilities for the support of economic productivity (in particular fishing and agriculture) and to permit tourists to use for their transportation needs the waterways in a simple and comfortable way. In that context, IPAT identified seven (7) communities that generate relevant tourist flows: Sal Creek, San Cristobal, Isla Popa, Boca del Drago, Bastimento, Las Delicias, and San San.

3) Basic Services and Transportation Infrastructure

Financing will be provided for the construction of wastewater treatment for Chiriquí Grande, the collection and disposal of solid wastes on Isla Colón. Designs and feasibility analysis have already been conducted for these projects.

Categories of projects that are conditionally eligible include road rehabilitation, rehabilitation of drainage structures and small bridges, the integration of electric energy systems into the existing grids (Bocas del Toro and Chiriquí Grande), remote rural electric energy systems, small-scale drinking water and waste disposal projects and the upgrading of existing water supply systems and sewers. For larger or longer-term investments, funding will be provided only for pre-investment studies and efforts to obtain financing from other sources or to support Phase II.

PHASE II

An interim assessment will be made of phase I after 70% of the loan proceeds have been committed or 50% have been disbursed. When 80% of the indicator targets have been achieved and at least 75% of the loan has been disbursed the program could proceed to Phase II. Phase II includes 3 development components.

1) Component 1

Creating a decentralized management capacity, with a strategic vision for fostering sustainable development schemes in the region.

2) Component 2

Designing and negotiating the foundations for sustainable economic development in agriculture, forestry, fishing and tourism.

3) Component 3

Strengthening self-management capacity, and sharing responsibilities in addressing problems.

[105] This project responds to the strategic objective of Tourism, Regional Development Strategy of the Province of Bocas del Toro, as a part of the IADB program (reference TC-00-11-01-1-PN)

The Ministerio de Economía y Finanzas (MEF) and the consortium *Caura-Omniconsult* have conducted a detailed study which generated as a final outcome a detailed diagnostic of the pertaining problems and a strategy that includes a detailed action plan for the implementation of the proposed changes in the public administration and the priority economic sectors in the region[106].

The strategy sets forward the framework for the sustainable development of the Province of Bocas del Toro through concrete actions, grouped in five Area-Programs and arranged in order of importance according to the sequential implementation stages:

1. Area-Program I: Local Institutional Development
2. Area-Program II: Natural Resources Management and Functional Territorial Organization
3. Area-Program III: Productive Diversification and Production System Improvement
4. Area-Program IV: Infrastructure and Basic Services
5. Area-Program V: Human Resources Development

The fundamental objectives of the Action Plan for the sustainable development of Bocas del Toro include[107]:

- Fomenting the development of an institution that act as a support for and link of all actors involved in the regional development plan, promoting local actors participation in synergic mechanisms that are part of different levels of decision-making;
- Boosting a sustainable approach towards natural resources for local and regional development, taking into account basic regional vocations;
- Strengthening the rich natural resources, from biological diversity and endemic species presence typical of each region;
- Fomenting economic development in the region according to the potentiality of available resources, oriented towards strengthening international trade and commerce;
- Promoting aid and the improvement of basic and communal services, innovating investment and supply methods to achieve better effective procedures.

3.2.3 Regional Infrastructure Development Plans

Panama City Coastal Development Plan

The Panama City Coastal Development Plan is facilitated by MIVI and includes representatives of many pubic and private interest groups.

The concept of the plan is as follows[108]: "The Open Space System seeks to bring continuity and integrity to the environmental diversity that is part of the Metropolitan Area, both as natural and

[106] "Estrategia de Desarrollo Sostenible de Bocas del Toro: Formulacion de la Estrategia y Plan de Accion"; Caura-Omniconsult; versión final; 2003
[107] "Estrategia de Desarrollo Sostenible de Bocas del Toro: Formulacion de la Estrategia y Plan de Accion"; Caura-Omniconsult; versión final; 2003; Executive Summary
[108] See Arq. Manuel Trute: "*Proyecto Cinta Costera*" (free translation of Spanish original) Slide 3

protected, and as public and urban, by promoting a system of recreational functions which have a better access to all infrastructures that define the totality of the trans-oceanic waters (basins, lakes, channels, beaches, rivers, etc…)".

Through a comprehensive infrastructure development, the Panama City Coastal Development plan will change the existing badly structured coastline of Panama City into an attractive tourism and leisure area, visualized in next Figure 3.2.1.

Source: MIVI Project Facilitator

Figure 3.2.1 Coastal Development Area

The Coastal shoreline of the project extends along Panama Bay, between Sea Food Market and Punta Paitilla urbanization and includes:

- Stretch 1:
  - November 3 Street/Anayansi Park;
  - Surroundings areas to projects that are in an ongoing transformation process.
- Stretch 2:
  - Anayansi Park/Matasnillo River;
  - Properties and coastal concessions (Yacht and Fishing Club, Miramar Towers);
  - Related areas to traditional city center.

The final product, once the coastline has been rehabilitated, the waterfront of Panama City will look as presented in Figure 3.2.2.

Source: MIVI Project Facilitator

Figure 3.2.2 Future Waterfront Line of Panama City

The objectives of the coastline rehabilitation project are:

- To preserve natural resources;
- To develop a clean and healthy urban environment without pollution;
- To introduce green areas and free spaces for recreation;
- To improve access to cultural and historical resources;
- To stimulate area integration.

The coastline of Panama City is at present confronted with a number of important problems:

- Public Transportation toward this area is insecure and limited;
- There are major visual obstacles / intrusions;
- Concessions and existing developments limit continued shoreline development;
- Several physical and social surroundings next to proposed area are deteriorated;
- Inadequate and dangerous pedestrian access;
- Intensive traffic flows;
- Urban legislation that does not stipulates physical development criteria for coastal areas adjoining urban centers.

At the same time, there are also major advantages that make the project feasible:

- Possibility to rescue deteriorated structures next to project;
- Good traffic accessibility;

- Panorama opportunity and high scenic value;
- Surrounding valorization is possible;
- Opportunity to provide recreational wide spaces for metropolitan population;
- Opportunity to develop coherent "rules" for project development in coastal areas;
- Opportunity to incorporate into the entire project the infrastructure projects for the enlargement of Balboa Avenue and the construction of a sewage water collector along the coastline.

One of the areas of particular attention relates to the future of Panama Port, located inside the coastal development area. Within the context of the Port Master Plan, several questions will require answers, among which:

- Can Panama Port remains operational within the context of the planned coastline development plan;
- If Panama Port will have to be re-located, what will be the optimal location for the new port facility;
- If Panama Port is relocated, which will be the future of the port area and adjunct areas, taking into account the strategic orientation of the plan.

Independent of the final answers to above questions, Panama Port in its present condition cannot be a part of the planned future development of this coastline. The next Figure 3.2.3 clearly demonstrates the deteriorated condition of the port infrastructure and in Figure 3.2.4, an abandoned ship is shown that is disposed of in the port area.

Figure 3.2.3 Panama Port Infrastructure

Figure 3.2.4 Abandoned Ship in Panama Port

Source: JICA Study Team

Colon Free Zone Intermodal Center

The Panamanian government adopted in the middle of the year 2000 the development of a logistics center of transportation, services and industry in the area of Coco Solito, the Colon Free Zone and Telfers Island. Once finished, the Multimodal Industrial Center of Services (CEMIS) will be a 292 hectares industrial park of seven interconnected zones and will be a duty free bonded zone with additional true 0% income tax, see Figure 3.2.5.

The transformation of the Colon Free Zone into a multimodal center will provide a better access to Latin American and Caribbean consumers and will allow the commercial area to expand its markets. The project also opens opportunities for new economic activities, will increase employment and support other tourism projects in the region.

Source: Colon Free Zone Administration

Figure 3.2.5 Colon Free Zone Master Plan Map

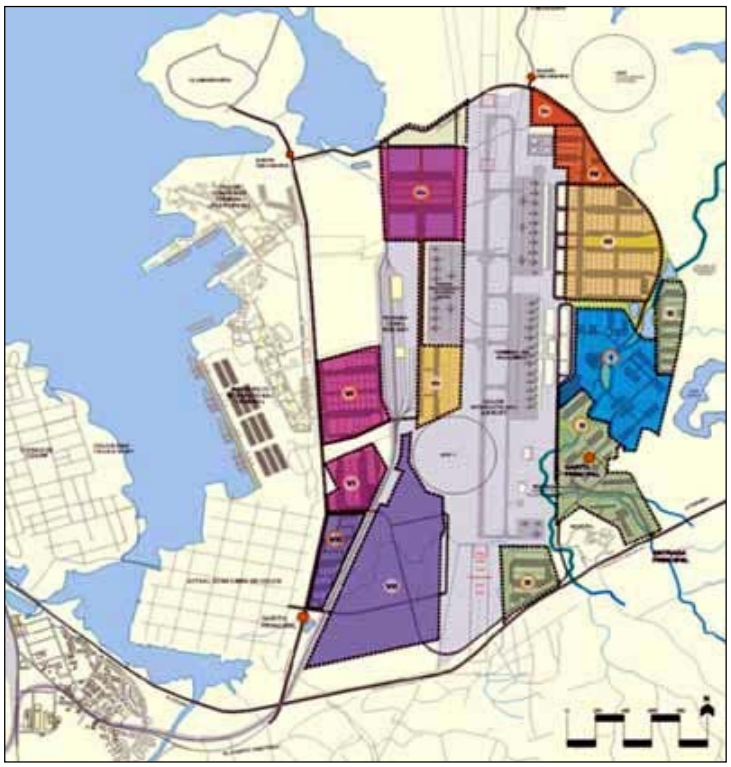
The future multimodal area will be divided in 7 functional zones, as visualized in the following Figure 3.2.6.

The planned industrial zones are:

1) **Zone 1**
   - Corporations of High Technology and Added Value

2) **Zone 2**
   - Incubator and Multi-Tenant Facilities

3) **Zone 3**
   - Logistics of High Technology with Emphasis in Air Transportation
4) **Zone 4**
   - Logistics and Traditional Distribution
5) **Zone 5**
   - Trucks Terminals
6) **Zone 6**
   - Multimodal Heavy Logistics
7) **Zone 7**
   - Expansion of Traditional Free Zone Operations



Source: Colon Free Zone Administration

Figure 3.2.6 Functional Zones in Future Colon Free Zone

One of the critical features for the modernization of Colon Free Zone is the automation of the operations in the Colon Free Zone, including twenty-four hours a day services, and on line approval procedures.

The multimodal platform will integrate all means of transport to create value added to international commercial customers and tourists.

The port component integrates Manzanillo International Terminal, Colon Container Terminal and the two Panama Canal ports of Panama Ports Company (subsidiary of Hutchinson Wahmpoa).

Air transportation will service the commercial sector in Zone with services custom-made for the Colon Free Zone, with a focus on "just in time" operations. The passenger terminal will support the "Flight and Cruiser" approach by offering the facilities of check-in, luggage and transport between the airport and the cruises for passengers.

The Panama Canal Railway Company invested 75 millions USD to allow the railroad to transport a total of 250,000 TEUS a year from one ocean to another therewith complementing the transport infrastructure of the multimodal center and in time offering tourists and visitors a first class railway connection to Panama City.

Finally, 23 hectares of land will be assigned for the development of a modern cargo transportation terminal inside the multimodal center, allowing faster cargo movement among intermodal facilities and facilitate transport of nationalized cargo through the Panama-Colon highway.

Barú Multimodal Free Zone

The zone of Barú offers more than banana production. It offers the most fertile land for the cultivation of rice, corn, sorghum and also provides the industrial exploitation of palm oil and agro-industrial food. Also an important volume of cattle production is located in the region. Barú also is important in terms of logistics and services that among which the fiscal port, the trans-isthmus oleoduct (oil pipeline) and important fishing and littoral zones.

With the Ley 19 of May 4th 2001[109], the legal framework was established to convert Barú into an attractive production and tourist area. The law stipulated the terms for the establishment of the Special Zona Franca Turística and Apoyo Logístico Multimodal in the district of Barú and with legal address in Puerto Armuelles[110]. In September 2002, a draft strategic plan was presented that includes the framework conditions for the establishment of the Free Zone and includes a first action plan, focusing on the administrative and organizational aspects of the organization that would become responsible for realizing the project.

According to the objectives of the plan, Zona Franca de Barú will include 4 specific free zones:

1) The Commercial Zone (Zona Commercial)
2) The Tourism Zone (Zona Turistica)
3) The Processing Zone (Zona Procesadora)
4) The Petroleum Zone (Zona Petrolera)

The concept of the Zona Franca de Barú is similar to Colon Free Zone operations. According to the promoters, once the Bugaba-frontier stretch of the highway, including the section from this point to Puerto Armuelles will be completed, the conditions will be right to turn the area into an important expansion zone. The planned extension of the coastal highway by the government of

[109] Publication Official Gazette Nº 24,297, May 9th 2001; see also http://barufreezone.com/leyes_zona_libre.htm
[110] Apdo Post 51, Puerto Armuelles – Av. Presidente Remon, Puerto Armuelles – Chiriqui Republica de Panamá

Costa Rica will further increase the zone's attractiveness, permitting the access to this zone from the Pacific side of Costa Rica. As part of the development plan, the construction or rehabilitation is planned for all necessary transport infrastructure including ports, docks, dry docks, loading and unloading facilities.

The planned project is very ambitious and includes several components:

1) The Processing Free Zone, offering import-export activities, transit (re-exportation), full logistics services, including cargo handling, cargo dispatch by sea, air or land, warehousing, and industrial treatment such as refining, purifying, mixing, and transforming. The zone will also allow operating and manipulating all types of merchandise, products, raw materials and other commercial activities as permitted by relevant laws. This zone will benefit from the introduction of a special and simplified export regime.

2) The Establishment of a Petroleum Free Zone to operate and manipulate crude oil, semi-processed oil products or any of its derivations.

3) The Commercial Free Zone will focus on the provision of commercial services using modern communications and computer technology. The service will focus on international services in respect to import and export activities but will also provide services oriented to the national markets.

4) The Tourism Free Zone, concentrated in the port of Puerto Armuelles that will be transformed into a shopping zone for Central American tourists. The plan includes the rehabilitation of the port area in order to accommodate for cruise lines and other international tourists, providing the opportunity for cruise ships to dock at dedicated facilities in the District of Barú. These investments could also indirectly promote supplementary investment in the tourism sector.

The promoters of the Barú Free Zone are guided by their "*Visión 2006*" which states:

"*The Baru Free Zone, a commercial center in the Pacific West of the Republic of Panama (Almuelles Port) with a service and industry platform for export, having a modern communications system that allows businessman's use of frontline technology and to carry out its business operations from the Baru Free Zone to the rest of the world and from any part of the planet to the Zone*."[111]

In other words, the Free Zone would become a worldwide commercial center in the western pacific of the Republic of Panamá (Puerto Armuelles) and act as a platform of services and industries for export, offering a modern communications system that allows businessmen to use a state-of-the-art technology and perform commercial operations between the Zona Franca de Barú and any part in the world.

[111] "Plan estratégico de la Zona Franca de Barú: Programa de desarrollo sostenible de la Zona Franca de Barú": Zona Franca de Barú, Puerto Armuelles, p 1.

But two years after the Law on Barú Free Zone was published, in 2003, the consolidation of the development of the Free Zone was the year's primary objective[112]. More specifically, the objectives to achieve in 2003 need to:

- Hire the amount of employees needed in this zone;
- Purchase 180 hectares of land for the Zone;
- Construct administrative offices and infrastructure of this area (parking lots, control rooms, parks, etc.), (20,000Mt2);
- Conduct work meetings to promote the Zone (4 local visits a month in the city of Panama and 2 international to promote this zone).

In spite of the need for substantial infrastructure improvements, Baru Free Zone has recently announced its first successful realization. It's a USD 14 million tuna storage facility on Charco Azul Bay, to be built by a Spanish consortium. Eventually, the investors plan to build a seafood processing plant and create some 600 jobs.

Although officially inaugurated and first private investments realized, the completion of a fully operational Free Zone and realization of some components of the program will prove to be much more difficult if not impossible.

In particular the rehabilitation plan for Puerto Armuelles might have to be re-considered. The Barú Development Plan presently foresees Puerto Armuelles to be rehabilitated and transformed into a tourist and cruise port where cruise vessels can dock and a shopping zone can cater for predominantly Central American tourists.

The next pictures demonstrate there is a substantial difference between the existing port facilities of Puerto Armuelles (Figures 3.2.7 and 3.2.8) and what can be considered a port of call for a cruise ship, including adjunct shopping zone (Figures 3.2.9 and 3.2.10). The question should therefore be asked whether this plan is not too ambitious and whether the project is economically feasible. At present, no detailed development studies are available regarding feasibility of the transforming Puerto Armuelles into a tourist and cruise port. In the context of that study, alternative destinations for the port should be investigated in detail.

Figure 3.2.7 Puerto Armuelles Port Facility

Figure 3.2.8 Puerto Armuelles Port Proximity

Source: JICA Study Team

[112] Zona Franca de Barú; Program: "General Direction and Administration: Budget 2003"

Figure 3.2.9 Thomas Cruise Terminal

Figure 3.2.10 Shopping Zone at Terminal

Source: JICA Study Team

Howard Multimodal Hub

Howard Air Force base is one of the many areas and facilities that reverted to Panama at the end of 1999. A view of the base is presented in next Figure 3.2.11.

Figure 3.2.11 View on Howard Air Force Base

Source: ARI

Former Howard Air Force Base is located in the Pacific sector, near Roadman Naval Station and Farfan and covers approximately 3,707 acres, including industrial zones, residential communities, urban developments and areas for the construction of new transport facilities with complementary maritime business.

The following infrastructure became available after the transfer of Howard to Panama:

- International airport with hangars, passenger terminal and fueling facilities and a landing strip of approximately 2,591 meters, large enough to handle international cargo planes;
- Fuel storage tanks;
- High quality commercial, institutional and residential buildings;

- Utilities including drainage and potable water systems, sewage plant, electricity powered by a double 44 KV thermoelectric station at Miraflores;
- State-of-the-art fiber optic telecommunications system that interconnects all former and present military installations in Panama.

Similar to other Free Zone development plans (e.g., Colon and Barú Free Zones), ARI plans to invite foreign investors in helping to convert Howard into "the Special Economic Area Panama – Pacific". This zone should become a world class business center where companies will be able to service their global markets.

The Special Economic Area Panama – Pacific project has been developed with the assistance of the World Bank (IFC) and a consortium of specialized consultants among which Infrastructure Management Group (technical advisors), the Services Group (regulatory advisors) and Leigh Fisher & Associates (airport development advisors).

Conservative estimates in these studies indicated that the development could generate over the next 20 years 22,270 new direct employments and over 55,000 indirect employments.

The studies also concluded that Howard has a high development potential as multimodal transport and business center, not in the least because of the available airport with high-quality infrastructure, including an 8,500 feet runway and large hangars, suitable for air cargo and airplane maintenance operations, see Figure 3.2.12.

Figure 3.2.12 Airport at Howard Air Force Base

Source: ARI

In particular, the marketing surveys demonstrated that clusters in the fields of information, communication and technology such as call centers, back-office operations and global information processing centers have a very high potential [113]. Furthermore, high-tech manufacturing and services as well as high-value worldwide logistics are specializations that could be stimulated in the zone.

[113] Dell Computer Corp. is the first to take advantage of the site. In 2003, it installed its international call center in the zone. The center will initially employ 500 workers. This number could over time increase to 900 workers.

To guarantee the availability of the necessary expertise, required for the development of high-tech activities, ongoing training programs in information technology, communications and aeronautics are provided.

The responsibility for the conversion of the former military compound into an area with high commercial, economic and social is with the Interoceanic Region Authority (Autoridad del la Región Interoceánica - ARI)[114].

One of the focus projects for ARI is the development of a container port on the 253 hectares of Farfan. The development site is located at the Panama Canal's entrance, in the close proximity of the Bridge of the Americas.

The Japan International Cooperation Agency (JICA), in its "Study on the Development Plan of the Port of Balboa in the Republic of Panama" [115], argued that after saturation of Balboa port and after an extensive modernization process, Farfan could become an important container port in the Pacific[116].

According to the plan for the development of Howard, the port will be part of the multimodal and intermodal center of transport that Panama is promoting worldwide. Farfan, located in the proximity of the Port of Balboa and of Howard airport makes this site especially attractive for the proposed development of a container port. The project is estimated to cost around 1 billion USD.

At present, the economic acceleration center has already been established in Howard. The Center is administrated by the Technological University of Panama and the Technology Institute of Florida, with the objective of offering training in aeronautic and logistics.

Work is also underway with "Corporación Financiera Internacional" to prepare the bid of the project for the development of the former Howard Air Force Base, comprising 1,002 hectares of the base and 1,000 additional hectares for future expansion.

[114] In 1993, the Interoceanic Region Authority (ARI) was established to administrate custody and maintain the areas transferred to Panama in accordance with the Treaties of the Panama Canal of 1977. Modifications according to Ley 5 of February 25th 1993 and Ley 7 of March 7th 1995 enabled the integration of ARI into State policies. The development of the Panama Canal area, including Howards base, is structured in accordance with Law No. 21 of July 2, 1997: "Regional Plan and General Plan of Use of the Soil, Preservation and Development of the Canal Area".

[115] "Study on the Development Plan of the Port of Balboa in the Republic of Panama"; JICA, June 1997, Final Report. The study was executed by The Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI)

[116] According to the study results and based upon the demand forecast, it was estimated that the container terminal at Farfan should become operational in 2009, see "Study on the Development Plan of the Port of Balboa in the Republic of Panama"; JICA, June 1997, Final Report, p 157

4. NATURAL CONDITIONS OF PANAMA

4.1 Geomorphology

4.1.1 Location

Panama is located on the narrowest and lowest part of the Isthmus of Panama that links North America and South America. It borders Columbia to the east and Costa Rica to the west , and lies between latitudes 7°11' North and 9°39' West, and between longitudes 77°10' West and 83°03' West. Panama is horizontally positioned between the Caribbean Sea and Pacific Ocean (see Figure 4.1.1).

Figure 4.1.1 Location of Panama

The country is divided into twelve provinces: Bocas del Toro, Chiriqui, Comarca de Ngobe Bugle, Veraguas, Los Santos, Herrera, Cocle, Panama, Colon, Comarca de San Blas, Darien, and Comarca de Embera (see Figure 4.1.2).

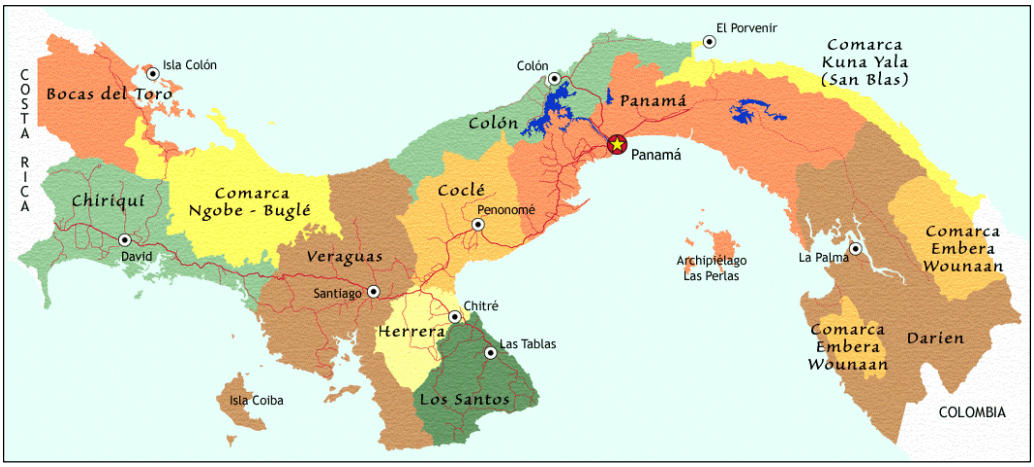
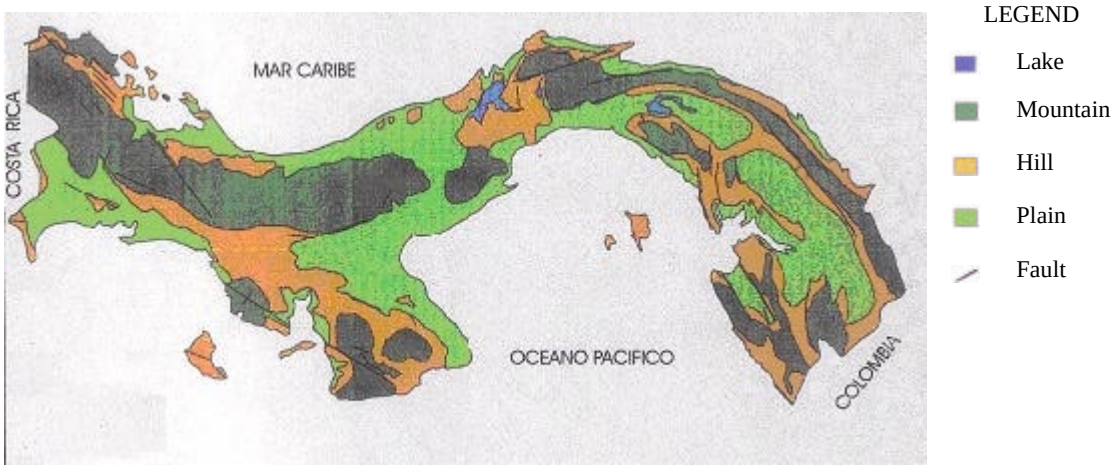


Figure. 4.1.2 Twelve Provinces in Panama

4.1.2 Topography

Approximately 1,700 km in length and 720 km in width, Panama is relatively flat, with most of its territory under 900 m. The only significant mountain range is known as the "Cordillera Central", which originates in Costa Rica and descends in altitude as it pushes eastward towards Panama City (see Figure 4.1.3).



Source: Atlas National de la Republica de Panama

Figure 4.1.3 Geomorphic Map of Panama

Dominant feature of landform is central spine of highlands forming continental divide. Highest elevations are near borders with Costa Rica and Colombia. Lowest elevations are at waist of country where it is crossed by Panama Canal. Most of population concentrates on Pacific side of the divide southwestward from Panama City.

The divide does not form part of the great mountain chains of North America. Only near the Colombian border, there are highlands related to the Andean system of South America. The spine that forms the divide is the highly eroded arch of uplifts from the sea bottom, in which peaks were formed by volcanic intrusions.

4.1.3 Shoreline and Submarine Configuration

The Republic of Panama has 1,259 km of coasts in the Caribbean and 1,703 km in the Pacific. The continental platform in the Caribbean is narrow. At the widest point it has 39 km, whereas at the narrowest point it only has 5.5 km. The platform at the Caribbean is almost 6,000 km^2, and is made up by hard seabed (rock and coral). On the other hand, the continental platform in the Pacific is ample and occupies about 19,000 km^2, and the platform is composed of soft seabed (mud and sand). This platform extends from the east (77º56' W), in the limit of Panama and Colombia, to the western border zone between Panama and Costa Rica (82º54' W).

The platform of the Gulf of Panama, that is the greater one, approximately extends by 150 km in the north-south axis and has a maximum width of 245 km in the east-west axis (between the Gulf of San Miguel and the Bay of Parita).The Gulf of Panama is relatively deeper and has a smooth slope in south direction. The depth increases considerably from the edge of the platform of the Gulf of Panama, going from 200 to 3,000 m in a distance of 10 km.

4.2 Land Use

In Panama, land use was oriented from the beginning of the Spanish colonization towards the Pacific; this region of the country is more suited for cattle and agricultural development. The Panama Canal, the most important inter-oceanic route of the world, has been from its inauguration in 1914 to the present, a great link in worldwide maritime commerce.

The native regions in Panama are administered by laws established by the national government and at the moment there are two native regions in the country.

From the beginnings of the Republic, the banana plantations in Panama were administered by multinational companies (United Brands Company and subsidiaries).

The tropical forest is divided among small logging companies or cooperatives, that make up wood industry or establish wood exploitation.

Present land use in Panama can be categorized in three different types and percentages for the whole area are as follows:

Arable land (7%), land cultivated for crops that are replanted after each harvest like wheat, maize and rice.

Permanent crops area (2%), land cultivated for crops that are not replanted after each harvest like citrus, coffee, and rubber; includes land under small flowering bushes, fruit trees, nut trees, and vines, but excludes land under trees grown for wood or timber.

Other area (91%), any land not arable or under permanent crops; includes permanent meadows and pastures, forests and woodlands, built-up areas, roads, barren land, etc.

4.3 Vegetation

The existing vegetation in Panama is characterized by large trees, shrubs, gramineousness and epiphytes.

Tropical perennial forests are made up of many perennial species with wide leaves and are characterized in layers of 30-55 m. The forests are developed in the lands that are below the 600 m of altitude from the sea level with an annual average precipitation between 2,000 and 4,000 mm. Most of these forests are in the Atlantic watershed, whereas in the Pacific side only small zones in the west of Chiriqui and the peninsula of Azuero have been left.

Sub-tropical perennial forests are also compound of many perennial species having wide leaves which are from a superior layer of continuous canopy and have an average height of 25 m. The forests are developed in very humid zones in elevations between 700 and 1,500 m of altitude from sea level. Most of these wooded zones are located throughout the Central cordillera.

Perennial high land forests are composed of perennial forests of wide leaves with continuous canopy approximately 25 m in height and average layer about 10 m. The forests are developed in humid and very humid zones over 1,500 m of elevation. This type of forest covers the Central cordillera, between the provinces of Chiriqui and Bocas del Toro.

Sub-perennial tropical forests are various and have a quite continuous canopy with average height of 35 m. Many emergent trees reach 50 and 55 m in height. These forests are inland with altitude under 600 m located in the east of the country (provinces of Darien, Comarca de San Blas and part of the provinces of Panama and Colon), including humid and sub humid zones. These woods of commercial dimension are in the abundant forest type of Panama.

Tropical caducous forests are a little dense between December and May.

Flooding land forests are composed of edaphic associations, pure or almost pure, on alluvial soil subject to the influence of the tides or to periodic floods during the rainy season, bordering the low coasts and the estuaries of the rivers.

Secondary vegetations in cultivate area and savanna are in extensive zones that include different climatic and edaphic conditions. This includes savannas maintained by the fire, permanent and semi permanent, annual cultures, natural and artificial grass and areas abandoned with secondary vegetation.

4.4 Meteorology

4.4.1 Climate

The semi-permanent meteorological cycle of the North Atlantic affects the climate conditions of Panama, and generates northeast trade winds that reach the country, determining the climate of Panama.

There is a convergence zone of trade winds from both hemispheres (north and south) that affects the climate of places under its influence and that for Panama is very important. This is the Inter tropical Convergence Zone (ITCZ)[117], which follows the sun's movement through the year. This north-south migration of the ITCZ produces Panama's two weather seasons: dry and rainy, characteristic of most of Panama's territory.

[117] Near the equator, from about 5° north and 5° south, the northeast trade winds and southeast trade winds converge in a low pressure zone known as the Inter-tropical Convergence Zone or ITCZ. Solar heating in the region forces air to rise through convection which results in a plethora of precipitation. The ITCZ is a key component of the global circulation system.

Köppen's climate classification[118] coincides with vegetation groups and is based on monthly temperature data, annual temperature data, and monthly and annual precipitation data.

According to Köppen's climate classification, the climate types can be categorized in Panama as shown Figure 4.4.1.

4.4.2 Rainfall

In the Pacific watershed, there is an extended and unique rainy season that begins by the end of April or in May and persists until mid or end November. Between December and the end of April, the dry season sets in with almost total rain absence.

Over the slopes and coastal plains of the Caribbean watershed, a different variation from the seasonal pattern in the distribution of rains prevails.

Rains in Panama are characterically very intense and of short duration, although no precipitation in some areas is observed during the rainy season. These characteristics produce annual average values between 1,000 and 7,000 mm (refer to Figure 4.4.2).

In the tropics, precipitation constitutes the most climatic variable of all. The annual total shows considerable changes from one place to another. Other characteristics of rainfall are seasonal distribution, intensity, frequency and length of days with rain.

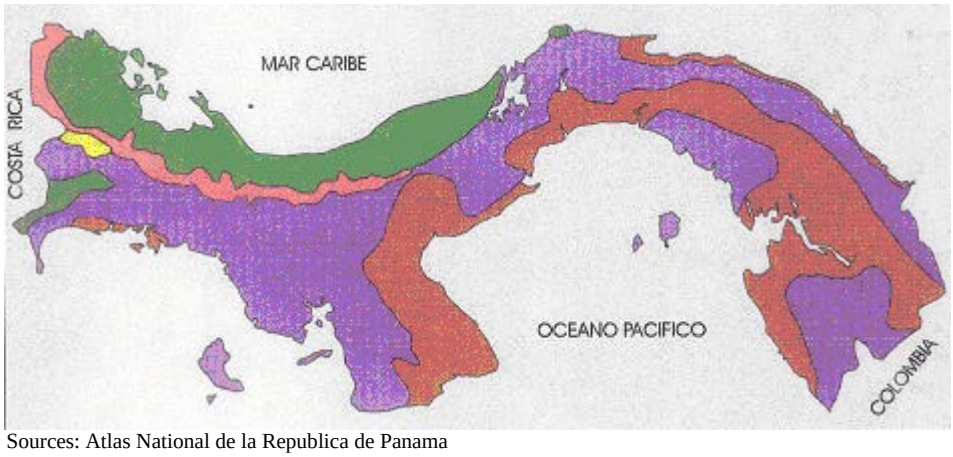
4.4.3 Temperature

The values registered for the temperatures in Panama follow the geographic position of the Isthmus. Monthly air temperature for main cities of each region in Panama is shown in Figure 4.4.3. Temperatures are uniformly high (as is the relative humidity), and there is little seasonal variation. Diurnal ranges are low; on a typical dry-season day in the capital city, the early morning minimum may be 24°C and the afternoon maximum 29°C. The temperature seldom exceeds 32°C.

4.4.4 Humidity

The Atlantic and Pacific Oceans are the main contributors to Panama's humidity, because the country is narrow, so the climate reflects a great amount of maritime influence. Ocean-atmosphere interaction determines heat and humidity of air that circulates over the oceans. Figure 4.4.4 indicates monthly humidity (historical average from 1997-2002) in Naranjal-Chichebre (Panama province) and Facultad de Agronomia (Chiriqui province). As shown, the monthly humidity of both cities is historically the same, characterized by 70-80 % in dry season from November to April, 80-90% in rainy season from May to December. Humidity in Panama is also comparatively high like the temperature.

[118] Koppen was a German botanist and climatologist. He developed his classification system in the early 1900's. Koppen's system uses 5 principal climate types Koppen used vegetation groups to aid in climate classification. Koppen used definite temperature and precipitation criteria to distinguish between climate types: A means climates are hot and moist, C means climates are warm and moist, D means climates are cool and moist, and B means climates include a wide range of temperature and a range of moisture.



Sources: Atlas National de la Republica de Panama

LEGEND

Very humid tropical climate:
Abundant rain all the year, drier month, precipitation 60 mm, average temperature of the freshest month >18 °C, differentiates between the average temperature from the warmest month and the freshest month < 5 °C.

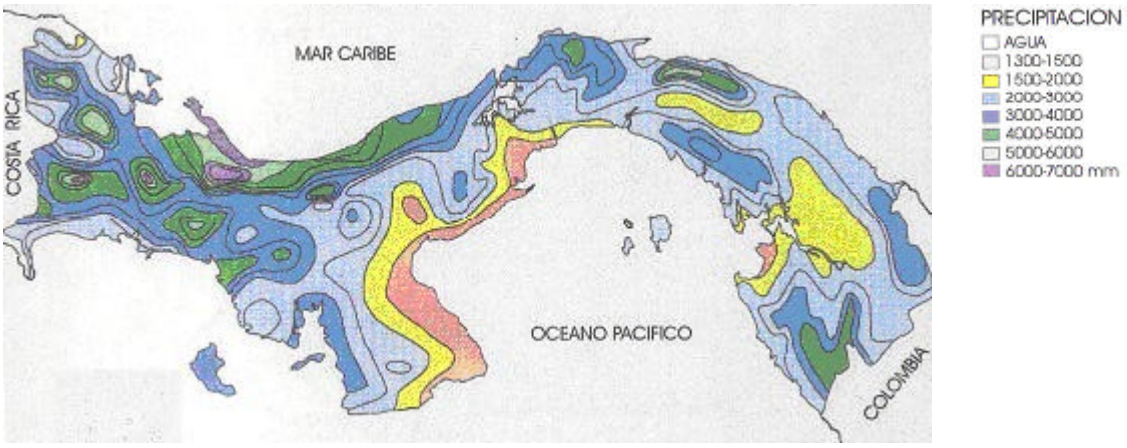
Humid tropical climate:
Annual precipitation greater than 2500 mm, one or more months with smaller precipitation of 60 mm, average temperature of the freshest month > 18 °C, differentiates between the average temperature from the warmest month and the freshest month < 5 °C.

Tropical savanna climate:
Annual precipitation smaller than 2500 mm, prolonged dry station (months with rain smaller than 60 mm) in the winter of the North hemisphere, average temperature of the freshest month > 18 °C, differentiates between the average temperature from the warmest month and the freshest month < 5° C.

Tempered climate very humid of height:
Abundant rain all the year, dry month but, precipitation >=60 mm, average temperature of the freshest month 18 °C, differentiates between the temperature from the warmest month and the freshest month < 5 °C, determined by the height of the place (> 1200 ms).

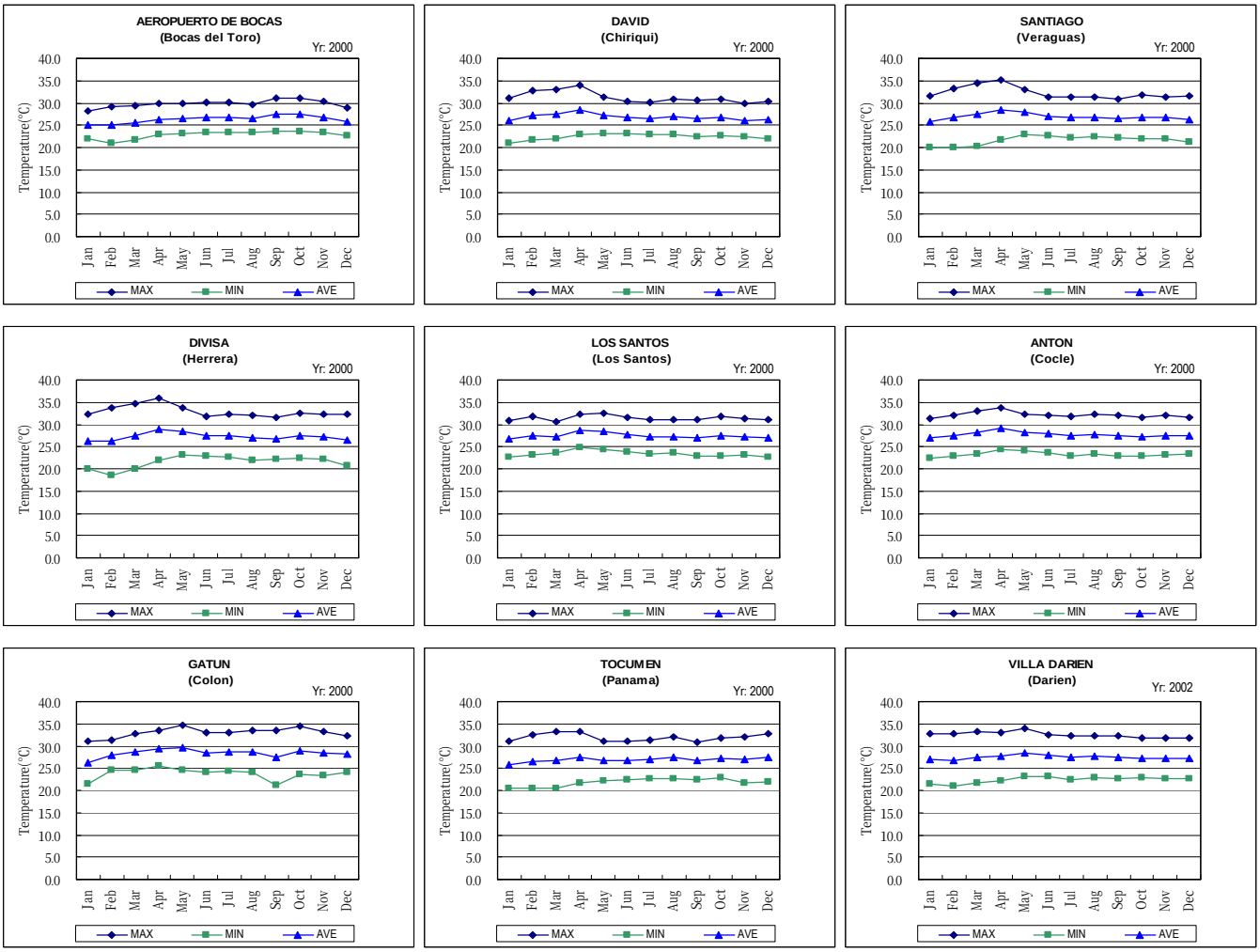
Tempered climate humid of height:
Dry station (months with precipitation smaller than 60 mm) in the winter of the North hemisphere, average temperature of the freshest month 18 °C, differentiates between the average temperature from the warmest month and the freshest month 5 °C, determined by the height of place (> 1200 ms) and one or more dry months.

Figure 4.4.1 Climatic Classification of Panama



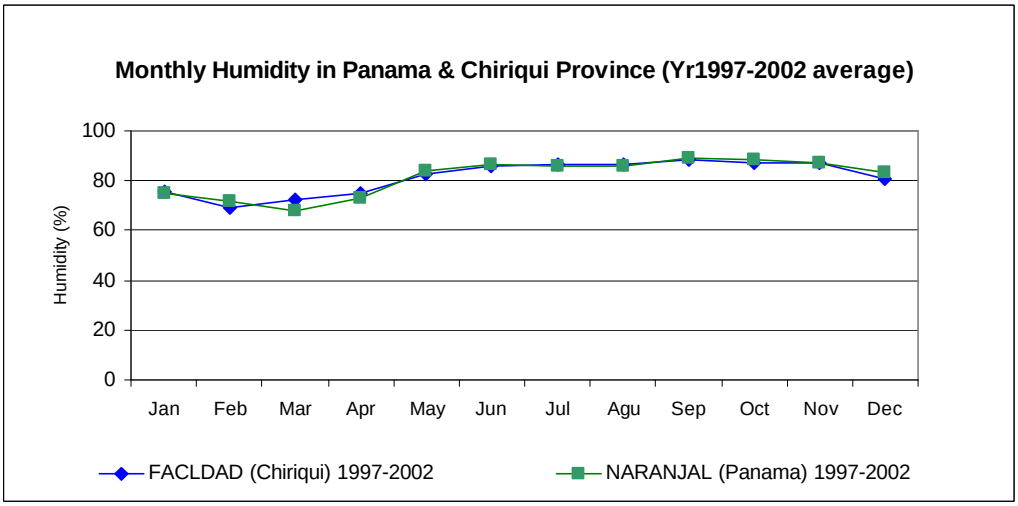
Source: Atlas National de la Republica de Panama

Figure 4.4.2 Annual Average Precipitation in Panama



Sources: Autoridad Nacional del Ambiente (ANAM), Direccion de Estrdistica Y Censo

Figure 4.4.3 Monthly Air Temperature for Main Cities in Panama (2000, 2002)



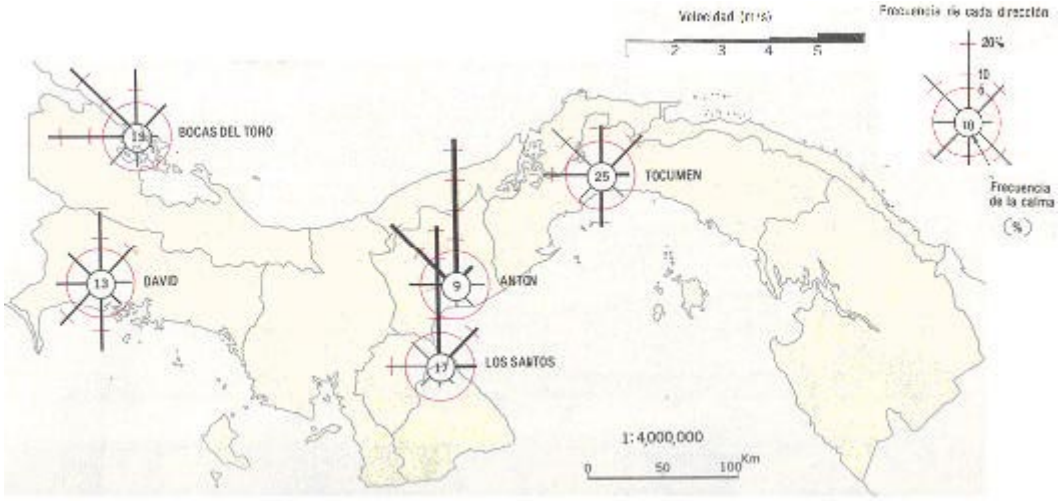
Source: Autoridad Nacional del Ambiente (ANAM)

Figure 4.4.4 Monthly Humidity in Panama and Chiriqui Province (1997-2002)

4.4.5 Wind

The winds of the north move the ITCZ away from the Isthmus of Panama, whereas the winds of the south generally push the ITCZ on the Isthmus.

Figure 4.4.5 designate wind roses for annual average wind velocity with each direction in Panama, as summarized data from 1971 to 1985. The most elevated values of the speed appear from the Atlantic side, especially the central Panama such as Anton and Los Santos which are affected by northern strong wind. In general, the whole country is invaded by the predominant flow of trade winds that seem to impinge during dry months.



Source: Atlas National de la Republica de Panama

Figure 4.4.5 Annual Average Wind Velocity with Direction in Panama (1971-1985)

4.5 Geology

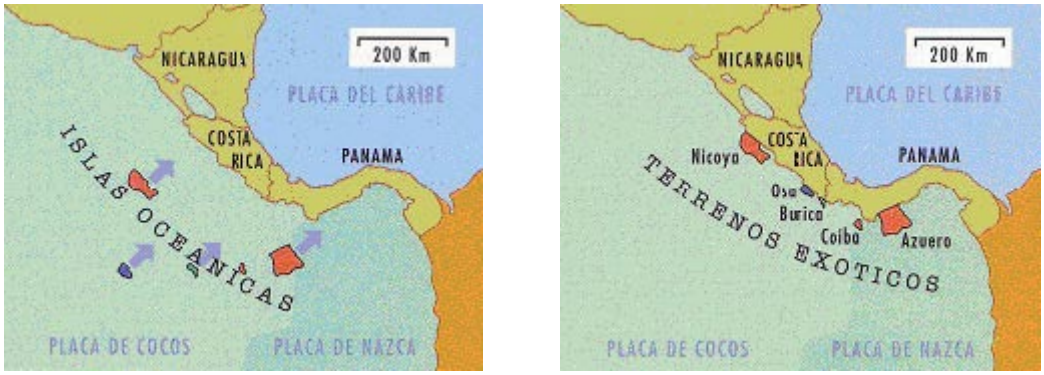
4.5.1 History of Isthmus Emergence

Millions of years ago, a volcano series existed and was dispersed over Cocos Plate[119] in the Pacific Ocean. When the Cocos Plate was displaced toward the Caribbean Plate[120], the volcanoes arrived one by one to subduction zone located in close to Costa Rica and Panama coastal zone.

Those huge oceanic volcanoes remained in the subduction zone adhering to superior plate; today they are in Isla Coiba and Azuero Peninsula in Panama (see Figure 4.5.1).

[119] The Cocos Plate is created by the East Pacific Rise from the rise the plate moves pushed, pulled, and dragged to the east. Because the Cocos Plate is made of oceanic crust and upper mantle it is denser than the west edge of the Caribbean Plate.

[120] The Caribbean plate is an area of over thickened oceanic crust, with a thickness of approximately 8 to 20 km, and is moving eastward with respect to the adjacent North American and South American Plates at a rate of approximately 20 millimetres per year.



Source: Panama, Puente Biologico

Figure 4.5.1 Geological History

The Central American isthmus arose from tectonic activities during the Upper Jurassic period, 190 million years ago. Granite intrusions in this period later formed the Llorona Range in Portobelo and the San Blas Range, which resulted in the mountainous area in the northwest sector of the Panama Canal watershed.

In the Cretaceous period, 136 to 65 million years ago, a volcanic insular arch was formed from northeast Colombia to Nicaragua, and some of the oldest rocks in the country emerged, including San Blas Range and Gatun Lake formations.

During the Pliocene (5.7 million years ago), due to huge volcanic activities preceded by massive sedimentation processes, the insular arch closed, effectively separating the Pacific Ocean from the Atlantic; this process continued until 2.5 million years ago.

In the Pleistocene (2.5 to 1 million years ago), several sectors of Panama rose and sank due to enormous glaciations and changes in sea level. Sedimentations from this period formed the country's coastal plains.

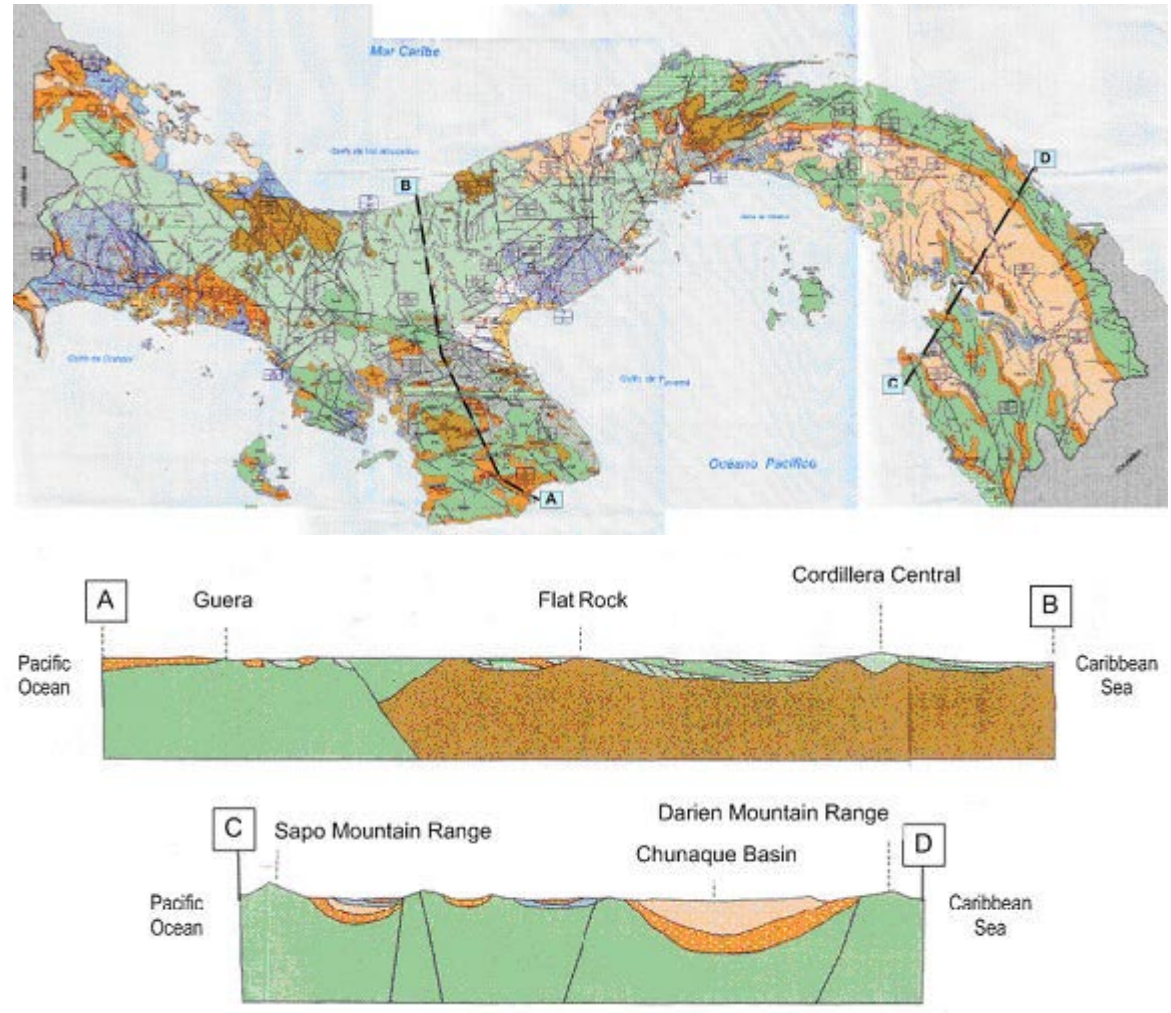
4.5.2 Stratigraphy

Rocks in Panama vary in age, from the Cretaceous era to the present, and include marine and terrestrial sediments, intrusive and extrusive rocks. Figure 4.5.2 show stratigraphic Map in Panama with two geological sections.

(1) Secondary

The basic and ultrabasic rocks that surface in the south-occidental part of the Azuero Peninsula and Sona are considered the oldest rocks of Panama. Lava frequently presents “pillow” structures indicating positioning in submarine environments.

Sedimentary rock of the Cretaceous era comprises limestone (Bocas del Toro and Azuero Peninsula) locally affected by metamorphosis of contact.



Sources: Empresa de Transmisión Eléctrica, S.A.(ETESA)

LEGEND

	Tertiary Sedimentary Rock (Eocene-Oligocene)		Sandy mud and Clay, not consolidated sediment
	Tertiary Volcanic Rock (Miocene)		Tertiary, Sandstones, Shale, Mires, Conglomerates, Limonite Spile, Limestone
	Secondary Volcanic Rock (Cretaceous)		Quaternary, Alluviums, Consolidated Sediments, Sandstones, Mangrove Swamp, Sand & Delta Deposition
	Tertiary Sedimentary Rock (Oligocene)		Intrusive Rock

Figure 4.5.2 Stratigraphical Map in Panama

(2) Tertiary

The tertiary era in Panama contains marine and terrestrial sequences, which were mainly influenced by volcanic sediments such as volcanic sheets, and covered by basic, acid fluids and ignimbrite. This development varied greatly from one region to another, and it is not possible to make a precise stratigraphic correlation and classification.

In the west of Panama, the tertiary can be seen in the northern and southern slopes, bordering the Central mountain ranges, in the interior of this region. The tertiary is covered by rock of the Baru Volcano. In the northeast of the frontier with Costa Rica, the tertiary is primarily marine sediments.

In the center of Panama, along the central mountain ranges from the frontier of Costa Rica to the Panama Canal limit, terrestrial volcanic and plutonic formations predominate.

In the Southern part of the Azuero Peninsula and Sona (Veraguas), there are tertiary volcanic rocks. In the northern, eastern and central part of the Azuero Peninsula, there are continental tuffs interspersed with marine sediments, which indicate marine regression accompanied by violent volcanism.

(3) Quaternary

This system includes the Pleistocene and the most recent that still continues, defines all geological activity that has occurred since the end of the Pliocene era to the present.

The Quaternary era in Panama primarily consists of volcanic rock from the Pleistocene, coastal deposits from swamps, clay, interspersed organic silt that contains marine fossils and conglomerates. Marine fossils of the Pleistocene are found at altitudes that varied from several meters to more than 30 m above sea level. Recent deposits include fluvial accumulation, marine and in addition coastal swamps and muddy shallow areas.

Fluvial accumulation that appears south of the Baru Volcano and the coastal marine plains north of Puerto Armuelles are identified as the Quaternary. In the western part of the country close to Puerto Armuelles, some conglomerates with sheets superior to 200m that indicate movement in this region, are localized on dozens of meters above sea level and crossed by faults and frequent seismic movements.

The biggest extension of the Quaternary deposits is represented in the central provinces on Azuero Peninsula. Swamps appear as a result of the retreat of the sea. There are also the Quaternary deposits toward the east on coastal plains in the Panama province.

(4) Soil

In general, Panamanian soil is lixiviated light clay, with a pH a little bit acidic, low contents of phosphorous and medium contents of organic material. Soil is red because of ferric oxide. The soil is also characterized by high contents of calcium, magnesium and potassium; therefore, the soil drains well due to the clay texture.

The most fertile soils are alfisol, alluviums and volcanic ashes. The provinces with the extensions of arable soils are generally Panama, Chiriqui, Veraguas and Cocle. On the other hand, half of forest soils are found in the province of Darien.

4.6 Marine Climate

4.6.1 Upwelling

Two events regularly affect the coastal marine climate of the Gulf of Panama: (a) a wind-driven, seasonal upwelling, and (b) the episodic occurrence (4-9 year interval) of sea warming due to the El Nino Southern Oscillation.

Upwelling, which is called "coastal crop out", develops from 150 m depth probably, during the dry season when northeast trade winds cross to the Pacific over a low part in the isthmian mountain range in central Panama, and displaces nutrient poor, with offshore surface water. This surface water is replaced by the up welled cooler, more saline water.

The cold water outcrop zones are very rich in sea surface. Thanks to sun energy, this nutrient become in a huge quantity of micro-planktons, which are very important in marine ecology.

4.6.2 Temperature

Average water surface temperature in the Caribbean side ranges from 27°C (dry season) to 29°C (rainy season), and on the Pacific side from 32°C (dry season) to 29°C (rainy season).

4.6.3 Salinity

Generally, the salinity of the superficial water in the Caribbean coast of Panama, oscillates between 33 and 36 $^{o}/_{oo}$; in the Gulf of Panama, it ranges between 25 and 36 $^{o}/_{oo}$, whereas in the Gulf of Chiriqui it fluctuates between 28 and 34 $^{o}/_{oo.}$

4.6.4 Tide

On the Pacific side of the isthmus, a large tidal range is one of the most distinctive features. Tides are semi-diurnal and amplitudes may range up to 7 m.

On the Caribbean side of the isthmus, the tidal range is small (less than 0.7 m), with a complex seasonal pattern of change between diurnal and semi-diurnal tides of varying amplitudes.

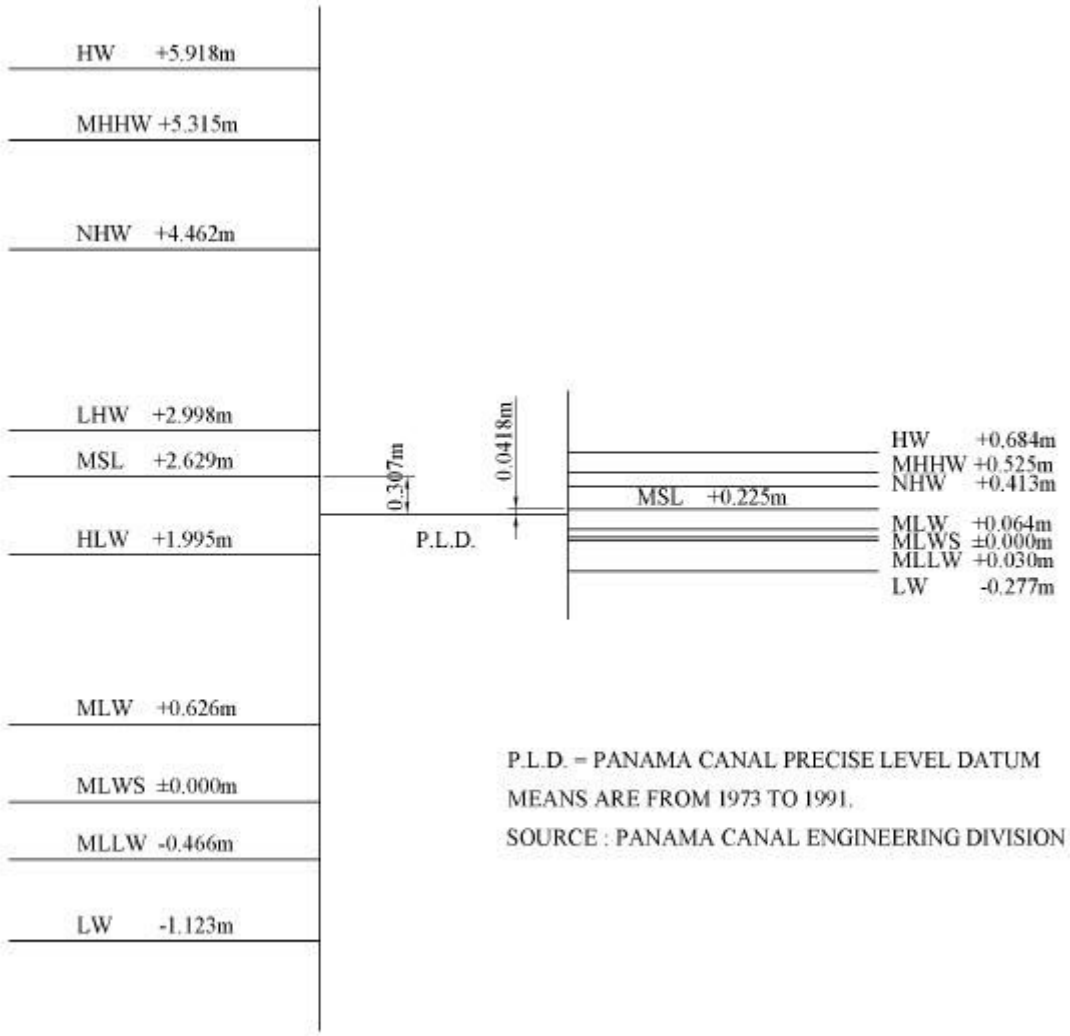
Tide level relations of the Pacific side and the Caribbean side in Panama are respectively referred to the tide conditions of Balboa port and Cristobal port as shown in Figure. 4.6.1.

4.6.5 Current

On the Caribbean side of the isthmus, the annual current is 0.5-1.0 kt, and it comes from the northwest direction going down along the coast of Nicaragua and Costa Rica.

On the Pacific side, there are two types of currents. In the Gulf of Panama, there is current coming from the Colombian coast and a part of the current deviates to the tip of Azuero Peninsula. Seasonal fluctuation of the current velocity appears spontaneously and the velocity is approximately 0.3-0.7 kt.

On the other hand, the current from the Pacific Ocean affects the Gulf of Chiriqui; the influence seems to be small, maximum 0.5 kt and only appears from January to May.



Source: JICA, Final Report, the Study on the Development Plan of the Port of Balboa, 1997

Figure 4.6.1 Relation of Tide Elevation between Balboa Port and Cristobal Port

4.6.6 Waves

Wave height in the Caribbean side is normally less than 1.0 m because of the sheltering effect with outer waves by Cuba, Jamaica and Dominica. When tropical depression or hurricane develops inside the Caribbean Sea, sometimes wave height may be up to 1.5 m.

In the Pacific side (the Gulf of Panama and the Gulf of Chiriqui), wave height is maximum 2.5 m from the direction of south or southeast.

4.7 Natural Disasters

4.7.1 Hurricanes

Meteorological conditions are mainly affected by two hurricane tracks: from the Caribbean Sea and the Pacific Ocean.

(1) Caribbean Sea

When hurricanes are located over Colombia or on Colombia's northern coast, Panama is affected by northern winds towards occidental regions. These winds produce great amounts of precipitation along the Caribbean coast because of its interaction with local geography.

(2) Pacific Ocean

Hurricanes from the Pacific only affect Panama if they are very close to Central America. The two most affectable positions are south of Panama or south of Costa Rica, but this seldom happens. In these regions, low pressure commonly lies and winds obtain hurricane energy until they migrate towards the west far from Central America. However, low pressure generates northern winds towards occidental regions and south orient region, in the second case, wind shifts to the southwest and it transports great amounts of humidity from the Pacific Ocean and produces strong storms along the Pacific coastline.

(3) Hurricane Mitch and its contribution of rain in Panama

This hurricane severely affected Central America during October 21-31 of 1998. In Panama, during the afternoon of October 22nd, the tropical depression transformed into a tropical rainstorm, localized on 370 km northeast of Colon. Maximum winds reached 75 km/h.

On the next day, Mitch was 430 km northeast of Colon and reached winds of 83 km/h. During the day, wind speeds intensified and reached 178 km/h, then 250 km/h on October 26th turning into a 5 degree hurricane.

During these 2 days Mitch had moved slowly towards the west, on the 26th it was 175 km northeast of cape Gracias a Dios in Honduras. A maximum wind speeds were observed the 26th and 27th reaching 286 km/h and its central pressure reduced to 905 hPa.

4.7.2 Floods

When Hurricane Mitch attacked Panama, at some regions, there were floods caused by heavy rains (Chiriqui, Veraguas, Los Santos and Darien) that caused damages in crops, homes and water systems, and created public health problems. Landslides caused damages in roads, especially roads through Chiriqui and Veraguas. Affected population by river floods in Chiriqui, Veraguas, Los Santos and Darien was estimated to be 6,387 with 2,808 injuries and 185 homes were destroyed.

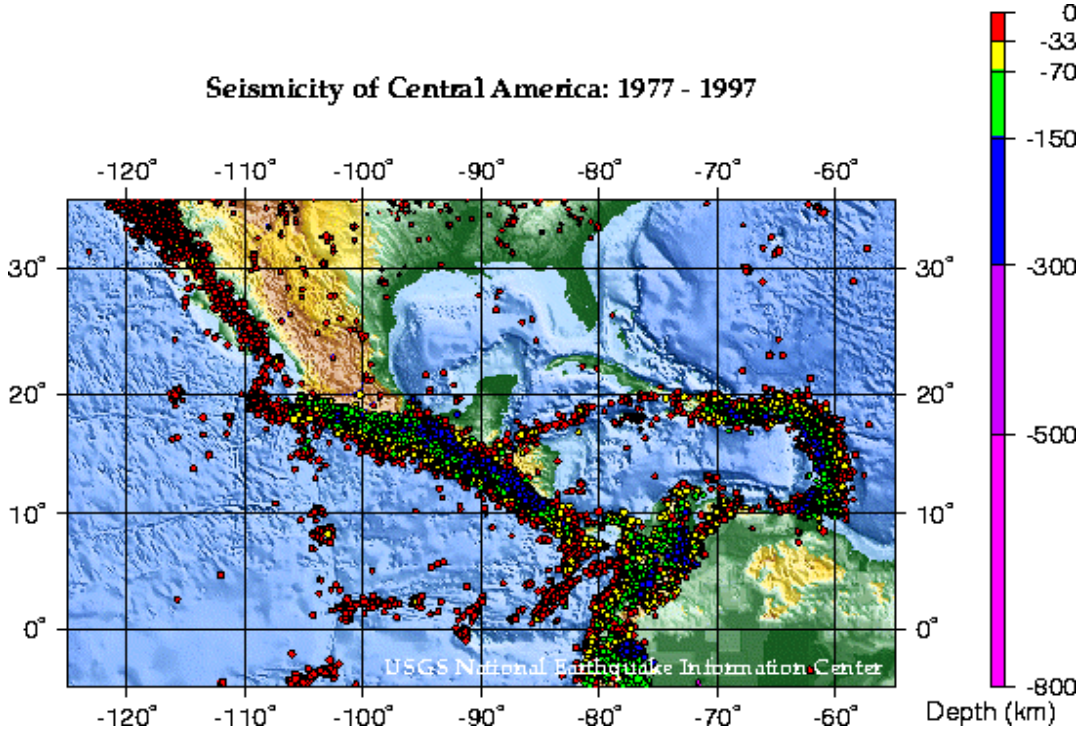
4.7.3 Seismic Activities

Figure 4.7.1 describes seismicity of Central America from 1977 to 1997. The distribution of epicenter in America reflects a high density of events along the Pacific Coast in the regions of Guatemala, El Salvador, Nicaragua and Costa Rica. The regions with more activity have had severe earthquakes.

Generally, the origin of this intense seismic activity is caused by the subduction zone, where the Cocos plate is introduced into the Caribbean plate creating the associated volcanic chains, with the interaction between the Caribbean plate with the North American plate in Guatemala.

In Panama, two typical seismic zones can be identified as the southwest of Chiriqui province and the southeast of Darien province, where localize or converge three tectonic plates exist. One typical seismic zone lies between Cocos plate, Nazca and the Micro-plate of Panama, and the other is located between Nazca plate, the South American and the Micro-plate of Panama (refer to Figure 4.7.2).

Along 83º W meridian, south of Punta Burica, high seismic activity is caused by the interaction of Cocos and Nazca Plates, in the Fracture Zone of Panama. Also, along parallel 7º N, seismic activity is caused by the movements between the Panama Micro-plate and the north limit of Nazca plate.



Source: United States Geographic Survey (USGS)

Figure 4.7.1 Seismicity of Central America (1977-1997)

Figure 4.7.2 Location of Plate Tectonic in Latin America

Earthquakes occur around both borders and the Pacific Ocean (mostly the south and west of the Gulf of Chiriqui and southeast of the Gulf of Panama). They have registered an average magnitude of 4-5 by the Richter scale. Occasionally, it has reached over 6 in the same regions.

5. ENVIRONMENTAL CONDITION OF PANAMA

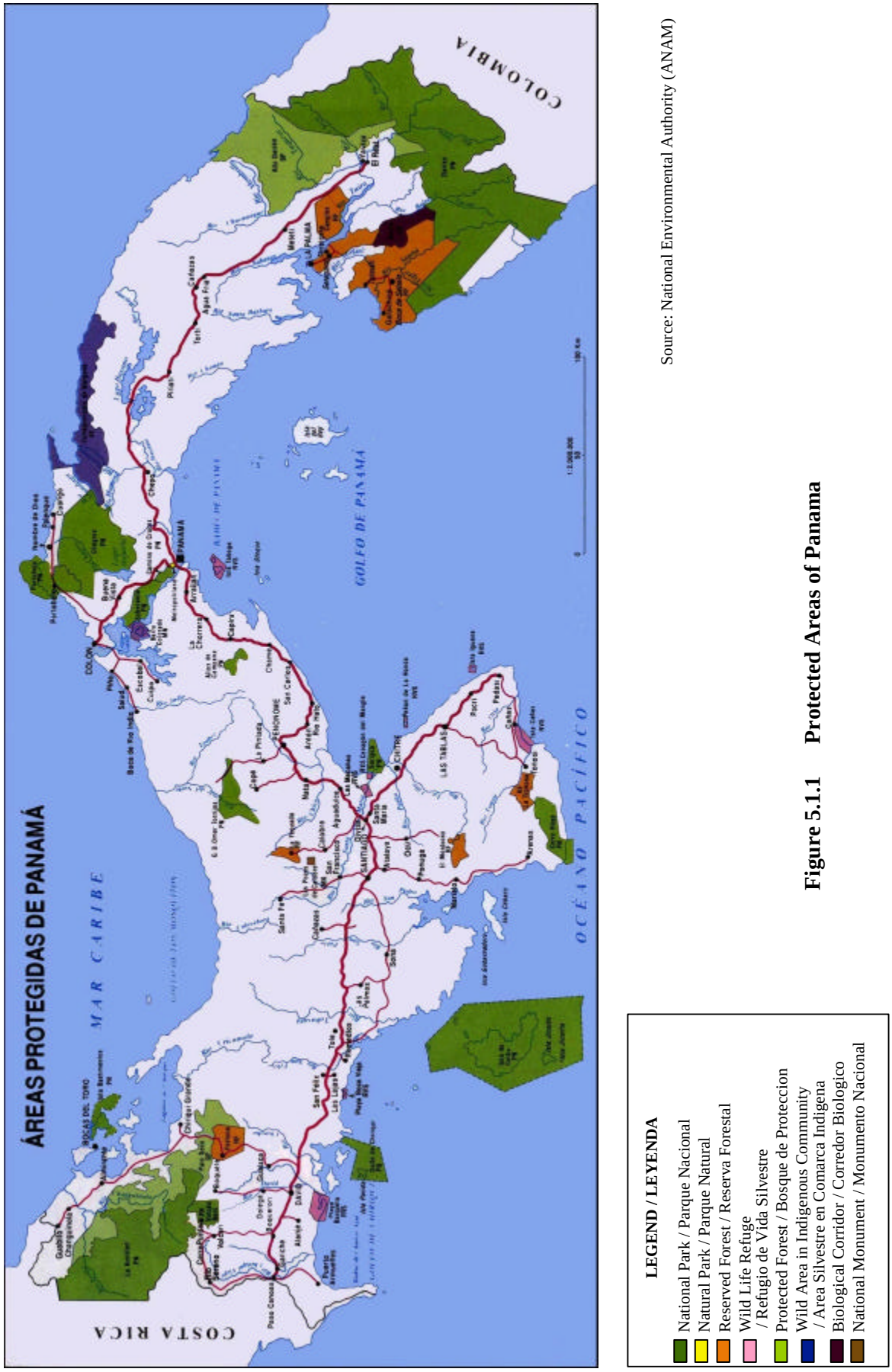
5.1 Overall Environment

Panama has a fascinating and varied ecology principally consequent to its geographic location just north of equator and varied altitude with mountain range that virtually divides the country into two watersheds draining into Atlantic (Caribbean) Ocean to the north and Pacific Ocean to the south. The rich ecology and hence biodiversity is further complemented with its varying soil characteristics. Accordingly, as per the Holdridge Classification Panama have twelve (12) life zones, which is remarkable for a country with a territorial area of only about 75,500 km^2 (ref. Getting to know Panama, Michele Labrut, 1997).

More than 12% of the national territory remains as protected areas. The protected areas are distributed throughout the country that incorporates both the eastern and western national border areas respectively with Columbia (Darien national park) and Costa Rica (International Park La Amistad). Other protected areas of the country include, Campana, Cruces, Cerro Hoya, Isla Coiba, Isla Bastimentos, Gulf of Chiriqui, Omar Torrijos, Portobelo, Sarigua, Soberania and Volcan Baru. It is noted that of these protected areas the Isla Bastimentos located along the Caribbean (Atlantic) coast of Bocas del Toro and both the Gulf of Chiriqui located along the Pacific coast of Chiriqui and Isla Coiba located off the coast of Chiriqui are principally marine protected areas (protected marine environment) while the rest are protected forest areas of terrestrial environment. The protected areas of Panama (Areas protegidas de Panama) are shown in Figure 5.1.1 for illustrative purpose.

It is noted that deforestation of forests in Panama, in particular along its Pacific watershed, has been a serious problem for a long time. In fact along the Pacific watershed virtually there is no remaining natural forestation. Even though this has been largely controlled recently since the creation of ANAM (National Environmental Authority/Autoridad Nacional del Ambiente) and the implementation of environmental protection measures consequent to the enactment of Forestry Law (Law No 1 of February 1994), deforestation still remains a significant terrestrial environmental degradation issue to be dealt with vigorously.

Nevertheless, various active reforestation programs have also been initiated and ongoing throughout the country imparting hope for long-term terrestrial environmental restoration. In this respect reforestation works undertaken by private and non-governmental (non-profit) environmental organizations like ANCON (National Association for the Conservation of Nature/Asociacion Nacional para la Conservacion de la Naturaleza) are also very significant.



Source: National Environmental Authority (ANAM)

Figure 5.1.1 Protected Areas of Panama

5.2 Coastal Water Environment

The coastal water environmental condition of Panama has much relevance to this port development master plan since ports have the potential to cause coastal (port water) environmental degradation consequent to ship/vessel operation including cargo handling. In this respect, as far as the current state of coastal water environment of Panama is concerned it could be regarded as good with no serious coastal water environmental pollution issues, in an overall sense.

This overall good coastal water environmental status is principally attributed to the low population density of Panama with a population of only about 3 million (year 2000) in a relatively vast land area of 75,500 km^2 that also includes a vast coastline of about 3000 km in length spanning both Pacific and Atlantic (Caribbean) oceans. Consequently, the pollution load generated by miscellaneous anthropogenic activities in itself is low in the first place to cause any serious coastal water environmental degradation due to subsequent pollution load runoff into the coastal waters. Still, this does not imply that there are no localized coastal water environmental pollution issues in Panama.

Concerning the localized coastal water environmental pollution issues in Panama, it is postulated that land based miscellaneous anthropogenic activities are the major contributory sources of such pollution that are noticeable in the coastal waters of significant population centers including Panama city, the largest population center of the nation. Severe localized coastal water pollution accompanied with the emanation of offensive odor, in particular during low tidal condition, attributed to the disposal of untreated sewage is visibly evident in the coastal waters of Panama Bay in Paitilla area located nearby the newly opened Multi Centro shopping complex. It is further noted that even when a sewage treatment plant is provided at times it is not adequately operated and maintained as noted in the tourism island of Bocas Del Toro (Isla Colon). Isla Colon has a facultative pond sewage treatment plant that requires improved operational management measures.

In relation to localized port water pollution in those ports and ramps currently under operation in Panama, oil pollution is identified as the most significant port operational environmental issue. Localized oil pollution in port/ramp waters is visible in most passenger terminals under the jurisdiction of AMP. Such terminals include the passenger terminal of Balboa port in Panama City, Coquira port in Chepo of Panama Province, and Almirante port waters and passenger terminals of Bocas Del Toro (Isla Colon) located in Bocas Del Toro Province.

Finally based on the above findings on localized coastal water environmental pollution in Panama the following action programs are recommended as basic mitigation measures.

Since land based anthropogenic activities in developed population centers located near the coastal areas is the most significant cause of coastal water environmental pollution, development of

proper waste management systems including the provision of sewage treatment plants so as to treat the wastewaters of land based anthropogenic origin prior to their disposal into natural water environment including the coastal water environment shall be the first priority for the improvement of coastal water environment. This is a nationwide environmental sanitation issue to be actively addressed by the Government of Panama.

Moreover, it is important to ensure proper operational management of such wastewater treatment plants. On the other hand AMP has to improve its oil pollution control measures in those ports under its jurisdiction. Oil is the most important pollutant of ship/vessel operation, which is also regulated by the Annex-1 of MARPOL. In this respect provision of waste oil reception facility by AMP in ports is the most important basic requirement that has to be complemented with surveillance against illegal oil dumping by vessel operators.

5.3 Environmental Laws, Regulations and Standards

5.3.1 Environmental Laws and Regulations

(1) General laws and regulations

The Legislative Assembly of Panama enacted a comprehensive national environmental law in July 1998. This environmental law is generally referred to as Law No. 41 of 1998.

The Law No.41/1998 established clearly the basic frame for national environmental conservation and management for Panama. Moreover, this law, as of Article No. 5, established ANAM (National Environmental Authority/Autoridad Nacional del Ambiente) as the principal responsible governmental authority for national environmental protection, conservation and management, which is represented to the Executive Branch through the Ministry of Planning and Economic Policy.

This law (No.41/1998) under Article 7 defines the functions and responsibility of ANAM as follows;

Formulate the national policy of environment and the use of the natural resources, according to the State Development Plan.

To direct, supervise and to carry into effect the implementation of the policies, strategies and environmental programs of the government, in coordination with other institutional and private organs.

Dictate environmental standards of emission, absorption, and procedures with the participation of the competent authority as appropriate.

Formulate laws for due consideration of the corresponding circumstances.

Produce the resolutions and the technical and administrative standards for the implementation of the national policy on environment and the renewable natural resources, so as to prevent environment degradation.

Implement the present law, its regulation, the environmental quality standards and the technical and administrative norms assigned by law.

Represent the Republic of Panama before national and international organs and assume all functions and representations of National Institute of Renewable Natural Resources (INRENARE).

Promote and facilitate the implementation of environmental projects accordingly in coordination with the public and private sectors.

Dictate the requirements, guidance and terms of reference for the elaboration and presentation of the declaration, evaluation and conduct of environmental impact assessment (EIA) study.

Evaluate the environmental impact assessment (EIA) study and produce the respective resolutions.

Promote public participation and the application of the present law and regulations, in the formulation and implementation of policies, strategies and environmental programs of its competence.

Promote the transfer to local authorities of the relevant functions on natural resources and the environment within its territories and assist the municipalities in the local environmental aspects.

Promote the environmental technical and scientific investigation, in coordination with the National Secretary of Science and Technology and other specialized institutions.

Cooperate in the elaboration and implementation of formal and informal education, in coordination with the Ministry of Specialized Education.

Create and maintain available and update data base related to environment and the sustainable use of the natural resources, through studies and provide information and analysis on technical aspects so as to support the National Environment Council, as well as the provincial councils and others.

Elaborate an Annual Report on the environment and present to the Executive Branch.

Charge for services provided to public entities, corporate or private enterprises, or private persons for the development of profitable activities.

The relationship of the Authority with natural or juridical persons that are dedicated to non-profit activities will be established through agreements.

Impose sanctions and fines, in accordance with the present laws, regulations and other complementary dispositions.

Perform any other functions and duties according to this law and its regulations as required.

(2) MARPOL Regulations

Panama is a signatory nation that ratified all five annexes of MARPOL-73/78 of IMO (International Maritime Organization) concerned to the prevention of pollution from ships and vessels. Accession to MARPOL by the state of Panama has been effective since 1983 as per Law No.1 enacted by The National Representative Assembly dated October 25 1983.

General Directorate of Mercantile Marine (Direccion General de Marina Mercante) of AMP is responsible for the implementation of MARPOL regulations and well as the Port State Control Requirements in the form of inspection of ships and vessels on their compliance and possession of functioning waste management systems as well as monitoring of vessels and ships against illegal dumping of wastes including levying fines for any non compliance by vessels/ships and clean-up of port waters.

(3) Environmental Impact Assessment (EIA) Regulations

The Executive Degree No. 59, dated March 16, 2000 (De.59/2000), promulgated by ANAM as the competent authority on environmental impact evaluation in accordance with the above mentioned Law No.41/1998, defines and dictates the process of environmental impact evaluation of Panama in total of 79 Articles.

Of these articles, The Article 14 specifies projects and actions subjected to mandatory EIA process according to various project sectors. In this respect, under the transport sector the listed projects subject to EIA process include commercial ports and docks as well. Accordingly, projects planned by this master plan are subjected to EIA process.

It is further noted that the Article19 of this De.59/2000 groups the EIA studies of projects mandated by the Article 14 into 3 categories depending on the degree of perceived adverse impacts.

Category-I EIA studies are for projects that do not generate any significant adverse impacts, and hence very simple EIA document is adequate. Category-II EIA studies are for projects that may generate significant adverse impacts but still could be mitigated with well known and easily applicable measures so as not to adversely affect the overall environment. Accordingly, EIA studies of many typical civil engineering projects, including the port development projects planned by this master plan could be regarded to fall into Category-II as the norm. Category-III EIA studies are for projects that would probably generate significant adverse impacts, which in turn would require detailed analysis to evaluate the potential adverse effects and hence to determine the appropriate and applicable mitigation means and also to formulate the required environmental management plan.

It is further noted that only consultancy firms that are certified and licensed by ANAM, still using experts who themselves are certified and licensed individuals by ANAM, could officially conduct an EIA study for a project. Moreover, the Consultancy firm that conducts the EIA study decides

by itself with due justification the relevant Category (Category I, II or III) of the EIA study for the development project concerned.

Finally, EIA studies were conducted for the short-term port development plans of the feasibility study as delineated by the master plan. These studies were conducted following the overall EIA guidelines of ANAM and by considering all projects are belonging to Category II of the EIA guidelines. This is in consideration to the fact that these EIA studies were conducted during the feasibility study stage of the projects as opposed to the detailed engineering design stage of the projects for which the EIA guidelines is intended to be followed in totality since the project facilities could be determined concretely during the detailed engineering of a project. The formal EIA documentations in Spanish fully in conformity with the EIA guidelines of ANAM are recommended to be formulated when each of the project components concerned are actually implemented. The EIA studies conducted are dealt with under the relevant projects in Volume 2 of this report (and also in Appendix P).

5.3.2 Environmental Standards

Currently, under the Triennial Standards Development Program (Programa trienal de normas, 2001-2003), that has been ongoing since July 2001, ANAM is in the process of formulating various environmental standards to suit the situation, purpose and intended use of the environmental element like a water body in accordance with its authority as granted by the Law No.41/1998. As of January 2004 so far only effluent standards for treated wastewater has already been developed. Such standards already developed include the standards for the reuse of treated wastewater, standards for the direct discharge of liquid effluents into wastewater collection systems, use and final disposal of sludge and others (Ref. Normas para aguas residuals, ANAM, Aug. 2000).

Accordingly, stream (environmental) water quality standards based on the intended use of a water body, both for an inland water body like river or lake as well as coastal waters of sea that has much relevance to port water use of coastal water as well, is yet to be established in Panama. Also air quality and noise and vibration standards are yet to be established.

6. PORT SECTOR OF PANAMA

6.1 Maritime Network

6.1.1 Maritime Trade Routes

(1) International Maritime Network of Panama

1) Canal Transit Routes

Panama Canal is a pivot for the major maritime services between the east and the west such as the liner container services between Europe/east coast of North America and west coast of North America /Far East (see Figure 6.1.1(1) and (2)) and also the ones between Europe/east coast of North America and west coast of South America/Australia • New Zealand (see Figure 6.1.2 (1) and (2)).

Figure 6.1.1 (1) World Major Route

(US East Coast, Europe – West Coast, Far East Route)

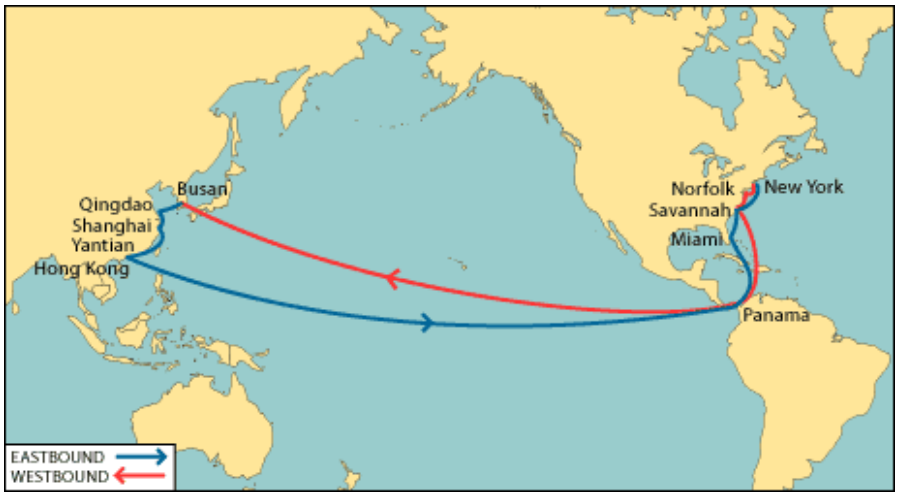


Figure 6.1.1 (2) World Major Route

(US East Coast, Europe – West Coast, Far East Route)

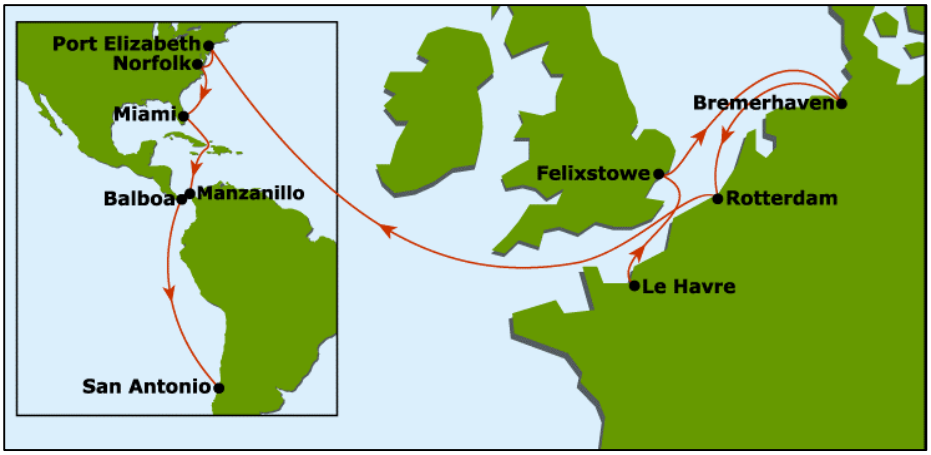


Figure 6.1.2 (1) North – South Route

(Europe, US East Coast – West Coast of South America)

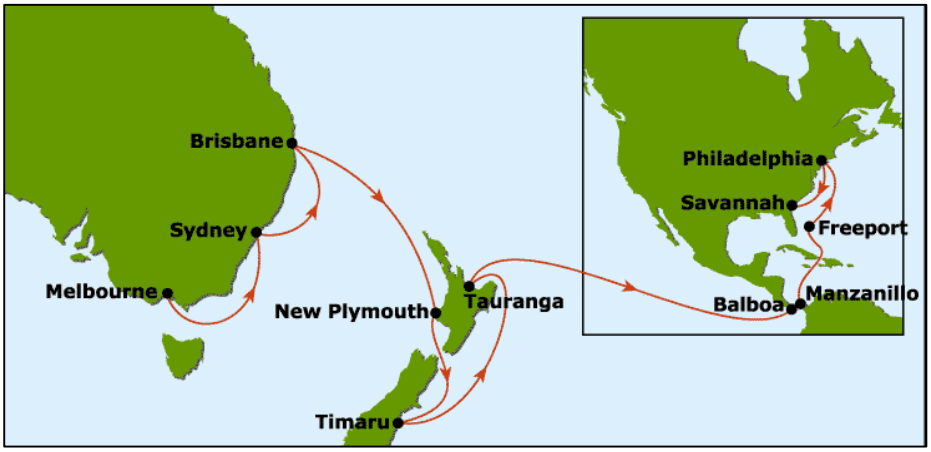


Figure 6.1.2 (2) North – South Route

(Europe, US East Coast –New Zealand& Australia)

i) Far East/east coast of North America/Europe

The most basic service is the one from Far East to the east coast of North America with the extension to Europe for some service vice versa. Almost all the major container shipping lines are servicing in this route. The vessels provided are the so-called pana-max type container vessels with the capacity of around 3,500-4,200TEU.All the services are weekly ones with a fixed day calling. The major lines/groups servicing are listed as follows:

Name of the operator	Frequency of service	Calling on (Panama Ports)
Maersk Sealand	3 or 2 loops seasonally	Balboa(PPC) and Manzanillo(MIT)
Evergreen/Lloyd Triestino	2 loops	Colon (CCT, Evergreen)
Grand Alliance (PONL, Hapag Lloyd, OOCL, NYK,MISC)	3 or 2 loops seasonally	Manzanillo(MIT)

New World Alliance(APL, MOL, Hyundai)		
	2 loops	Manzanillo(MIT)
Group of COSCO, K Line, Yang Ming, Hanjin		
	3 or 2 loops seasonally	Manzanillo(MIT)
Group of CMA-CGM, China Shipping, PONOL		
	1 loop	Manzanillo(MIT)
ZIM/Evergreen	1 loop	Colon(CCT, Evergreen)
MSC (Mediterranean Shipping)	1 loop	Manzanillo(MIT)

In addition to the above mentioned full-container services, there is another regular service provided by WW (Wallenius Wilhelmsen) utilizing 37/47,000 DWT Roll-on/Roll-off vessels for cars and breakbulk with the service frequency of 2 loops a month calling at Manzanillo(MIT).

ii) Europe/west coast of South America

A group composed of PONL, Hapag Lloyd, Hamburg Sud, CSAV, CMA, CGM provides a weekly service with container vessels having capacities of 1,900-2,500TEUs. The Maersk Sealand also provides a weekly service utilizing vessels with the capacity of 2,000TEUs.

iii) East coast of North America/Australia/New Zealand

A group composed of Hamburg Sud, PONL, CMA-CGM Contship has a weekly service. Vessels utilized are various. Maersk-Sealand has a biweekly service utilizing vessels with the capacity of 2,200 TEUs.

iv) Near-sea service; Caribbean/West & East of Central & South America/Gulf area

There are also international maritime services covering the various ports in the east and west coasts of Central and South America and in the Caribbean Sea (Figure 6.1.3(1)).

Figure 6.1.3 (1) Coastal Shipping Routes

Caribbean/West & East of Central & South America/Gulf area

In the Atlantic side the services are the round ones starting from Mexican gulf ports or Houston covering the ports in Honduras, Costa Rica, Colombia, Venezuela and the Caribbean with calling at Colon on the way.

In the Pacific side the services are the round ones starting from Los Angeles or Manzanillo (Mexico) covering the ports in Salvador, Honduras, Nicaragua, Costa Rica, and then Colombia, Ecuador, Peru, Chile with calling at Balboa on the way (See Figure 6.1.3 (2)). There are also round services covering the various ports in the west coast of South America starting from Balboa (Figure 6.1.3 (3))

In addition to the lines already mentioned, CCNI, Crowley Lines, Seaboard Marine, Nordana Line, Melfi Marine jointly provide weekly services in various routes with a space-chartered scheme. Vessels employed are 900 - 2,200 TEUs including Roll-on/Roll-off vessels (Figure 6.1.3 (4)).

Figure 6.1.3 (2) Coastal Shipping Routes
Pacific Coast of North, Central and South America

Figure 6.1.3 (3) Coastal Shipping Routes
Feeder services from Balboa (Panama) to West Coast of South America

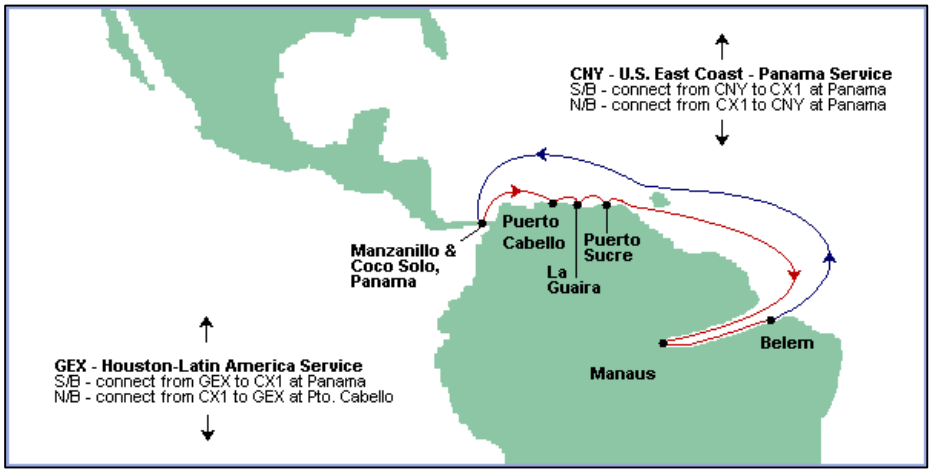


Figure 6.1.3 (4) Coastal Shipping Routes (Container feeder routes)

Feeder services from Balboa (Panama) to East Coast of South America

v) Far East Mexico and West Coast of South America

Incidentally, there are some services passing off Chiriqui destined to South America direct or via Balboa port from Far East. Taking the example of the service by NYK and jointly CSAV/NYK they have weekly sailings covering the ports in west coast of Central American countries and Colombian port, and also weekly sailings covering the ports in west coast of South America, all after dropping at Manzanillo in Mexico. The vessels utilized are around 900-2,000TEU full container ones. (See Figure 6.1.4).

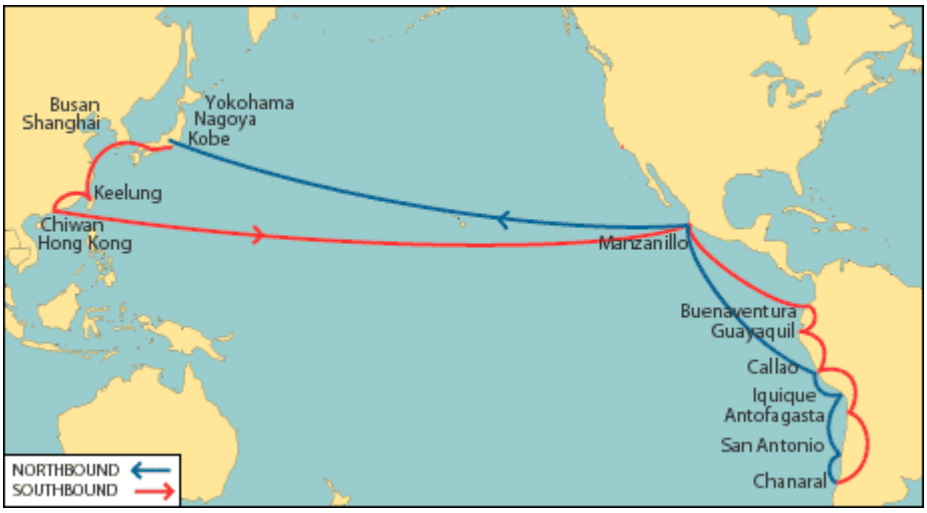


Figure 6.1.4 Far East Mexico and West Coast of South America

The route skipping Panama

2) Import and Export Routes of Panama

The biggest gateway ports for export and import container cargo of Panama are container terminals in Colon, such as MIT and Colon Container Terminal. Furthermore the lines like Maersk-Sealand have been increasing the volume of the container cargo handled at Balboa since the operation at Balboa was privatized. The cargoes imported and exported at the terminals in Colon are transported to Panama overland (see Figure 6.1.5). In 2001 the two container terminals in Colon handed 400,000 tons of Import container cargoes and 300,000 tons of export container cargoes, in addition Cristobal Port imported 170,000 tons of break bulk cargoes. Taking into consideration of the fact that these import and export cargoes are primarily related to the economic activities in Panama Province, it is roughly estimated that a total of about 800,000 tons of cargoes were transported overland.

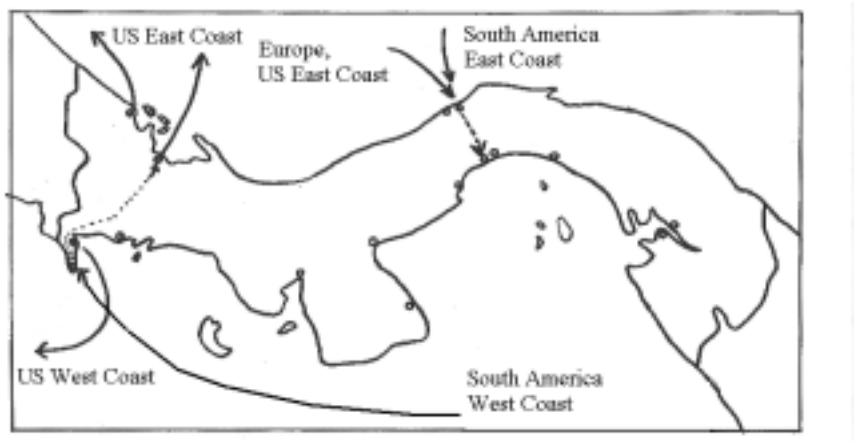


Figure 6.1.5 Containers from Europe, US East Coast and South America East Coast

Import and Export of Conventional Cargoes: Oil, Banana

The ports other than Colon and Balboa are basically export and import ports for specific commodities, which are general cargoes. At Almirante and Chirique Grande Ports, fresh bananas produced at the adjacent areas including the bordering areas on Costa Rica are shipped out to US east coast and Europe such as Belgium, Luxemburg, Sweden and Portugal. The vessels utilized most are 11,000-13,000 gross tons reefer vessels and they load the palletized banana in hatch and containers on deck.

There is an oil pipeline connected between Charco Azul and Chiriqui Grande in Chiriqui and petroleum products from Ecuador in South America is discharged at Charco Azul and shipped out at Chiriqui Grande to east coast of North America and Caribbean countries after going through the pipeline.

Fairly big volume of grains like wheat and maize are coming from the gulf ports in North America. These dry bulk cargoes are currently discharged at Balboa in the Pacific side rather than at Cristobal Port in Atlantic side, because the importers prefer to unload the cargoes as close as possible to their storage facilities (see Figure 6.1.6). At Balboa port, the volume of the container

cargo handled has been increasing. The expansion of the container wharves is underway. Thus the port is being highly specialized for container cargo handling. The pier that has long been used for dry bulk handling is also renovated for container operation. Therefore, the dry bulk cargoes unloading is about to be relocated to Cristobal port in the Atlantic side. Importers of wheat and other dry bulk have prepared a plan to construct a grain terminal at Cristobal Port. Besides, a new bulk terminal for clinker import was inaugurated in January, 2004 at Bahia Las Minas Port.

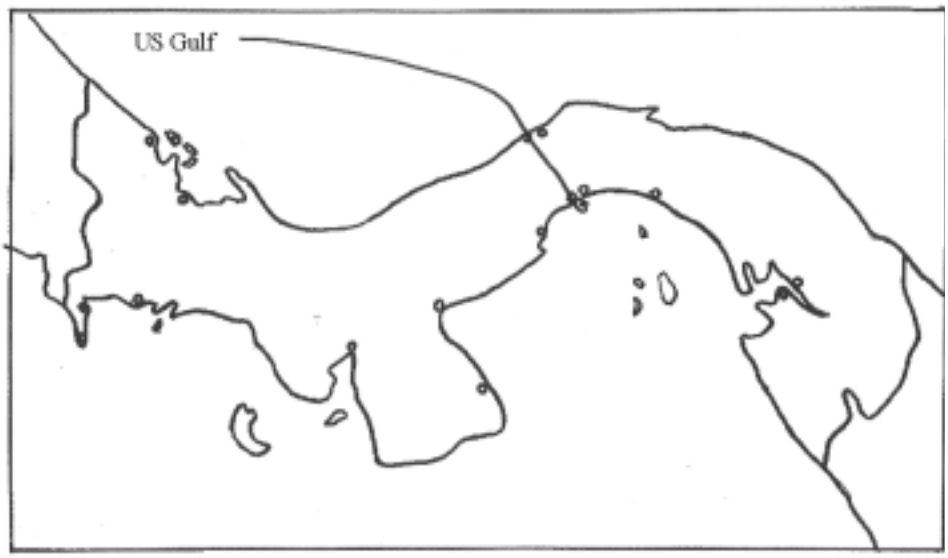


Figure 6.1.6 Conventional Cargo Route (Grain & Corn from US Gulf)

At Aguadulce and Pedregal fertilizer from North America and is unloaded for import while sugar is shipped out for export to North America through the Canal (see Figure 6.1.7).

The vessels utilized are 1,600-2,800 gross ton types.

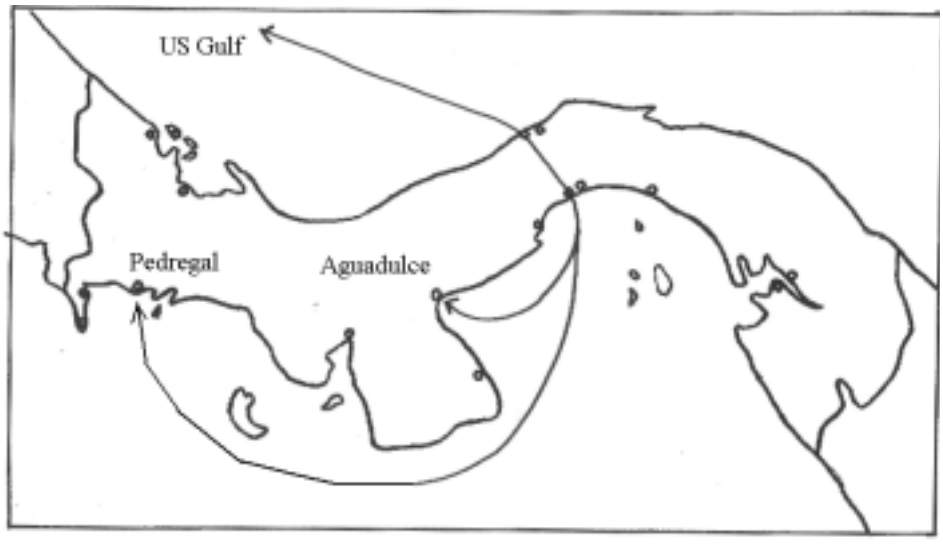


Figure 6.1.7 Direct Export and Import from/to Local Ports (Sugar and Fertilizer)

The existing maritime network for international trade is schematically exhibited in Figure 6.1.8.

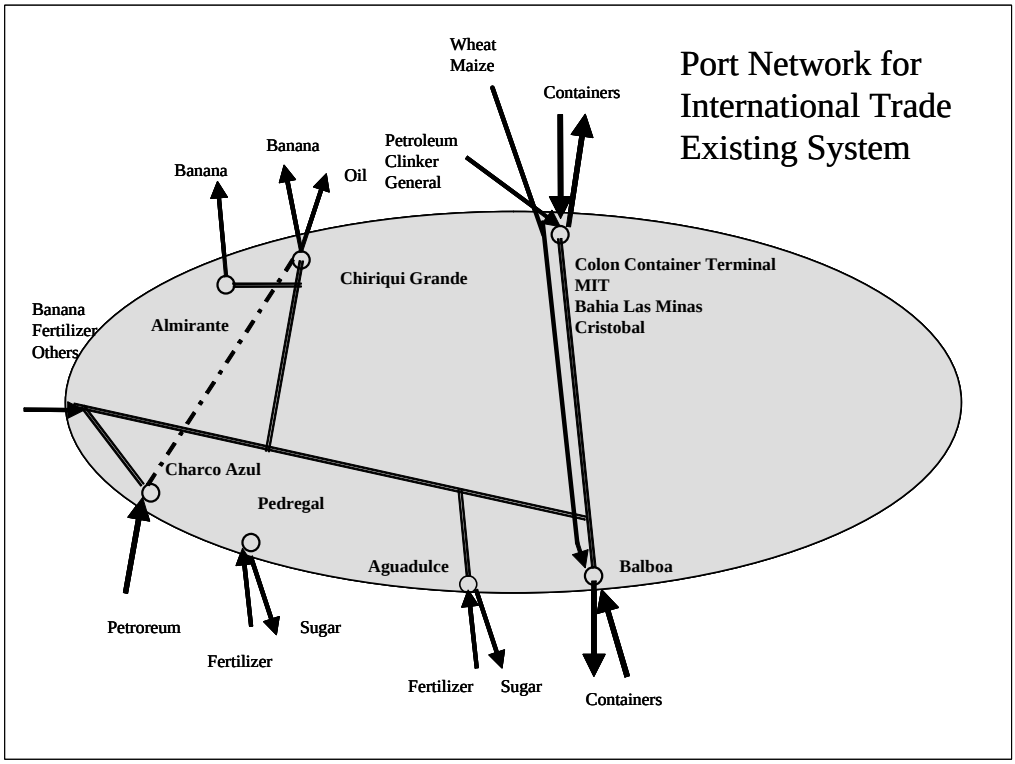


Figure 6.1.8 Maritime Network for International Trade

(2) Domestic Shipping Routes

In Panama, there is no domestic maritime feeder service of export or import cargoes. Thus, after discharged or before loaded at the international trade ports, all the cargo is drayed on the road except oil between Charco Azul and Chiriqui Grande by pipeline. The existing domestic sea routes are the only transportation means in eastern Panama, namely Darien Province and Comarca de San Blas, where the roads are not yet in a good condition. In the west side of the Canal in the country where the roads are already in a good condition the sea routes are mostly the ferry services to isolated islands (see Figure 6.1.9).

1) The Maritime Network in the East Side:

Panama City-Darien

There is a regular service between Panama Port in Panama City and La Palma, Yaviza, Sambu, Jaque, Garachine, El Real in Darien where the roads are not yet in a good condition. In the first half of 2003 year there were about 100 sailings from Panama Port to Darien. The vessel sizes are various from 37 tons to 110 tons and they loaded about 36 tons of general cargo per calling and discharged about 14 tons of the same an average. The travel time between Panama Port and La Palma is 14 hours.

Colon-San Blas Province

In San Blas province there is no road and there is a regular shipping service starting from Colon Port Terminal at Colon, covering various villages dotted on the coastal in San Blas with final destination of Puerto Obardia at the border on Colombia. Through interview at Colon Port Terminal, The Study Team found out that currently two ships are operated by the communities, i.e. municipalities in San Blas Region.

2) The sea route to the isolated islands in Gulf of Panama:

There is a regular service to the isolated islands in Gulf of Panama from Panama Port and a terminal of small craft in Balboa Port: the latter is supposed to be relocated due to the expansion of the container wharf. The number of trips observed in the island routes in the first half of 2003 are as follows:

Panama-Contadora (Contadola Island):	36 sailings,
Panama-San Miguel:	35 sailing,
Panama-Gonzalez:	10 sailings, and
Panama-Esmeralda:	14 sailings.

The vessels utilized are from 14 up to 46 GRTs and they load about 34 tons of cargoes to Contadora and 6-8 tons to others, and discharge 2-4 tons per calling on average. Cargoes are, in general, daily consumables.

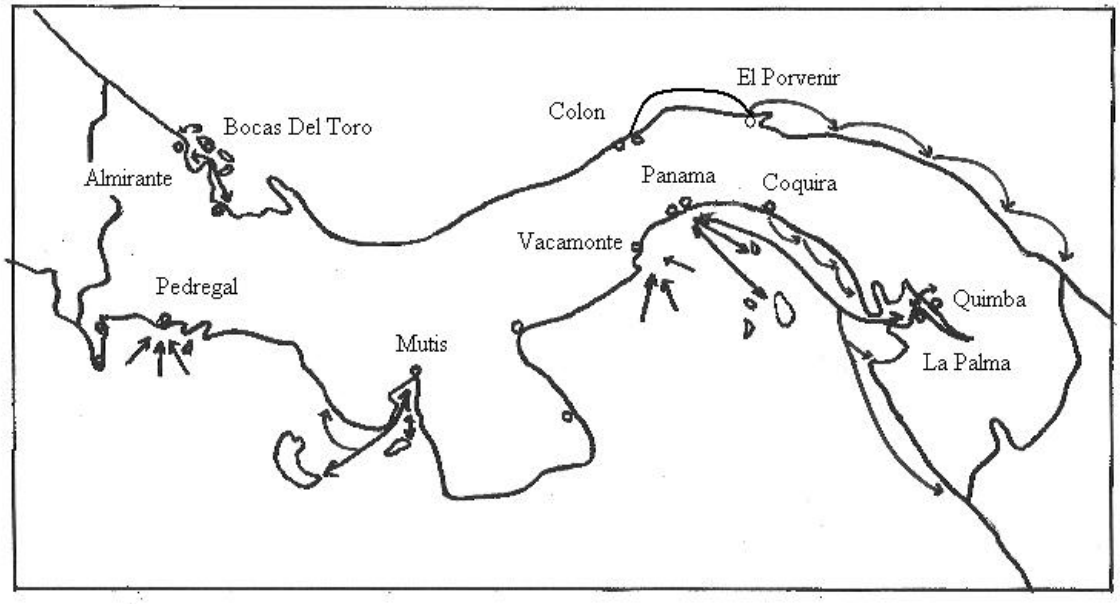


Figure 6.1.9 Domestic Shipping Routes

3) In the East Part of Pacific Side in Panama Province

There is a service from Coquira to villages in the east part of Pacific coastal side.

- Coquira-Pasiga: 2 service per month
- Coquira-Oquendo: 1 sailing per month
- Coquira-Maje /El Real: Occasional service

The vessels used are the same as those employed in Panama – Darien routes. Some of the ships call on Coquira Port on the way back from Darien. They occasionally discharge wood at Coquira Port but the volume is very limited in recent years.

4) Veraguas Province

At Mutis Port, small crafts with outboard engines are in service on charter basis. They carry passengers and some cargoes to the islands and coastal communities in Asuero Peninsula.

5) Bocas del Toro province

There is a Roll-on/Roll-off ferry service between Bocas del Toro and Almirante Ports with 4or 5 sailings per week. In addition, frequent passenger service is available along the same route by small crafts with outboard engines, which are called the "Water Taxis". The ferry boat utilized is 1,091 gross tons and there were 121 sailings carrying 72 tons per sailing of general cargo on the average over the period of the first half of 2003. The commodities carried by the ferry were construction materials, food and beverage, etc.

The maritime network for domestic trade is schematically exhibited in Figure 6.1.10.

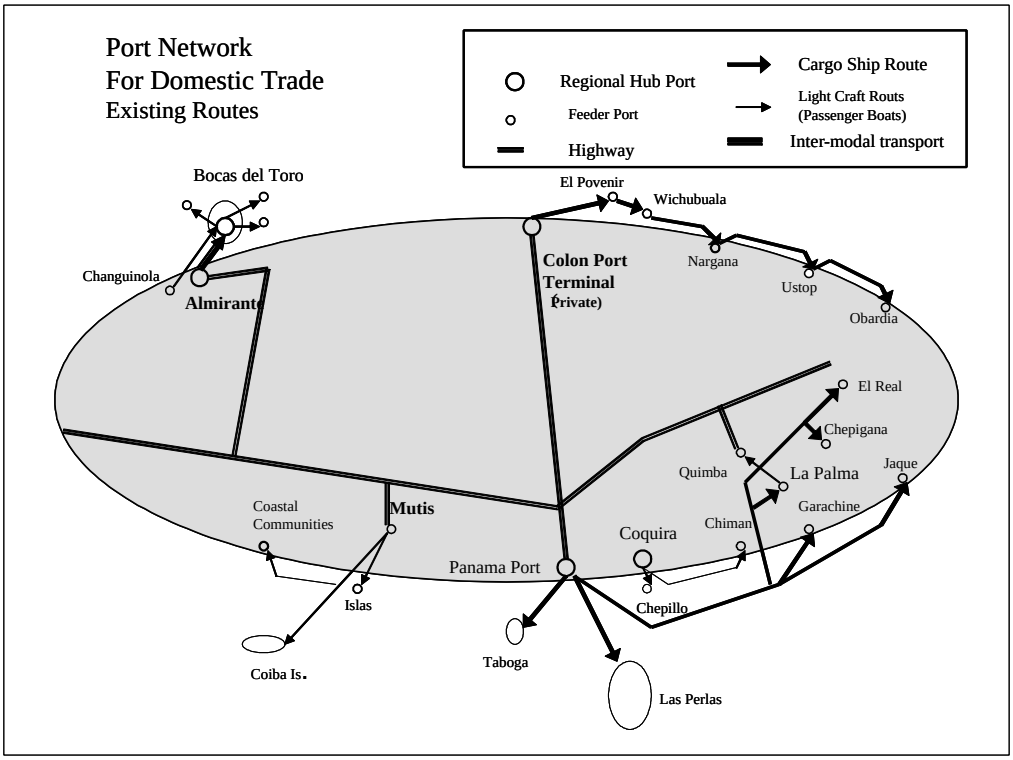


Figure 6.1.10 Maritime Network for Domestic Trades

6.1.2 Trade Partners of Panama

The following is a general survey on the route of export/import, trading partners and major commodities based on the customs trade statistics for 2001 year. The more detailed trade statistics in 2002 is shown in **Appendix N**.

(1) Transport Mode of Import and Export

Table 6.**1**.1 shows the import of 2001 in gross weight and value by transportation modes. (The cargo imported to Colon Free Zone is not included.) The total of import is 5.3 million tons in gross weight and about USD 3 billions in CIF value. In volume the imported cargo is via sea with the portion of 91.5% via sea, 8.2% via land and 0.3% via air. On the other hand, in terms of value, the shares of sea, land and air cargoes were 66%), 8.2% and 14.4%, respectively. This implies that high valued cargoes are imported via land and via air than those cargoes transported by sea: the 91.5% of volume-wise share of cargoes transported by via sea accounts for only 66% of value-wise share, while the share of the cargoes transported by land remains the same in value-wise share and the 0.3% of volume-wise share of air cargoes account for 14.4% in value. Since Colon Free Zone is defined as outside of Panama in the trade statistics, the cargoes transported via land include those from Colon Free Zone as well as Cost Rica. It is reasonable to think that the commodities imported from CFZ such as finished merchandise have higher values per ton than the bulk cargoes imported via sea such as oil and grains, which are the principal commodities of sea cargoes.

Table 6.1.1 Transport Mode in Importation in 2001

Import by Mode in 2001	Gross Weight in ton		Value CIF USD 1,000	
	Weight	Share	Value	Share
Via Air	16,770	0.3%	430,715	14.4%
Via Land	432,912	8.2%	586,289	19.6%
Via Sea	4,834,379	91.5%	1,969,290	66.0%

Table 6.1.2 Transport Mode in Exportation in 2001

Export by Mode in 2001	Gross Weight		Value FOB	
	Ton	share	USD 1,000	Share
Via Air	53,339	4.0%	222,995	27.6%
Via Land	56,069	4.1%	89,991	11.1%
Via Sea	1,242,462	91.9%	496,059	61.3%
Total	1,351,870	100%	809,045	100%

(2) Import

Table 6.1.3 and 6.1.4 show the import by origin area and country respectively. The figures shown are total import volumes and values via land, via sea and via air.

Major countries of origin in volume are USA in North America, Ecuador, Colombia and Venezuela in South America. These three countries in South America are the major countries of origin of import of crude oil and petroleum products as shown in Table 6.1.5.

The portion by area of origin in volume is 25% from North America, 58% from South America, 10% from Central America and the Caribbean, 4% from Asia and 3% from Europe, and in value it is about 40% from North America, 20% each from South America, Central America and the Caribbean respectively and 10% each from Europe and Asia.

Table 6.1.3 Import Volumes by Area of Origin

all transportation modes by Area of Origin	2001		2001	
Import	USD 1,000	Share	ton	Share
North America (includingMexico)	1,118,630	37.50%	1,296,312	24.50%
Central America	208,883	7.00%	134,450	2.50%
South America	637,234	21.30%	3,071,662	58.10%
Caribbean	459,018	15.40%	390,605	7.40%
Europe	258,075	8.60%	153,644	2.90%
Asia	286,905	9.60%	227,279	4.30%
Africa	1,589	0.10%	2,007	-
Oceania	16,053	0.50%	8,105	0.10%

Table 6.1.4 Import Volume by Country of Origin

Import by all modes by country of Origin	2001		2001	
	USD 1,000	Share	(GW ton)	Share
USA	972,628	32.6%	1,221,099	23.1%
Equador	236,716	7.9%	1,543,468	29.2%
Colombia	168,997	5.7%	744,484	14.1%
Venezuela	154,272	5.2%	693,382	13.1%
Japan	128,975	4.3%	48,733	0.9%
Mexico	119,388	3.6%	51,039	1.0%
Costarica	108,828	3.6%	79,919	1.5%
Guatemala	57,977	1.9%	26,545	0.5%
South Korea	54,756	1.8%	58,690	1.1%
Alumenia	51,947	1.7%	12,126	0.2%
Spain	50,923	1.7%	67,319	1.3%
France	45,734	1.5%	9,660	0.2%

Table 6.1.5 Import Volume and Value by Commodity

All transportation modes by import commodity	2001			
	Value	Share	(GW ton)	Share
Crude Oil and Petroleum products	623,182	20.9%	3,777,529	71.5%
Machinery Electrical Goods	562,888	18.8%	50,631	1.0%
Chemical Products	342,745	11.5%	167,977	3.2%
Transport Machinery	258,481	8.7%	36,861	0.7%
Food,feed, Beverage,alcohol,tobacco,etc.	215,419	7.2%	249,899	4.7%
Metal Manufactures	161,489	5.4%	207,879	3.9%
Plastic Manufactures	129,541	4.3%	70,829	1.3%
Textile	138,248	4.6%	23,770	0.4%
Wood Pulp, Paper	127,558	4.3%	91,418	1.7%
Vegetables	92,511	3.1%	425,056	8.0%
Cement, Ceramic,etc.	45,506	1.5%	84,735	1.6%
Total Import	2,986,294	100.0%	5,284,061	100.0%

The import by port is shown Table 6.1.6. Major ones are the container cargo handled at container terminals in Balboa and Colon and also the oil and petroleum products handled at Bahia Las Minas. Since 2001 Tabogilla and Chiriqui Grande have replaced Bahia Las Minas for handling oil and petroleum products.

Table 6.1.6 Import Cargo by Port

Import at individual port	Gross Weight		Value FOB		Major
	ton	Share	USD 1,000	Share	Commodity
Canal Area Port					
Balboa	612,426	12.7%	326,446	10.9%	Container
Colon CNTR Terminal	129,152	2.7%	108,799	3.6%	Container
Cristobal	407,744	8.4%	312,259	10.5%	Container
Puerto Manzanillo	385,436	8.0%	658,278	22.0%	Container
Other Commercial Port					
Bahia Las Minas	3,245,166	67.1%	548,595	18.4%	Oil
Colon Port Terminal	2,001	-	1,053	-	Conventional
Rodman	34,670	0.7%	4,221	0.1%	Oil
Almirante	1,568	-	1,460	-	
Puerto Armuelles	2,562	0.1%	1,044	-	
Chiriqui Grande	8,349	0.1%	5,511	0.2%	
Aguadulce	3,105	0.1%	708	-	
Pedregal	2,195	-	878	-	
Fishery Port					
Puerto de Vacamonte	3	-	31	-	

(3) Export

Table 6.1.7 to 6.1.9 show the export by area of destination, by country of destination and by commodity both in value and in volume respectively. North and Central Americas, Europe and Central and the Caribbean are major areas of destination in both value and volume. The export to South America is comparatively small to the import. Major destination countries from Colon Free Zone are South American countries.

Table 6.1.7 Export Values and Volumes by Area of Destination

Export by Destination continent (All Transport Modes)	2001			
	Value	Share	Weight t	Share
North America (includingMexico)	408,134	50.4%	422,305	31.2%
Central America	123,338	12.6%	170,741	15.2%
South America	32,684	4.0%	26,914	2.0%
Caribbean	46,232	5.7%	123,076	9.1%
Europe	164,038	20.3%	566,407	41.9%
Asia	34,153	4.2%	41,551	3.10%
Africa	221	-	289	-
Oceania	244	-	586	-

Table 6.1.8 Export Values and Volume by Destination Country

Export by Destination contry (All Transport Modes)	2001			
	Value	Share	Weight t	Share
USA	388,856	48.1%	372,245	27.5%
Mexico	15,098	1.9%	46,873	3.5%
Guatemala	17,129	2.1%	15,850	1.2%
Nicaragua	41,130	5.1%	11,713	0.9%
Costarica	38,773	4.8%	76,030	5.6%
Honduras	20,077	2.5%	62,854	4.6%
Venezuela	18,192	2.2%	9,369	0.7%
Puertorico	13,391	1.7%	24,146	1.8%
Belgium/ Luxemburg	36,517	4.5%	143,406	10.6%
Sweden	30,306	3.7%	116,086	8.6%
Almania	25,832	3.2%	93,897	6.9%
Italy	22,139	2.7%	58,909	4.4%
Spain	18,135	2.2%	63,991	4.7%
Portugal	15,098	1.9%	46,873	3.5%
Japan	12,067	1.5%	12,413	0.9%
Taiwan	11,721	1.4%	15,336	1.1%

Table 6.1.9 Major Export Commodities (All Transport Modes in 2001)

Export Commodity in 2001	Weight in t	Weight Share	Major Destinations
	Value USD 1,000	Value share	
Banana,fresh	467,050	34.50%	Belgium/Luxemburg, Sweden, Almania,
	122,123	15.10%	Italy, Portugal, USA,
Petroleum Products	442,078	32.70%	USA and then Spain,Honduras,
(Mainly bunker fuel oil)	57,185	7.00%	CostaRica,Mexico,Dominica,Puertorico.
Melon,Watermelon	52,827	3.90%	Belgium-Luxemburg,USA and Spain.
	25,827	3.20%	
Sugar	41,142	3.00%	Almost all the cargo is going to USA
	13,923	1.70%	and then to Haiti and Spain.
Salmon(Fish)	34,603	2.60%	Most of the cargos go to USA and then to Spain,
	95,980	11.90%	Venezuela, Taiwan,Hong Kong, Japan
Beef,meat etc.	10,539	0.80%	Nicaragua and then Mexico,Costarica,Guatemala,
	48,726	6.00%	USA..
Shrimp,frozen	7,491	0.60%	Most of the cargo is going to USA
	70,295	8.70%	and then to Honduras,Nicaragua,Spain.
Coffee,roasted	7,087	0.50%	Majority goes to USA and then to Canada,Italy,
	11,109	1.40%	Belgium-Luxemburg and Portugal.

The export by port is shown in Table 6.1.10.

Table 6.1.10 Export Cargo by Port

Export in 2001	Gross Weight		Value FOB		Major Commodity
	ton	Share	USD 1,000	Share	
Canal Area Port					
Balboa	11,972	1.0%	13,374	2.7%	Container
Colon CNTR Terminal	15,091	1.2%	15,880	3.2%	Container
Cristobal	55,556	4.5%	11,823	2.4%	Container
Perto Manzanillo	185,618	14.9%	232,030	46.8%	Container
Other Commercial Port					
Colon Port Terminal	19	-	46	-	
Bahia Las Minas	439,004	35.3%	54,005	10.9%	Oil
Taboguilla	12,643	1.0%	3,693	0.7%	Oil
Almirante	409,793	33.0%	108,443	21.9%	Banana
Chiriqui Grande	63,767	5.1%	21,243	4.3%	Banana
Aguadulce	30,932	2.9%	10,725	2.2%	Sugar
Pedregal	10,218	0.8%	3,518	0.7%	Sugar
Fishery Port					
Puerto de Vacamonte	7,748	0.6%	21,242	4.3%	
Puerto Caimito	102	-	33	-	

In volume, major ones are petroleum products at Bahia Las Minas and banana at Almirante which respecitvely occupy about 35% of the total. The container cargo exported at Balboa and Colon is 20% and the remaining 10% is exported at other local ports. In value, 55% is handled at the container terminals of Balboa and Colon, 10% at Bahia Las Minas, 22% at Almirante and the remaining at other local ports.

Since 2001 afterwards Tabogilla and Chiriqui Grande have replaced Bahia Las Minas for handling oil and petroleum products.

6.1.3 Movement related to Panamanian ports

(1) Expansion Project of the Canal Capacity

The government of Panama is seeking possibility of further capacity increase of the Canal. The study including traffic demand forecast for the Canal is reportedly about finalizing while the details are not available at this moment. Many studies and discussions on this issue have been done so far without any official conclusion and decision on the project. One of the reasons of the situation is that the scale and impact of the project is so large and complicated under the tight financial and competitive circumstances. This situation may affect on the future prospect of container terminal development in this area in terms of the Canal capacity (maximum size and number allowable for the transit vessels), as well as the possible increase of toll price.

Under this circumstance, two scenarios can be considered for the future Canal development. One is the case that the development project under consideration of the ACP will be realized in due course. According to the recent information on the project, the Canal would be expanded in future by providing the third locks to accommodate the Over- Panamax vessels (8,000-9,000 TEUs class) with a beam of about 54.9 m.

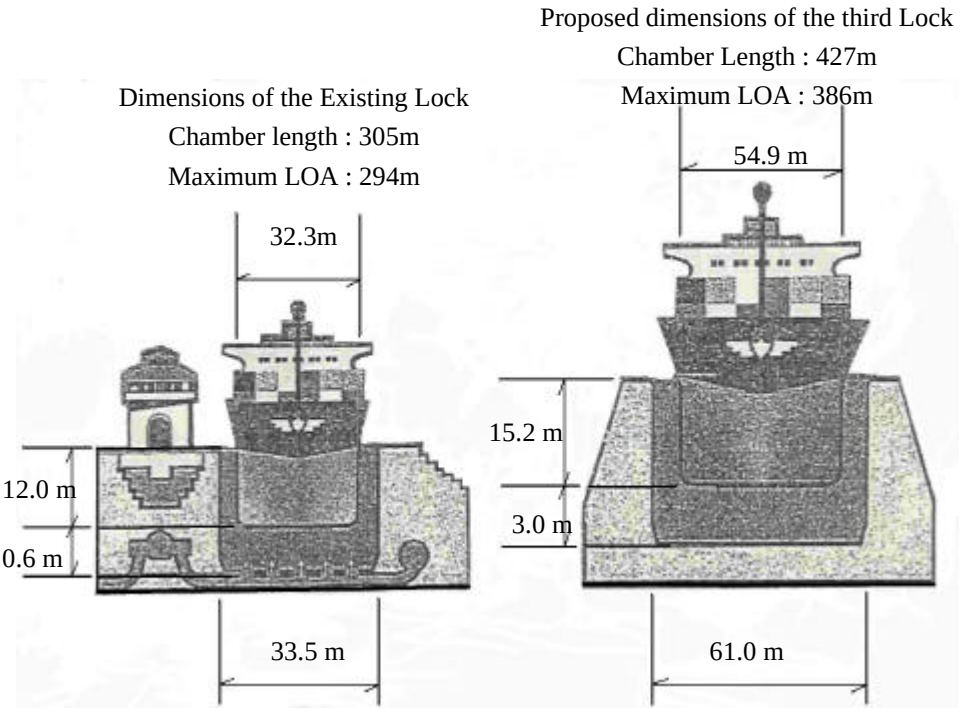
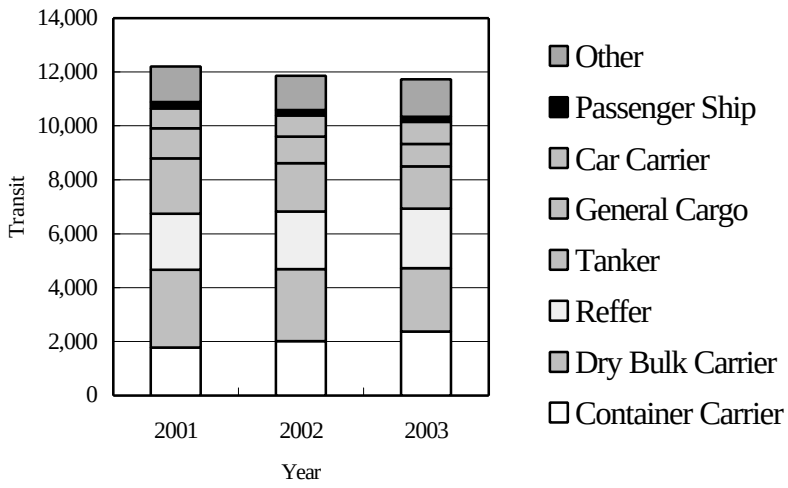


Figure 6.1.11 Proposed Dimension for the Panama Canal Expansion

Source: Presentation by the Administrator of ACP, Aug. 2003

The proposed new sets of locks pour and drain about three times as much water as the existing lock per passage of a post Panamax ship.

The total number of canal transit is about 12,000 per year. While the number of transits made by dry bulk carriers, Tankers and general cargo ships have been decreasing, that made by container carriers has been steadily increasing over the past three years (see Figure 6.1.12).



Source: ACP Web site

Figure 6.1.12 Panama Canal Transit by Type of Ship

Thus, it is likely that Post-Panamax container carriers are the principal users of the new lock. Those Post-Panamax container carriers presently plying in the world trade have carrying capacities of 8,000 to 9,000 TEU, which is about double of Panamax Container carriers. Therefore, the water volume required for the new lock operation per TEU will be 1.5 times larger than that needed for the existing lock.

Another possible way to expand the canal transit capacity may be the increase only in terms of the allowable total number of the transits without constructing additional locks. In fact, the canal widening project for the one-lane Crebra Cut was started in 1992 and the Panama Canal Commission, which had operated the canal until the ACP took over the former in the beginning of 2000, started the widening the Crebra Cut that had been one lane channel for Panamax ships. With widened channel, the Panamax ships are allowed to make transit even during the nights.

In any of the above two cases, the Canal capacity highly depends on the volume of available water for the lock operation, and it cannot be increased without providing additional water resources. Unless the alternative measures such as the construction of additional water reservoirs or a water recycling system is introduced, the total annual number of ship traffic would remain at the current level of about 13,000, 20% of which traffic is supposed to be container ships.

The ACP is examining the both possible measures to increase the water volume for canal operation: the construction of additional reservoir and the water recycling system.

In relation to the Canal Expansion Project, the Japan External Trade Organization (JETRO), in their report “The Preliminary Study on Land Reclamation Alternatives at the Pacific Entrance to the Panama Canal, March 2003”, has proposed a plan to construct a new container terminal for the increasing transshipment at Balboa Port. The terminal is proposed to be developed on an artificial island made of the dredged material generated by the canal expansion project.

The study estimated the transshipment container volumes at Pacific Entrance of Panama Canal to be 1.88 million TEUs and 3.57 TEUs in the year 2010 and 2020, respectively. In the study the container transshipment volume is estimated on the basis of the forecast of the container cargo throughput up to the year 2020. The methodology employed in the study to estimate the transshipment container volume at the Pacific entrance of the Panama Canal is as follows:

(1) On the basis of the statistics of the world container throughput by regions in the central and south Americas (Table 6.1.11), the regression analysis was done between the container throughput and the GDP of the regions (Table 6.1.12). The GDP growth rate in the future is assumed to be 3.9 % over the coming years (Table 6.1.13).

(2) It is assumed that 30% of the containers handled at central-and south-American Pacific coast are transshipped at the Pacific Entrance of the Panama Canal. Thus the transshipment container volumes at Pacific Port in Panama was estimated to be 1.88 million TEUs and 3.57 TEUs in the year 2010 and 2020, respectively (See Table 6.1.14).

Table 6.1.11 Latin America Container Throughput (1,000 TEU)

Year	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998
Caribbean	1,819.8	2,364.6	2,569.4	2,573.7	2,787.8	2,975.9	3,341.90	3,617.1	4,177.4	4,586.8
Central America East Coast	653.0	1,125.0	1,216.0	1,501.5	1,730.3	1,948.0	2,298.6	2,660.7	3,366.8	4,058.6
Central America West Coast	67.6	169.3	160.4	193.0	218.1	273.9	293.7	309.3	412.5	437.3
South America Atlantic Coast	719.8	1,006.8	1,086.4	1,327.4	1,589.5	1,820.0	2,505.7	2,630.8	3,060.1	3,171.0
South America Pacific Coast	243.4	458.5	615.0	788.6	895.7	1,007.8	1,204.0	1,600.4	1,855.2	2,026.5
Total	3,503.6	5,124.2	5,647.2	6,384.2	7,221.4	8,025.6 J	9,643.9	10,818.3	12,872.0	14,280.2

Source: Ocean Shipping Consultants (JETRO, 2003)

Table 6.1.12 Total Container throughput of Central- and South-American Pacific Coast v.s. the Regional GDP scale (year 1990 = 1.000)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998
Container Throughput	628	775	982	1,114	1,282	1,498	1,910	2,268	2,464
Size of Regional GDP	1.000	1.033	1.067	1.102	1.139	1.176	1.215	1.255	1.297

Source: Ocean Shipping Consultants (JETRO, 2003)

Table 6.1.13 GDP growth rate in Central- and South American Pacific Coast Regions

Year	1991-1998	1999	2000	2001	2002	2003	2004-2020
GDP Growth rate (%)	3.3	0.1	3.8	0.9	2.5	4.5	3.9

Source: Ocean Shipping Consultants (JETRO, 2003)

Table 6.1.14 Container throughput and transshipment volume at Central- and South-American Pacific Coast

(TEU)

Year	Total Volume	Growth rate	Transshipment Ratio				
			10%	20%	25%	30%	40%
1999	2,463,800		246,380	492,760	615,950	739,140	985,520
2010	6,266,000	8.9%	627,000	1,253,000	1,566,500	**1,880,000**	2,506,000
2015	8,813,000	7.1%	881,000	1,763,000	2,203,250	**2,644,000**	3,525,000
2020	11,900,000	6.2%	1,190,000	2,380,000	2,975,000	**3,570,000**	4,760,000

Source: JETRO Study, March, 2003

(2) Impact of Canal expansion project on the container transshipment business

a. Current container routes

The restriction of the existing Panama Canal is three folds: width, depth and the capacity in terms of the number of transits. Even Panamax ships sometimes have problems with the draft limits, because the full-load drafts exceed the depth of the lock. Thus, some container carriers unload some of the containers on board before the canal transit to lessen their draft. These unloaded containers are transported to other side of the canal by trains, which are operated by the Panama Canal Railway Company. This type of container operation is called “Land Bridge” or sometimes a “Dry Canal”.

In recent years, container carriers tend to become bigger. In fact newly built container carriers and those in order include quite a number of so-called "Post-Panamax" or "Super–Panamax" container carries. These oversized container carrier cannot pass the Panama Canal. Apart from the container carrier, tankers and dry bulk carriers that are bigger than Panamax size are currently plying in the sea routes other than Panama Canal routes in east-west trade routes such as Europe – East Coat of North America, Asia - Europe - East Coast of North America, Asia - West Coast of North America. Along the routes such as North America - Central-and South-Americas or Asia- Central-and south Americas, Panamax or smaller size carriers are employed either by direct operation or transshipment operation at the ports at North-America or Panama.

The passable ship size is limited by the dimensions of the locks. The existing lock has the dimensions of 100 ft (294m) long, 100 ft (33m) wide and 36ft (12 m) deep, while those of the proposed plan are 385m long, 55m wide and 15.3m deep. The new lock will allow the passage of the largest container carrier in the world having loading capacity of 9,200 TEU, Length Overall of 346m, Beam length of 54.9 m and draft of 14.5m.

b. Probable operation scheme of Post Panamax container carriers with the widened Panama Canal

It is quite rational to assume that Post-Panamax container Carriers are those that could have largest impact and are expected to change their operational scheme, because quite a number of Post-Panamax size container carriers are currently plying in the world trade routes: more Post-Panamax container carriers are in the new-building lists and are expected to be plying in the coming years. Thus, As soon as the widened Panama Canal is operational, the Panama Canal will be the major trade routes for the Post-Panamax container carriers.

It is also rational to assume that the Post-Panamax container carriers will be employed along such trade routes that have large container traffic volume. As shown in Figure 6.1.13, East-and Southeast-Asia, North America and Europe are the regions that have large container traffic. Though the container throughputs shown in the figure include intra-regional traffic, yet these four regions are the major origins and destinations of container traffic. The Central-and South-Americas including Caribbean account for less portions than other regions. Therefore, the Post-Panamax container carriers tend to be employed along the routes connecting Europe-Asia-North America. The widened Panama Canal will provide a new route for the Post-Panamax container carriers directly connecting Asia and North America.

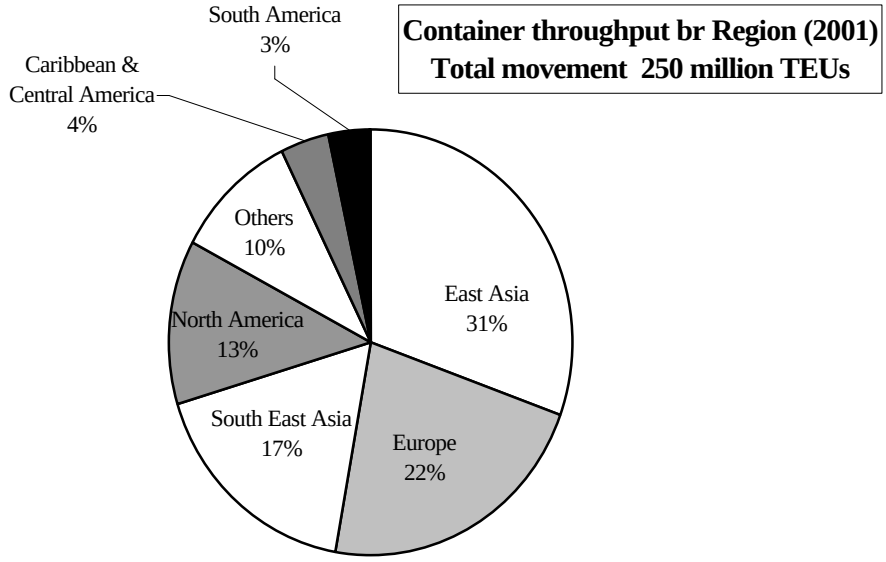


Figure 6.1.13 Share of the world container throughput

This study does not intend to forecast the number of Canal transits with and without widened Canal, but to analyze the impact of the widened Canal on the container transshipment volumes in Panamanian Ports. Therefore, the point is what would be the impact of the employment of the Post-Panamax container carriers along the Asia-North America route on the transshipment container volumes in Panama.

There are two scenarios: one is the canal expansion will increase the transshipment container volume, and the other is it will reduce the transshipment.

a. Decrease or unchanging scenario

Post-Panamax container carriers will not call on Panamanian Port, because, it is commonly observed that shipping lines tend to reduce the number of port calls of the Post-Panamax ships to shorten the turn-around period. If the Panama Canal Authority charges relatively higher charge, the shipping lines rather avoid spending a time at Panama: it should be noted that the widened lock requires 1.5 times larger volume of water per TEU and this would likely cause the increase in the canal transit charge. This would make the shipping lines rather maintain the present operation scheme, i.e. Asia-Europe-North America route than Asia – Panama Canal-North America.

In addition, with the widened locks, the "Land Bridge" operation between Balboa and Colon would be no longer needed. This will result in the decrease of transshipment container volume.

As shown in Table 8.2.3, the origin and destination countries of the transshipment containers in Panama are Colombia, Venezuela and Trinidad Tobago, Chile, Peru and Costa Rica, which are located near Panama. Many of these countries are in South-American countries, and, in 2001, Columbia account for about 40%.

Taking consideration of the tendency of the operational scheme of Post-Panamax currently observed, it seems to be unlikely that Post-Panamax container carriers plying between Asia

and West Coast of America will extend their voyage to Panama after port calls on US and Mexico. It is more unlikely that A post Panamax container carriers from Asia extend their voyage as far as Colon passing through the Panama Canal to unload and load containers to and from Caribbean and South American countries, because of the volume of the containers and cost of canal transit. Thus, the function of Mexican Ports as the regional hub will remain unchanged and the containers to and from Central-American countries will be transshipped in Mexico.

As the trade in South American countries grow, containers tend to be carried by mother container ships directly rather than feeder ships. In fact, the direct container services to Chile, Argentina and Brazil are increasing and the transshipment container volumes to and from these countries observed in Panama are relatively small comparing the size of their economy.

On the basis of the above mentioned discussions, it is foreseen that the transshipment container volume in Panama Ports will grow in proportion to the economic growths of those countries of current clients.

b. Increase scenario

With the widened canal, some of the Post-Panamax container carriers currently plying along the route Asia – Suez Canal-Europe-US East Coast may be deployed in Asia-Panama Canal-North America-Europe routes because of the reduced operational cost of shipping lines: this in turn may result in the decrease of the shipping charges of containers. With lower shipping tariffs, the competitiveness of the export products of Caribbean, Central and South American countries will be strengthened in the Asian market, especially in China, which is expanding trades with North and South Americas in accordance with its economic growth. Thus, the trade volume between Latin American countries and Asia will be increased. In the same manner, the export volumes of manufactured products of China to these countries are also expected to increase in the coming decades. If such case occurs, the more containers will be transported between South America and Asia. It seems to be most probable that these containers to and from South American countries will be transshiped at Panamanian Ports from feeder container ships to the Post-Panamax carriers plying between Asia-US East Coast via Panama Canal, and vise versa.

However, this increase scenario highly depends on the assumption that the shipping tariff should be lowered due to the employment of Post-Panamax container carriers in the all-water service between Asia and US East Coast. Whether the tariff is lowered or not is subsequently highly dependent on the tariff of the Panama Canal transit for the Port-Panamax container carriers.

c. Elements that control the transshipment container volume at Panamanean Ports

Which scenario is more probable is highly dependent on the amount of the canal transit charge imposed on the ships that use the new lock.

The transshipment operation currently performed at the ports in Panama is not only because of the canal restriction. In general, the main purpose of the transshipment is most economize the shipping cost in the container carrier operation along the trunk routes that serve for the major container markets at the sacrifice of the cost in the feeder routes that serve for minor container markets. Therefore, basically, the change itself in the size of the container carriers employed along the truck routes will not give any considerable effect on the volume of the transshipment containers. Thus, key elements that affect the transshipment container volumes in Panamanian ports will remain unchanged, i.e. the export and import container cargo volumes at the ports of the feeder routes and the business policy of the shipping lines where to choose their hub ports.

On the basis of above discussion, it seems the most realistic to assume that the key element to control the volume of the container transshipment at Panamanian ports is the export and import container volumes of the adjacent countries of Panama such as Columbia, Venezuela, Peru, Costa Rica, etc., which have smaller economic scale. The shipping lines tend to expand direct services to and from those South American countries having larger economic scale such as Chile, Brazil and Argentine.

It also can be said that the effect of the canal expansion is still unpredictable, because the canal transit charge has a large impact on the decisions of the shipping lines whether their Post-Panamax should call on Panamanian Ports for transshipment.

On the basis of above discussion, in this study, the container transshipment volumes in Panamanian ports shall be forecasted on the assumption that the transshipment containers should be the containers to and from the countries of present clients and that should increase in accordance with the economic growth of these countries.

(3) Movement toward the proposal of coastal shipping in Central America

The Commission of Central American Maritime Transport (COCATRAM), which is a group working for maritime transport under the umbrella of Secretariat for Central American Economic Integration (SIECA, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua are the five member countries while Panama is an observer in various mechanisms of the integration), published a pre-feasibility study of the development of the coastal shipping in the region in November 2002. Though Panama is not a member of SIECA, it has been actively participating in the study as a member of COCATRAM. The pre-feasibility study proposed the development of the following three coastal sea routes (See Figure 6.1.14): further explanation on the proposed coastal routes is given in **Appendix H.**

Since the publication of the plan, there have been some movements among the member countries to introduce the plan in their transport policy. For example, a new container terminal is being constructed in El Salvador as the gateway of the three adjacent countries, i.e., El Savador, Honduras and Nicaragua. Colinto Port, the principal port of Nicaragua, is taking steps to serve

RoRo Ferry to carry container cargoes between Colinto Port and the New Container Terminal in El Salvador.

When the Coastal Shipping service proposed by COCATRAM is realized, together with the ships employed in existing Near-sea feeder services (see Section 6, Fig. 6.1.3 (2)), more container ships will be plying along the Panamanian coast. Taking into consideration of the distance between the Caldera Port (Costa Rica) and Balboa Port (Panama), there is a possibility that some of the container ships plying along this route will call on a port somewhere between the principal ports of the two countries provided that container cargo traffic amounts to large enough to attract shipping lines.

The establishment of the following routes for the coastal shipping are proposed by COCATRAM:

(1) Central America intra-regional coastal shipping route (Pacific coast);
Quezal (Guatemala) – Acaftra (El Salvador) – San Lorenzo(Honduras) –
Corinto (Nicaragua) – Caldera(Costa Rica)

(2) Pacific feeder service route;
Caldera (Costa Rica) – Balboa (Panama)

(3) Atlantic feeder service route
Colon(Panama) – Limon/Moin(Costa Rica) – Coltez (Honduras) –
Santo Tomas (Guatemala)

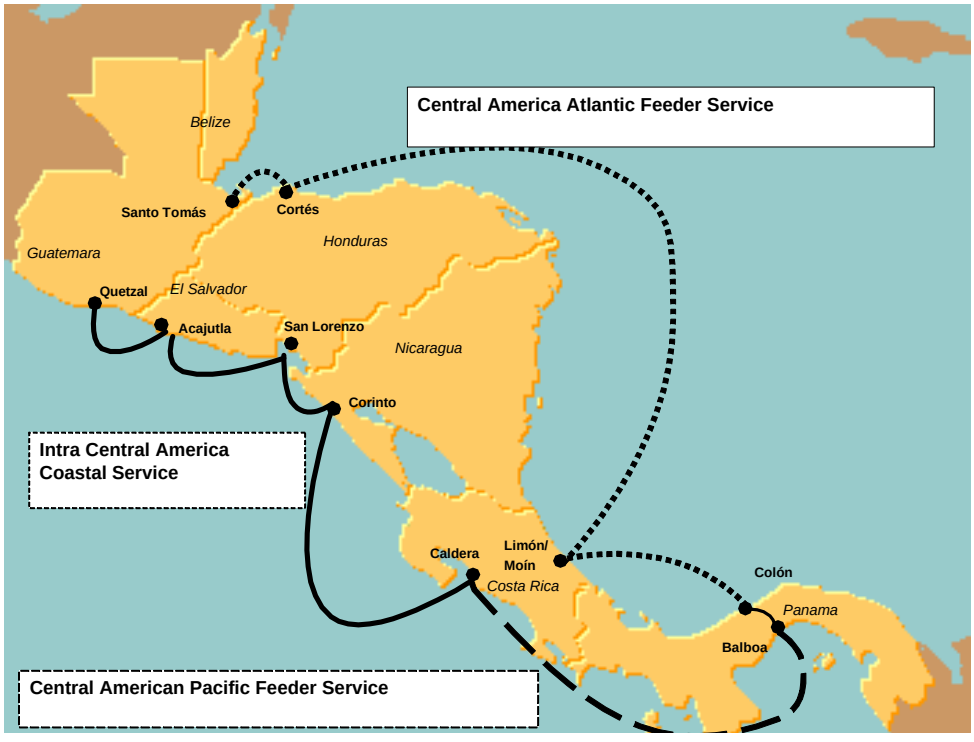


Figure 6.1.14 Intra Central America Coastal Shipping Service proposed by COCATRAM

6.2 National Port System

6.2.1 Classification of the Ports

(1) Classification of Ports by Port Management Body

AMP classifies the Panamanian ports by their port management body. Those ports managed by private companies are classified as "Private Ports", while those managed by AMP itself are classified as "National Ports."

The 14 ports listed in Table 6.2.1 are Private Ports that are currently operational. There are two types of private ports: those constructed, owned and operated by the private companies and those managed by private companies under concession contract with the government. The private ports consist of the international container ports in Colon and Panama cities (No. 1 through 4 in Table), the international tourist ports, Colon 2000 that is located in the Colon Free Zone (No. 5 in the Table) and other 10 ports that are specialized for loading and unloading of specific commodities (No. 6 through 14 in the Table).

Table 6.2.1 List of Privately Operated Ports

	Ports operated by Private		**Classification by ownership**		
	International Ports		Ownership		Responsibility
			Land	Facility	Operation Maintenance
	Name	**Province**			
1	PUERTO BALBOA	Panama	AMP	AMP/Private	Private
2	COLON CONTAINER TERMINAL	Colon	Private	Private	Private
3	MANSANILLO	Colon	Private	Private	Private
4	CRISTOBAL	Colon	AMP	AMP/Private	Private
5	Colon 2000	Colon	Private	Private	Private
6	ALMIRANTE	Bocas DT	Private	Private	Private
7	PTP (RAMBALA)	Bocas DT	Private	Private	Private
8	CHARCO AZUL	Chiriqui	Private	Private	Private
9	PEDREGAL	Chiriqui	AMP	AMP/Private	Private
10	AGUADULCE	Cocle	AMP	AMP/Private	Private
11	TABOGUILLA	Panama	Private	Private	Private
12	PUERTO RODMAN	Panama	AMP	AMP/Private	Private
13	BAHIA LAS MINAS	Colon	AMP	AMP/Private	Private
14	SAMBA BONITA	Colon	AMP	Private	Private

The National ports managed by AMP are 48 ports including commercial ports and fishing ports.

(2) Classification by the Roles and Functions of Ports

The Panamanian ports can be classified as shown in Table 6.2. 2 from the viewpoint of their roles and functions. Firstly, the ports are classified into three major categories and then sub-categories:

1) International Port

i) International Container Port

Balboa, Cristobal, MIT, CCT

ii) International Tourism Port

Colon 2000

iii) Industrial Port (Private Business Port)

Almirante, PTP(Petro Terminal of Panam)	– Bocas del Roro
Charco Azul, Pedregal Port	– Chiriqui
Aguadulce	– Cocle
Bahia Las Minas	– Colon
Tabogilla、Puerto Rodman	– Panama

(Tabogilla Port is a logistic port for crude oil and petroleum products. Rodman Ports is one of the oil outlets of Tabogilla oil terminal for bunkering the canal transit vessels and calling ships at Balboa Port.)

2) Domestic Port

i) Regional Hub Port

Panama Port is a regional hub for the shipping services to the ports in Darien Province and to the islands in Panama Bay.

In the same manner, Colon Port Terminal is the gateway to the community ports along the coast of Comarca de San Blas.

ii) Local Hub Port

La Palma and Quimba ports are the local hub ports for passenger transport services to adjacent coastal communities in San Miguel Bay in Darien Province.

Coquila Port is the gateway to remote communities situated in eastern coast of Panama Province without land access.

Bocas del Toro port, in Bocas del Toro Province, is the RoRo ferry terminal to Almirante Port, and it also has functions as a local hub port of the shipping services of small crafts to the remote communities and resorts in the islands nearby.

Mutis Port is a base of the small crafts providing shipping service to remote communities on the coast and islands of Veraguas Province.

iii) Feeder Port

This category consists of other small ports which are mostly located in the coastal villages.

3) Fish Port

i) Base and Fish Processing Port

Base ports of commercial fishing boats having ancillary industries: processing, ship repair and logistics. Presently, Vacamonte Port is the sole fishing port of this type in the country.

ii) Home Port

Fishing ports for local fishermen. Many fishing ports of this type are located in Pacific western coast of Panama, especially in Azuero Peninsula.

The major roles and functions of all the individual ports of Panama are summarized as shown in Table 6.3.2.

Table 6.2.2 Major Roles and Function of Ports of Panama

	International Ports		Major Function of the port
	Name	**Province**	
1	PUERTO BALBOA	Panama	International Container Trans-shipment port
2	COLON CONTAINER TERMINAL	Colon	
3	MANSANILLO	Colon	
4	CRISTOBAL	Colon	
5	Colon 2000	Colon	Int-Tourism Port
6	ALMIRANTE	Bocas DT	Private Business
7	PTP (RAMBALA)	Bocas DT	
8	CHARCO AZUL	Chiriqui	
9	PEDREGAL	Chiriqui	Local Industry Related
10	AGUADULCE	Cocle	
11	TABOGUILLA	Panama	Private Business
12	PUERTO RODMAN	Panama	
13	BAHIA LAS MINAS	Colon	
14	SAMBA BONITA	Colon	

	Domestic Ports		Major Function of the port
	Name	**Province**	
15	**PUERTO Panama**	Panama	Regional Hub
16	**LA PALMA**	Darien	Local hub
17	CHEPIGANA	Darien	Feeder
18	GARACHINE	Darien	Feeder
19	PUERTO PINA	Darien	Feeder
20	JAQUE	Darien	Feeder
21	**PUERTO QUIMBA**	Darien	Feeder/hub
22	YAVIZA	Darien	Feeder
23	CAMOGANTI	Darien	Feeder
24	PUERTO OBALDIA	San Blas	Feeder
25	TUBUALA	San Blas	Feeder
26	MANSUKUM	San Blas	Feeder
27	ALIGANDI	San Blas	Feeder
28	TICANGUITIQUI	San Blas	Feeder
29	NARGANA	San Blas	Feeder
30	RIO AZUCAR	San Blas	Feeder
31	EL PORVENIR	San Blas	Feeder
32	Chepillo	Panama	Feeder
33	CONTADORA	Panama	Feeder
34	Saboga	Panama	Feeder
35	Pedro Gonzalez	Panama	Feeder
36	San Jose	Panama	Feeder
37	La Esmeralda	Panama	Feeder
38	TABOGUILLA	Panama	Feeder
39	TABOGA	Panama	Feeder(Tourist)
40	JUAN DIAZ	Panama	Feeder
41	**COQUIRA**	Panama	Local hub
42	LA NICORA	Panama	Feeder
43	CHININA	Panama	Feeder
44	CHIMAN	Panama	Feeder
45	LA MAESTRA	Panama	Feeder
46	LA MACAIRA	Panama	Feeder
47	PUNTA BRUJA	Panama	Feeder
48	GONZALO VASQUEZ	Panama	Feeder
49	SAN MIGUEL	Panama	Feeder
50	Rio Pasiga	Panama	Feeder
51	SANTA ISABEL	Colon	Feeder
52	PLAYA CHIQUITA	Colon	Feeder
53	MIRAMAR	Colon	Feeder
54	VIENTO FRIO	Colon	Feeder
55	NOMBRE DE DIOS	Colon	Feeder
56	ISLA GRANDE	Colon	Feeder

	Domestic Ports (Continuation)		Major Function of the port
	Name	**Province**	
57	LA GUAYRA	Colon	Feeder
58	PORTOBELO	Colon	Feeder
59	DONOSO	Colon	Feeder
60	Santa Catalina	Ngobe Bugle	Feeder
61	**BOCAS DEL TORO**	Bocas DT	Local hub
62	BASTIMENTO	Bocas DT	Feeder
63	**ALMIRANTE**	Bocas DT	Local hub
64	**CHIRIQUI GRANDE**	Bocas DT	Local hub
65	ROBALO	Bocas DT	Feeder
66	MIRAMAR	Bocas DT	Feeder
67	BAHIA AZUL	Bocas DT	Feeder
68	CUSAPIN	Bocas DT	Feeder
69	Isla Escudo de Veraguas	Bocas DT	Feeder
70	**AGUADULCE**	Cocle	Local Hub
71	**PUERTO MUTIS**	Veraguas	
72	**PUERTOS ARMUELLES**	Chiriqui	Local Hub/Supply

	Fish ports		Major Function of the port
	Name	**Province**	
73	**PUERTO VACAMONTE**	Panama	Hom/processing Port
74	LAS UVAS	Panama	Home Port
75	EL PAJONAL	Panama	Home Port
76	BAHIA CHAME	Panama	Home Port
77	OTOQUE OCCIDENTE	Panama	Home Port
78	OTOQUE ORIENTE	Panama	Home Port
79	PLAYA LEONA	Panama	Home Port
80	PUERTO CAIMITO	Panama	Home Port
81	PUERTO GAGO	Cocle	Home Port
82	EL AGALLITO	Herrera	Home Port
83	BOCA PARITA	Herrera	Home Port
84	PARIS	Herrera	Home Port
85	BUCARO	Los Santos	Home Port
86	PUNTA MALA	Los Santos	Home Port
87	EL CIRUELO	Los Santos	Home Port
88	EL ARENAL	Los Santos	Home Port
89	LA CONCEPCION	Los Santos	Home Port
90	LA CANDELARIA	Los Santos	Home Port
91	MENSABE	Los Santos	Home Port
92	GUARARE	Los Santos	Home Port
93	PUERTO ORLA	Veraguas	Home Port
94	PUNTA MARIATOS	Veraguas	Home Port
95	Puerto Vidal	Veraguas	Home Port
96	Pixvae	Veraguas	Home Port
97	Bahia Honda	Veraguas	Home Port
98	Isla Gobernadora	Veraguas	Home Port
99	LIMONES	Chiriqui	Home Port
100	PEDREGAL	Chiriqui	Home Port
101	BOCA CHICA	Chiriqui	Home Port
102	REMEDIOS	Chiriqui	Home Port
103	ELNANCITO	Chiriqui	Home Port
104	Bella Vista	Chiriqui	Home Port

6.2.2 Diagnosis of Local Ports

As the base of the port development plan, the following are the diagnosis of the current status of the existing the major local ports.

(1) La Palma and Quimba (Darien Province)

Puerto La Palma is located at the estuary of Rio Tuira on the Gulf of San Miguel. Puerto La Palma is the principal port among the moorages and anchorages of the Darien region. Though the moorages and anchorages are sheltered from ocean waves topographically, there are very strong tidal currents in the estuary up to 3.5 knots (1.8 m/s) as well as normal river outflow. The coast of this area is estuarial and swampy.

Rio Tuira, on which Puerto La Palma is located, is the largest river in the Province of Darien and is navigable by small vessels up to El Real and Yaviza. Shallow areas, sand banks and narrow channels are found near El Real and Yaviza and they are restricting the draft of vessels. In 2002, La Palma Port was called by 13 ships with a total call of 242. Of the 13 ships, 10 ships called on La Palma Port and other remote communities: Jaque, Yaviza, Chepigana, El Real and Camoganti. These ships brought various commodities to these ports and took back lumber to Panama City. Three ships were employed to bring petroleum products to La Palma.

An open type wharf on vertical piles (40 m x 16 m) is the existing port facility at La Palma. Various consumer products (fuel, foods and miscellaneous drinks) and sawn timbers are handled at the wharf.

In the coming years, new port facilities will be completed at La Palma Port, including docking facilities for Roll-on/Roll-off ferries, cargo vessels and small passenger boats as well as the parking space. As the partner port, Quimba Port will also have the same type of facilities. These new facilities are expected to highly improve the capacity of the port and to facilitate the cargo and passenger transport to and from Panama City via Pan-American Highway, provided that Roll-on/Roll-off ferry services are provided by a private ship operator. A new concrete pier with berth length of 12m is also constructed soon next to the two floating wharves: one for Roll-on/Roll-off ferries and the other for small passenger crafts. The new pier will overtake the function of the existing pier and will be providing 24-hour-operational berth. Thus, the cargo handling capacity will increase considerably, because, at present, ships cannot dock at the existing pier during the low tide. The cargo handling capacity can be further increased with the introduction of handling equipment.

The new port facilities at these two ports will give great impacts on the inter-regional and intra-regional transport system in Darien. As the improvement of Pan-American Highway has been preceded, the cargo traffic between La Palma and Panama City has been shifted to land route from existing sea routes. In fact, the cargo volume of the sea route has been decreasing since 1998 when the highway improvement was completed up to the border between Panama and

Darien Provinces. The improvement of the rest part of the highway is scheduled to complete soon under IDB funded project. It seems to be very probable that function of the sea route will be taken over by the land route.

When the inter-modal transport is operational La Palma Port is expected to be more specialized for local shipping services, especially to Jaque, Chepigana and Camoganti than the services to Panama City. The cargo traffic between La Palma and Yavisa will decline after the Pan-American Highway is fully paved, for Yavisa will be directly connected by highway. Thus, the shipping services from La Palma to other remote municipalities should be strengthened. At the same time, La Palma Port, together with Quimba Port, should establish efficient safe and convenient inter-modal transport service as a part of Pan-American Highways.

(2) Coquira Port (Panama Province)

Situated in the eastern part of the Province of Panama, Coquira port is a local hub port to provide local ferry services to and from several coastal communities that have no land access. So far, no plan to improve land access to these communities has been announced. The existing sea route should be well maintained and upgraded over the coming decades.

The port is a local river port along Rio Bayano (District of Chepo) Panama Province and is managed by AMP. It is located about 25 km upstream from the river mouth of Rio Bayano. The port consists of a ramp and parking space of buses and trucks. The port accommodates local passengers and cargo traffic. The ramp is also used as the fish-landing site for the local fishing people.

About one km downstream of AMP's Coquira Port, there is a private fishing port and ship repair facility, which are privately owned and operated. The private fishing port is frequently called by the fishing boats and shrimp trawlers of the company (about 490 calls/year on the average).

While sawn timber accounts for the largest volume of cargo at Coquira (300 - 900 tons/year), the average number of ship calls carrying timers is 33 per year about 1/15 of the fishing boat calls. In consideration of the fact that number of the local fishermen will not increase because of the licensing policy of AMP limiting the number of fisher folks for the purpose of reservation of marine resources, it is assessed that the fishing boat calling on Coquira Port will not increase much in the future and that the number of calls will remain unchanged.

Another significant feature of Puerto de Coquira is the ferry transport connecting with the coastal villages of Panama Province and the remote islands in Gulf of Panama. The port statistics show over 40,000 passengers were disembarked and embarked in 2001. Most of the passenger ferries are small outboard motor boats with the capacity of 10 - 15 passengers. The number of calls of ferryboats at Coquira is estimated as 3 - 4,000 calls/year on the average (11 calls/day), while that of fishing boats is 1.6 calls/day. Thus, it seems that the congestion at the ramp, which is the sole landing facility for the small crafts, has not been serious.

Panama Port is requested to close cargo operation due to a project of Panama City government. Panama port is currently servicing for the shipping not only to Darien area but also to the islands in Panama Bay. The total number of trips from Panama Port to these islands was 120 in 1998 and 160 in 2002. With the geographical location of Coquira Port, it has a potential to be the alternative port to accommodate the cargo ships plying to the islands if a new cargo berth is constructed at the port.

On the basis of this observation, Coquira Port will remain as a local hub especially for passenger and cargo movement in the coming years. When Panama Port stops cargo handling operation, Coquila Port will be playing more important roles as the hub port to the nearby islands.

(3) Panama Port (Panama Province)

Panama Port, known as Fiscal Pier, is located within commercial center of Panama City. It consists of a jetty with two berthing sides: berth length of the east side is 125 m while the other (west) side is 110 m. The basin turns dry during low tides and ships land aground. When the tide rises to its high water level, the basin has depth about 4 m at the quayside. Cargo handling on the pier is restricted due to the shed on the pier, i.e., the cargo handling works are limited to loading/unloading through the three openings on the both sides of the shed wall and cargo handling to utilize the whole extension of the pier is impossible. The port capacity at the Fiscal Pier is estimated as 17,000 tons/year assuming cargo handling by the combination of ship-gear and the gear on the pier, and 16-hour operation.

At present the port of Panama is surrounded by the adjacent old city (Casco Viejo) and has no additional space for port expansion to build warehouse or to secure cargo marshalling yard. And a redevelopment program, which is called the “Panama City Coastal Development Plan”, is being planned on the waterfront area of Gulf of Panama enclosing Fiscal Pier. The program aims at the improvement of the water quality and urban environment on the coast and assumes demolition of the pier.

Panama Port is currently handling cargoes and passengers to Darien and Taboga Island. As explained above, the inter-regional transport between Darien and Panama is expected to shift to the land route via Pan-American Highway. Thus, port traffic from Panama Port will be mainly to the islands in Panama Bay. Tabaga Island is one of the most popular tourism areas in Panama Province and many tourists are visiting the island by fast passenger crafts. Though the passenger craft may dock at the tourism port at Flamingo Island at Amador, an alternative port facility for small cargo ships will be needed.

(4) Balboa Port (Panama Province)

Balboa Port is becoming more specialized port for international container cargo handling since it was privatized in 1998. The port is still playing the important role in unloading conventional cargoes, especially dry bulk. In fact, the port has been the only port for the importation of grains

and corns, which are vital commodity for people and livestock farming. Though the current concession contract between the Panama Port Company (PCC), the operator of Balboa Port, and the government prescribes the concessionaire should accept conventional cargo ships, the former tends to focus more profitable business, i.e. container handling. In fact PPC is now constructing another container wharf and upgrading the container handling capacity at the existing multi-purpose wharf.

This generates an issue which is more beneficial to impose the requirement to handle conventional cargos or to lift such restriction to facilitate the operator to expand its business further. Since dry bulk cargoes are expected to increase in accordance with the growth of the national economy, the import of dry bulk as well as other conventional cargoes should be given due consideration in the Port Master Plan.

(5) Vacamonte Port (Panama Province)

Vacamonte Port is situated in Arraijan District (the suburb of Panama City), and has an 8 km long paved access road to the four-lane Pan-American highways. The port started its operation in 1979 and is managed by AMP Vacamonte Port. The port is highly specialized for commercial fishing industries. The port was originally a home port of shrimp fishing boats and later a deeper draft pier was constructed to accommodate larger ships that brought frozen tuna. In addition to mooring facilities, the port also has shrimp processing factories, ship repair facility, industrial estates for logistics businesses as well as other commercial businesses.

Retaining the calm water area sheltered by the 1,050 meters long breakwater, Puerto de Vacamonte functions as the unloading base of tuna boats and shrimp trawlers. The water depth of the basin is designed -5.5 m. The port is equipped with the freezing, processing, shipping facilities of tuna/bonito and shrimp and also equipped with the shipyard and workshop serving for the fishing boats. The port does not have berthing and cargo handling facilities a commercial port usually has.

Most of the ships calling on Vacamonte are fishing boats, i.e., tuna ships (landing 8 - 12,000 tons/year of tuna) and shrimp trawlers (landing 10,000 - 14,000 tons/year of shrimp). The port capacity at Vacamonte is estimated as 200,000 tons/year as for tuna and 15,000 tons/year as for shrimp assuming fish landing is handled by the combination of manpower, gear on shrimp piers and ship-gear, and 8-hour operation. While the shrimp landing capacity is assessed to be sufficient, Tuna Pier needs to be expanded , because there is no facility for tuna ships to dock for supply.

In the recent years, decline has been observed in unloading shrimps while tune unloading has been increased and this lead to the congestion of the deep draft pier.

(6) Aguadulce Port (Cocle Province)

Aguadulce Port is a river port constructed in 1923 and located at about 10 km upstream from the Palo Blanco estuary. Though there is a restriction due to the shallow river channel, the ships navigate and enter the port during the high tides. The port is located in a river, and the maintenance of the access channel to the river mouth is required. Even with the buoys for navigation aids, careful ship maneuvering is needed at sharp carves of the access channel.

The port is situated in the center of the agricultural plain of Cocle Province and has functioned for a long time as the port for export of the agro-products in the region. The current function of the port is export of sugar products and import of fertilizer. Since the major industry in the hinterland of the port, i.e. Cocle, Herrera and Los Santos Provinces is agro industry, the current function of the port should remain unchanged over the coming years. Taking into consideration of the physical restrictions due to geographical and hydrographical conditions, the safety improvement is the major target of the development plan of this port.

(7) Mensabe (Veraguas Province)

The port located at outlet of Mensabe River, Las Tablas Province, which is rich in marine resources. Thus, the major users of the port are fishing boats that unload fish catch and receive fuel and water. It was constructed in 1996 and the port facilities are in good condition including the berth with the size 16.3 m x 3.9 m.

The port is situated on the river bank near the mouth and the water depth is limited by the sandbar. Thus, it is assessed that this port will remain occasionally used by fish boats in the coming decades.

(8) Mutis Port (Los Santos Province)

Puerto Mutis is located at the outlet of Martin Grande River, Veraguas Province. The port is used principally for the coastwise trade and also by the local fishermen of the region to trade their fish catches. Present facilities are the two berths 16.5 m and 15 m long, a ramp of 20m long and a floating wharf for small crafts. Small crafts provide passenger transportation services to remote coastal communities in the bay and islands. Tourists visiting Coiba Island get on these boats at this port. In addition to the passenger services, those small crafts also provide supply services to the fishing boats working in the coastal water in the region.

The road network of the coastal area in Veraguas Province still remains undeveloped. Over the coming decades, the existing water transport service will continue. The floating wharf should be well maintained.

(9) Pedregal Port (Chiriqui Province)

Puerto Pedregal is a river port constructed in 1916 and administrated by Chiriquí's Railroad Division of the Department of Public Works (transferred to APN in 1978). The port is located at about 15 km upstream from the river mouth, Boca Brava.

Port calls of the commercial ships are about 10 calls/year and their role is to import fertilizer and to export sugar. Navigation is restricted by sand bars at the mouth of the estuary. The port also provides mooring space for many pleasure boats and their trips accounts for 90 % of the port calls at Puerto Pedregal.

Fertilizer and sugar accounts for the most part of the cargo handled at Pedregal. The port capacity at Pedregal is estimated for fertilizer and sugar and is evaluated as 200,000 tons/year assuming cargo handling by ship-gear and 8-hour operation. This is to surpass the current cargo traffic volume at Pedregal (about 20,000 tons/year).

(10) Puerto Armuelles Port (Chiriqui Province)

The existing pier (approach: 277 m, berth: 137 m) is an overage facility constructed in 1938. The pier was damaged by the earthquake in September 2002 and cannot be used at present. Though the facility used to be a dedicated pier of banana export and fertilizer import, the export of banana from Puerto Armuelles Port stopped in 1998. Currently banana export has diverted to Puerto de Chiriqui Grande.

The designed port capacity at the pier of Puerto Armuelles is estimated as 850,000 tons/year assuming a dedicated Banana-carrier ship (with 5 ship-gear cranes) and 16-hour operation.

Administration of this pier was transferred to AMP from Chiriqui Fruit Company. AMP is currently studying rehabilitation of the pier.

With the rehabilitation, the life of the structure can be extended some more years. However, the port specialized for banana export is not suitable for cargo handling that requires heavy equipment.

(11) Chiriqui Grande

At Chiriqui Grande, there are two ports: National and Private ports. The National Port of Chiriqui Grande is managed by AMP, and the other is operated by Petro Terminal of Chiriqui (PTP, a joint venture company between private and Panamanian government).

The National Port of Chiriqui Grande is a jetty that used to be used as a Roll-on/Roll-off ferry terminal complementing the missing link of the highways to Almirante and Bocas del Toro. Almirante was the gateway to Changuinola, the most populated town of Bocas del Toro Province, and then Bocas del Toro is the Provincial Capital located in an island. The ferry service was terminated when a highway between Chiriqui Grand and Almirante was completed and the traffic

was shifted to land route. Thus the Ro-Ro ferry is currently operational only between Almirante and Bocas del Toro.

It seems to be unrealistic that the Roll-on/Roll-off ferry service will revive between Chiriqui Grande and other locations in Bocas del Toro. Thus the function of the national port should change. There are many communities on the islands and remote areas in the peninsula in and around Laguna de Chiriqui. The port has the role to serve as the terminal of the local shipping service to these communities. The function of Chiriqui Grande National Port over the coming decades will be to provide mooring facilities for small crafts that carry passengers and cargoes to remote communities in the province.

The PTP originally started its business from the land bridge service of petroleum between Charco Azul and Chiriqui Grande. Now the company also operates a multipurpose wharf where ocean going cargo vessels are calling to carry bananas to the east coast of U.S. Aside from the petroleum trade, the multi-purpose wharf of PTP is currently called by only reefer ships plying between Chiriqui Grande and east coast of U.S and further to Europe. The major cargo is bananas brought overland from Chiriqui Province and southern pacific regions of Costa Rica. Though the PTP wharf is currently specialized for the export of bananas, its facilities can accommodate other types of cargoes when the western provinces of Panama have promoted their export products up to the level that requires an outlet to Caribbean side.

(12) Bocas del Toro and Almirante Ports (Bocas del Toro Province)

Ports Bocas del Toro is one of the important tourist centers in Caribbean Sea located at the western end of Panama. The provincial capital, Bocas del Toro, is located in Isla Colon, and most of the visitors from Panama City to Bocas del Toro generally use air routes, while many foreign tourists visit there via boats from Changuinola which is the first leg of these tourist arriving overland from Coasta Rica.

Puerto Bacas del Toro is connected with its counterpart on the mainland, Almirante, by a ferryboat (Palanga; Ro-Ro type, 1,090 GRT, LOA 57.5 m). Various consumer goods (such as foods, diesel oil, etc.) are ferried from Almirante Port. The ferry provides the convenience of 5 days/week and 1 round trip/day services. The cargos handled at Bocas del Toro are general cargo transported by ferry, and both the volume of cargo and the number of port calls is on the growing trend.

The most popular island for tourists is Isla Bastimentos, where resort beaches and cottages are located. Small passenger crafts with outboard engine, which are called the "Water Taxis", are transporting tourists to the island either from Almirante or Bocas del Toro.

Bocas del Toro Port is a rather passenger port for not only tourists but also local people. Since the Roll-on/Roll-off ferry service is only five times a week, passengers rather use small crafts which are operated either according to the scheduled or on charter.

AMP used to operate passenger boat landing facilities at Bocas del Toro, which is a covered pier. However, since the pier was damaged, the private operators of "Water Taxis" started to construct their own landing facilities near the AMP pier. Many of those facilities are not safe and comfortable enough for passengers.

Thus, the construction of new passenger terminals at both ports is urgently needed. This is especially true for Bocas del Toro Port, for it is the gateway to the most scenic area and it is also the hub of the passenger boat services to many island resorts.

6.3 Capacity of the Existing Port Infrastructure

(1) International Container Ports

Table 6.3.1 shows the results of an evaluation of the handling capacity of the major container terminals in Panama (including all the ongoing and proposed expansion projects at Balboa Port and the terminals in Colon port complex).

The total handling capacity of the four container terminals is estimated as 7.4 million TEUs (about 52 million tons/year).

Table 6.3.1 Handling Capacity of Major Container Terminals

Container Terminal	Facility and Equipment	Capacity (1,000 TEU/year)	Capacity (1,000 MT/year)
Manzanillo Intrnational Terminal	Berth: 1,240 m, 10 Quay Cranes	2,800	19,600
Colon Conteiner Terminal	Berth 612 m, 5 Quay Cranes	1,000	7,000
Cristobal Port	Berth 450 m, 2 Quay Cranes	400	2,800
Balboa Port	Berth 1,500 m, 12 Quay Cranes	3,200	22,400
Total		**7,400**	**51,800**

Note: (1) As for Balboa Port, the condition after completion of all phases of modernization is assumed.
(2) Cargo weight is assumed as 1 TEU = about 7 Metric Tons based on the actual records.
(3) Ratio of 20 ft : 40 ft container is assumed as 1:2 in number.

(2) Local ports

The capacities of the major national ports (local ports) were also assessed on the basis of the current operational scheme such as ship size and the commodities handled at the ports. For the case of La Palma and Quimba Ports, the capacities have been estimated for the planned port facilities in the Sustainable Development of Darien. The results are shown in Table 6.3.2.

Table 6.3.2 Capacities of the Major National Ports

Category: Puerto(port). Muelle(pier). Atracadero(moorage). Rampa (lamp). Astillero (Shipyard)

Name of port	Province	Category and Purpose	Existing Facility			Cargo Handling Capacity				Future Need of Facility
			Facility	Unit	Size	Ship Size	Load Capacity	Frequency	Cargo Capacity	
La Palma	Darien	Pier	(Existing) Concrete Pier	m^2	40x16					Careful maintenance of the floating pier is required.
		General Cargo and Passenger	IDB Project							
			Floating Pier (Ro/Ro Ferry)	berth	1	1,000 GRT	300 t	2 /Day	262,800 t	
			Fixed Pier(Cargo Ship)	m	12	140 GRT	50 t	3 /Day	65,700 t	
			Floating Pier (Small Crafts)	beth	2	Small Craft	20 Pax	16 /Day	140,160 t	
Quimba	Darien	Pier	(Existing) Floating Pier	m^2	6.4x4.4					Careful maintenance of the floating pier is required.
		General Cargo, Passenger, Fish landing	IDB Project							
			Floating Pier (Ro/Ro Ferry)	berth	1	1,000 GRT	300 t	2 /Day	262,800 t	
			Floating Pier (Small Crafts)	beth	2	Small Craft	20 Pax	20 /Day	175,200 Pax	
Coquira	Panama	Ramp	Ramp(Existing)	m^2	1.824	Small Craft	20 Pax	16 /Day	140,160 Pax	
		General Cargo, Passenger, Fish landing								
Panama	Panama	Pier	Jetty	m^2	125x14.5	To be Closed for Cargo ships				Demolish the shed on Fiscal Pier in order to modernize cargo handling. Need to develop warehouse and truck yard
		General Cargo								
Vacamonte	Panama	Port	Tuna Jetty	m^2	242.5 x 12.5	140 GRT	40 t	2 /Day	29,200 t	Need maintenance dredge, fence and burglar alarm, fire fiting gears and garvage correction and first treatment facilities
		Fish Port	Shrimp Jetty x 2	m^2	2x60xS.3	50 GRT	5 t	36 /Day	39,420 t	
Aguadulce	Cocle	Muelle	Concrete Pier	m	100	2000 GWT	1000 t	10 /Mo	120,000 t	Need replacement of the concrete deck of the pier, regular bethymetric survey and maintenance of navigation aids
		General Cargo and Bulk Cargo								

Table 6.3.2 Capacities of the Major National Ports (Continuation)

Category: Puerto(port). Muelle(pier). Atracadero(moorage). Rampa (ramp). Astillero (Shipyard)

Name of port	Province	Category and Purpose	Existing Facility			Cargo Handling Capacity				Future Need of Facility
			Facility	Unit	Size	Ship Size	Load Capacity	Frequency	Cargo Capacity	
Mensabe	Los Santos	Muelle	Concrete Pier	m	16	10	5 t	1 /Day	1,825 t	
		Multi Purpose Fish Landing								
Mutis	Veraguas	Muelle	Concrete Pier	m	16.5	50 GRT	10 t	1 /Day	3,650 t	Maintenace of the floating pier
		General Cargo	T-shaped Pier	m	15	50 GRT	10 t	1 /Day	3,650 t	
			Ramp	m	20	Small Craft	1 t	20 /Day	7,300 t	
			Floating Pier	m	6	Small Craft	5 Pax	20 /Day	36,500 Pax	
Pedregal	Chiriqui	Muelles	Concrete Pier	m^2	84	2000GWT	1000 t	10 /Mo	120,000	No need to reinforce port facility. Future increase of the fish and tuna loading can be taken care by the increase of operation hours
		General Cargo and Bulk Cargo, Fish landing								
Armuelles	Chiriqui	Muelles	Jetty (Berth)	m^2	137 z 16.5	Cannot be used for Cargo unloading & loading			0 t	Existing pier is time worn and damaged. Need to identify the purpose of the use of the facilities
		Specialized port (Banana)				Mooring only				
Bocas del Toro	Bocas del Toro	Muelles	Ferry Pier	m^2	30x12	1,000 GRT	300 t	2 /Day	262,800 t	Improvement of passenger service is required.
		General Cargo Ferry Berths								
Almirante	Bocas del Toro	Muelles								
		Ferry Berth	Ferry Pier	m	10	1,000 GRT	300 t	2 /Day	262,800 t	
Chiriqui Grande	Bocas del Toro	Muelles								Need to identify the purpose of the use of the RoRo Ramp
		General Cargo and Bulk Cargo	Concrete deck on vertical	m	182	15000DWT	10000 t	10 /Mo	1,200,000 t	
			steel piles							
		RoRo Berth	Ferry Pier	m	22.5	1,000 GRT	300 t	2 /Day	262,800 t	

6.4 National Port Administrative System of Panama

6.4.1 Historical Background

The Port Authority of Panama (APN) was created in May 2, 1974 by Law No. 42. The APN is a centralized port administrative, managerial and operational body that had the following functions under the general government policy through the Ministry of Commerce and Industry:

(1) to promote, plan, and coordinate the development of the national port system and in consequence, to formulate and execute the adequate policies for this objectives;

(2) to construct, improve, expand and maintain the ports and commercial port facilities for public use and the ports and port facilities for the fishing industry;

(3) to exploit and operate the port services indicated in the above (2), and to control and supervise those ports and facilities that the authority do not operate directly.

In order to fulfill the above mentioned functions, the authority executed the following attributions:

(1) to elaborate and execute a general plan of the development of the national port system (by itself or through the collaboration with other public or private , national and foreign agencies);

(2) to operate the national port and port facilities (except those facilities that had been given in concession to private companies and military ports);

(3) to plan, design, build and improve national ports (by itself or through other special government agencies or particulars);

(4) to grant concessions for the exploitation of the national ports that were existing or to be built in the future.

(5) to provide navigation, maneuvering and ship landing facilities in the ports and, in general, all the services they require for the efficient cargo movement, and to regulate these activities within the port area;

(6) to load, unload, transfer, store, guard, and deliver the cargoes;

(7) to acquire and alienate its properties, contract personal or corporate and national or foreign loans and to carry out the contracts and official acts

(8) to charge rates and rights over the services the authority provides;

(9) to administrate its patrimony and to use its economic resources;

(10) to administrate, supervise and exercise port control over the port under concessions contract;

(11) other attributions indicated by Law or other regulations.

Thus, the authority had the functions to plan, construct, operate and improve the national ports and to provide all the services for efficient cargo movements in the ports. In order to execute these it also has the functions to grant concessions of the national ports, to acquire/alienate its properties, to get contract personal or corporate and national or foreign loans and to charge rates over the services the authority provided. It also had the function to control and supervise those ports and facilities that the authority did not operate directly.

To regulate the concessions mentioned in the Law 42, a regulation, which was called "Agreement No. 9-76", was established in March 24, 1976, in order to reconfirm the contract made under the Law 42 and to regulate the concession contacts related to port businesses.

On the basis of the Law 42, the APN had performed its function and the national port system had been developed. Most of the existing facilities in the national port in the rural areas were developed by the Port Authority of Panama in 1980's. Apart from the national ports, there were several private ports: wharves for banana export in Almirante and Puerto Armuelles that were owned and operated by private companies, oil terminals in Charco Azul and Chiriqui Grande for the land bridge of petroleum between the Pacific and the Atlantic coast and another oil terminal at Bahia las Minas. There were also privately operated wharves in Colon under concession contract between the Port Authority and the private companies: the Coco Solo Norte and the Colon Port Terminal, which were handling international general cargoes.

In October, 1993, the Ministry of Trade and Industry awarded concession to the Mansanillo International Terminal Inc, a private terminal operator. The concession contract, which allows the private operator to construct and operate a container terminal in Colon, was then became a law, Law No. 31, December, 1993. On the basis of the new law, a completely new container terminal was constructed by purely by private funds: the construction covered not only the reclamation of the wharf, but also the removal of a portion of breakwater for the construction of a new access navigation channel. The Mansanillo International Terminal was operational in the end of 1994, while the principal public ports, Balboa and Cristobal Ports were operated by the Port Authority itself.

Subsequently, a move to the privatization occurred and the Panamanian government decided to privatize the APN together with other two public corporations: telephone and water supply.

While the APN was conducting the study of Balboa Port development Plan in 1996, the privatization of the two principal ports of the nation, i.e. Balboa and Cristobal Ports, proceeded. In January, 1997, the government approved the concession contract between both Balboa and Cristobal Ports.

When the two principal public ports were privatized, the APN dismissed its own cargo handling operation. In the following year, the Port Authority of Panama was merged into the Panama Maritime Authority together with other maritime related agencies that used to be under various ministries.

6.4.2 Objectives and Functions of the Maritime Authority of Panama

(1) Organic Law of AMP

The Maritime Authority of Panama (AMP) was created by Decreto Ley (Law Decree) No.7 issued by the President on February 10, 1998, in accordance with 1998 Ley No.1, to give the President extraordinary and specified powers for making necessary arrangements for creation of the National Bank Commission and AMP.

AMP is a unified body of various maritime competencies from different institutions such as managing of marine and coastal resources from the Ministry of Commerce and Industry (MICI), education and training of seafarers from the Ministry of Education, registry of merchant marine vessels from the Ministry of Economy and Finance (MEF), and absorbing APN on port matters (after privatization of major ports).

The objectives of AMP stipulated in the Article 3 of the Decreto Ley are the following three points:

1) Regulate, project and carry out the policies, strategies, laws and programs that are related to the functioning and development of the Maritime Sector. Here, 'Maritime Sector' means all the activities related to the merchant marine, the port system, the marine and coastal resources, the human resources and the maritime ancillary industries of the Republic of Panama.
2) Coordinate its activities with ACP, Authority of the Intervocalic Region (ARI), IPAT, the National Institute of Renewable Resources and any other institutions related to the Maritime Sector for promoting the country's socioeconomic development.
3) Act as a supreme maritime authority of Panama, and exercise the rights and comply with the responsibilities of the State within the framework of the UN Convention of LAW of the Sea, 1982 and other existing laws and regulations.

Decreto Ley 1998 No.7 also stipulates the following duties for AMP:

1) To propose, coordinate and carry out National Maritime Strategy.
2) To recommend policies and actions, to carry out administrative actions, and to enforce laws and regulations regarding the Maritime Sector.
3) To prepare jointly measures to safeguard the national interest within territorial waters.
4) To enforce strictly the provisions of the UN Convention on the Law of the Sea, 1982 and other international treaties, conventions and instruments ratified by Panama regarding the Maritime Sector.
5) To evaluate and propose to the Executive Branch, the general term of the whole government agencies under the Presidency of the Republic, and other Government agencies, which belong to the Legal Branch headed by Legislative assembly and the

Judicial Branch headed by the Council of Justice, and the adoption of international treaties and conventions and instruments relating to the activities of Maritime Sector.

6) To represent Panama in international organizations regarding matters concerning the Maritime Sector, in co-operation with the Ministry of the Foreign Affairs.

7) To cooperate with the National Maritime Service in order to enforce national laws in the maritime areas and internal waters of Panama.

8) To update signaling systems, navigation aids, nautical charts and other hydrographic data needed for safe passage of ships through the waters of Panama, in accordance with the National Constitution and the laws of the Republic.

9) To conduct, with cooperation of other competent State agencies, the operations required for controlling oil and chemical spills, and other disasters or casualties that take place within the marine area and internal waters under jurisdiction of Panama.

AMP has, together with other provisions a wide range of functions in terms of regulation, development, maintenance, operation and conservation of the maritime sector. While the Decreto Ley provides that AMP is the supreme maritime authority, many of the functions may not be executed without support of organs in the Executive Branch, inter alia. Ministry of Foreign Affairs, Ministry of Agricultural Development, ACP, ARI, NMS, and IPAT. In addition, it should be noted that functions are executed under the control of budget, which reflects the economic and financial environment at the time.

While the major functions of AMP as a whole are rather focus coordinating and regulating aspects, most of the functions of the APN were inherited by the Directorate General of Port and Maritime Ancillary Industries**.** The organic law prescribed that the following are the functions of the directorate general::

1) to propose and coordinate the development plans for the national ports system and implement the actions necessary to achieve them.

2) to implement a general plan for the development of the national ports system, in accordance with the policies dictated by the office of the Administrator.

3) to build, improve, expand and preserve commercial port installations for the public use, pursuant to the policies dictated by the office of the Administrator. The works themselves may be carried out by the Directorate General itself, or through special government organizations or private parties.

4) to exploit and operate the ports services detailed in the previous numeral, as well as control and supervise those ports and installations that it does not operate directly.

5) to operate the national ports and port installations (except those given in concession to private companies and those belong to the Public Force or the Panama Canal Authority).

6) to process and oversee concessions granted for the exploitation of national ports already in existence or to be built in the future.

7) to promote facilities for the navigation, maneuvering and mooring of vessels docking at national ports and, in general, provide the services that these may require for the efficient handling of cargo and the customary supplies, and to regulate such activities within the port areas.

8) to load, unload, transfer, store, guard and deliver to the consignees or their representatives, either itself or through concessionaires, the merchandise, products or other goods to be loaded or unloaded.

9) to define the concepts that correspond to the rates and fees that shall be paid by vessels using port services.

10) to promote the upgrading of maritime ancillary service companies, so that they may meet the traffic demands of the Panama Canal and the ports system.

11) to sanction those who violate the laws and regulations regarding the administration of ports and the maritime ancillary industries.

12) Fulfill any other functions as may be assigned to it by the Authority's Administrator and Board of Directors.

However, it should be noted that the Board of Directors of AMP consist of ministers and professionals who represent various maritime sub-sectors and do not include the representatives of the port users:

1) One Minister of State designated by the President of the Republic, who will presides it. In his absence, he will be replaced by his Vice-Minister.
2) The Minister for the Canal affairs; in his absence he shall be replaced by the Administrator of the Panama Canal Authority.
3) A professional with knowledge of, and experience in Maritime Law.
4) A businessman with experience in the Maritime Sector.
5) A prominent professional with knowledge and experience in the training of personnel for the Maritime Sector.
6) A professional prominent in Nautical Science.
7) A professional prominent in the management of marine resources.

Incidentally, the Executive Committee of APN consisted of the representatives from four ministries and the representatives of the port workers and port users:

1) The Ministry of Commerce and Industry presiding the Committee
2) The Ministry of Public Works
3) The Ministry of State and Treasury
4) The Ministry of Planning and Economic Policy

5) A representative of the port workers, and
6) A representative of the port users.

In addition, there is no provisions to establish Local Port Boards that, under the direction of the Executive Committee of APN, used to be formulated to collaborate with the administrators of local ports. The Local Port Boards constituted by the following persons:

1) The Port Administrator presiding the Board;
2) The corresponding local government representative;
3) The National Guard Chief of the area; and
4) A representative from the Technical Province Board designated by the Province's Governor.

Thus, after the merge of the APN to AMP, no official committee is formulated to coordinate the AMP with the local governments and local office of the National Maritime Service.

(2) National Maritime Strategy

The primary function of AMP is to propose, coordinate and carry out the National Maritime Strategy (NMS). Since it creation, the AMP has worked to prepare the NMS in coordination with the agencies concerned. In December, 2004, the Board of Directors of AMP approved it and released to the public. The full text of the NMS is attached in Appendix L of this report. The English version prepared by the study team is also attached.

The NMS aims at two objectives. The First Strategic Objectives focuses administrative aspects. Some of the key items that may provide the basic concept of the port development are the following items:

1) Legal security and compliance with international regulations;
2) Standards of quality management through clear, modernized, simple, flexible and predictable regulations;
3) To foster the investment , innovation and continuous improvement

   (To safeguard the sustainability of the investments in infrastructure and equipment through maintenance programs)

4) Coordination and collaboration with related institutions
5) To carry out marketing activities
6) Conservation of the environment and marine resources

   (Integrated management of coastal areas)

The Second Strategic Objectives aim at the support the growth and sustainable socio-economic development. The key elements that should be taken into considerations in the port development are:

1) to promote the use of national supplies that marine sector offers to other productive sectors in order to obtain the biggest positive impact in the economy

   (to respect the autonomy of the institutions and to foster their profitability and good managerial performance)

2) to stimulate the investment in the required physical infrastructure
   - to prepare a port development plan and carry out the feasibility study,
   - to promote the private investment in coastal shipping toward the most remote communities
   - to plan Integrated Coastal Management
   - to set up necessary infrastructure to maximize activities of marine conglomerate

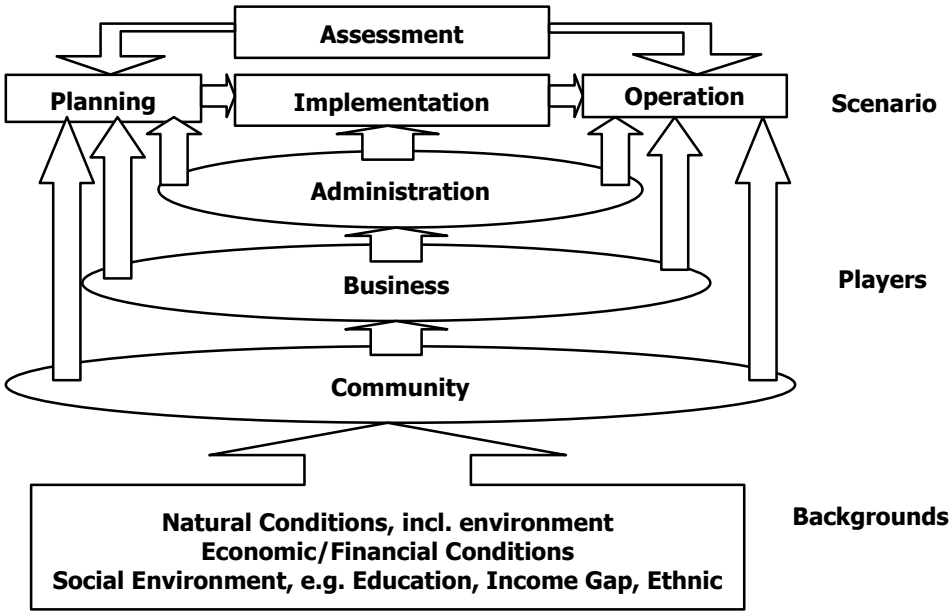
3) Guarantee the sustainability of the resources
   (to establish National Program of integrated Coastal Management)
   - Marine and coastal resources
   - the component of tourism development

(3) AMP's Role in Port Sector in accordance with the Organic Law of AMP and the National Maritime Strategy

In recent years, there are quite a lot of arguments on public investments. One of the key issues in the arguments is the participation of private sector participation. As shown in Figure 6.4.1, while the administration (Public sector) is playing the key roles, other players (stakeholders) such as the business circles and local communities are also playing their respective roles that influence the whole process of the project, directory or indirectly according to their characteristics and the conditions the players are placed. All the players are also influenced by the socioeconomic conditions of the nation, region and communities.

This is especially true, the stakeholders other than administration (public) participate in the investment. While the administration tends to take initiative, the business circle and the community often express their views and interest, and sometimes take part in the process of implementation and operation. It is often seen that private sector are more actively involved when the projects are implemented by the schemes called "Build-Operate-Transfer (BOT)" or "Build-Operate-Own (BOO)". In such cases, it is also often seen that while the private sector is directly working on the project, the public sector rather focus on the supporting work: the cooperation and coordination with other agencies to interface with the basic national policies, other on-going and planned infrastructure development projects.

Above all, assessment on the whole process is also one of the issues brought into the arguments. The assessment of the impacts on the natural, social and economic environment that the project may cause should be carried out properly.



Source: JICA Study Team

Figure 6.4.1 Port Development Procedure

In the above Figure, assessment should not be limited to natural environment, but should evaluate contribution of the port development to the economy and society of the region and implications for the quality life of residents. Here, the community (including local government) plays an important role. During the implementation stage, various stakeholders (particularly business) must have interest, and they will have the main role in case of a concession. At this stage, administrations will have the main role or merely conduct supervisory functions as the case may be. AMP may award concessions at its own judgment; however, AMP's Board of Directors, National Economic Council (CENA) and Cabinet Council will jointly decide the concessions exceeding the amount of Balboa 100 million.

At running stage, administration's role varies according to the characteristics of the port. In smaller ports, it acts as manager besides port captain (harbor master) because of non-existence of adequate body in the region; however, in many ports with concessionaire, particularly with hybrid concession, since business actively participates in management and operation, the function of administration is accordingly limited.

Attention should be drawn to 'Background' in the Figure. These conditions constitute the framework by which a project will be developed, modified or even suspended. Participants should look into these conditions and keep them in mind in times of change.

It should be noted various bodies according to their characteristics as well as nature of each port share the activities in a port. AMP is playing important role within the above environment.

One specific function of AMP is to facilitate private/public co-operation. Decreto Ley No.7 provides that in view of assuring the development of the Maritime Sector, the Authority should

promote the creation and expansion of private/mixed companies through granting of guarantees, leasing of assets or by any other means. It also says that it should participate in private/mixed companies by acquiring share or stock, and within the existing legal framework may sell, lease and negotiate any kind of assets, or may award concessions. These functions affect the Authority's structure and competence.

(4) Organizations of AMP and the Executive Branches of the Government

Organizational structure of the Panamanian Government and AMP are shown in Figures 6.4.2 and 6.4.3, respectively.

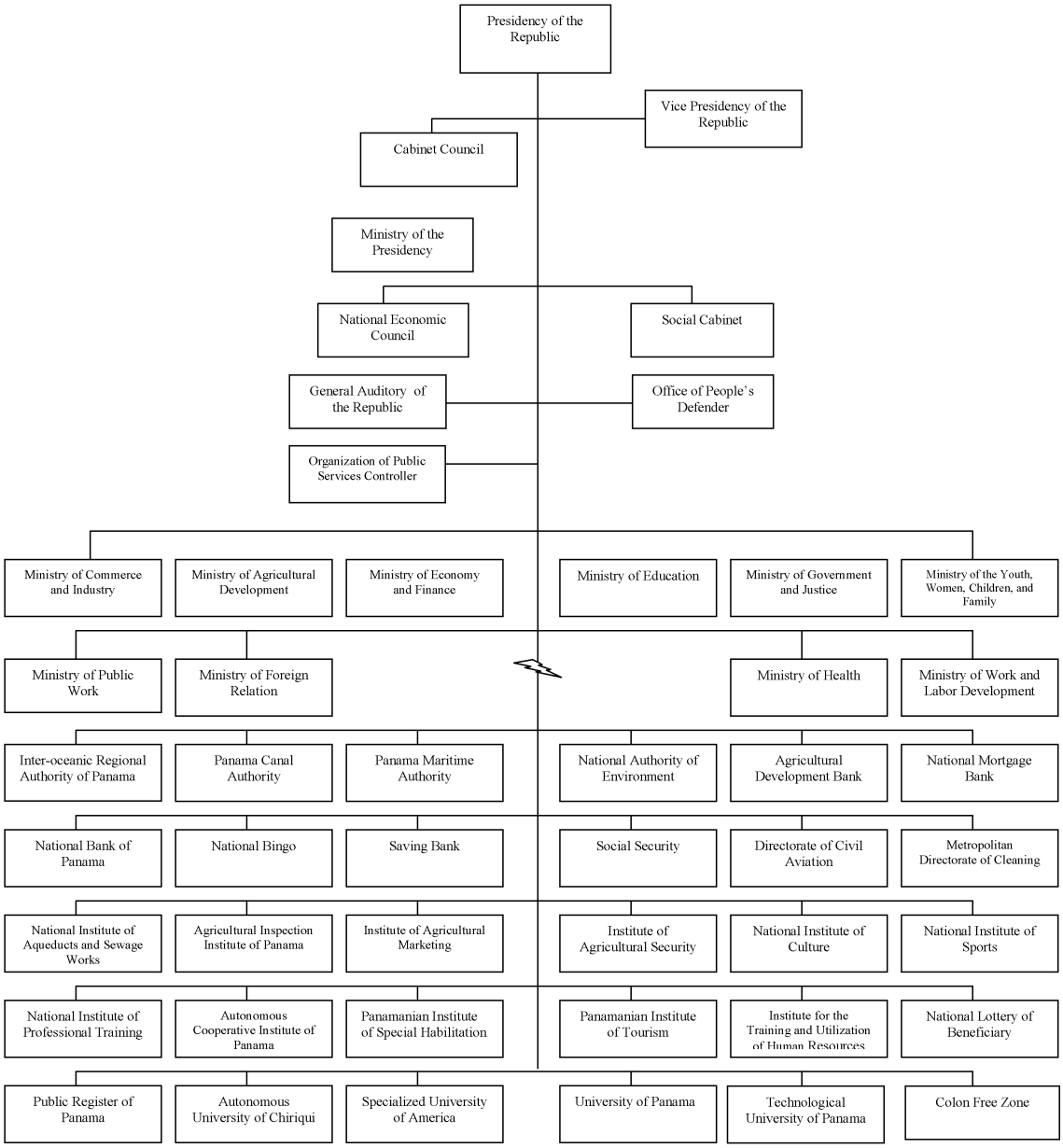


Figure 6.4.2 Executive Branch

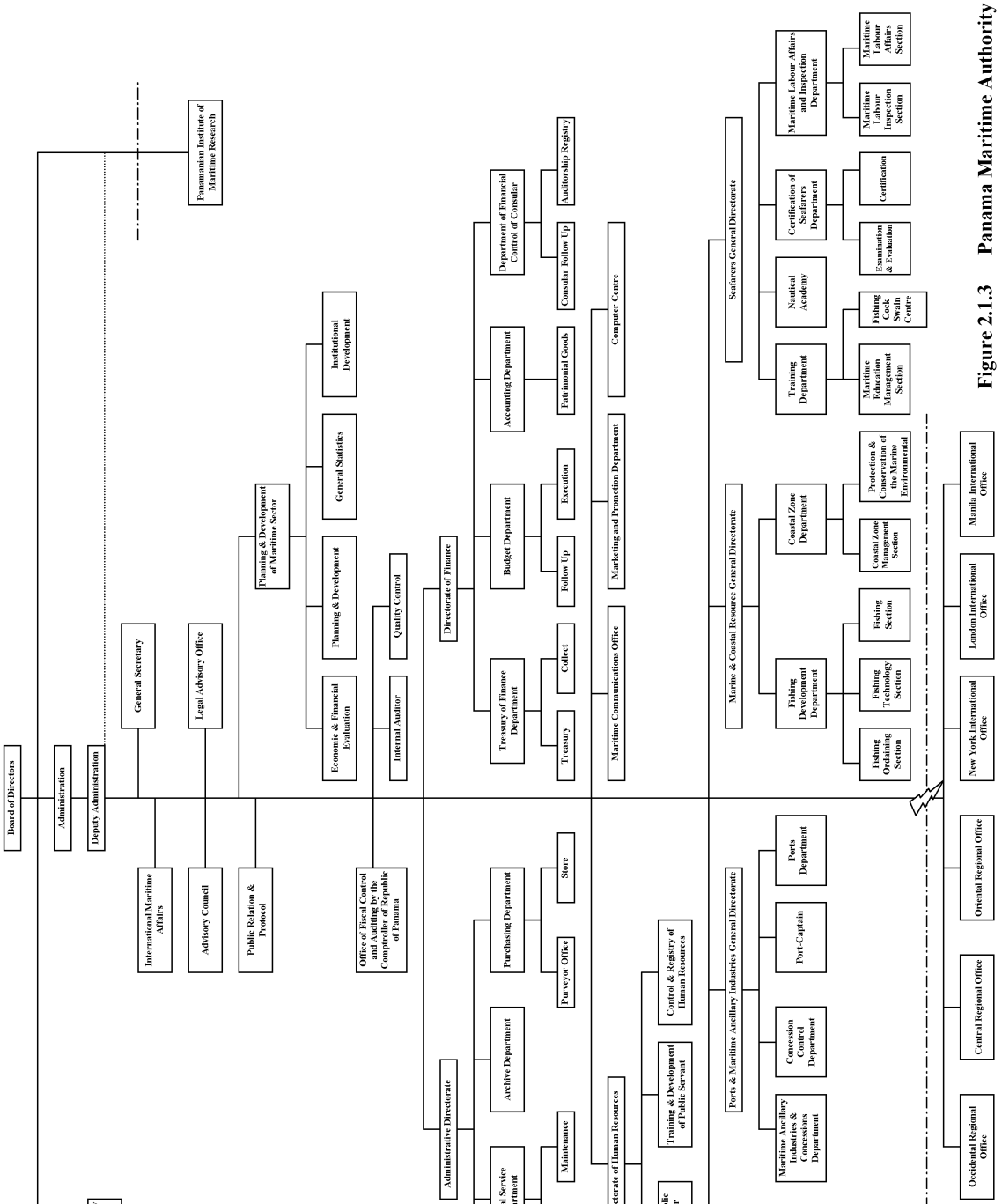


Figure 6.4.3 Panama Maritime Authority

Figure 2.1.3 Panama Maritime Authority

6.5 Existing Issues in the Port Administration and Management

6.5.1 Critical Situation Related to Port Sector

Observing the socio-economic situation in Panama as well as behavior of AMP, two points could critically limit the drafting and implementing strategy of ports, namely shortfall of financial resources and insufficient human resources. Without overcoming these points, any future plans may not be workable.

(1) Shortfall of Financial Resources

In 2002, Government deficit recorded Balboa 236 million the highest since 1998. Main reason was the deficit of social security that amounted to Balboa 330 million in 2002 after large increase of Balboa 148 million in 1998. With the increase of population of pension age, the deficit will reach the level pressing seriously into the public sector's financial condition.

Total public sectors debt is up from Balboa 7,087 million in 1998 to Balboa 8,521 million in 2002, about 20% increase. Of total debt in 2002, internal debt is Balboa 2,172 million and external debt is Balboa 6,439 million. Total debt/GDP ratio is 69.3% in 2002 down from 75.8% in 1998. Under the circumstances, the Fiscal Responsibility Law 2002 was enacted to prohibit having a fiscal deficit over 2% of GDP.

As a result, each governmental institution including decentralized organs is under the strict budgetary control by MEF and Contrarolia. Particularly for capital expenditures, MEF examines in depth the draft budget of each project. This disciplinary budgetary management will continue for considerable time in future, since with the fiscal environment of Panama, this is a sensible means for the moment to prevent economic and social damage caused by collapse of the Government account.

Governments capital investment is particularly under strict evaluation by MEF. Recent five years average government capital expenditure including decentralized organs is Balboa 351 million, 10-15% of total expenditure. AMP's appropriated capital investment is only Balboa1.76 million in 2003.

According to the AMP Profit-Loss Account, total income during Jan.-Oct. 2002 was Balboa 48.7 million and the current expenditure was Balboa 21.0 million (financial result inclusive), which resulted in Balboa 27.7million surplus.

Table 6.5.1 Income and Expenses of AMP (2000-Oct. 2002)

000 B/.

Year	2002	2001	2000
Total Income	**48,745**	**49,190**	**69,780**
Administration Costs and Expenses			
Employee Expenses	9,414	10,310	13,152
Operation Costs	950	1,035	5,280
Services provided by the third parties	6,919	9,521	10,968
Diverse Negotiation Expenses	5	9	0
Provisions	2,498	3,447	2,707
Total Administration Costs and Expenses	**19,786**	**24,322**	**32,107**
Other Income and Expenses			
Financial Income	11	16	1,249
Financial Expenses	1,243	1,078	1,388
Total Other Income and Expenses	**(1,232)**	**(1,062)**	**(139)**
Result of Operation before Extraordinary Items	**27,727**	**23,806**	**37,534**
Extraordinary Items			
Extraordinary Income	7,256	19,995	0
Extraordinary Expenses	9,098	6,268	0
Total Extraordinary Items	**(1,842)**	**13,727**	**0**
Fiscal Contributions			
Received Current Transfers	50	132	0
Transfers, Coordination and Subsidies	37,023	32,403	40,590
Total Fiscal Contributions	**(36,973)**	**(32,271)**	**(40,590)**
Final Results	**(11,088)**	**5,262**	**(3,056)**

Source: Financial Statements of AMP.

However, each year, AMP together with Civil Aeronautics Co., Electric Transmission Co., Lotteria National and Colon Free Zone is contributing to the treasury. AMP's transfer to treasury amounted to Balboa 37,073 thousand in 2002. The final result for Jan.-Oct. 2002 is Balboa 11,088 thousand deficit. This result does not include capital investment, which is Balboa 1,761 thousand (Source MEF).

(2) Insufficient Personnel Resources

After privatization of Cristobal and Balboa Ports in 1993 and 1997, many able personnel and well-trained workers left APN (now AMP). At present, among some 1,100 (Aug 2003) total AMP's staff, only 14 are working in Direccion General de Puertos y Industrias Maritimas Aux. (Headquarter of AMP), and 319 are working in local offices (Administradores and Capitania). Vacamonte is the largest office with 142 staff, Capitania de Cristobal is the next with 58 staff and

Panama is the third with 23 staff. Other 21 offices have less than 15 staff working, and in 9 offices only one or two staff are working.

It is felt that the port sector of AMP in general hires an insufficient number of personnel for the functions assigned to it by Law.

Table 6.5.2 Port Sector Personnel

Name of Port	Staff	Ship Calls	Remarks
Aguadulce	11	150	Pm
Almirante	3	426	hb/pm
Armuelles	10	168	
Bahia Las Minas	5	166	Hb
Bocas del Toro	2	216	Pm
Coquira	4	706	Partly private
Charco Azul	5	70	Hb
Chiriqui Grande	2	233	hb/pm
La Palma	4	219	
Mensabe	8	691	
Mutis	5	671	Pm
Panama	23	1902	Pm
Pedregal	9	96	Hb
Vacamonte	142	4064	Pm
Direccion General	14		
Capitania de Balboa	13		
Capitaniade Cristobal	58		

Source: AMP
Note: Personnel Aug.25, 2003, Ship Calls, 2001, hb=hybrid concession, pm=piecemeal concession[121]

AMP is recruiting new staff through personal connections. Although this way of recruiting might be suitable for employing persons with guaranteed background, it is too limited to get newcomers with expert knowledge.

Since the Study is recommending several future plans, which will involve additional manpower, some measures for improving the present situation is inevitable.

[121] These terms are used in the context of the Study as follows:
'Hybrid Concession' means concession awarded for a terminal or terminals in terms of building and operating as the case may be. MIT, CCT and PPC are examples.
'Piecemeal Concession' means concession awarded for managing or operating limited range of facilities, such as cargo handling works, water supply, tug or pilot.

Panama Port is the gateway of Darien Province and Panama Bay Islands (Isla Taboguilla and Isla de Rey), and has been in service since 1902. Administradora's office at Panama Port has 26 staffs, working for administration and operation such as granting permission to vessels for entering and exit procedures, collection of fees, maintenance (including repairing and welding), driving forklift, and so on. Three staffs are working at the neighboring fish pier for inspection of fishing vessels, and three persons of the office plus 2 persons from Merchant Marine in Headquarters carry out ship safety inspections, and works related to prevention of marine pollution etc. 8 persons are dispatched from headquarters to provide 24 hour security.

Three concessionaires distribute various goods such as food, beer, beverage and fuel (two companies), and one company runs a canteen.

Since Columbians visit the port on the way to Colon Free Zone, and to obtain tariff exempted fuel and some other goods to Darien, CIQ personnel (4 customs officers consisting of two immigration and two quarantine officers) are placed in the port building.

Coquina is a very active port with cargo and passengers to and from Panama City and neighboring towns as well as many fishing vessels calling. At Coquira Administradora office, four staffs are responsible for statistics, billing and collection of fees (concession and cargo), granting permission for vessels' entering procedures, cleaning and security. One staff is engaged in marine resource matters in another office.

A concessionaire distributes ice and fuel to vessels in the port, and another concessionaire repairs small vessels. Vessel or cargo owners handle cargo and passengers.

In both ports, ship or cargo owners directly hire workers to carry out cargo handlings. In Panama Fiscal Pier, AMP issues certificate to control labor.

6.5.2 Legislation Matters

(1) Maritime Security

i) Safety and Environmental Regime

The maritime and environmental requirements have mainly been the responsibility of ships, shipping industry or flag states, and ports have only played supporting functions. However, the recent development of security aspect demands wider involvement of port management and facility, and tremendous works have yet to be done by the authority and industries related to ports.

Safety and environmental regime of shipping and maritime transport have mainly been developed in an international forum since the Second World War. 1960 SOLAS Convention and 1973 MARPOL Convention are the most significant achievements. Latin American states established "Viña del Mar Acuerdo" to cooperate among the relevant countries to enforce safety and environmental requirements, in particular, internationally applied port state control. According to the Annual Report of the Acuerdo, Panama is actively participating the work as shown below.

Table 6.5.3 Port State Control of Panama

Size	No. of Inspections	Without Deficiencies	With Deficiencies	Detained
Small	14	12	2	8
Ordinary	75	48	27	8

Source: Annual Report 2003 (Vina de Acuerdo)

ii) Recent Action in International Forum[122]

In December 2002, a week long Diplomatic Conference held at the International Maritime Organization (IMO) headquarters in London adopted a series of measures to strengthen maritime security and prevent and suppress acts of terrorism against shipping. This new comprehensive maritime security regime is set to enter into force in July 2004.

The new measures, which are for risk management from the threat of terrorism, contain amendments to several Chapters of 1974 SOLAS Convention, and the most far-reaching outcome of the Conference is the new Chapter XI-2 (Special measures to enhance maritime security). Regulation XI-2/3 of the new Chapter enshrines the International Ship and Port Facility Security Code (ISPS Code).

The purpose of the Code is to provide a standardized and consistent framework for evaluating risks enabling governments to offset vulnerability for ships and port facilities.

Government should conduct port facility security assessments. First, they must identify and evaluate assets and infrastructures that are critical to the port facility as well as those areas or structures that, if damaged, could cause significant loss of life or damage to the port facility's economy and environment. Then, the assessment must identify the actual threat to those critical assets and infrastructures in order to prioritize security measures. The assessment must address vulnerability of the port facility by identifying its weakness in physical security, structural integrity, protection systems, procedural policies, communications systems, transportation infrastructure, utilities, and other areas within a port facility that may be a likely target. Once this assessment has been completed, government can evaluate risk.

The Code embodies a number of minimum-security requirements for ships and port facilities. For ships, these requirements cover:

- Ship security plans
- Ship security officers
- Company security officers
- Certain onboard equipment

[122] Based on IMO Newsroom.

For port facilities, the requirements cover:

- Port facility security plans
- Port facility security officers
- Certain security equipment

In addition, the requirements for ships and for port facilities include:

- Monitoring and controlling access
- Monitoring the activities of people and cargo
- Ensuring security communications are readily available

In order to communicate the threat at a port facility or for a ship, the government will set the appropriate security level. Security levels 1, 2 and 3 correspond to normal, medium, and high threat situations.

Each government must ensure completion of a Port Facility Security Assessment for each port open for foreign trade, which is fundamentally the risk analysis of all aspects of port facility operation to determine which parts of it are more likely to be the subject of attack. On completion of the analysis, it will be possible to produce an overall assessment of risk. Based on the Assessment, government or port authority will prepare a Port facility Security Plan that should indicate the operational and physical security measures that the port facility should take to ensure that it always operates at Security level 1 (normal).

The Conference adopted 11 resolutions, some of which are related to port facility management as follows:

Resolution 2 adopts ISPS Code and invited government to note that the Code will take effect on 1 July 2004.

Resolution 5 strongly urged government to provide, in cooperation with IMO, assistance to those States which have difficulty in meeting the requirements and also invites the Secretary-General to give consideration to establishing a Maritime Security Trust Fund for the purpose of providing a dedicated source of financial support for maritime security technical cooperation activities and, in particular, for providing support for national initiatives in developing countries to strengthen their maritime security infrastructure and measures.

Resolution 6 urged government to take any action needed to finalize as soon as possible any legislative or administrative arrangements, which are required at the national level, to give effect to the requirements relating to ships certification and port facility, since the Chapter XI-2 of the Convention does not provide for any extension of the implementation dates for the introduction of the measures to enhance maritime security.

Resolution 7 invited governments to establish appropriate measures to enhance the security of ships and of port facilities other than those covered by Chapter XI-2 of the Convention; it also

encouraged governments to establish and disseminate information to facilitate contact and liaison between company and ship security officers and the authorities responsible for the security of port facilities not covered by Chapter XI-2, prior to ship entering, or anchoring at such a port.

As provided in the final clauses of the Convention, the amendments to SOLAS and ISPS will enter into force on 1 July 2004, unless prior to that date, more than one-third of the Contracting Governments to the SOJAS Convention or Contracting Governments of a combined merchant fleet which constitute not less than 50% of the gross tonnage of the world's merchant fleet have notified their objections to the amendments.

Despite the provision, it is each government's decision to become a Contracting State of the amendments. Panama takes the legal position that any amendment that enters into force automatically after certain date or fulfilling the explicit conditions should become effective to it without legal action such as ratification by Assembly. By virtue of the legal system Panama is already a Contracting State of the new SOLAS.

iii) US Government

US government tackled its security agenda at an early stage after 9/11, and enacted a series of legislations for the purpose of enhancing higher security regimens. November 2001, Congress enacted Aviation and Transportation Security Act, which created the Transport Security Administration (TSA) within the Department of Homeland of Security (DHS). TSA function is to analyze, collect information and develop border protection system against terrorism. January 2002, Maritime Transportation Security Act (MTSA) was enacted revising 1936 Merchant Marine Act, to update safety and security criteria of ships and ports and to strengthen the Coast Guard. The revised criteria are the harbinger of 2002 SOLAS Convention and Recommendations.

US Customs and Border Protection (CBP), in order to enhance effective border security, takes the following three measures, which will affect free flow of international trade and business.

Container Security Initiative (CSI)

CBP, with agreement of foreign administration, conducts inspection of US importing containers at loading ports. Now, CBP is prescreening containers at 20 major ports in Europe, Asia, Australia etc, including Felixstow, Rotterdam, Antwerp, Hamburg, Le Havre, Singapore, Hong Kong, Shanghai, Pusan, Yokohama and Kobe. These ports cover 70% of containers entering US ports. CBP is continuing its effort to get into more ports around the world.

Customs-Trade Partnership Against Terrorism (C-TPAT)

This is to develop and maintain effective security processes throughout the global supply chain despite the transportation mode. CBP awards certification to makers in the States, when the logistic chain satisfies the CBP standards. Cargo with the certificate is accepted by CBP.

24-Hour Rule

Effective December 2, 2002, carriers and/or NVOCCs must submit a cargo declaration 24 hours before cargo is laden aboard the vessel at a foreign port.

iv) Actions to be Taken

AMP Merchant Marine Sector that represents Panama in various important meetings of IMO, is the first responsible organization of maritime security matters. AMP has created a department under the Vice Administrador called Protection Maritima beginning of 2003. Panama is one of the first 25 countries agreeing with US to implement CSI. So far Panama shows excellent performance to implement the security agenda.

Aside from these, AMP is trying hard to prepare effective implementation measures of above requirements, among others:

- Forming an inter-institutional organ (Comite de Puertos, members: Consejo de Segridad, Customs, Policia Nacional, Servicio Maritimo Nacional chaired by AMP);
- Convening seminars for local personnel;
- Contracting with security consultants to assess the security plan in 8 public ports (Aguadulce, Arumelles, Bahia las Minas, Bocas del Toro, Chiriqui Grande, Coquira, Vacamonte and Yaviza) open for foreign trade;
- Issuing security certificates.

Despite these efforts to enforce the international requirements, there are many areas to be developed by both public and private sectors, e.g. training for inspectors, and trainers of local personnel, promulgation and publicity of rules, assessment of risks of foreign trade ports in the Interior and installation and repair works of security equipment (a part of those works has already been started). Many of these activities are executed by hiring outside consultants, but verification of inspections, training of personnel and public relations should in large part be conducted by AMP. At present, it may be advocated to hire experienced consultants, but in future as AMP could accumulate the knowledge and experience, it is desirable because of its own security reason to become conducting by itself, or supervising more thoroughly. These steps may require additional cost, and certain number of personnel will be needed for fulfilling the above responsibility. At present, AMP is in a critical situation in terms of finance and personnel. But to survive world maritime competition, it is an agenda item of high priority to take adequate financial and personnel steps.

As many security requirements are mandatory within the country and a wide range of public and private sectors have committed to their execution, comprehensive legislation might be useful to ensure their effective implementation. This step would also be in line with IMO Resolution 9.

If the legal instrument is enacted, the following clauses should be incorporated in relation to port facilities:

- The government/port authorities shall be responsible for maintaining security of all land and sea entrances to the port area, and perimeter fencing and lighting around the port area.
- Without limitation to the government/authorities under the instrument, terminal operators and leaseholders shall provide additional security equipment within and on boundaries of the site, including the entrances.
- The terminal operator shall be solely responsible for maintaining, at all times, the concession area in good order and condition and also to ensure that the terminal environment is adequately protected.
- Vehicular traffic, parking and other land movement shall be conducted by the rules and regulations fixed by government/authorities, or in case of concession area, by terminal operator.

(2) Concession Rules

The participation of private sector in infrastructure development and operation is a growing trend in the world. Many governments look for measures to reduce public expenditure while pursuing maximum expansion of the infrastructure. Foreign investment is a most favored tool of the financially stretched government.

Aside from financial reasons, privatization is a tool for introducing business skill into operation of public infrastructure. The government expects that privatization will improve efficiency of operation and upgrade service quality and decrease costs and prices.

The main legal instrument used for private participation is a 'concession'. A port concession is a contract in which a government transfers operating rights to private enterprise, which then engages in an activity contingent on government approval and subject to the terms of contract. The contract may include the rehabilitation or construction of infrastructure by the concessionaire.[123]

The Panamanian Government has extensively utilized the legal tool since the creation of APN. Ley 42 of May 2, 1974 authorized the APN to award concessions in terms of construction and exploitation of maritime and port facilities. The Executive Committee of the APN enacted a concession regulation (Agreement No.9-76) as the enforcement regulation. Since then, the regulation works as the guidepost of APN then AMP to award concessions or licenses. However, as more than 20 years have passed and social and administrative environment has changed, certain parts of the regulations thoughts and contents may have become outdated. AMP realizes

[123] World Bank: Port Reform Toolkit, Module 3. Alternative Port Management and Ownership Models, p52.

this point, and issued a pamphlet (entitled "Requisitos de Concesion") to guide applicants to going through the concession procedure. Further, they are recognizing the necessity to enact a new regulation governing the concession and lease of port area; however, the drafting and enactment are far reaching to harmonize the policies of MEF, ACP and so on, then to be agreed by the relevant organizations such as ANAM, IPAT etc. Nevertheless, in view of encouraging private investment to the port sector, AMP should start the preparation work without much delay.

The following are general suggestions for some points.[124]

Criteria of Categories

Agreement No.9-76, when it was enacted, divided the concession into two categories: namely, less than one year (license) and others. The Executive Committee of APN awarded a concession under Executive Committee Resolutions, and then General Director of APN granted licenses. At present, if the amount of a contract exceeds one million Balboas, AMP Board of Directors, National Economic Council (CENA) and Cabinet Council consider it. In cases where a contract amount is less than one million Balboas, AMP considers the request. Concessions are awarded in the form of contract countersigned by the Contrarolia General.

Thus, the concession regulation classifies the concessions by the contract amount. However, considering the nature of work executed by a concessionaire, the following classification is may be better employed to characterize the nature of the concessions: namely, Hybrid Concession and Piecemeal Concession.

'Hybrid Concession' is a concession awarded for operating one or more terminals as a whole. Construction of the terminals may be included and in many cases, maintenance and repairing works are the responsibility of the concessionaire. In general, the term of this kind of concession is more than 25 years. MIT, CCT and PPC are examples. For hybrid concessions, a private sector invests the greater amount of funds and confronts higher risks in terms of financial environment, expected traffic volume and political and/or social climate. Private sector tends to be reluctant to be involved in such project because of unstable return, insufficient studies on market, cost elements and other factors affecting management such as excessive intervention from public side, etc. and it will evaluate its participation in port project for many elements. Criteria of hybrid concession may be the following:

- Expected yields and higher profit
- Adequate debt/equity structure
- Transparent and solid legal framework
- Project's feasibility
- Socially stable management is assured.

[124] "Legal Tool for Port Reform" World Bank: Port Reform Tool Kit Module No.7 provides a useful detailed guideline to work out the revision of concession regulation as well as for the work of awarding concessions. Access can be made through Internet.

Having said that, it is unavoidable that many construction works should attract private investment in the country where, because of the government's continuous financial deficit, each organization is placed under the strict budgetary control. Panama has experienced many successful privatizations, and the experience may support private involvement.

'Piecemeal Concession' is a concession awarded for managing or operating a limited range of port facilities or equipment such as cargo-handling, warehousing, water supply, tug and so on. This category can be called 'licensing', and is seen in most ports. The term is varied by each contract, but tends to be shorter than that of hybrid Concession.

In many cases, public sectors lease their assets to private sector in exchange for a certain fee. While private sector does not contribute financial resources for construction, this type of concession brings benefit to public sector, by introducing private effectiveness and discharging public sector from the burden of operation. When the public sector suffers from shortage of skilled staff, the benefit is very large. In general terms, services carried out in land or water area of port, which are not directly involved in the basic functions of port are suitable for being executed by private bodies. Restaurants, stores, gasoline retailing, ice plants and manufacturers are examples. Cargo and ship handling, warehousing, tug and pilot service may well be privatized with concession or licensing. Waste disposal, rescue and fire fighting, handling of dangerous goods and security services may be awarded concessions on the condition that AMP or competent public bodies conduct monitoring and controlling activities. On the other hand, vessel traffic control, installation and maintenance of navigation aids, control of dangerous goods and emergency response services (public organs other than AMP) should be retained by public sector because of their regulatory nature.

There is no clear border between the services provided by public sector and those provided by private sector. However, in general terms, some services tend to be provided by public sector while others tend to be done by private sector. Figure 6.5.1 exhibits how the regulatory and operational activities in the ports tend to be handled by public or private sectors. The figure also indicates that many services in the ports can be provided by either public or private or a subtle combination of these two sectors.

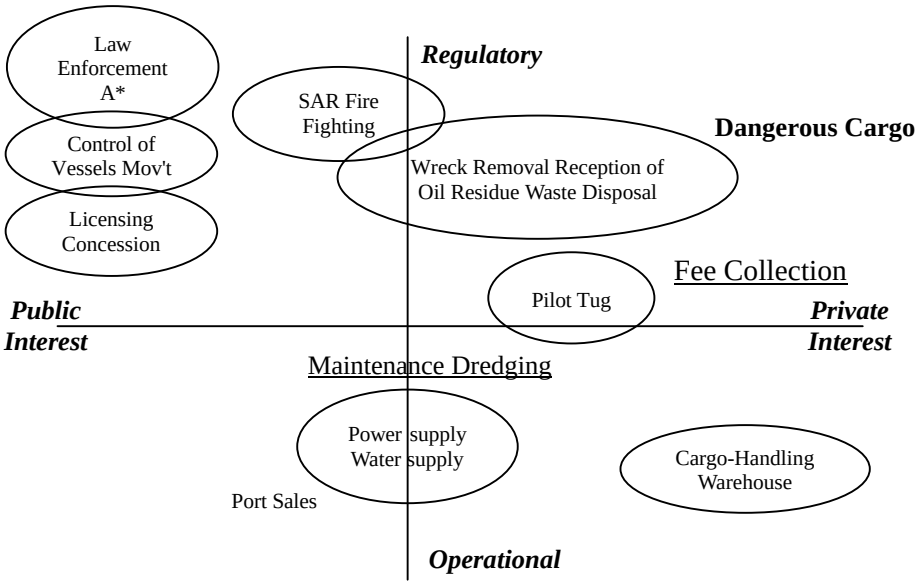
Transparency of Procedure

AMP inherited the legal power to award concession contract from APN. The Executive committee is awarding the concession to private firms.

Regarding the concession contract, there are two concerns: the transparency of the procedure in awarding concession to certain concessionaire, and the access of the public to the information concerning to the existing concession contracts.

In the decision making of awarding a concession, coordination should be done with the proper agencies to avoid the conflicts, and the concession should be acceptable by the public: messy

situation of the coastal area of the Municipality of Bocas del Toro is an example to demonstrate a typical result of the lack of coordination among the agencies and awarding concession without consideration of social impact of the concession.



Note: A* in the circle of Law Enforcement indicates legal instruments regarding to navigation and ship safety, environment protection, security measures, CIQ and so on.
Source: The Study Team

Figure 6.5.1 Distribution of Port Activities by their Characteristics

While AMP is promoting the private participation in the port related services, it does not have a complete inventory of the effective concession contracts. In addition, the public do not have access to the information of the concession contracts. This situation may discourage private firms to think of the investment in the port related services.

Provisions of Rules

For convenience of applicants and concessionaires, whereby attract inventors, rules or standards may be provided in the Regulation for AMP action, for example:

- Preference among plural applicants (Art. 12 and 13)
- Determination of amount or exemption of deposit (Art. 15)
- Adding obligations (item h of Art. 20)

Observation of Social and Environmental Requirement

In order to satisfy growing social and environmental requests, the Regulation as well as Contract Form should explicitly provide that concessionaires should have following obligations:

- Implementing environmental protection standard
- Implementation of security requirement, which AMP decides
- No discrimination for providing services and facilities
- Satisfying reasonable labor requirements.

AMP as Regulator

In case of hybrid concession, AMP and its local office is a partner of concessionaire concerning commercial activity in the port, and at same time regulator of the concessionaire. AMP's office permits entering and leaving the port, assigns channel and berth, takes documents, enforces navigation rules and land traffic control and so on. These powers are associated with such obligations that it provide and keep both marine services e.g. tug, pilot, navigation aid, etc. as well as road and land facilities in good and satisfactory condition. These matters may not be explicitly provided in the rules or contract, but it is fairly certain that public sector will have such obligation.

In this respect, in order to expedite solution of disputes, an arbitration clause may be good to be provided in rules and contracts.

Fostering the Concession Office

Direccion de Asesoria Juridica and Departament de Control de Concesiones are dealing with 50-80 concession requests, and awarding 15-20 concessions a year. The number may not increase; however, with growing technological progress and increasing arguments on claims, evaluation would become complicated and time consuming. In the future, staff with legal and technical knowledge should assist the organ responsible for evaluation of concession.

6.5.3 Roles and Functions of Public and Private Sectors in the Ports in Canal Area

(1) The Target

Terminals located at both ends of the Canal, which were constructed and are managed by private firms under concession contract with the Government, have grown to the position as the regional hubs and act as the nation's key element of trade. This is partly owing to geographical advantage and to the operators management skills, but mainly due to change of the global trade pattern, i.e. growth of transshipment, thus bringing hub and spoke distributions of port functions. Nowadays, however, many of the Caribbean and the Pacific West Coast Nations have begun to pursue the status of regional hub port, aiming at more container throughput and more favorable cost performance.

The primary target of the Canal ports must be to survive in the competition and further, to become winner aiming at becoming a major regional hub. Carriers, which are also facing impetuous competition, request terminals with facilities that enable their vessels quick turn-round. To meet the request, terminals make effort to furnish equipment such as crane capacities, wide

channel and basin, adequate computer system and so on. Quality of staff and labor, connection with hinterland and measures for feeder are also necessary tools for attracting clients. The ports should fulfill those requests adequately.

(2) Agenda for New Environment

i) Private Sector

Growing competition in the maritime field and recent social climate has brought about following new work to port operators.

a) Many of the global major ports tend to serve shippers and carriers for furnishing 'value-added service' (VAS) and 'value-added facility' (VAF)[125] in the logistics. These ports include shippers effort to reduce transport and trade cost, port users effort to enhance integrated documentation system, better combination of transport and storage and so on. These means are also key elements for being qualified as a regional hub port.

b) Although the government should primarily conduct many functions of the security scheme newly enacted in IMO and unilaterally executed by US Government [see Section 6.5.1 (2)], this issue is also a high priority agenda item for terminal operator surviving world competition. Now, it is required to take measures for ensuring security of the terminals as quickly as possible.

Under the new security scheme, it is indispensable to take risk management steps, which include:

- Port facility security plans
- Port facility security officers
- Certain security equipment

For these steps, US government uses the assessment model shown in the figure below.

For the moment, terminal operators at Cristobal, Colon and Balboa are making a good job to fulfill the security requirements.

c) According to the concessions contracted by the Cabinet Council, the powers of which were specifically bestowed by the Parliament,[126] maintenance work required for the operations of the terminals is the duty of concessionaire.

[125] See World Bank "Port Reform Toolkit, Module 3"

[126] Law No.31 of December 21 1993 and Law No.5, January 16, 1997. The contracts provide that the purpose of facilitating the execution of this Contract, the States grants the enterprise, ---the following rights (e) to dredge, refill or reinforce the coastal areas assigned to the concessionaire and entrances of the areas (1997, Law No.5).

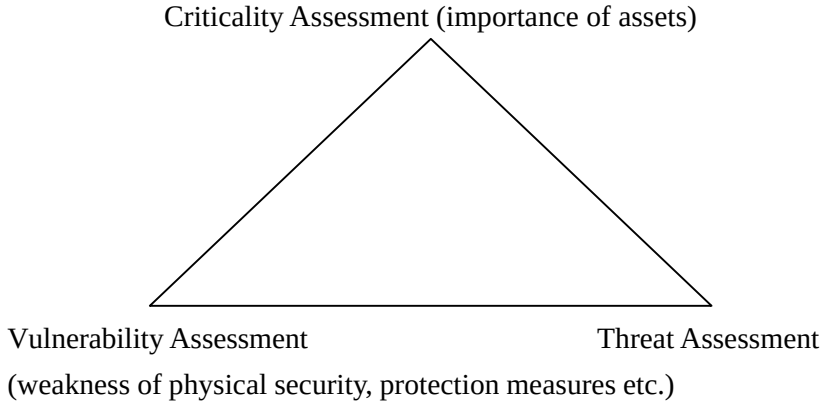


Figure 6.5.2 Security Assessment Model

ii) Public Sector

Catalyst

a) It is common practice of major port that many branches of administration are working. In port of Balboa and Cristobal, administrations responsible for CIQ, NMS, ACP, Colon Free Zone and AMP Capitania are conducting their job according to their functions. For discharging individual ship inspection and security issues, AMP or its Capitania convenes meetings to consult each other. These may help effectively carrying out the functions. However, given the rapid change of environment around seaborne trade and major ports, administrations frequently modify or add the regulations. To enforce the change of rules, private sector should be not only notified, but explained the detail and background at earliest possible. Many times it can be done with transmission of notice or information through electronic devices; however, in some cases face-to-face explanation and discussion may be more useful.

b) As has been said in item i) c) of this Subsection, maintenance works of the terminal and its adjacent water area are duty of concessionaires as well. In case of dredging of channels accessible to more than two operators terminals, interested operators may argue with respect to sharing the cost or other matters. In such case, public sector, notably AMP, should coordinate the views of interest party, or make arbitration between them.

   Also, a terminal operator may wish to communicate among other private sectors in terms of the problems of interface. In these cases, it may be useful to organize a forum where all the interested party, be it public or private, get together to exchange their views.

   This sort of forum may also be useful for AMP to furnish machinery informing of new rules and regulations or public issues. Personnel from AMP will chair this forum.

   By taking these steps, AMP functions as a catalyst to enhance the higher standard of the port behavior aiming the prosperity of the port as the common goal.

Other Functions

a) As for recent development of security issues, AMP Headquarter and Customs is fulfilling the requirements of SOLAS and US Government [See Section 10.1.3 (2)]. Terminal operators also work for assessing the risk and ensuring the security within their territory. It may be useful to maintain the security in the port so that AMP Captain would act as an intermediate organ at the port between Headquarters and terminal operators or other private sector firms.

b) Almost all major ports are trying to sell their port to clients by means of publishing beautiful brochures or dispatching missions to the possible customers. Some ports hire a local person with much knowledge on maritime matters for inquiries of clients. Such action is what the administration should carry out where necessary.

c) Protecting water area from contamination is increasingly drawing attention of community and international society. This is primarily public sector's responsibility, by taking such steps as providing receiving facility of oil residues, and beams, which reduce oil dispersion at accident. These steps are normally conducted by hiring private firms, but monitoring should be conducted by the administration of the port.

6.5.4 Outstanding Issues Identified by the Study Team

(1) Port Infrastructure

In the course of the study, the study team has identified the following changes will surely occur in near future. Thus these changes should be taken into consideration in the preparation of the port master plan.

1) International port:

- A new clinker terminal started it operation in December 2003 in Bahia las Minas Port..
- Balboa Port will be highly specialized for the container cargo handling.

Therefore, the dry bulk such as wheat, corn and soya beans will be handed at Cristobal Port. A group of grain importers has carried out a feasibility study on the installation of the grain terminal in Cristobal Port.

2) Domestic ports

- Pan-American Highway will be fully paved and inter-modal link will be established between La Palama and Quimba Ports by Ro/Ro Ferry service,
- Panama Port will be closed for cargo handling

(2) Outstanding Issues Raised in the Workshop

With the aim to recognize the existing situation of the local ports and to identify outstanding issues on the present port services including infrastructure, management and etc., workshops were

held at the five locations: La Palma, Bocas del Toro, David, Vacamonte and Colon. Those whose business are closely related to the port activities were invited in the workshop. The workshops were intended to obtain collective opinion through the discussions between the participants as well as individual opinions. The discussion also provided such opportunities for the participants to think of the issues and to identify the problems and clarify the causes.

The full report of the workshops is attached in Appendix K.

The following are the major issues raises in the workshops at the five locations:

1) Bocas del Toro and Almirante Ports

The major issues were lack of coordination among government agencies and local governments and the negligence of the government agencies in the communication with the residents. The rules and regulation prescribing conditions and procedures obtaining the permission to construct buildings on the coast of Boas Del Toro is not clear. This situation without coordination and regulations resulted in allowing many private buildings and piers constructed disorderly along the main street of Bocas Del Toro. In addition, neither central nor local governments do not execute strict control on illegal buildings and the occupation of coastal areas.

It seemed to be consensus opinion that coordination among the government agencies is indispensable for issuance of the permits for building structures on the coast and that, in order upgrade the potential as the tourism area, an integrated port complex is desired in stead of allowing individuals to construct private facilities on the coast. Such port complex should include those facilities for Ro-Ro ferries, passenger launches, fish market and arcades. Those problems mentioned in the workshop were as follows:

i) Infrastructure

Luck of the following:

Development plan, maintenance, fund, development and maintenance of access roads, and physical space for the port,

ii) Administration and management

Lack of the following: control of transport measures, education, waste control, observance of laws and regulations, policies and guidelines, technical staff of AMP, port terminals do not provide appropriate services and shores are occupied by buildings

iii) Attitude of the government

AMP does not administrate in the province and government has no interest in port development.

2) Pedregal and Puerto Armuelles Ports

Some participants of the participants had professional background in port related business. Thus the discussion in the workshop was made on specific and practical issues. Among these issues, the following are those attracted other participants' interest:

- The existing structure of Puerto Armuelles is not suitable for the handling general cargoes.
- Though the existing Puerto Armuelles is repaired, there are not many users. Chiriqui has a tourism potential and various development plans. Above all, an integrated development master plan and strategic plan.
- It is necessary to recognize the mechanism of cargo handling. Taking into consideration of the fact that Province of Aguadulce is exporting agricultural products such as corn, grain and beans, Chiriqui may also be able to export its products. Thus, PTP is planning to support the import and export cargo handling at Chiriqui Grande Port and a new port planned in Pacific side.
- Cargo ships having tonnage ranging from 1,500 to 4,000 tons are serving El Salvador, Costa Rica and Panama. If there is a demand to export fruits or to import fertilizer, for example, ships can be chartered.
- The tariff system of Panama has not been revised over many years. The present port tariff system is in favor of large ships while smaller ships are required to pay higher tariff. Thus the tariff system should be revised.

Those problems mentioned in the workshop were as follows:

i) Infrastructure

Deplorable state of the port infrastructure because of lack of the following;

Efficient access channel and jetty, budget, suitable personnel, an integrate plan of development

ii) Administration and management

Tariff system does not match the current reality, inefficient procedure of the documentation, elevated degree of contamination and lack of security in the port and their access roads.

3) La Palma Port

One of the issues that many participants pointed out was the absence of custom and immigration offices at La Palma and Darien Province as well as the security problems. These services are really needed for the ports on the frontier. It seemed to be everyone's feeling that the Province of

Darien is kept out of the mind of the central government. Other issues related to the present ports were luck of sanitary situation around the port and luck of port plan.

The representatives from the Cooperatives of fishers mentioned their wish to have a market where they can sell their products in commercial base and processing facilities.

The discussion proceeded to such point that the vital issue was the fact that Darien lacks of the most basic infrastructure such as water, electricity, communication and sewage, and that because of this Darien could not attract either industry or tourists. At the end of the discussion, it seemed to be a consensus of opinion to establish an activity center, including government service, markets, etc., for coastal communities in Darien that do not have road access.

The problems mentioned in the workshop were lack of the following:

- modern and adequate facilities and equipment for security
- port infrastructure, office and equipment
- officials of marine resources in the province of Darien who regulate the fishery activities and use of illegal fishing techniques and gears
- placement of custom surveillance
- Sanitary surveillance
- adequate port facilities in ***Rio Balsa*** for the stock and commercialization of agricultural products
- more ports in the province
- processing companies for the processing and commercialization of the local fishing products: local fishermen need to sell their product directly to get more benefits
- port administration office in the most of the ports in the region

4) Vacamonte Port

Three outstanding issues were raised during the discussion:

- The entrance channel has not been dredged for the past 10 years and the water depth there is becoming shallower.
- The security system within the port complex is not reliable enough. There was a crime in the port and the companies have to employ their own security guards.
- The garbage collection is much worse than in the city.
- The rules and regulations in the port are not transparent: especially the fines on violations should be clearly defined and properly executed.

Thus, the discussion indicated that even the most basic requirements for port services are not fulfilled in Vacamonte and the users are not satisfied with present port service level.

The problems mentioned in the workshop were lack of the following:

Lack of

personal and equipment (cars and armament) for the security department, dredging lack of space for the containers, countermeasure for oil spill, treatment of waste water residuals, maintenance of shrimp plants (galleys), auxiliary electric power plant, fire fighting team (card and pumps) and proper personnel for the fire station.

and

- Bad handling of garbage in the port area
- repair the defenses do the jetties (unloading)
- bad protection (Breakwater)
- Bad concession managements
- Legal Stability
- High port tariff for docking

5) Colon

The major issues discussed in the workshop in Colon were as follows:

i) Operational productivity of the container terminals

The shipping lines appreciated the performance of the container terminal operators in Balboa Port and the Mansanillo International Terminal (MIT). It was also noted that the coordination among the CIQ offices and the terminal operators are well done.

ii) Need improvements in the operation of Colon Free Zone (CFZ) and Colon 200 Terminal

Due to the confusion in the destination of the containers between MIT and CFZ, the custom procedure sometimes takes longer period. The improvement in the communication between CFZ and Custom Office, by the use of EDI for instance, would be effective to settle this confusion.

Colon 2000 terminal lacks English speaking personnel to receive the foreign tourist coming via cruisers. The Immigration office is not properly informed of the arrival schedules of the cruisers. This is especially true for those cruisers dock at Gatun. The Maritime Health Office also has the similar experiences.

iii) Education and importance of local ports

Panama and Colon areas are the major concern of the maritime sector. All the Maritime Schools offer the same curriculum. Thus, the graduates are oversaturated in the market of maritime related business. Schools should also focus other places where maritime activity can also take a part: such as Vacamonte, Charco Azul or Puerto Armuelles.

To this end, AMP should disseminate the activities of local ports. In general, very little is known of the smaller ports, and actually majority of the people do not know even the location

of the ports. The information of port activities such as cargo, commodity, handling volume and other activities of the minor ports as well as the international ports should be made public. Thus, the private sector may look for business opportunity.

While both the government and private sector have concentrated so much in the major international ports, the local ports are also a part of all the logistics, and, if adequately used, they could work as an aggregated value. Each port has its own specialization, not all necessarily handle containers or shrimps. By specializing in the activity in the region, each port would provide favorable conditions to commercialize the products of the region.

iv) Maintenance dredge of access channel

The draft of the vessels entering the Canal is limited up to 39 feet, while vessels coming from the orient entering Balboa Port have larger draft than this limit. Who is responsible for the dredging status of Balboa Port?

v) Security issues

While Manzanillo has a perfect security system, Colon 2000, Colon Port Terminal and Cristobal still have problems as well as other smaller ports. There is an anxiety that some ports in Panama would be shut down simply because they cannot develop their security plans.

It is understood that AMP is the one who will finally certify the security plans, and that, according to the code, there are also certifying companies for the shipping lines and agencies. Maybe the NMS will not need to do these inspections, since it is AMP duty.

When security search operations or other type of activities take place, there is already a coordination and consensus. The idea is not to create a division between private and public members, but to make up a team that can work together. We do not believe in isolating, we believe in the creation of an atmosphere of cooperation.

vi) Involvement of Maritime Chamber

The Maritime Chamber should also be included in the group activities, because the Maritime Chamber includes the entire maritime sector. The maritime sector has expanded so much that it is no longer ship chandlers alone, but it includes all the entities related to maritime sector such as banks, law firms, consultants and so on. Maritime Chamber could provide further insight and suggestions on how the maritime sector wants things to work in order to get a better port services. It is important for the terminal operator to listen to the customers what are lacking in order to improve the service.

7. FUTURE SOCIO-ECONOMIC FRAMEWORK

7.1 Basic Assumptions and Development Constraints

(1) Basic Assumptions

The purpose of this chapter is to identify an appropriate socio-economic framework for future port transportation planning and therewith related socio-economic development. The socio-economic framework will structure transportation demand as a realistic match between socio-economic growth and port-related traffic. Traffic in the ports is determined by the need for imports and the potential to export. The former is based upon the socio-economic strength of the consumer market while the latter is determined by the quality and level of production that will establish the competitive position of the sector / product in the international markets. The forecasting framework needs further adjustments in order to incorporate the direct and indirect influences of national and regional development plans and the socio-economic policy of the Panamanian government.

Forecasting future socio-economic growth for Panama will be determined in particular by five (5) major components, notably

- The duality of the economy where services account for approximately 75% of GDP.
- The social duality of the country with following characteristics:
  - A high concentration of the population in the Metropolitan area (Panama and Colon account for over 50% of population);
  - A high discrepancy between household wealth and a related high level of poverty in particular in the Interior Area (up to 38%) and the Indian Reservations (over 80% of the indigenous population);
- The Free Trade Agreements and the accession to the WTO will have a strong positive effect on the Panamanian economy and export. The opening of new markets will contribute to the development of non-service related economic activities in Panama.
- The future economic and social development of Panama will be outlined by the results of the various national and regional development plans, introduced by the Panamanian government and international donor organizations such as the World Bank and the IADB.
- The growth of population, the changing population distribution per gender and per age, the share of economic active population, the spreading of HIV/AIDS and the alleviation of poverty and illiteracy are all factors that will contribute to or hinder the future development of Panama and its provinces.

(2) Key Policy Supporting Future Socio-Economic Growth

The future economic development of Panama is oriented towards two converging axes. The first axis is the strengthening of the international competitive position of the country, in particular through the signing of Free Trade Agreements. The second axis is the decentralization and the

accelerated development of the Interior Region for which international donors have pledged strong support (see Chapter 3).

The focus on international competitiveness springs from the notion that Panama needs to enter more strongly the globalizing economy with new and more competitive products in addition to the traditional service-oriented products for which it had and still holds a leading position. Examples of the latter are the Panama Canal and the ports, Colon Free Zone and financial intermediation, and more recently tourism, telecommunications and commerce. The country should take more advantage of its strategic geographical position to shift its present orientation from the USA and Central America towards the world as a whole. This shift could be beneficial for the primary and secondary sector that could benefit from the opening of new markets. One important focus is the development of the primary sector. The ongoing national and regional development plans are a step in the right direction and could be the catalyst that attracts foreign direct investments and promotes efficiency and competitiveness. While the necessary resources are abundantly available, the Panamanian economy as a whole demonstrates only limited competitive strength in the global market because production is generally small scale, making the volumes too small to generate economies of scale.

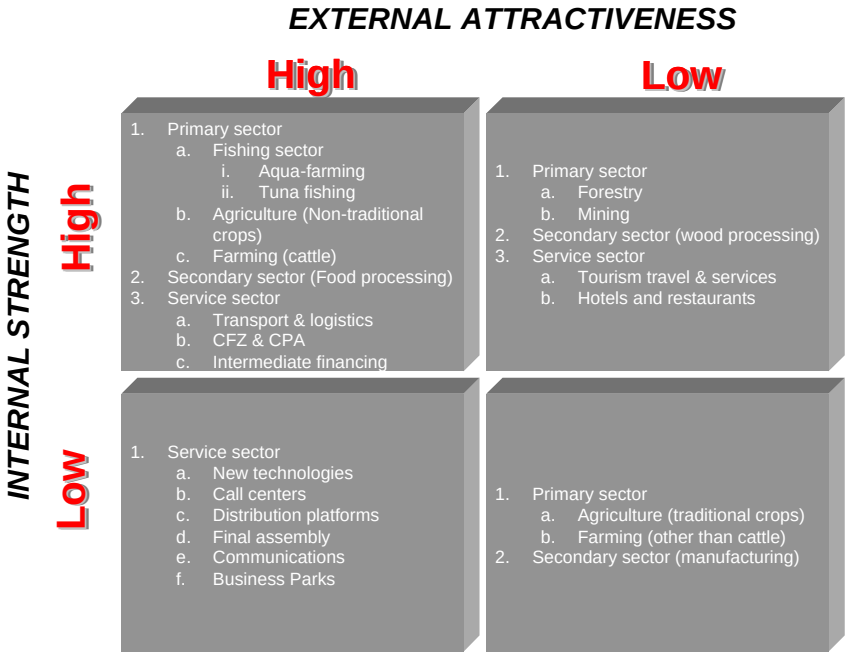
In addition to a wide range of national and province-based development initiatives, initiated by both the public and the private sector, one of the central points of Panama's future economic growth will be the signing of Free Trade Agreements (FTA). The FTAs constitute an integrated part of the economic policy of Panama and intend to open new export markets, helping the nation's economy to diversify and find again its international competitiveness. Several bilateral FTA have already been signed or are in the process of intense negotiation. Examples are the FTA with El Salvador, Taiwan and Nicaragua. These bilateral agreements are in addition to the firm commitment of the Panamanian government to actively participate in the establishment of multilateral and global agreements. An example of the former is the planned FTA between the United States and the countries of Central America, an example of the latter is the 1997 adhesion of Panama to the WTO. One of the key Economic Treaties that are presently negotiated by the government of Panama is the Free Trade Agreement with the United States. Both parties involved have recently expressed their strong commitment to signing such an agreement in the near future, therewith re-affirming the strong economic relationship that exists between both countries.

(3) Catalysts for Economic Growth

In evaluating the future potential of the different sectors, it is imperative to take into consideration (a) the share of that sector in the Panamanian economy and (b) the past production and export performance. Both appreciations will allow estimating the quality of the sector and its potential to contribute to future economic growth.

Based upon the past and present performance of the Panamanian economy, a number of sectors can be identified as potential catalysts for socio-economic growth. In this approach, the

Panamanian economy can be profiled according to a Strength-Attractiveness Matrix. The relevant sectors are positioned in a 2x2 matrix according to their internal strength and their external attractiveness. The internal strength is generally determined by their past productivity, capacity, organizational and sector structure, financial performance and other quantitative factors. Some qualitative factors can be added and could include the appreciation of specialists and international donor organizations, existing development plans etc…The external attractiveness is determined by the perception of foreign investors and markets on the present and potential performance of the Panamanian sector(s) in question. A clear quantitative indicator for the external attractiveness of the sector is the export performance. Next Figure 7.1.1 represents a strength-attractiveness appreciation of selected sectors in Panama, based upon past growth and export performance.



Source: JICA Study Team

Figure 7.1.1 Strength-Attractiveness Matrix for Selected Economic Sectors

<u>High Strength – High Attractiveness</u>

The fishing sector was until recently one of the best performing sectors in Panama with constantly increasing export volumes. With the completion of the sector's privatization, the sector can prepare for further expansive growth. Particularly attractive to stimulate this growth are tuna fishing and aqua-culture or aqua-farming of shrimps and various fish species (after the shrimp sector will have completely recovered from the devastating effects of the White Spot disease). Also the production and export of non-agricultural crops is compensating for the decline in traditional agriculture. Production and export of melons and other new crops is constantly rising and with the necessary efficiency improvements, could substantially increase its present share of nearly 23% of total agricultural exports. Also the export of cattle products knew a constant increase until the year 2000 and in particular poultry continues to perform strongly.

Manufacturing traditionally performs weakly and also shows a gradual decrease in overall productivity. However, one exception is the food processing industry (and the manufacturing of beer and other alcoholic beverages). Food processing could continue growing and benefit from increased productivity of crop cultivation and fishing. With the right economic and efficiency measures, food processing can further expand and grow jointly with the primary sector.

The service sector will continue to benefit from the strong position and economic performance of its service sector. In addition to a further growth of traditional activities such as intermediate banking, the Panama Canal and Colón Free Zone, transport and logistics will see a continued growth in the future, in particular stimulated by expected high productivity of the private ports. Transport will remain one of the strategic components of Panama's economy and will continue to contribute to the development of the Interior. Ongoing and planned investments (several multimodal logistics centers in several provinces, capacity expansion of the Panama Canal, completion of Pan-American Highway) will all contribute to the future socio-economic development of Panama.

As a general observation, the above described sectors have a proven economic track-record and with the right incentives, will continue to contribute to future economic growth. In particular the primary and secondary sector can also contribute to the economic and social development of the Interior area. However, careful attention will have to be devoted to the exploitation of the available resources in order to avoid over-cultivation, environmental problems or managerial and operational errors that could all negatively affect this potential growth.

<u>High Strength – Low Attractiveness</u>

Forestry and mining in Panama have a high potential and forestry sees a continued growth while the mining sector demonstrated a very strong performance after several years of decline. Both sectors have a particular potential for Panama because of the availability of natural resources.

According to FAO statistics, the number of forestry plantations grows with an annual volume of 3,300 ha per year. Non-productive forests still make over 50% of the total covered area in Panama and if the non classified forests are included in this calculation, total non-productive forest equals 2/3rd of the total coverage, clearly demonstrating an impressive growth potential. Mining also has a high growth potential and has important natural reserves of gold, copper and silver. Although there is foreign interest in the sector from mining companies such as Western Keltic Mines Inc., Panacobre (subsidiary of Tio Mine Resources Inc), Adrian Resources Ltd., Innet Mining Corp.—and others, only USD 200 million was actually invested by U.S and Canadian companies between 1997 and 1999. Foreign investors remain hesitant and sector growth is very slow. But investment in mining was and still is expected to offer strong opportunities because Panama could become over time a major producer of copper and of gold (as byproduct of copper). Production of manganese is also considered a possibility[127].

[127] "The mineral industry of Panama" ; David B. Doan in U.S. Geological Survey Minerals Yearbook—1999

Expansion is not only apparent in the production of raw materials, but also in the manufacturing and construction sector although still performing below its true capacity. The 2001 trade balance for all forest products shows that imports are 62 million dollar while exports only account for 7.6 million USD[128]. But the potential is undoubtedly there. For example, sawn wood is responsible for 21% of total exports against 1.8% imports and with the necessary stimuli, the present distortion for paper and paperboard, accounting for 75% of total imports against 64% of exports could be reversed over time.

Tourism is undoubtedly the sector with the highest development potential, although this potential is not yet worldwide recognized. Panama received just over 800,000 visitors in 2002, generating revenues in 2002 estimated at 678.8 million Balboa, an increase with 53.1 million Balboa (+8.7%) as compared to the year 2001. Tourism continues to perform strongly in 2003 with, during the second quarter of 2003, a 13.5% increase in occupation in tourist facilities as compared to the second quarter of 2002, an increase in 13.5% of tourist visitors and an increase in spending of 13.2%. Total year 2003 performance expectations are therefore very optimistic. As a consequence of this strong performance, the restaurant and hotel sector demonstrated again growth (year-on-year over 5% during 2nd quarter) as compared to a decline in 2002[129].

Although international interest remains low, some tourism destinations are promoted by international travel agencies, but they are concentrated around Panama City. Starting in Panama City, excursions are proposed to the Chiriqui Highlands (in particular the volcano), and natural resorts in the proximity of Panama City (in particular Balboa Rainforest). But once Bocas del Toro is proposed as a destination, the type of vacation changes to an "adventure" or "excursion" where a "…*few hotels and restaurants can be found in town, but be aware that this is a remote area that has seen little development*"[130]. And as for visiting Darién, "*The region is as wild as it gets in Panama — or practically anywhere else for that matter. … The rugged country also attracts … drug smugglers, kidnappers, guerrillas fighting against the Columbian government, Columbian soldiers fighting against the guerrillas. In short, it is not a place to visit on your own.*"[131] But the situation can change. The luscious mountains, variety of vegetation, unspoiled beaches and a rich folklore and heritage in the Interior Area can become well known by the world's tourist community although it will require a strong marketing effort after having invested in the necessary infrastructure that is adapted to the standards of the tourists that search the comfort and pleasure of the cosmopolitan life within a "natural environment"[132].

[128] See FAO – FAOSTAT database
[129] "Informe de Coyuntura Económica: Segundo Trimestre 2003", Ministerio de Economía y Finanzas
[130] Description provided by I-Explore travel agent, working in association with National Geographic (see http://www.iexplore.com/)
[131] See footnote 3 for reference
[132] USD 10 million budget. conducted by the advertising firm Campagnani-BBDO. See http://www.InternationalReports.net (operated by the Washington Times advertising department)

The development potential of above mentioned sectors is available but is (not yet) recognized by the international community. Increasing the attractiveness of tourism and of forestry and mining will require an integrated, comprehensive and structured strategy that is oriented, not only to the hardware component (infrastructure development), but equally to the software (management and control, marketing) and humanware (human expertise and regulatory environment) components. The development will also have to find a balance between the economics of large-scale exploitation and the conservation of these same resources, all while respecting the rights of the indigenous population.

Low Strength – High Attractiveness

Growth in the service sector is driven in particular by a communications and technology sector that is growing fast worldwide. The development is lead by innovative applications in the mobile and broadband data communications sectors and in internet and networking applications. The forecasted growth in these sectors is of 5% for 2003[133]. "The telecommunications and information technology (IT) industry is growing exponentially and trade in equipment -- even to the most remote parts of the world -- is burgeoning. … Valued at more than USD 300 billion and growing at approximately 15 percent a year, the international telecommunications equipment market is expanding at an even higher rate than the U.S. market."[134] According to the year 2000 Communications Industry Forecast[135], Internet and other new technologies made the communications industry the fastest-growing sector of the US economy from 1994 to 1999 and will allow it to maintain that lead through 2004.

Also Panama participates in this growth and while "… the parameters of the telecommunications sector are constantly being redefined, evidence suggests that Panama's aggressive stance on privatization has secured Panama's' position as Latin America's pioneer. The advent of increased competition, from both locally and internationally based companies, will likely translate into a much improved telecommunications infrastructure, as well as more modern services and competitive pricing." So this is a positive evolution. But as the focus in Panama will be on wireless communications (due to the difficulties related to cable penetration in more remote areas) "…they can charge you handsomely for that service, or at least more than that associated with a normal voice call."[136]

The full opening of the market in 2003 could prove to be the necessary incentive to maintain attracting foreign investments. Also the continued development of business parks and service centers could be a pole of attraction for the sector. The recent multi-million dollar investment by Dell demonstrates the potential.

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133 Telecommunications Industry Association (TIA) press release March 12th 2003.

134 TIA website market policy: see http://www.tiaonline.org/policy/regional/overview.cfm

135 The Communications Industry Forecast (CIF) is a comprehensive accounting of consumer usage and advertising spending trends across the full range of the communications industry

136 see http://www.worldheadquarters.com Stephen Egan is a trader, part time journalist and is the co-founder of Latin Americas only financial internet portal site www.InviertaYa.com

But Panama will need to prove that its market is attractive. It will have to provide not only the necessary economic incentives to foreign investors, but will also have to ensure top-of-the-line expertise, infrastructure and most of all cost effective operating conditions. All these conditions are imperative to strengthen the sector and transform the present international attractiveness in sustainable long-term development.

The advantage for the communications and technology sector is that the conditions reducing the strength of the sector are internal, meaning that with the right strategies and incentives, change can be achieved and international competitiveness increased, therewith improving its attractiveness for foreign direct investments.

Low Strength – Low Attractiveness

Traditional agricultural products such as bananas, coffee and sugar have seen a constant decline over the last decade. Changes in the global market and policy decisions in key markets (e.g., Europe for bananas) have created an environment in which exporting becomes increasingly difficult. At the same time, new developing countries emerge and compete for a shrinking market, offering in more competitive prices because of lower production costs, export subsidies, investment incentives, etc… But agriculture remains a key sector in the Interior and is still responsible for over 75% of annual exports and the sector could increase its competitiveness with the right measures.

For many manufacturing products, structural market conditions make Panama an unattractive country to invest in manufacturing and production. One of the important reasons is the absence of basic products needed in the production processes. With the globalization of production, this problem could in theory be overcome by the import of the necessary products. But the related logistics costs need to be less than the potential benefits generated from locating the production plant in Panama which in many cases is not possible. For many manufacturing products, Panama simply cannot compete with a wide range of countries where labor and production costs are only a fraction of these in Panama.

Manufacturing and traditional agriculture are sectors in decline. Their perspectives for growth are weak and their attractiveness for foreign investors low. These sectors, although still be very important for the economy of Panama (certainly bananas still is a major player), will not be(come) catalysts for future economic growth. Strategies should be put in place to stop further decline and reduce the social effects of this decline, for example, by stimulating restructuring and re-orientation towards new sectors with more promising growth and development perspectives.

The above review allows a number of basic assumptions related to future socio-economic growth of the country and its economy:

- Panama will remain the center of economic and social development and the duality in the economy will not disappear, although the gap between the Metropolitan and Interior Areas could gradually reduce.
- A gradual re-location outside the Panama province can be observed, in particular for the manufacturing and industrial sectors. The share of the secondary sector in the neighboring provinces is climbing with a higher rate than any other province.
- Socio-economic development in the provinces will be stimulated by the various development programs. The focus of attention is on primary sector development although other possibilities are not excluded. In particular, Chiriqui and Bocas del Torro could benefit from the positive effects of these programs. Darien province, although also a focus of attention, will probably require more time before economic growth and social improvements will emerge, due to several existing problems that substantially reduce the attractiveness of this province and need a solution first (drug traffic, insecurity, Columbian rebels etc…).
- The primary sector is still recovering from past diseases and natural disasters. After a full recovery, primary sector production and exports will increase as a consequence of the growing production efficiency and growth of non-traditional products. Traditional products will be more dependent upon international demand and will see a fluctuating performance following the situation on the international markets.
- It can be expected that in the longer term future, solutions will be found for the resistance of the local population against the environmental and social effects of mining and forestry. Once these solutions in place, both sectors can be properly developed and attract the foreign direct investments (FDI) it needs for its potential growth.
- The expected strong growth of the primary sector will have a positive effect on the manufacturing industry. In particular the food processing industry will benefit from this growth. Traditional processing of agricultural products (milk, tomato, fish, cattle, etc…) will continue to rise and manufacturing of wood products could increase when the exploitation of forests in Panama grows stronger.
- The service sector will maintain its dominant economic role although the growth will be drive by new services such as tourism.

(4) Development Constraints and Potential

1) Economic Constraints and Potential

Although the GDP per capita of Panama is the second highest in Central America, the comparative economic analysis for Central America clearly demonstrated that the duality of the economy and the society did not facilitate economic development (see Chapter 2). Following general observations can be made on the growth potential of the relevant sectors in Panama:

i) Agriculture

a) *Agriculture:* About 60 per cent of the land is in agricultural use with 16 per cent cultivated and the rest is natural pasture and forest. Principal cash crops include bananas, sugar cane and coffee although the importance of non-traditional crops is rising. Food is imported, in particular from the United States to meet demand. Tariff levels have been substantially reduced since Panama's accession to the World Trade Organisation (WTO) in 1997. The agricultural sector is still recovering from meteorological factors and poor international demand for its traditional products. The strengthening of the agricultural sector is a government priority.

b) *Fishing*: Particularly shrimp production has increased in importance since the improvement to the port and fishing terminal at Vacamonte was completed in 1994. It is one of Latin America's largest producers of farmed shrimp and the leader in exports of shrimp larvae. Shrimp constitute about 18 per cent of exports, making Panama a leading exporter of shrimp. However, the sector is still recovering from the disastrous effects of the White Spot disease. In addition to shrimps, tuna fishing is becoming an important contributor to the sector's growth with a 31% rise in exports in 2002, as compared to the year 2001.

c) *Farming*: farming is a stable sector with a strong export. Production and exports remained stable and demonstrated a regular growth. In 2002, cattle exports grew with 25% compared to 2001 and in that year had already demonstrated a growth of 20% compared to the year before.

d) *Forestry:* The country has 40 per cent of forest cover but a large part is protected area because of large-scale deforestation. Forest industry still sees a modest production and many products, particularly paper, is imported. Year 2001 numbers clearly demonstrate the existing discrepancy. In that year, total import of forest products amounted to USD 62 million, while exports totaled USD 7.7 million.

e) *Mining*: Mining is at present irrelevant and accounts for approximately 0.2% of GDP. But the sector has important reserves and could substantially grow if more transparent regulations are put in place and solutions can be found for the strong resistance of the local population. Large copper deposits are found in Cerro Colorado and Petaquilla. It is estimated that copper reserves at Cerro Colorado is the largest in the world with one billion tons deposit. There are also important quantities of gold and molybdenum. For example, the Cerro Quema mine has estimated gold reserves in the region of 300,000 ounces. It is estimated that mining could increase its economic productivity to nearly 15% of GDP and directly employ 4,000 persons.

ii) Industry and Manufacturing

a) Manufacturing is small-scale and predominantly geared towards domestic consumption. It contributes approximately 13.5 per cent to GDP and employs 16 per cent of the workforce. Manufacturing is responsible for around 9% of GDP while construction counts for 4.5%.

b) Main activities include food processing which accounts for nearly a third of the gross value of manufacturing output. Also beer and alcoholic beverages are important components of the manufacturing industry.

c) Main products manufactured in Panama are construction, textiles and clothing, footwear and leather goods, chemicals, plastics, paper, beverages, cigarettes, construction materials and petroleum products from the Las Minas refinery near Colón (capacity 100,000bpd).

d) The emphasis of the government's policy is to encourage foreign investments in labor-intensive export-based industries.

iii) Service Sector

a) The service sector remains the dominant sector although several actors are loosing momentum. The share of public administration is still growing in most provinces, but at the same time, the performance of financial intermediation which was once the driving force of economic growth, is declining.

b) Tourism is becoming an important contributor to GDP and its economic performance has at present surpassed Colon Free Zone, banking and the Panama Canal. However, facilities and expertise are at present lacking to strengthen and exploit the sector properly. Substantial efforts are made by the government to promote Panama as a tourist destination and it can be expected that in time, these efforts will pay-off. The expected growth of tourism in Panama will stimulate the economic activity of related sectors such as hotels and restaurants or real estate.

c) Transport is a growing sector and the continued expansion of the private ports will have a positive effect on their economic performance. Container traffic is growing strongly and it can be expected that this trend will continue.

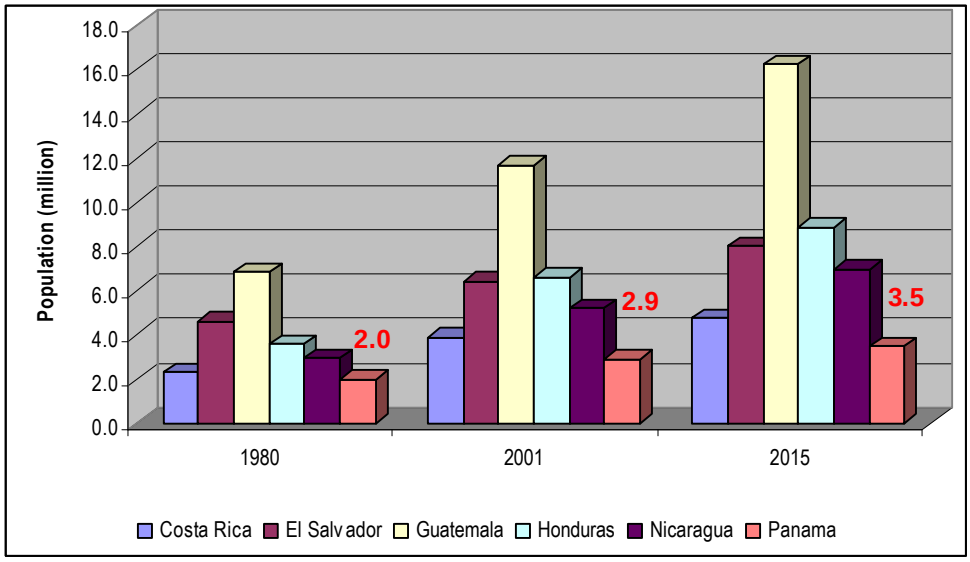
2) Social constraints and potential

Although the GDP per Capita in Panama is the second highest of the Central American countries, the demographic indicators for Panama are not overall positive. The country has a lower fertility rate as the average of the Central American countries (2.7 as compared to 3 for the region) as well as a lower rate of the natural population increase (1.8 as compared to 2.4 for the region). The population in Panama is also aging. Panama has, compared to the Central American region average, the second lowest percentage of population below 15 years of age and the highest percentage of people, older than 65 years. According to the demographic forecasts by various international organizations, there is not much change expected to the present situation. Panama had in the past the smallest population and the second lowest growth rate and World Bank experts estimate that the country will remain at that position in the future (Table 7.2.1 and Figure 7.2.1).

Table 7.1.1 Population Growth 1980 – 2015 for Selected Countries

Population (million)	1980	2001	2015
Costa Rica	2.3	3.9	4.7
El Salvador	4.6	6.4	8.0
Guatemala	6.8	11.7	16.3
Honduras	3.6	6.6	8.9
Nicaragua	2.9	5.2	7.0
Panama	2.0	2.9	3.5
Population Growth (%)	**1980**	**2001**	**2015**
Costa Rica		69.6%	22.0%
El Salvador		39.6%	25.1%
Guatemala		71.3%	39.2%
Honduras		84.6%	34.8%
Nicaragua		78.2%	33.7%
Panama		48.6%	19.3%

Source: World Development Indicators 2003, World Bank



Source: World Development Indicators 2003, World Bank

Figure 7.1.2 Population Growth 1981 – 2015 for Selected Countries

In spite the fact that Panama is rated by the World Bank as an “upper middle income country”, Panama is struggling with explicit social inequalities, high levels of unemployment and thereto associated high poverty figures and will continue to do so in the future.

Also HIV/AIDS and other transmittable diseases are a major issue of concern and will be in the future. At present, between 0.9% to 1.6% of the female population, and between 1.4% and 2.4%

of the male population are infected[137]. The Population Division of the United Nations Secretariat identified HIV/AIDS as a "major concern" since 1996[138]. For male persons between the age of 15 and 49, AIDS is the second cause of deaths that reduces life expectancy with 0.5 years[139]. According to the UN Population Division, HIV/AIDS will continue to be a major problem. For countries such as Panama where the demographic impact of HIV/AIDS still remains relatively low, the later start of the epidemic means "*… that the most dramatic impact of AIDS will come in the future. … Clearly, the spread of HIV in Asia and Latin America and the Caribbean will require careful monitoring. While it is not yet certain that such spread will follow the pattern observed in Africa, rapid and effective responses may be required to avert the devastation that Africa is already experiencing"*[140].

7.2 Population Forecasts

7.2.1 Development Scenario

Although it is common to develop different development scenarios when engaged in long-term forecasting, determining relevant scenarios for the social and demographic forecasts for Panama proved to be uninteresting for several reasons:

- Population forecasts from different international sources seem to be in line with the national forecasts made by the *Controlaría General de la Republica*, indicating that there is a consensus about the expected growth of the population in Panama.
- The past and future growth trend for Panama stays in line with the growth in population observed in the other Central American countries.
- International forecasts with variable scenarios such as made by the UN Population Division demonstrate a difference between the high and low growth scenario. Given that the median scenario, applied by the UN is corroborating the forecasts as made by the World Bank and the *Controlaría General de la Republica*, it was considered opportune to apply the latter forecasts as basis.
- Efforts in achieving major changes in the future distribution of the population over the different regions demanded the (manual) introduction of double digit growth over the entire period for provinces such as Chiriqui, Bocas del Torro and Darien. This trend is completely different from other existing forecasts.

For that reason, it was decided to use the population forecasts made by the *Controlaría General de la Republica* as basis for the socio-economic calculations. In a separate chapter, some

[137] "Country Profiles for Population and Reproductive Health: Policy Developments and Indicators 2003"; United Nations Population Fund and Population Reference Bureau, 2003; p 221
[138] "National Population Policies – 2001"; Population Division of the United Nations Secretariat, p 266
[139] Eduardo Arriaga: "adult mortality in the era of HIV/AIDS: Latin America and the Caribbean"; Workshop on HIV/AIDS and Adult Mortality in Developing Countries; Population Division, Department of Economic and Social Affairs, United Nations Secretariat ; New York, 8-13 September 2003; P 5 and Table 2
[140] Population Division of the United Nations Secretariat "World Population Prospects: The 2002 Revision - Highlights"; 23 February 2003; Doc nº ESA/P/WP. 180 p 14

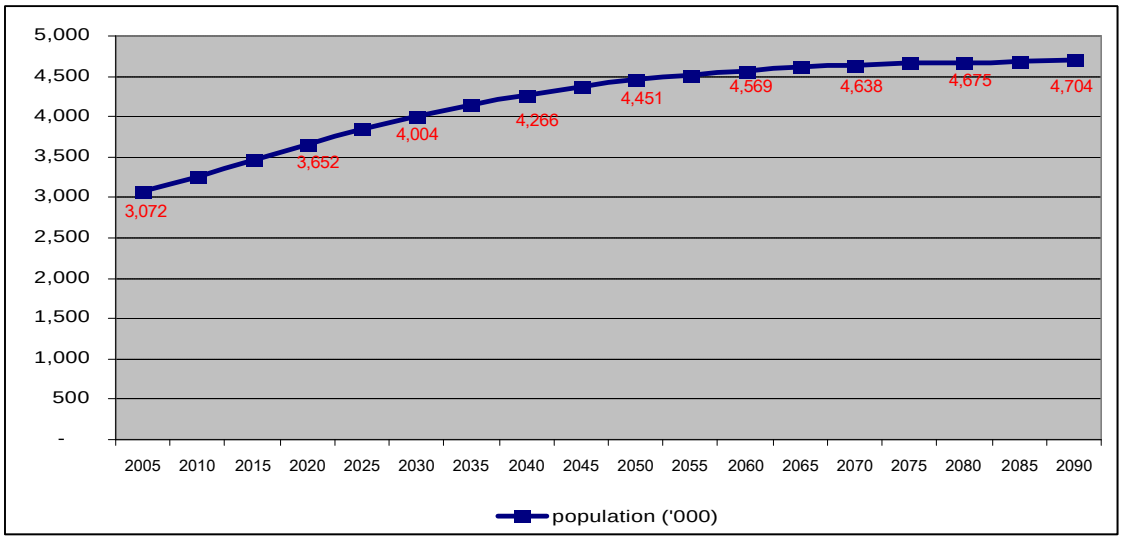
alternative forecasts will be made to demonstrate the difference in future demographic profile if the variable scenarios of the UN are taken into consideration.

After a review of international demographic forecasts, made by representative international agencies, the forecasts made by the *Controlaría General de la Republica* are discussed in detail in a second part. They are considered as the base case scenario. In order to estimate possible deviations from the base case scenario if the differentiated UN forecasts are considered, development generated scenarios will be discussed in the paragraph thereafter. In the following paragraphs and using the base case scenario results, various additional demographic indicators will be discussed and as much as possible, compared to estimates made by other international agencies.

7.2.2 Forecasts by International Agencies

(1) World Bank

The World Bank has made a long-term forecast of population growth for Panama. As can be clearly seen in Figure 7.2.1, the speed of increase will gradually decline between 2005 and 2090.



Source: World Development Indicators 2003, World Bank

Figure 7.2.1 Forecasted Population Growth for Panama ('000 persons)

In 2005, the World Bank estimates that total population in Panama will have increased to just over 3 million people and that population will reach 3.83 million people by 2025 (3.65 million people in 2020). Total population in 2090 is estimated at 4.7 million people. This is only 250.000 persons more than 40 years earlier, when in 2050 population will have reached 4.45 million people. The distribution between male and female is demonstrated in Table 7.2.1.

Table 7.2.1 Population Growth 2005 – 2090 ('000 Persons) per Gender

	2005	2010	2020	2025	2030	2040	2050	2060	2070	2080	2090
Females	1,525	1,621	1,823	1,919	2,006	2,145	2,246	2,312	2,354	2,376	2,390
Males	1,547	1,639	1,830	1,919	1,999	2,121	2,205	2,257	2,284	2,299	2,314
TOTAL	3,072	3,260	3,653	3,838	4,005	4,266	4,451	4,569	4,638	4,675	4,704

Source: World Development Indicators 2003, World Bank

According to World Bank experts, the gender distribution of the population will not undergo dramatic changes, as can be concluded from the results in Table 7.2.2. The female population, in 2005 with 49.6% still slightly below the 50% level, will increase over the next 85 years to reach 50.8% in 2090, a share that is just above the 50% level. The structure of the male population undergoes the opposite evolution, from just above to slightly below the 50% level of total population.

Table 7.2.2 Population 2005 – 2090 per Gender (%)

	2005	2010	2020	2030	2040	2050	2060	2070	2080	2090
Females	49.6	49.7	49.9	50.1	50.3	50.5	50.6	50.8	50.8	50.8
Males	50.4	50.3	50.1	49.9	49.7	49.5	49.4	49.2	49.2	49.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

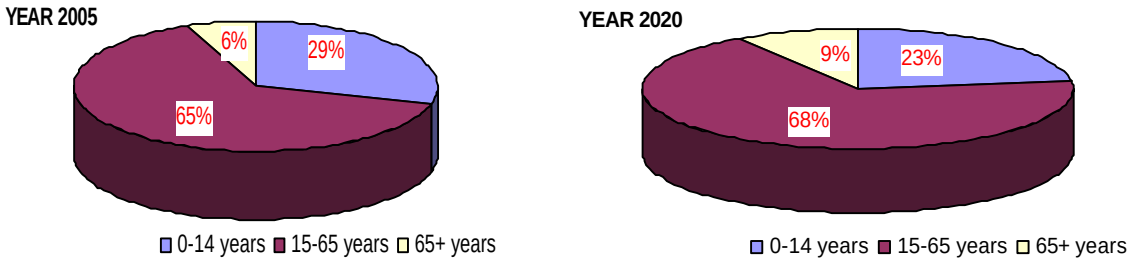
Source: World Development Indicators 2003, World Bank

A review of the age distribution over the 85 year period demonstrates that also in Panama, the population is aging. See Table 7.2.3. But an interesting fact for the next 20 years is that the economic active population will continue to increase, from 65% of total population in 2005 to 68% of total population in 2020 (Figure 7.2.2).

Table 7.2.3 Population 2005 – 2090 per Age (in '000 of Persons and %)

Age ('000)	**2005**	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**	**2090**
0-14 years	895	859	834	869	853	851	861	854	856	855
15-64 years	1,993	2,180	2,489	2,646	2,741	2,790	2,772	2,765	2,793	2,790
65+ years	184	221	330	490	672	810	936	1,019	1,026	1,059
Total	3,072	3,260	3,653	4,005	4,266	4,451	4,569	4,638	4,675	4,704
% distribution	**2005**	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**	**2090**
0-14 years	29	26	23	22	20	19	19	18	18	18
15-65 years	65	67	68	66	64	63	61	60	60	59
65+ years	6	7	9	12	16	18	20	22	22	23
Total	100	100	100	100	100	100	100	100	100	100

Source: World Development Indicators 2003, World Bank



Source: World Development Indicators 2003, World Bank

Figure 7.2.2 Percentage Distribution per Age of Population (2005 – 2030 – 2090)

It is only from that point on that the share of the economic active population will gradually decline, to reach 59% of total population by the year 2090. The aging of the population is clearly demonstrated in the table. While the share of the population over 65 years old is only 6% in 2005, it will quadruple to 23% of total population over the next 85 years time. The absolute number of children (below 15 years old) will remain approximately the same over that period, but its share of total population will decrease from 29% in 2005 to 18% in 2090.

It should be noted that the World Bank estimates are very conservative. While they forecast a total population of just over 3 million persons for Panama, the latest population counts for Panama demonstrate that the actual 2003 number is already higher. According to the preliminary results, provided by the *Controlaría General de la Republica*, the total population in Panama is equal to 3,116,277 persons in 2003, consisting of 1,572,850 males and 1,543,427 females.

The World Bank has also forecasted other demographic indicators, which are summarized in next Table 7.2.4. The forecasts made by the World Bank, extent to the year 2090 but are limited in the overview to the years relevant for the underlying study.

Table 7.2.4 Selected Demographic Indicators 2000 -2030

	2000-05	2005-10	2010-15	2015-20	2020-25	2025-30
Birth rate (per 1,000 people)	20.4	17.2	16.9	16.5	15.8	14.9
Death rate (per 1,000 people)	5	4.9	5.1	5.3	5.9	6.5
Infant mortality rate (per 1,000 live births)	19.2	16	13.4	11.2	10.4	9.6
Under-5 mortality rate (per 1,000)	23	19.4	16.4	13.8	12.9	12
Life expectancy at age 15 (years)	61.92	62.62	63.28	63.92	64.2	64.49
Life expectancy at birth (years)	74.91	75.89	76.79	77.64	78	78.37
Net migration rate (per 1,000 people)	-0.7	-0.3	-0.2	-0.1	0	0
Net reproduction rate (female births per woman)	1.148	1	1	1	1	1
Population growth rate (average annual %)	1.47	1.19	1.16	1.11	0.99	0.85
Rate of natural increase (per 100 people)	1.54	1.22	1.18	1.11	1	0.85
Total fertility rate (births per woman)	2.42	2.101	2.094	2.089	2.086	2.084

Source: World Development Indicators 2003, World Bank

The above indicators support the conclusion that the population in Panama will grow older. The birth rate will decline with almost 6 basic points over the next 25 years causing the total fertility rate, the net reproduction rate and the rate of natural increase both to decrease. At the same time, life expectancy at all reference ages grows and the infant mortality sees a spectacular decline. In other words, fewer children are born and people live longer.

Also the Populations Reference Bureau (PRB) has made population forecasts until the year 2050[141]. The PRB is an independent Washington-based organization that informs the population about the population dimensions of important social, economic, and political issues. According to the PRB forecasts, the present population of approximately 3 million people will increase to 4.2 million people in 2025 and further climb to reach 5 million people in the year 2050. Their forecast is slightly higher than the World Bank estimates. PRB assumes that the total population of Panama will increase with 68% over the next 50 years.

(2) United Nations Population Division

The United Nations Population Division that argues the total population of Panama to reach 5.14 million people by 2050[142]. The forecast remains similar to the year 2002 forecasts when the total population in Panama was forecasted to reach 3.79 million people in 2015, 4.29 million in 2025 and 5.14 million people in 2050[143]. The Population Division estimates population growth and other demographic indicators according to three growth variants, namely the High, Low and Medium Variant. The estimates for each of the three variants are presented in next Table 7.2.4.

According to the UN experts, the total population of Panama will increase to a number between 3.818 million persons (low variant) and 4.163 million people (high variant). According to the medium case variant that could be considered as the most probable scenario. Population in Panama will reach just over 4 million persons in 2020 (4.047 million). The relation between the shares of male and female population remains relatively stable over the period although according to all three variants, the gap between male and female persons slightly reduces over time.

The Table 7.2.5 and the Table 7.2.6 hereafter clearly demonstrate that the population is aging, independent of the variation that is selected, causing the median age to increase in all three variants. The increase is higher in the low variant (from 24.8 years in 2000 to 31.9 years in 2020) than in the median variant (30.0 years in 2020) and the high variant (29.0 years in 2020).

[141] See “2003 World Population Data Sheet”, Population Reference Bureau, Washington, USA; 2003

[142] See « Long Range Population Projections : Proceedings of the Workgroup on Long Range Population Projections, 30th of June, 2003”; UN, Population Division, Department of Economic and Social Affairs, 21 august 2003, (doc ref: ESA/P/WP.186), p 18 table 2.

[143] See “World Population Prospects : The 2002 Revision”; United Nations, Population Division, 26/02/2003 (doc ref: ESA/P/WP.180), Statistical Annexes.

Table 7.2.5 Population Forecasts 2000 -2020 3 Scenarios

	2000	2005	2010	2015	2020
Low variant					
Population (thousands)	2 950	3 204	3 434	3 635	3 818
Male population (thousands)	1 489	1 617	1 731	1 830	1 919
Female population (thousands)	1 461	1 588	1 703	1 805	1 899
Population sex ratio (males per 100 females)	102.0	101.8	101.6	101.4	101.1
Percentage aged 0-4 (%)	11.2	9.8	8.6	7.6	7.1
Percentage aged 5-14 (%)	20.6	19.9	18.7	16.8	15.0
Percentage aged 15-24 (%)	18.5	18.1	17.7	17.5	16.8
Percentage aged 60 or over (%)	8.0	8.8	9.9	11.4	13.2
Percentage aged 65 or over (%)	5.5	6.0	6.8	7.8	9.1
Percentage aged 80 or over (%)	1.0	1.2	1.3	1.5	1.8
Percentage of women aged 15-49 (%)	53.2	53.7	53.8	54.0	53.1
Median age (years)	24.8	26.3	28.0	29.9	31.9
Population density (per sq. km)	39	42	45	48	51
Medium variant					
Population (thousands)	2 950	3 235	3 520	3 790	4 047
Male population (thousands)	1 489	1 632	1 775	1 909	2 036
Female population (thousands)	1 461	1 602	1 745	1 881	2 011
Population sex ratio (males per 100 females)	102.0	101.9	101.7	101.5	101.3
Percentage aged 0-4 (%)	11.2	10.6	10.0	9.2	8.6
Percentage aged 5-14 (%)	20.6	19.7	19.1	18.3	17.3
Percentage aged 15-24 (%)	18.5	17.9	17.3	16.8	16.6
Percentage aged 60 or over (%)	8.0	8.8	9.7	10.9	12.4
Percentage aged 65 or over (%)	5.5	6.0	6.7	7.5	8.6
Percentage aged 80 or over (%)	1.0	1.2	1.3	1.5	1.7
Percentage of women aged 15-49 (%)	53.2	53.2	52.5	51.8	50.8
Median age (years)	24.8	26.1	27.3	28.6	30.0
Population density (per sq. km)	39	43	47	50	54
High variant					
Population (thousands)	2 950	3 243	3 545	3 852	4 163
Male population (thousands)	1 489	1 636	1 787	1 941	2 096
Female population (thousands)	1 461	1 607	1 757	1 911	2 068
Population sex ratio (males per 100 females)	102.0	101.9	101.7	101.6	101.4
Percentage aged 0-4 (%)	11.2	10.8	10.4	10.0	9.6
Percentage aged 5-14 (%)	20.6	19.7	19.2	18.7	18.1
Percentage aged 15-24 (%)	18.5	17.9	17.2	16.6	16.3
Percentage aged 60 or over (%)	8.0	8.7	9.6	10.7	12.1
Percentage aged 65 or over (%)	5.5	6.0	6.6	7.4	8.3
Percentage aged 80 or over (%)	1.0	1.2	1.3	1.5	1.6
Percentage of women aged 15-49 (%)	53.2	53.0	52.1	51.0	49.6
Median age (years)	24.8	26.0	27.1	28.1	29.0
Population density (per sq. km)	39	43	47	51	55

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2002 Revision and World Urbanization Prospects: The 2001 Revision

Several time-based variations between different demographic indicators are presented in Table 7.2.6 hereafter and demonstrate that independent of the variant, the population is aging due to lower fertility and longer life-expectancy.

Table 7.2.6 Selected Demographic Indicators for Panama (2000 – 2020)

	2000-2005	2005-2010	2010-2015	2015-2020
High variant				
Population change per year (thousands)	59	60	61	62
Births per year, both sexes combined (thousands)	72	75	78	81
Deaths per year, both sexes combined (thousands)	15	17	19	21
Population growth rate (%)	1.89	1.78	1.66	1.56
Crude birth rate (per 1,000 population)	23.2	22.2	21.1	20.3
Crude death rate (per 1,000 population)	5.0	5.0	5.1	5.3
Total fertility rate (children per woman)	2.77	2.75	2.72	2.69
Net reproduction rate (per woman)	1.31	1.30	1.29	1.28
Infant mortality rate (per 1,000 births)	20.6	18.2	15.7	13.5
Life expectancy at birth, both sexes combined (years)	74.7	75.5	76.3	77.0
Life expectancy at birth, males (years)	72.3	73.0	73.7	74.4
Life expectancy at birth, females (years)	77.4	78.2	79.1	79.9
Medium variant				
Population change per year (thousands)	57	57	54	52
Births per year, both sexes combined (thousands)	70	72	71	70
Deaths per year, both sexes combined (thousands)	15	17	19	21
Population growth rate (%)	1.84	1.69	1.48	1.32
Crude birth rate (per 1,000 population)	22.7	21.3	19.3	17.9
Crude death rate (per 1,000 population)	5.0	5.0	5.1	5.3
Total fertility rate (children per woman)	2.70	2.62	2.45	2.32
Net reproduction rate (per woman)	1.27	1.24	1.16	1.11
Infant mortality rate (per 1,000 births)	20.6	18.2	15.7	13.5
Life expectancy at birth, both sexes combined (years)	74.7	75.5	76.3	77.0
Life expectancy at birth, males (years)	72.3	73.0	73.7	74.4
Life expectancy at birth, females (years)	77.4	78.2	79.1	79.9
Low variant				
Population change per year (thousands)	51	46	40	37
Births per year, both sexes combined (thousands)	64	60	56	55
Deaths per year, both sexes combined (thousands)	15	17	18	21
Population growth rate (%)	1.65	1.38	1.14	0.98
Crude birth rate (per 1,000 population)	20.8	18.2	16.0	14.8
Crude death rate (per 1,000 population)	5.0	5.0	5.2	5.5
Total fertility rate (children per woman)	2.45	2.20	1.95	1.82
Net reproduction rate (per woman)	1.16	1.04	0.93	0.87
Infant mortality rate (per 1,000 births)	20.6	18.2	15.7	13.5
Life expectancy at birth, both sexes combined (years)	74.7	75.5	76.3	77.0
Life expectancy at birth, males (years)	72.3	73.0	73.7	74.4
Life expectancy at birth, females (years)	77.4	78.2	79.1	79.9

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2002 Revision and World Urbanization Prospects: The 2001 Revision