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Final Report

***Technical Assistance for the
Implementation of the Urban Development
Component of the General and Regional
Plans***

USAID/Panama

December 31, 1999

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Implementation of the Urban Development
Component of the General and Regional
Plans*

Prepared for:
*United States Agency for International Development
(USAID/Panama)*

December 31, 1999

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1. Introduction and Objective

Panama has just become the sole manager of the Panama Canal Area. During December 1999, with the reversion of the last assets—including the canal itself—the process that began 20 years ago under the Torrijos-Carter Treaty, was completed. According to the special objective: “ facilitate an efficient transfer of the Canal and the productive use of the reverted assets”, the United State Agency for International Development (USAID) is offering technical assistance to the Authority of the Interoceanic Region (ARI), a Governmental entity that is responsible for the administration and integration of the reverted assets. The assistance objective, provided by the Consulting Firm: International Resources Group (IRG) is to strengthen ARI’s Technical Planning Directorate for the implementation of the principal duties: the evaluation of projects and the preparation of local development plans. This Final Report presents the findings and outputs of the technical assistance, including:

- a diagnostic of the physical and economic development of the reverted areas,
- criteria and procedures for the evaluation of development projects, and,
- guidelines for the preparation of local development plans.

2. Diagnostic

The former Panama Canal Zone goods reversion process is complete. During the last month the largest military bases have reverted, including Fort Sherman, Howard Air Force Base and Fort Clayton. With the Canal reversion on December 17, as well as some small installations due by the end to the month, all the Canal area is now under Panamanian control.

Although the reversion has been completed, the process of integration of the reverted goods into the national economy continues under the direction of the Authority of the Interoceanic Region (ARI). On July 30, 1999, 7,129 of the 14,796 goods in the reverted areas—equivalent to 48%, had been assigned by ARI under diverse forms of ownership.¹ In the Atlantic and Pacific regions, nearly 2,000 ha. of land, with and without improvements, have been sold, rented or assigned and nearly 10,000 have been distributed under concessions. It may be pointed out that the integration process of reverted areas is approximately half way complete.

At the wake of the Panamanian Canal Area Management Era, the present technical assistance takes advantage of the historical moment to conduct a physical and economic diagnostic of the development of the reverted areas. The objective of the diagnostic is to enhance understanding of present trends by the personnel of the Technical Planning Directorate and to produce guidelines to improve and guide ARI's future activities, on behalf of the management and integration of the reverted goods.

Due to the time constraints of the present exercise, the consultant did not conduct a retrieval of primary data and depended only on secondary data offered by ARI and other entities, as well as interviews with key actors from the different subsections of analysis. Instead of increasing available information about the development process in the Canal Area, the value added by the consultant includes:

- (i) Summary of available data in a concise way, providing a global perspective of present conditions and trends,
- (ii) Synthesis of main subsectoral findings in an integrated analysis of the development process,
- (iii) Objective analysis of actual results in comparison with the objectives identified in the development strategy.

We herein present discussions and analysis on the following themes:

- Development strategies for the reverted areas,
- Progress in the reversion and transfer of goods in the canal area,
- Economic Performance in the reverted areas
- Urban development trends in a metropolitan context,
- Impacts on real estate markets, and
- Evaluation of present development based upon strategies.

¹ "Reverted Goods Real Estate Inventory, 1979-1999" ARI, July 31, 1999.

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At the end the diagnostic conclusions are presented as well as recommended guidelines for future DPT actions.

2.1 Reverted Areas Development Strategies

The reverted area's main development strategy is presented in Volume 3 of the Global Land Use Plan, Conservation and Development of the Canal Area (ARI/Nathan Associates, 1997). The strategies five objectives are the following:

- Generate permanent resources and employment,
- Preserve the efficiency of the canal operation,
- Protect the areas natural resources,
- Integrate the reverted area into the national economy, and
- Build political and civil-society support for the strategy.

The focus on employment generation arose mainly from an analysis of Panamanian economic performance during the last three decades; while internal production has evolved in a similar way to other Central American countries, growth did not bring a substantial improvement in wealth distribution.

Both recognizing the governments financial restrictions, the strategy identifies economic activities that are capable of generating direct and indirect revenue while targeting the use of investment incentives. The following were identified as engines of the national economy: (i) the Canal, (ii) Colon Free Zone, (iii) the maritime ports, (iv) the banking and insurance systems. Since these engines are located in or near the canal area, the development strategy is to “enhance the development of international services and to improve their capacity to distribute revenue over to other sectors of the economy”. The key sectors of this strategy are the following:

- International maritime services
- Commerce
- International Tourism
- Export-oriented industry, including assembly

As a conclusion and, located between the two most radical alternatives, that is, intensive growth (that can result in an excessive consumption of natural resources) and controlled growth (that can limit employment generation), a “balanced growth” is the General Plans proposed strategy. After the following discussion on development trends observed by the consultant, we will compare these trends with the objectives and sectoral approaches stated by the strategy.

2.2 Canal Area Reverted Assets Reversion and Transfer Progress

Table 2-1 summarizes the state of the reversion and transfer of goods in the canal area. It can be pointed out that 100% of the goods have reverted. Other data originated in the report “Real Estate Inventory, 1979, 1999” from the Directorate of Organization and

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Information Systems (DOSI), only includes transfers made by ARI before July 31, 1999. To that date, 7,129 of the total 14, 784 goods, representing nearly half (48%), had been transferred to other parties under different ownership. From these 7,129 goods, only one quarter were sold, while one third were allocated and another third were rented. Some 6% of goods were granted, or are still under licenses given by the United States government.

Table 2-2. presents the transfer of housing units, by the end of November 1999. Due to the recent transfer of the biggest military bases, including a large proportion of the total housing supply, it is not surprising that nearly half of the 9,447 total units (4,439 that is: 47%) are still under ARI's administration. Of the rest, half (51%) were rented, 29% were sold, while 15% were assigned.

It can be observed that many of these transfers were accomplished before ARI's creation; for example, during the 1979-1994 period, the Panamanian government rented many housing units from the civilian areas of the former Canal Zone. Nevertheless, the global selling rate of the housing stock (29% of the transferred units) and of total improvements (24% of the transferred goods) remains very low, suggesting lost opportunities in generating more revenue during the process of integrating the reverted goods.

At the same time, 2,478 improvements (34% of the transfers) and 763 housing units (15% of the transfers) were assigned to governmental offices and some non governmental organizations (NGO's), including the Foundation City of Knowledge that is the beneficiary of nearly half (48%) of the housing transfers. The majority of the assignments do not generate substantial financial resources to ARI nor to society as a whole; they represent a simple transfer of an activity from one geographical sector to another. The relocation of offices from the public sector to the reverted areas, the metropolitan economy, and taking into account the opportunity, this type of transaction is an example of "non productive use" of reverted goods. Cost, in the case of housing, only the value of the 763 assigned units, at average market prices in the reverted areas, is \$52 million.

Another inconvenience of the reverted goods emerging ownership structure is the high proportion of rent. More than a third of the transferred goods, and more than half of the transferred housing, are under rent contracts where the government is the tenant. International experience has definitely demonstrated that public sector entities do not have any comparative advantage in renting real estate. On the contrary, public tenant's complaints include low maintenance, stock damage, non-adapted market prices and lost potential income. There is no reason to believe that results will be different in the case of the reverted areas.

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**Table 2.1
Progress on Reversion and Transfer of Assets (Improvements) in the Canal Area**

Town	Total Assets	Reverted Quantity	Sold Quantity	Rented Quantity	Allocated Quantity	Under Concession* Quantity	Under ARI Mngt Quantity						
		%	%	%	%		%						
Albrook	668	668	100%	445	67%	41	6%	130	19%	3	0%	49	7%
Altos de la Cantera	104	104	100%	47	45%	8	8%	29	28%	-	0%	20	19%
Amador	423	423	100%	26	6%	87	21%	75	18%	11	3%	224	53%
Ancón	420	420	100%	84	20%	138	33%	74	18%	16	4%	108	26%
Arraiján, Tanques	104	104	100%	-	0%	-	0%	1	1%	61	59%	42	40%
Balboa	1,169	1,169	100%	184	16%	246	21%	348	30%	17	1%	374	32%
Balboa Industrial	185	185	100%	-	0%	-	0%	185	100%	-	0%	-	0%
Cárdenas	176	176	100%	-	0%	-	0%	-	0%	-	0%	176	100%
Clayton	1,700	1,700	100%	-	0%	-	0%	-	0%	-	0%	1,700	100%
Cocolí	284	284	100%	-	0%	61	21%	69	24%	-	0%	154	54%
Corozal	368	368	100%	3	1%	15	4%	122	33%	1	0%	227	62%
Curundú	69	69	100%	-	0%	1	1%	31	45%	-	0%	37	54%
Curundú, Altos	240	240	100%	94	39%	14	6%	117	49%	-	0%	15	6%
Curundú, Llanos	159	159	100%	73	46%	45	28%	32	20%	-	0%	9	6%
Diablo	463	463	100%	155	33%	114	25%	25	5%	8	2%	161	35%
Emperador	8	8	100%	-	0%	-	0%	-	0%	-	0%	8	100%
Farfán	441	441	100%	-	0%	-	0%	-	0%	-	0%	441	100%
Gamboa	561	561	100%	-	0%	152	27%	100	18%	84	15%	225	40%
Howard	791	791	100%	-	0%	-	0%	5	1%	-	0%	786	99%
Kobbe	316	316	100%	-	0%	-	0%	-	0%	-	0%	316	100%
La Boca	273	273	100%	-	0%	14	5%	108	40%	22	8%	129	47%
Los Ríos	243	243	100%	8	3%	55	23%	42	17%	-	0%	138	57%

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Paraíso	391	391	100%	-	0%	277	71%	45	12%	2	1%	67	17%
Pedro Miguel	305	305	100%	-	0%	178	58%	18	6%	-	0%	109	36%
Rodman	605	605	100%	-	0%	8	1%	137	23%	3	0%	457	76%
Summit	83	83	100%	-	0%	3	4%	56	67%	-	0%	24	29%
Arco Iris	555	555	100%	-	0%	469	85%	59	11%	3	1%	24	4%
Campo de Francia	177	177	100%	-	0%	-	0%	73	41%	1	1%	103	58%
Cerro de Oro	46	46	100%	15	33%	31	67%	-	0%	-	0%	-	0%
Cerro Pelado	3	3	100%	-	0%	-	0%	-	0%	-	0%	3	100%
Coco Solo	564	564	100%	18	3%	102	18%	147	26%	1	0%	296	52%
Cristóbal	222	222	100%	-	0%	62	28%	-	0%	-	0%	160	72%
Gatún	397	397	100%	-	0%	20	5%	40	10%	-	0%	337	85%
Gatún, Tanques	26	26	100%	-	0%	26	100%	-	0%	-	0%	-	0%
Davis	715	715	100%	143	20%	120	17%	161	23%	105	15%	186	26%
Espinar	594	594	100%	196	33%	86	14%	78	13%	11	2%	223	38%
Margarita	517	517	100%	223	43%	155	30%	64	12%	5	1%	70	14%
Mindi	21	21	100%	-	0%	16	76%	1	5%	-	0%	4	19%
Monte Esperanza	186	186	100%	4	2%	1	1%	59	32%	34	18%	88	47%
Sherman-San Lorenzo	212	212	100%	-	0%	-	0%	47	22%	-	0%	165	78%
Total	14,784	14,784	100%	1,718	12%	2,545	17%	2,478	17%	388	3%	7,655	52%
*Includes licenses													
Sources: "Inventario de los Bienes Revertidos, 1979-1999", ARI; Dirección de Planificación Técnica													
Data on transfer of assets by ARI to other parties through 21 July 1999 only.													

Table 2-2
Status of Housing Transfers by ARI in the Reverted Areas

Housing Status	No. of Units	% from Total	% of Transferred Units
Sold in Public Auction	471	5.0%	9.4%
Not Sold in Public Auction	963	10.2%	19.2%
Rented	2,545	26.9%	50.8%
Allocated*	763	8.1%	15.2%
Granted	266	2.8%	5.3%
Under ARI's Administration	4,439	47.0%	-
Total	9,447	100.0%	100.0%

* The majority of beneficiaries are entities from the public sector.

Source: Data Base from the Administration of Reverted Assets Directorate, ARI

2.3 Economic performance of the Reverted Areas

2.3.1 Methodological Framework for Economic Diagnosis

2.3.1.1 Diagnostic Objectives

The objective of the economic part of the diagnostic is, on one hand to describe, and on the other to analyze, the economic performance of the reverted areas. This region covers the geographical area of the Inter-oceanic Region included in the General Plan. The analysis of the region's economic performance will implicitly evaluate the reverted areas present reversion and development processes.

2.3.1.2 Analysis Approach and Scope

The economic activities that derive from the operations, projects, and other existing activities in the reverted areas, constitute the economic foundation of this region. Due to the fact that this is a specific regional economic and spatial analysis, the economic diagnostic analysis will also consider the effects of other, not necessarily economic variables. Among them, are the land use instructions and norms established in the General Plan, and the development strategy, that have given the market and the private initiative the role of development mobilizing agents, in opposition to an alternative strategy of "controlled economy", or normative planning. These considerations are only recognition that there will be restrictions (externalities) to the exclusively economic considerations in the region's development process.

Using the region's annual information between 1994 and 1997, we will analyze the reverted areas economic sectors, and especially the key sectors implied in ARI's development strategy: Maritime, Commercial, Industrial and, Tourism. This method assumes that by analyzing the sector, you evaluate the performance of the projects that belong to it. This diagnostic will allow us to observe the region's economic performance up to this date and, consequently explore different policies for the regions future development.

This approach is better than to do a project by project analysis of each project in the region, since such an approach would imply doing an ex – post evaluation of each project,

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very possibly using an economic cost-analysis instrument to evaluate the opportunity cost of those projects. This process would be extremely expensive and would not render useful results in the understanding of the regional economic performance. On the other hand, there are many small projects, whose opportunity cost is not significant to the country. It is also possible, that because of the instructions and norms established in the General Plan, the adopted projects and assignments couldn't have been very different.

Nevertheless, projects will be examined in relation with its impacts in the development of the sectors, and as we examine the future trends of the key sectors.

2.3.1.3 Physical Region of Analysis

Even though the Panama Canal, that presently dominates the regional economy, existed before the beginning of the reversion process, it is also true that, as we will demonstrate further ahead, with the exception of the of the Canal operation, the new activities in the reverted areas could change and evolve with this process.

The General Plan has no jurisdiction over the Canal's operation area, this is reserved to the Canal Authority, and soon the CICH will be included too. Therefore, it is necessary to point out that the decisions on projects and investments in the reverted areas materialize in a physical territory that does not include the area reserved for the Canal operation.

As we will demonstrate further ahead, the Panama Canal activities have a considerable weight on the economy of the reverted areas. It's possible that this weight could distort an economic analysis by sectors. For this reason, the reverted area's economy will be analyzed including and excluding the Panama Canal's regional accounts and the results will be compared. The analysis that excludes the Canal will show us how the region's economy has developed, structured by the other sectors. In this way one can obtain a more realistic vision of the new economy that has been created with the reverted assets and the new investments.

2.3.1 General Economic Context

2.3.1.1 Sectoral Structure of the Panamanian Economy

To analyze the economy of the reverted areas, it will be necessary to take the national economy as reference. The sectoral structure of the Panamanian Economy is characterized by a strong supremacy of the service activities, of which, Personal Services (45%) and Public Services (21%), represented in 1997 66 % of the Gross Domestic Product, as can be observed in Table 1. These sectors are followed by Transportation with 14%, Manufacturing Industry, with 9%, Primary Activities, with 7%, and Construction, with 4%. With small variations, the proportions of sectoral participation in the GDP have been stable between 1994 and 1997. As it can be observed in Table 1, the activities of the country's transportation sector are in a second place, with a participation of 14% in the GDP, after the Service sector (personal, public and government, with 66%). In the Transportation sector, the Panama Canal, and Other Transportation associated with this operation represent 70% of the sector.

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Therefore, it can be concluded, that the sectoral structure of the Panamanian economy corresponds to an economy predominantly controlled by the Services and Transportation sectors, which together represented 80% of the GDP in 1997.

Table 1
Sectoral Participation in Gross Domestic Product By Aggregate Sectors in Prices of 1996

Activity Sectors	Total Economy				Reverted Areas			
	1994	1995	1996	1997	1994	1995	1996	1997
Primary Activities	0.08	0.08	0.08	0.07	0.01	0.01	0.01	0.01
Manufacturing Industries	0.09	0.09	0.09	0.09	0.01	0.02	0.02	0.02
Construction	0.05	0.05	0.04	0.04	0.06	0.05	0.03	0.06
Transportation without the Panama Canal	0.04	0.04	0.04	0.04	0.06	0.08	0.09	0.08
Other Transportation, Canal Commission	0.09	0.10	0.10	0.07	0.67	0.68	0.68	0.65
Total Transportation 1	0.13	0.14	0.14	0.14	0.74	0.75	0.77	0.74
Personal Services 2	0.45	0.45	0.45	0.45	0.08	0.08	0.08	0.08
Public and Governmental Services 3	0.20	0.20	0.20	0.21	0.10	0.09	0.10	0.10
Total Services 4	0.65	0.65	0.65	0.66	0.18	0.17	0.18	0.18

1: Ground Transportation, Maritime and Coastal Transportation, Other Transportation, Canal Commission.

2: Wholesale Commerce, Retail Commerce, Wholesale in Free Zones, Hotels and Restaurants, Financial Transactions, Real Estate Activities, Business Activities, Private Households and Domestic Service.

3: Water and Energy Utilities, Public Administration and Defense, Education, Health, Social Services.

4: Addition of 2 + 3

Source: Calculations from the Diagnostic

(from the study *Production, Investment and Employment in the reverted areas. Years 1994-1997. DPT, ARI, October, 1998*)

2.3.1.2 Sectoral Structure of the Reverted Areas Economy Including Panama Canal Activities

As it can be observed in Table 1, differing from the national economy, the sectoral structure of the reverted area's economy is characterized by the overwhelming predominance of the Transportation sector, which as a whole, represented in 1997, 74% of the GDP of the reverted areas (GDP-RA).

In 1997, the activities of the Canal Commission and other Transportation, alone, represented 65% of the GDP-RA. Following these sectors, Services with 18%, Personal Services (8%), and Public Services and Government (10%), which compare with a robust 66% at a national level. Construction (6%), was bigger than the national participation (4%), but Manufacturing Industry (2%) and Primary Activities (1%) were significantly below national participation that had 9% and 7% in both sectors.

One can conclude that the sectoral structure of the reverted area's economy, an economy in full growth and development, is presently controlled by the Transportation sector, defined itself by the Canal's operation, and by the coastal and harbor activities.

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The Special Economic Gravitation of the Panama Canal on the Reverted Areas

The Panama Canal's predominance on the sectoral structure of the reverted area's economy, already existed before the reversion process began. From a productive point of view, the Panama Canal has been and will continue being an activity that is highly dependent on the international demand, and as such, it has already established defined economic links with the country and the reverted area region. Its employment, production and, participation in GDP-RA, have remained generally stable, as can be observed in Tables 1, 2 and, 3.

Table 1 indicates that the Canal Commission's product in the country's GDP has remained stable within the order of 10% from 1994 to 1997, while its participation in the reverted area region changed from 730.2 millions of dollars in 1994, to 857.8 millions of dollars in 1997, with a net growth within the order of 15% during this period.

Table 2 shows us the Canal Commission's employment volume, and its growth from 8,758 employees in 1994, to 9,786 in 1997, that represents a net growth of 1,028 employment's, which is a 10% net growth. This could be explained by the gradual integration of Panamanian employees to the Canal Commission in replacement of foreign employees in anticipation to the Panama Canal reversion in December 1999.

Table 2
Employment Generated by the Activities from the Reverted Area's Economy by Economic Activity

Activity Sectors	Number of Employees							
	Total Economy				Reverted Areas			
	1994	1995	1996	1997 (P)	1994	1995	1996	1997 (P)
Primary activities	167,881	181,942	176,041	171,556	170	134	195	181
Manufactory Industries	89,512	92,562	94,016	96,277	522	743	759	823
Electricity, gas and water Utilities	9,262	8,831	9,112	9,085	6	7	10	10
Construction	52,501	53,571	54,882	59,570	250	308	529	1,064
Commerce	146,144	152,103	153,017	168,146	1,582	1820	2,272	2813
Hotels and Restaurants	27,505	27,458	30,491	4,161	11,793	12,961	13,698	12,918
Transportation, Storage and Communications	60,672	63,400	59,032	62,117	11,793	12961	13698	12,918
Financial Operations	19,436	19,700	22,076	22,797	35	34	33	29
Real Estate and Business Activities	26,329	27,204	27,868	28,596	406	539	567	755
Public Administration and Defense	60,472	57,488	61,028	69,150	10,490	10,189	11,247	11,698
Education, Private Health, Social Services	114,218	123,484	125,487	129,698	658	796	919	949
Private Households with domestic service	52,101	51,848	49,104	52,150	347	363	417	408
Organizations/extra territorial organisms	5,791	7,067	4,970	5,802	0	0	0	0
Total Employees	831,824	866,658	867,219	909,055	26,340	28,026	30,827	31,885
Canal Commission	8,758	9,120	9,309	9,786	8,758	9,120	9,309	9,786
Transportation, Storage, Communications, without the Canal	51,914	54,240	49,723	52,331	3,035	3,841	4,389	3,132
Total Employees without the Canal	823,066	857,538	857,910	899,269	17,582	18,906	21,518	22,099

(P): Preliminary Data

Source: Directorate of Statistics and Census, The Republics General Controllers Office Directorate of Technical Planning-RA

Table 3
Gross Domestic Product Generated in the Economy and In the Reverted Areas, by
Economic Activity 1994-1997
(millions of Balboas at 1996 Prices)

Activity Sectors	Total Economy				Reverted Areas			
	1994	1995	1996	1997(P)	1994	1995	1996	1997(P)
A. Primary activities	609.4	627.9	632.1	628.9	7.2	5.4	5.3	5.1
B. Manufactory Industries	698.7	699.8	711.1	746.6	10.6	19.2	16.3	14.6
C. Electricity, gas and water utilities	257.5	262.5	313.6	339.2	0.1	0.1	0.2	0.2
D. Construction	414.3	376.8	348.3	384.3	44.8	41.9	26.4	57.6
E. Whole Sale Commerce	327.9	327.8	332.3	341.3	2.4	3.3	3.5	4.8
F. Retail Commerce	409.7	413.1	417.5	428.6	1.6	1.5	2.4	2.5
G. Whole Sale Commerce in Free Zones	844.2	817.1	782.2	906.9	34.4	45.5	46.9	45.6
H. Hotels and Restaurants	115.9	121.8	129.5	139.8	0.7	0.8	1.2	1.1
J. Maritime and coastal Transportation	71.3	78.9	84.8	94.9	43.3	60.6	71.6	69.1
K. Other Transportation, Canal Commission	730.2	822.5	848.8	857.8	497.6	580.9	595	584.9
L. Financial Operations	783.9	748	845.7	862.3	0.2	0.4	0.4	0.7
M. Real Estate Activities	802.6	806.1	830.6	858.7	9	8.4	6.9	8.7
N. Business Activities	218.2	238.9	252.5	294.1	6.7	6.9	6.7	6.9
O. Public Administration Defense	951.9	983.9	1,002.20	1,066.70	71.2	74	78.6	81.2
P. Education, private health, Social services	338.8	343.8	354.7	375.1	3.3	4.2	5.1	5.2
Q. Private Households with domestic service	73.6	74.1	70	75	0.7	0.7	0.8	0.8
Organizations/extraterritorial organisms	351.9	216.2	327.1	339.7	..	..	..	..
Minus: financial operation services assigned to intermediate consumption	246.8	254.2	261.5	252.9	..	..	..	..
Plus: Import Rights								
Plus: Assets transferal taxes that encumber home acquisition	51.1	49	49.8	52.1	..	..	..	..
Gross Domestic Product	7,821.10	8,052.50	8,151.10	8,588	737.6	858.6	872.2	894.1

(P): Preliminary Data .Data is not relevant

Source: Directorate of Statistics and Census, The Republics General Controllers Office
 Directorate of Technical Planning-RA

2.3.1.3 Reverted Areas of the Economic Sectoral Structure excluding Panama Canal Activities

In this section, the reverted areas economy will be analyzed excluding the Panama Canal activities, in order to be able to observe how the region has developed. In this way, a more realistic vision of the new economy that has been created in the region and its trends can be obtained.

In Table 4 we can observe that the participation of the reverted areas economic sectors changes notoriously when the Panama Canal is not included in the accounts. The region's Transportation sector is reduced to Ground, Maritime and Coastal Transportation.

Table 4
Participation in the Gross Domestic Product by Aggregate Sector at 1996 Prices
Excluding the Panama Canal Activities

Activity Sectors	Total Economy				Reverted Areas			
	1994	1995	1996	1997	1994	1995	1996	1997
Primary Activities	0.09	0.09	0.09	0.08	0.03	0.02	0.02	0.02
Manufactory Industries	0.10	0.10	0.10	0.10	0.04	0.07	0.06	0.05
Construction	0.06	0.05	0.05	0.05	0.19	0.15	0.10	0.19
Transportation without the Panama Canal	0.04	0.04	0.04	0.04	0.20	0.24	0.28	0.24
Personal Services	0.50	0.50	0.50	0.50	0.23	0.24	0.25	0.23
Public Services and Government	0.22	0.22	0.23	0.23	0.31	0.28	0.30	0.28
Total Services	0.72	0.72	0.73	0.73	0.54	0.53	0.55	0.51

Source: Directorate of Statistics and Census, The Republics General Controllers Office
 Directorate of Technical Planning-RA

In this sectoral structure the Transportation sector now appears in second place, with 24% of the GDP-RA, preceded by the Public Services and Government with 28%. Services, in general, including public and government services, plus personal services, represents 51% of the GDP-RA, compared with a 73% at a national level. This is followed by Construction with a robust 19% compared to a 5% at a national level, while the Manufactory Industries (5%) and Primary Activities (2%) are kept below the national levels, although their regional participation is nearly 100% higher than in the whole economy.

Nevertheless, the sectoral structure of the reverted areas economy does not explain what is the level of importance of each sector in the regional economy relative to the country and only allows us to compare the relative sectoral participation within the region. Therefore, this comparison does not show what sectors that make most contributions to the national economy. This analysis, central for the understanding of a regional economy, is done in the following section.

2.3.2 Determination of the Level of Importance of Economic Activities in a Region

One way of determining the comparative level of importance between economic activities in a region is throughout the use of a simple indicator called *location quotient*. It is a simple accounting calculation technique (non stochastic) that is economic in data requirements. It has been widely used in urban and regional economics, among other countries, in the United Kingdom and the United States. It has several application variations, among them the Input-Output model. Its varied uses, and its use by development agencies in other countries, gives this quantitative instrument its legitimacy.

This indicator is frequently used in urban economy to determinate the economy's basic and non-basic employment, of which other useful indicators are drawn for employment prospecting. These applications are presented further ahead to support local development plan methodology formulation.

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It is also used to obtain the level of importance of activity sectors in a regional economy, using GDP data. It is calculated dividing a sector's product participation within a region, by the participation of the same sector in the national economy. It is a way of normalizing the participation of each regional sector in relation to the country.

In general:

If: (X_{jr}) represents j sector production for region r: with $(X_{jr}) > 0$

(X_{tr}) represents the total production of region r; with $(X_{tr}) > 0$

then,

$[(X_{jr})/(X_{tr})]$ represents the participation of sector j of region r in the total product of the region r

where $[(X_{jr})/(X_{tr})] > 0$

If: (X_{jn}) represents the level of production of j sector in the nation: with $(X_{jn}) > 0$

(X_{tn}) represents the total production of the nation; with $(X_{tn}) > 0$

then,

$[(X_{jn})/(X_{tn})]$ represents the participation of sector j of the nation in the total product of the nation

where $[(X_{jn})/(X_{tn})] > 0$

The Location Quotient of sector j in the region r, is defined as:

$$(LC_{jr}) = \{ [(X_{jr}) / (X_{tr})] / [(X_{jn}) / (X_{tn})] \}$$

where $(LC_{jr}) > 0$

therefore (LC_{jr}) is sector j location quotient in region r.

A $(LC_{jr}) = 1$ is an indicative that sector's j regional participation is identical to the participation of this sector in the national economy. It is a sector that has the same behavior in both economic environments.

A $(LC_{jr}) < 1$ is an indicative that sector j regional participation is smaller than the participation of this same sector in the national economy. In general, this means that the economic contribution of this region in the regional economy is smaller than the economic contribution of the same sector in the national economy. This sector may need the support of the national economy for its operation in the region. Therefore, ceteris paribus, it is a sector that makes a smaller contribution to the region's development.

A $(LC_{jr}) > 1$ is indicative that sector's j regional participation is bigger than the participation of this same sector in the national economy. In general, this means that the economic contribution of this sector in the regional economy is bigger than the economic contribution of the same sector in the national economy. This is a sector that normally does not need support from the national economy for its operation in the region. Therefore, ceteris paribus, it is a sector that comparatively makes a bigger contribution to the region's development.

The referred "economic contributions" of the above mentioned LC will be measured according to the nature of the sector's output, that could be goods or services. For instance,

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in the manufacturing sector, the economic contributions will be measured in sales or exports of produced manufactured goods. In the case of the service sectors the contributions will be the sales of services. In general, it is difficult to measure these flows, and to do so other techniques that are data intensive are needed and they will not be developed in this exercise.

The use of the location quotient in this diagnostic will be reduced only to depict the sector's levels of importance in the regional economy. Those indicators will serve to be compared with other economic indicators that, as a whole, will serve to better understand the reverted areas economic performance.

2.3.3 Analysis of the Reverted Areas Economy Including the Panama Canal Activities from the Regional Accounts

2.3.3.1 Identification of the Level of Importance of the Activity Sectors in the Reverted Areas Economy

Using the sectoral participation data of Table 1, the entire sector's CL of the reverted areas were calculated, according to the methodology presented in section 2.3.3.

The level of economic importance of the regions activity sectors, when including the Panama Canal activities in the regional accounts of the reverted areas can be observed in Tables 5. The sectors are organized from higher to lower degrees of importance. The degree of importance is given by the values of the location quotient. Greater values indicate higher degrees of importance.

Table 5
Reverted Area Economic Sector's Degree of Importance Including the Panama Canal Activities

Activity Sector	Location Quotients			
	1994	1995	1996	1997
Other Transportation and Canal Commission	7.28	6.55	6.56	6.57
Total Transportation Social Services 1	5.66	5.33	5.49	5.42
Transportation without the Panama Canal	1.69	2.01	2.42	2.27
Construction	1.15	1.03	0.71	1.45
Public Services and Government 3	0.51	0.46	0.47	0.47
Total Services 4	0.27	0.26	0.27	0.27
Manufacturing Industries	0.16	0.25	0.21	0.19
Personal Services 2	0.17	0.18	0.18	0.18
Primary Activities	0.13	0.08	0.08	0.08

1: Ground Transportation, Maritime and Coastal Transportation

2: Wholesale Commerce, Retail Commerce, Wholesale Commerce in Free Zones, Hotels and Restaurants, Financial Operations, Real Estate Activities, Private Households with Domestic Services

3. Electricity and Water Utilities, Public Administration and Defense, Education, Health.

4. Addition of 2 plus 3

Source: Diagnostic Calculations

(from the study: *Production, Investment and Employment in the reverted areas*, Years 1994/97, DPT, RA, October, 1998)

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As it can be observed in Table 5, the regions economy shows 2 sectors with $LC > 1$. Transportation has a LC of 5.66, 5.33, 5.49 and 5.42, for the 4 observed years and, Construction has a LC of 1.15, 1.03, 0.71 and, 1.45, for the same years.

This means that in the reverted area's economy there are only two sectors whose economic contribution in the region are bigger than the contribution they make to the national economy and that do not need the national economic support to operate.

It should be noticed that Other Transportation and Canal Commission, if taken as an individual sector, shows a LC of 7.28, 6.55, 6.56, and 6.57, the highest in the region. This confirms that this economic activity has the highest weight in the region, this is further corroborated observing the LC's of the rest of the Transportation Sector (Ground Transportation, Maritime and Coastal Transportation), with a LC of 1.69, 2.01, 2.42, and 2.27.

Public Services and Commerce, Total Services Sector, Manufacturing Industries, Personal Services and Primary Activities, are the activities that need most economic support from the country for their operation. With the exception of the year 1994 for Public Services and Government, these sectors had LC's bellow 0.5.

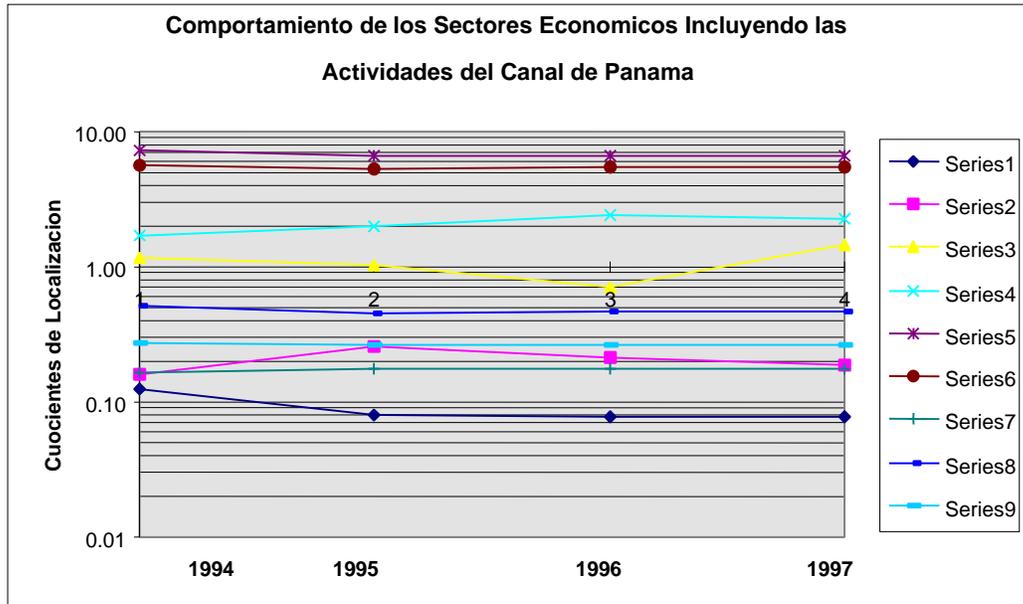
2.3.3.2 Sectoral Trends Concerning the Evolution of their Degree of Economic Importance in the Region, Including the Panama Canal Activities

Graphic 1 shows the degree of importance of the activity sectors during the 4 observed years and, allows the observation of trends in the evolution of the degree of economic importance of each activity sector in the regional economy.

The Ground Transportation, Maritime and Coastal Transportation activity shows an increasing degree of regional importance, beginning with a LC of 1.69 in 1994 and ending with a LC of 2.27 in 1997. This indicates that this activity, compared with the other sectors, has increased its level of economic importance in the reverted area during the reversion process. This behavior supports the soft gradual increase of the degree of importance of the general Transportation sector.

The Construction sector shows an increasing trend in its degree of regional economic importance. This can be explained by the construction demand, promoted by the projects under way, both buildings and infrastructure.

Graphic 1
Behavior of the Degree of Importance of the Reverted Areas Economic Sectors
Including Panama Canal Activities



Orden Jerárquico

Serie 1: Actividades Primarias

Serie 2: Industria Manufacturera

Serie 3: Construcción

Serie 4: Transporte Terrestre, Transporte Marítimo y de Cabotaje (Excluye al Canal)

Serie 5: Otros Transportes, Comisión del Canal

Serie 6: Total Sector Transporte, incluyendo el Canal de Panamá

Serie 7: Servicios Personales

Serie 8: Servicios Públicos y Gobierno

Serie 9: Total Sector Servicios

Fuente: Tabla 5

It can also be observed that the Manufacturing Industries and Primary sectors are decreasing their degree of economic importance in the regional economy. In the case of Primary Activities, the reason for the decrease could be the implementation of the General and Regional Plan's rules that explicitly privilege the conservation and management of natural resources, in opposition to farming that are contrary to this norm. But, on the other hand, it could also indicate lack of investments in reforestation projects.

In the case of Manufacturing Industries, its low degree of importance in the regional economy is more alarming, because this is one of the key sectors for the reverted areas development.

The Service sector's trend in regional importance is shown as stable. Due to the fact that this sector is composed of many activities, it will be necessary to observe the degree of relative importance of each of the activities involved, in order to find the explanation for this behavior.

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Organized in hierarchical order, the degree of relative importance of the activities involved in the Service sector can be observed in Table 6, while Graphic 2 shows us the behavior of evolution trends according to their degrees of importance.

Table 6
Hierarchy and Evolution Trends in the Degree of Economic Importance of Reverted Areas Service Sectors Including the Panama Canal

Activity by Hierarchical Order		Location Quotient				Degree of Importance Behavior
Hierarchical Order	Graphic Series/Activity Sector	1994	1995	1996	1997	
1	9/Administración Pública y Defensa,	0.793	0.705	0.730	0.730	Estable
2	4/Comercio al por mayor Zonas Francas	0.432	0.522	0.560	0.483	Estable
3	8/Actividades Empresariales	0.326	0.271	0.248	0.225	Cayendo en Forma Sostenida
4	10/Enseñanza, salud privada, serv. Sociales	0.103	0.115	0.134	0.133	Estable
5	11/Hogares privados c/ servicio doméstico	0.101	0.089	0.107	0.102	Estable
6	2/Comercio al por mayor	0.078	0.094	0.098	0.135	Creciendo en Forma Sostenida
7	7/Actividades Inmobiliarias	0.119	0.098	0.078	0.097	Estancado y Cayendo
8	5/Hoteles y Restaurantes	0.064	0.062	0.087	0.076	Estable/Creciendo
9	3/Comercio al por menor	0.041	0.034	0.054	0.056	Creciendo Levemente
10	6/Intermediación Financiera	0.003	0.005	0.004	0.008	Creciendo Escalonadamente
11	1/Suministro electricidad, gas y agua	0.004	0.004	0.006	0.006	Creciendo y Estabilizándose

Source: Diagnostic Calculations

As it can be observed in Table 6, taking each services activity in an individual way, Public Administration and Defence appear as the activity with the highest degree of importance in the Service Sector. This is an indication of comparatively considerable real estate allocations to governmental institutions, or said in other words, there has been a significant relocation of public Institutions to the reverted areas. Nonetheless, the indicator has remained stable, and this could be an indication of a freezing in the governmental allocations to this sector, or that it has reached a point of saturation. It should be recalled, that the assignments to governmental institutions are free of charge.

This sector is followed by Wholesale Commerce in Free Zones, that remains stable, which is indicative that this old activity, that has nevertheless grown during the reversion process, has reached a limit in its economic contribution to the region.

In decreasing order Business Activities follows, but with a considerably lower level of magnitude than the Governmental activities. This can be due to the fact that this type of activity is usually located in concentration economies, that is, in areas where there are already related and complementary activities. Clearly the reverted areas, a young economy

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in full development, still does not offer the economic concentration feature for this activity, which is, on the other hand, a new activity in the region.

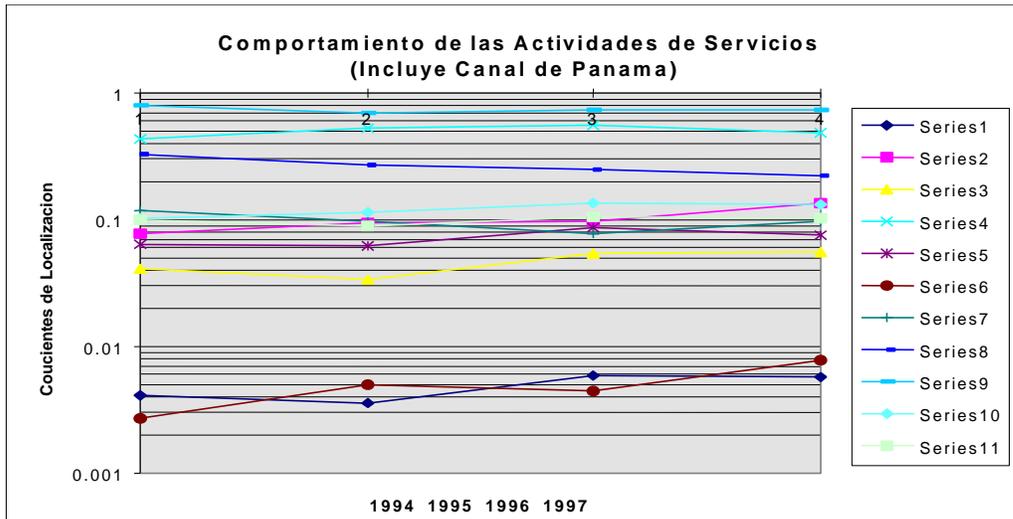
Education, Public Health and Social Services and, Private Households with Domestic Service, appear in the fourth and fifth place, with a very similar degree of importance and a stable behavior. Households with Domestic Service correspond to nearly three thousand housing units that have reverted and have been occupied by new owners and tenants. The similar order of importance in both activities is explained in great part because of their complementarity.

Wholesale Commerce, Real Estate Activities, Hotels and Restaurants, Retail Commerce and, Financial Operations, appear with the lowest degrees of importance for the regional economy. This is an indication of the enormous weight these service activities have in the rest of the country, specially their concentration in Panama City. The reverted areas, as a young regional economy, are not expected to be able to compete in these sectors with the rest of the country. Besides, these economies tend to be located in concentration economies, and Panama city offers the best possible option in the country. For these reasons, it is not expected that these activities will be transformed into sectors of regional importance in the near future.

Finally, Electricity, Gas and Water Utilities, are in the last place, which is understandable

Graphic 2 allows us to observe the evolution trends on the degree of importance of the service activities.

Graphic 2
Behavior of the Degree of Importance of the Reverted Areas Services Activities
Including the Panama Canal Activities



Explicación de Series 1 Suministro de electricidad, gas y agua 2 Comercio al por mayor 3 Comercio al por menor 4 Comercio al por mayor en Zonas Francas 5 Hoteles y Restaurantes 6 Intermediación Financiera 7 Actividades Inmobiliarias 8 Actividades Empresariales 9 Administración Pública y Defensa 10 Enseñanza, salud privada, serv. Sociales 11 Hogares privados con servicio doméstico Fuente: Tabla 6

2.3.3.3 Analyses of Regional Employment Including the Canal Activities

Using the information on employment from Table 2, the reverted areas employment LC's were calculated. The results appear in Table 7

Table 7
Degree of Importance and Trends in Employment Evolution by Activity Sector in the Reverted Areas Including Panama Canal Employment

Activity Sectors	Location Quotient				Degree of Importance Behavior
	1994	1995	1996	1997	
Transporte, Almacenaje y comunicaciones	6.14	6.32	6.53	5.93	Básico-Estable
Administración Pública y Defensa	5.48	5.48	5.18	4.82	Básico-Estable/Cayendo
Actividades Inmobiliarias y Empresariales	0.49	0.61	0.57	0.75	Creciendo en Forma Rápida
Construcción	0.15	0.18	0.27	0.51	Creciendo en Forma Rápida
Comercio	0.34	0.37	0.42	0.48	Creciendo Lentamente
Industrias Manufactureras	0.18	0.25	0.23	0.24	Estable
Hogares privados con servicio doméstico	0.21	0.21	0.24	0.22	Estable
Hoteles y Restaurantes	0.09	0.15	0.17	0.20	Creciendo Lentamente
Intermediación Financiera	0.06	0.05	0.04	0.04	Cayendo
Enseñanza, salud privada, serv. sociales	0.18	0.20	0.21	0.21	Creciendo Lentamente
Suministro de electricidad, gas y agua	0.02	0.02	0.03	0.03	Creciendo Lentamente
Actividades primarias	0.03	0.02	0.03	0.03	Estable

Source: Diagnostic Calculations, Table 2

As it can be observed in Table 7, in the reverted areas, Public Administration, Defense and Transportation, Storage and Communications appear with a LC higher than one.

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In the case of Construction, the results are an indication that the regional participation of construction employment, can not be higher than its participation at a national scale.

In relation to Public Administration and Defence, the participation of this type of employment in the reverted areas is of greater importance than its participation in the total economy and the high LC demonstrates that there has been an exodus of public employment to the reverted areas. This means that it is the most important type of employment in the region. In other words, the government is the biggest employer in the region, which is not surprising when we observe the lesser degrees of importance of private sectors employment in Table 7.

As it can be observed in Table 7, the sectors that show significant growth trends in their degree of regional employment importance are Business and Real Estate Activities and they are reaching their levels of national participation, Construction also shows a fast growth rate in its degree of importance.

The other sectors, Electricity, Water and Gas Utilities, Commerce; Hotels and Restaurants, Education, Private Health and, Social Services, show a slow degree of importance trend. Table 8 shows a comparison between the change of degree of importance trends

As it can be observed, with the exception of the Manufacturing Industries, Financial Operations and, Real Estate and Business Activities, the other sectors show consistency in their trends.

Table 8
Level of Importance and Evolutionary Trends of Employment by Activity Sector in the Reverted Areas, including Panama Canal Employment
(higher levels of regional importance correspond to higher location quotient)

Economic Activity	Production	Employment
A. Primary Activities	Stable	Stable
B. Manufacturing Industries	Declining	Stable
C. Electricity, Gas and Water Utilities	Slow Growth	Slow Growth
D. Construction	Basic-Growing	Fast Growth
E. Commerce	Slow Growth	Slow Growth
F. Hotels and Restaurants	Stable/Growing	Slow Growth
G. Transportation, Storage and Communication	Basic/Stable	Basic-Stable
H. Financial Operations	Slow Growth	Dropping
I. Real Estate and Business Activities	Stable/Declining	Fast Growth
J. Public Administration and Defense	Stable	Basic-Stable
K. Education, Private Health, Social Services	Stable	Slow Growth
L. Private Households and Domestic Service.	Stable	Stable

Source: Table 4, 6

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2.3.4 Analysis of the Reverted Areas Economy Excluding the Panama Canal Activities from the Regional Accounts

2.3.4.1 Identification of the Level of Importance of Activity Sectors in the Reverted Areas Economy

In this section, the economic performance of the reverted areas will be analyzed excluding the Panama Canal activities from the regional accounts and we will compare this economic regional behavior with the analysis, from the previous section, where the Panama Canal activities were included.

As it can be observed in Table 9, the regional sectoral structure changes notoriously when the Panama Canal activities are excluded. The table shows the sectors ordered from higher to lower levels of importance.

Table 9
Reverted Areas Economic Sectors Level of Importance Excluding the Panama Canal Activities

Activity Sectors	Location Quotient			
	1994	1995	1996	1997
Primary Activities	0.35	0.22	0.22	0.20
Manufacturing Industries	0.45	0.71	0.61	0.49
Construction	3.22	2.86	2.00	3.76
Transportation without the Panama Canal 1	4.70	5.58	6.82	5.91
Personal Services 2	0.46	0.49	0.50	0.46
Public and Governmental Services 3	1.43	1.27	1.33	1.22
Total Services 4	0.76	0.73	0.76	0.70

1: Ground Transportation, Maritime and, Coastal Transportation

2: Wholesale Commerce, Retail Commerce, Whole sale Commerce in Free Zones, Hotels and Restaurants, Financial Operations, Real Estate Activities, Business Activities, Private Households and Domestic Services

3: Electrical and Water Utilities, Public Administration and Defense, Education, Health, Social Services

4: 2 Plus 3

Source: Diagnostic Calculations (from the study *Production, Investment and Employment in the reverted areas, Years 1994-1997, DPT, RA, October, 1998*)

The regional economy now shows three sectors whose regional participation is bigger than their participation at a national level, or having a $LC > 1$: Transportation, Construction and Public and Governmental Services. When the analysis included the Panama Canal activities, there were only two sectors with this characteristic: Transportation and Construction.

Transportation without the Canal, appears first in the regional economy's ranking of degrees of importance, followed by construction. A new sector appears with a higher regional participation than the national participation: Public Services and Government. In the case of Transportation and Construction the result is similar to the case that includes the Panama Canal.

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Nevertheless, it is interesting to observe that the Transportation sector continues to have a very important weight in the region, even when the Panama Canal activities are excluded. This confirms the significant regional importance of this sector, because it shows a high degree of importance both with and without the Canal activities. In the previous analysis (with the Canal), it could be inferred that its relative importance in the regional economy was explained by the Canal. Nonetheless, Table 9, shows that this sector has a weight in the regional economy that is independent from the Panama Canal. A great part of the Transportation Sector's degree of importance is influenced by the maritime and storage activities that are consistent with the development strategy that qualifies this sector as a key sector.

Without the Canal accounts, the region shows a higher degree of importance for the construction sector in the regional economy than was the case when the Canal accounts were included. In fact, in Table 9 it can be observed that its LC is more than twice without the canal. This characterizes the reverted areas as a region in full physical construction process.

When excluding the Panama Canal activities, the biggest change in the regional accounts can be observed in the Public Services and Government sector that in this context becomes a sector with a higher regional participation than the national participation. Table 6 showed this sector as the first sector in importance among all the service sectors, with a LC near the unit. What Table 9 shows, confirms that there has been a considerable transfer of public management to the reverted areas, that is an indication of important building assignments to this sector.

In the present context, a higher degree of importance can be observed by comparing the Primary Activities and Manufacturing Industry's sectors behavior, but these continue to be activities of lower degrees of importance. However, as can be observed in the following analysis, it is important to observe that in the present context, the Manufacturing Industries sectoral trends are more promising. In the present context the sector has a higher relative degree of importance than Personal Services.

As we compare the personal services sector, it can be observed that without the Canal, this sector shows a degree of importance that represents more than twice the case of the analysis with the Canal. However, its degree of relative importance is still modest in comparison with the sectors of greater importance. Again, it will be necessary to desegregate this sector in its component activities to better understand its logistics. This will be done below.

2.3.4.2 Sectors Trends Concerning the Evolution of their Degree of Economic Importance in the Region, Excluding the Panama Canal Activities

Graphic 3 shows sector trends concerning the evolution of their edge of economic importance in the region, without considering the Canal.

It can be observed that the Transportation sector experienced its greatest importance in 1996 and in 1997 it shows a declining trend, but still maintaining a greater degree of importance than in 1994, our initial observation point. This finding is alarming due to the fact that this is a key sector for the development of the reverted areas and it could be an

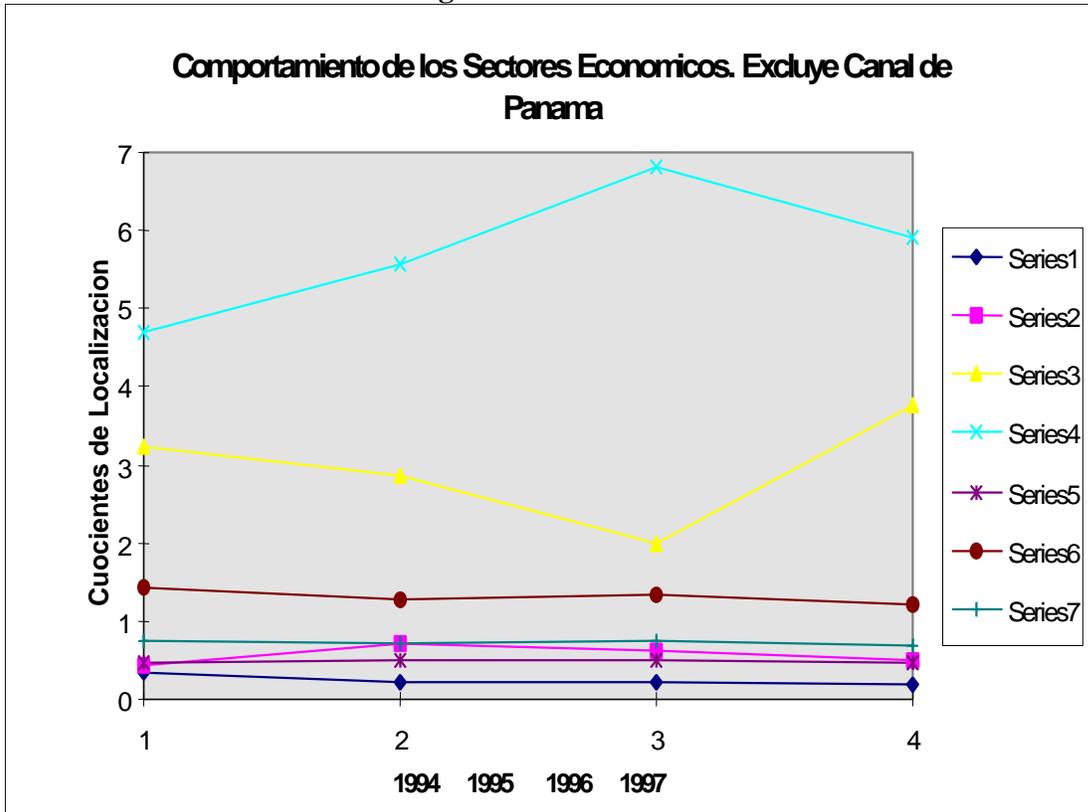
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indication of successful competition from other regions, or sectoral saturation, or of mistakes in the international promotion of this activity.

An increasing degree of importance in the regional economy is observed in the Construction sector's behavioral trend. With the exception of the level of its LC values, this trend is similar to that observed in the case of the analysis that includes the Panama Canal.

Even though in the present context Public Services and Government appear as the activity with the highest participation in the region than in the country ($LC > 1$), the sector's behavior shows a declining trend in its degree of sectoral importance in the region, which is similar to the results of the analysis that included the Canal.

Graphic 3
Behavior of the Degree of Importance of the Reverted Areas Services Activities
Excluding the Panama Canal Activities



Explicación de Series

- 1: Actividades Primarias
- 2: Industria Manufacturera
- 3: Construcción
- 4: Transporte sin el Canal (Transporte Terrestre, Transporte Marítimo y de Cabotaje)
- 5: Servicios Personales
- 6: Servicios Públicos y Gobierno
- 7: Total Servicios

Fuente: Tabla 9

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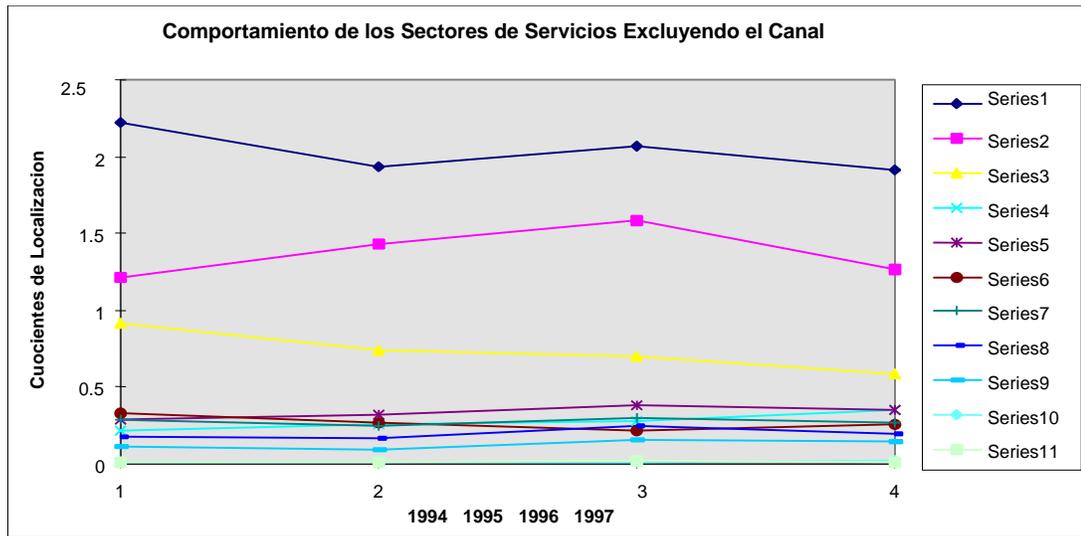
In the present context, the Primary Activities and the Manufacturing Industry's trends show an evolutionary declining degree of sectoral importance in the regional economy, which are the same trends shown in the analysis that included the Canal. In the case of the Manufacturing Industries, the result confirms the concern from the Canal analysis findings, because this is a reverted areas' key sector and it should be showing a more significant importance in the region's economy.

Even though the LC values for the two sectors are higher in the case that excludes the Canal, one can make the same inference that was made for the analysis that included the Canal: the decline in the degree of importance of the Primary Activities is an indication of successful policies that limit the development of agricultural activities in the region; the declining trend of the Manufacturing Industries is an indication that one cannot anticipate success in promoting this sector, and therefore one should revise what has been done, in order to stimulate the development of this sector in the region. Due to the fact that this is one of RA's strategic key sectors, this sectoral examination is important.

The Personal Services Sector continues to be a sector with a modest degree of regional economic importance. The comparison of the behavior shown by this sector will be done desegregating the sectors activity components.

Graphic 4 shows the evolutionary trends of service activities according to their degree of importance in the regional economy. Table 10 ranks the different personal service activities in hierarchical order according to regional importance, and at the same time shows the trend observed in this activity.

Graphic 4
Behavior of the Degree of Importance of the Reverted Areas Service Activities
Excluding Panama Canal Activities



Series

- 1 Administración Pública y Defensa
- 2 Comercio al por mayor en Zonas Francas
- 3 Actividades Empresariales
- 4 Comercio al por mayor
- 5 Enseñanza, salud privada, serv. sociales
- 6 Actividades Inmobiliarias
- 7 Hogares privados con servicio domestico
- 8 Hoteles y Restaurantes
- 9 Comercio al por menor
- 10 Intermediación Financiera
- 11 Suministro electricidad, gas y agua

Source: Table 10

As it can be observed in Graphic 4 and in Table 10, within the Personal Services sector, Pubic Administration and Defense, and Wholesale in Free Zones and, Business Activities have the sector's greatest degree of importance, this is also true in the case of the analysis with the Canal. This is an important finding because it confirms the trends of both analysis, with and without the Canal.

Table 10
Hierarchy and Evolutionary Trends of Service Sector’s Activities Economic
Importance in the Reverted Areas Excluding Panama Canal Activities

Activity By Hierarchy Order			Locational Quotients			
Hierarchy Order	Graphical Series/Services Activity	1994	1995	1996	1997	Behavior of the Degree of Importance
1	1/ Public Administration and Defense				1.910	Basic - Stable
2	2/Free Zone Wholesale Commerce				1.262	Basic - Stable
3	3/Management Activities	0.914	0.742	0.700	0.589	Falling
4	4/Wholesale Commerce	0.212	0.259	0.278	0.353	Growing
4	5/Teaching, Private Health and Social Services	0.290	0.314	0.380	0.348	Stable
4	6/Real State Activities	0.333	0.268	0.219	0.254	Stable
4	7/Private Homes with Domestic Service	0.283	0.243	0.302	0.268	Stable
5	8/Hotels and Restaurants	0.180	0.169	0.245	0.198	Stagment and Falling
6	9/ Retail Commerce	0.116	0.093	0.152	0.146	Stable
7	10/Financial Intermediary	0.008	0.014	0.012	0.020	Growing Lightly
7	11/Supply of Electricity, Gas and Water	0.012	0.010	0.017	0.015	Stable

Source: Diagnostic Calculations

The same trends, in the same hierarchical order, appear in the last four activities: Hotels and Restaurants (Tourism), Retail Commerce, Financial Operations and, Electrical, Gas and Water Utilities. In this case we can infer that while these sectors look for economies of scale to locate themselves, this is something that the reverted areas cannot yet offer, especially because of the enormous weight that Panama City’s consolidated areas has for these sectors.

The results are different for the other four activities:

Wholesale Commerce climbs from hierarchical position 6 in the analysis with the Canal, to hierarchical position 4 in the present context. This means that this activity, part of the reverted area’s priority development sectors, has a relative importance that tends to improve in the present context as compared to the analysis with the Canal.

The rest of the activities: Real Estate Activities, Private Households with Domestic Services and, Education, Private Health, Social Services, keep small variations, in the intermediate degree of importance, without any significant changes between both analysis.

In Graphic 4 we can observe, trends in the evolution of the degrees of importance – or behavior- of the service activities.

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2.3.5.3 Regional Employment Analysis Excluding the Canal Activities

The reverted areas' employment LC, excluding the Panama Canal activities, were calculated using the Employment information in Table 2. The results appear in Table 11.

Table 11
Degree of Economic Importance of Employment per Activity Sector in the Reverted Areas Excluding Employment in the Panama Canal

Sector de Actividad	Cuocientes de Localización				Comportamiento
	1994	1995	1996	1997	
A. Actividades primarias	0.05	0.03	0.04	0.04	Estable
B. Industrias Manufactureras	0.27	0.36	0.32	0.35	Estable
C. Suministro de electricidad, gas y agua	0.03	0.04	0.04	0.04	Estable
D. Construcción	0.22	0.26	0.38	0.73	Creciendo en Forma Rápida
E. Comercio	0.51	0.54	0.59	0.68	Creciendo Lentamente
F. Hoteles y Restaurantes	0.14	0.22	0.24	0.28	Estable
G. Transporte, Almacenaje y Comunicaciones	2.71	3.25	3.19	2.14	Básico-Estable
H. Intermediación Financiera	0.08	0.08	0.06	0.05	Cayendo
I. Actividades Inmobiliarias y Empresariales	0.72	0.90	0.81	1.07	Básico-Creciendo
J. Administración Pública y Defensa	8.12	8.04	7.35	6.88	Básico-Cayendo
K. Enseñanza, salud privada, serv. Sociales	0.27	0.29	0.29	0.30	Estable
L. Hogares privados con servicio doméstico	0.31	0.32	0.34	0.32	Estable

Source: Table 2

As it can be observed, Public Administration and Defense, appear as the most important employment activity, followed by Transportation, Storage and Communication. Real Estate and Business activities show third in degree of importance in the regional employment, reaching a LC higher than one (1) in 1997. With the exception of the relative values of the LC, this hierarchical order is the same as the case with the Canal.

From the point of view of the relative importance of the sectoral employment in the regional economy, the present context confirms that the public sector has transferred an important part of its activities to the reverted areas. This inference is true, both considering the regional accounts with and without the Canal.

It is interesting to observe that employment in the Commerce sector shows a higher regional importance without the Canal. This offers additional signals on the importance of studying this activity with greater depth, because there are contradictory findings in its behavior when it is analyzed with and without the Canal, and from the point of view of production and employment. It is even more important because this is a key sector in the reverted areas.

The other employment sectors show similar degrees of importance in both analysis and do not give any significantly different information than in the analysis with the Canal.

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Although employment sectors are aggregated in a somewhat different way than how they are aggregated in the regional product, Table 2 shows a sectoral comparison of behaviors and change trends as related to their degree of regional economic importance.

Table 12
Comparison of Evolutionary Trends of Economic Sectors Degree of Economic Importance in the Reverted Areas, by Production and Employment
Panama Canal Activities are Excluded
(based upon the location cuotients)
(Observations for the years 1994 to 1997)

Actividad Económica	Producción	Empleo
A. Actividades primarias	Estable	Estable
B. Industrias Manufactureras	Estable	Estable
C. Suministro de electricidad, gas y agua	Estable	Estable
D. Construcción	Básico-Creciendo	Creciendo en Forma Rápida
E. Comercio	Básico-Estable	Creciendo Lentamente
F. Hoteles y Restaurantes	Estancado y Cayendo	Estable
G. Transporte, Almacenaje y comunicaciones	Básico-Estable	Básico-Estable
H. Intermediación Financiera	Creciendo Lentamente	Cayendo
I. Actividades Inmobiliarias y Empresariales	Cayendo	Básico-Creciendo
J. Administración Pública y Defensa	Básico-Estable	Básico-Cayendo
K. Enseñanza, salud privada, serv. sociales	Estable	Estable
L. Hogares privados con servicio doméstico	Estable	Estable

Source: Tables 9, 10, 11

As it can be observed in Table 12, from the point of view of product and employment, the results show a similar behavior and trends in the majority of the sectors. The most notorious discrepancies can be observed in the cases of Hotels and Restaurants (Tourism), Financial Operations and, Real Estate and Business Activities.

In any case, these activities, as mentioned before, need location economies to install themselves, something the region cannot yet offer. The behavior variations that can be observed in these activities could be indicating that the establishment of a foundation for the location of personal services is slowly being created in the reverted areas, which seems to be plausible. At least in the case of Hotels and Restaurants (Tourism), it is well known that there are pending projects that once completed, will contribute to stimulate other service activities. In the future, all these, together, will push to strengthen a location economy in the reverted areas.

2.3.5 Analysis of Reverted Areas Key Sectors Economic Performance

In the preceding sections, we found that, out of the four reverted area key sectors, only Maritime Transportation appears to have a significant degree of importance in the reverted areas economy. This finding creates doubts on the performance of the other key sectors that integrate the region's economic development strategy.

In this part of the analysis, we will concentrate on the analysis of the economic performance of the Maritime, Industrial, and Commercial and, Tourism key sectors. In

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order to do this, we will introduce other economic indicators that will contribute to the understanding of these sectors behavior.

The level of importance of the four key sectors is shown in Tables 13 and 14 and, in the Graphics 5 and 6, including and excluding the Panama Canal activities. As it can be observed, the relative order of importance of all four sectors coincides in both cases. It can be observed that the Maritime sector continues to be the sector of greatest importance, followed by Industry, Commerce and, Tourism in declining order.

Table 13
Degree of Comparative Importance of the Key Sectors in the Regional Economy of Reverted Areas Excludes the Panama Canal (hierarchy by location quotient)

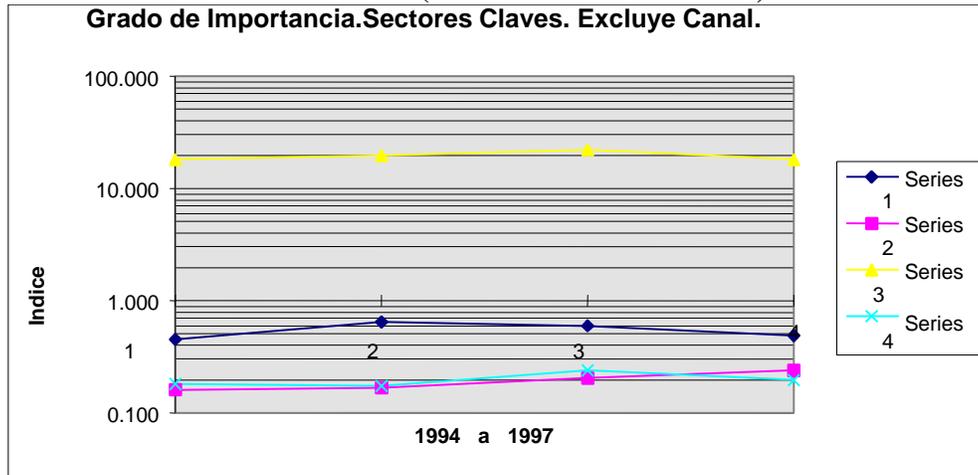
Key Sector	Hierarchy				
	1997	1994	1995	1996	1997
Maritime	1				
Industry	2				
Commerce	3				
Tourism	4				

Source: Calculations from Economic Diagnostic

Table 14
Degree of Comparative Importance of the Key Sectors in the Regional Economy of Reverted Areas Includes the Panama Canal (hierarchy by location quotient)

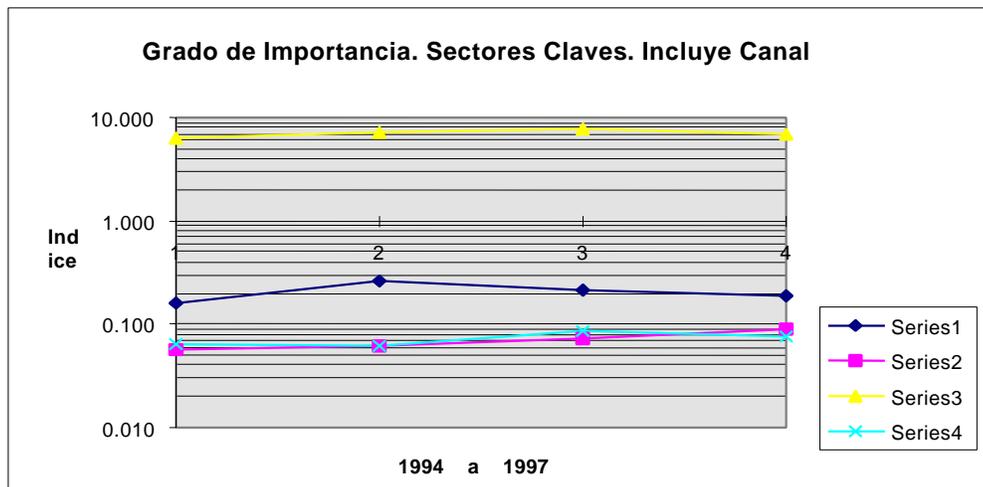
Key Sector	Hierarchy 1997	1994	1995	1996	1997
Maritime	1	17.94	20.00	22.24	
Industry	2	0.45	0.65	0.60	
Commerce	3	0.16	0.17	0.21	
Tourism	4	0.18	0.17	0.24	

Graphic 5
Degree of Comparative Importance of the Key Sectors of Reverted Areas Excludes the Panama Canal (index = location quotient)



Series 1: Maritime Sector
 Series 2: Industrial Sector
 Series 3: Commerce Sector
 Series 4: Tourism Sector
 Fuente: Tabla anterior

Graphic 6
Degree of Comparative Importance of the Key Sectors in the Regional Economy of Reverted Areas. Includes the Panama Canal (index = location quotient)



Series 1: Maritime Sector
 Series 2: Industrial Sector
 Series 3: Commerce Sector
 Series 4: Tourism Sector Fuente: Tabla anterior

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However, the degree of importance is not the only factor that allows to analyze the economic performance of a region. It is necessary now to analyze other indicators that, together with the degrees of importance, allow to infer the appropriate conclusions on the behavior of the key sectors and their meaning for the regional economy.

2.3.5.1 Industrial Sector

Observed Behavior

The Industry sector is the second sector in degree of importance among the four key sectors. However, it is of modest importance in the regional economy, as it was demonstrated previously.

The sector shows a tendency of diminishing its degree of importance among the four key sectors, as one can observe in the Charts 13, and 14, and in the Graphics 5 and 6.

Among the key sectors, this sector has the second highest participation in the GDP of the reverted areas and has a third place in employment volume, as one can observe in the Chart 22. Indeed; the sector contributes 7.72% to the GDP and 3.7% to the employment to the economy of the reverted areas.

The Table 15 shows negative rates of growth for the sector during the last two observed periods, 1995-1996, and 1996-1997, which is alarming, especially being a key sector.

Table 15
Rates of Growth of the Gross Internal Product of the Key Sectors of the Reverted Areas. At Prices of 1996.

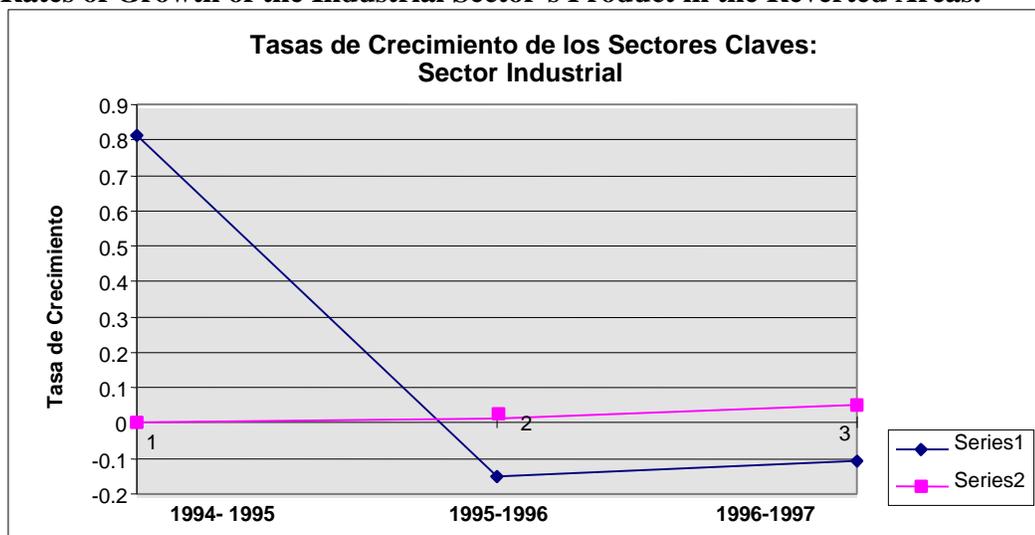
Key Sector	Hierarchy 1997	1994	1995	1996	1997
Maritime	1	6.44	7.20	7.89	6.99
Industry	2	0.16	0.26	0.21	0.19
Commerce	3	0.06	0.06	0.07	0.09
Tourism	4	0.06	0.06	0.09	0.08

Source: Table 16

However, although it is negative, the rate of growth of the sector improves in the last period, passing from -0.15104 to -0.10429, as one can also observe in Graphic 9.

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Graphic 9
Rates of Growth of the Industrial Sector's Product in the Reverted Areas.



Series 1: Reverted Areas

Series 2: Total Economy

The index of the product of this sector shows a sustained fall starting in 1995, as one can observe in the Chart of - 16 and in the Graph 10, which could be reverted if the product of the sector grows, like it seems to indicate in the trends of its growth rate in the observed period.

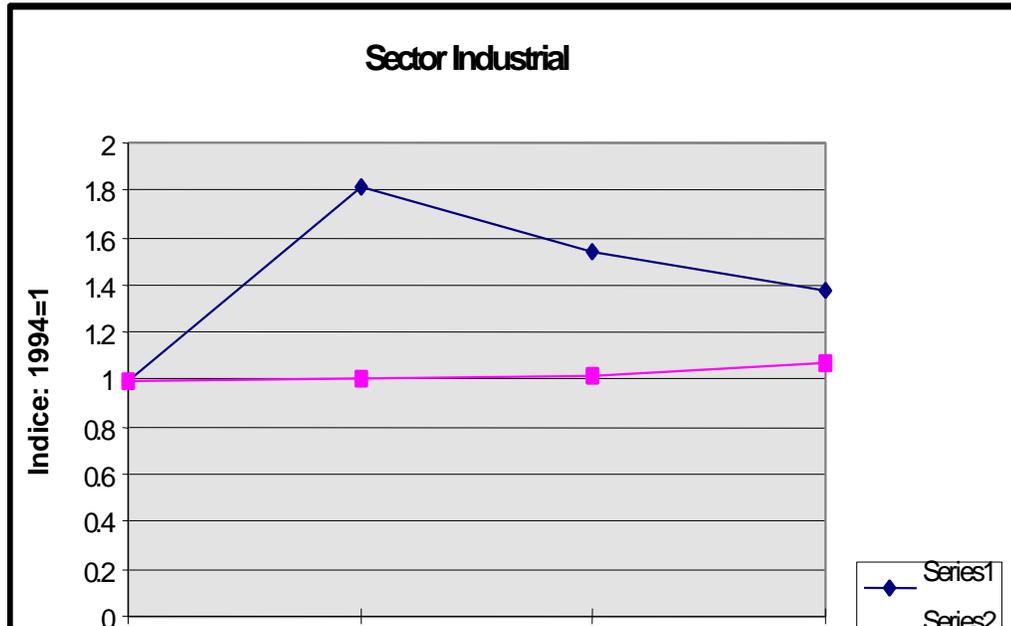
Table 16
Internal Gross Product Index of the Key Sectors in the Reverted Areas.
Index: 1994 = 1

Sectores Económicos	Economía Total			Áreas Revertidas		
	1994-1995	1995-1996	1996-1997	1994-1995	1995-1996	1996-1997
Actividades Primarias	0.030	0.007	-0.005	-0.250	-0.019	-0.038
Industria Manufacturera	0.002	0.016	0.050	0.811	-0.151	-0.104
Construcción	-0.091	-0.076	0.103	-0.065	-0.370	1.182
Transporte sin el Canal de Panamá	0.011	-0.018	0.065	0.389	0.170	-0.030
Otros Transportes Comisión del Canal	0.126	0.032	0.011	0.167	0.024	-0.017
Total Transporte ¹	0.093	0.019	0.025	0.187	0.039	-0.018
Servicios Personales ²	-0.008	0.032	0.067	0.212	0.019	0.033
Servicios Públicos y Gobierno ³	0.027	0.050	0.066	0.050	0.072	0.032
Total Servicios ⁴	0.012	0.025	0.056	0.164	0.016	0.025
Total Producto	0.003	0.038	0.067	0.119	0.047	0.033

Graphic 10

Internal Gross Product of the Industrial Sector of the Reverted Areas

Indice del Producto de los Sectores Claves:



Series 1: Reverted Areas

Series 2: Total Economy

Among the key sectors, at present, the Industrial sector has a relatively modest impact in the economy of the reverted areas, both in the product and in employment. Its participation in the GDP of the reverted areas was the second highest of the key sectors, with a modest 7.72 % participation, and generated 3.7% of the total employment, a modest order of magnitude that occupies the third place among the key sectors, as one can observe in the Chart of - 22.

Therefore, the sector’s expected recovery, even when it will be beneficial for the sector itself, won’t have enough significant favorable impacts on the region’s economy, to counteract the negative impacts of the recession of the Maritime sector.

Foreseen investments

When observing the investment under contract for the Industrial sector in the Tables de - 20 and de - 21, one can verify that, according to the figures as of August of 1999, this sector obtained 4% of the total investment contracted up to the year 2005 in the reverted areas. The Table 17 shows the projects that are under contract for the sector and the investment amounts. It is surprising that the sector has very few projects, only three.

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The same Table 17 shows the change that the investments under contract versus the investments under execution, represented for the sector. This change represented 36% growth rate in relation to the investments presently under execution.

When observing the behavior of the investments anticipated for the sector, it is reasonable to infer that there is a probability that the sector is beginning to recover due to the growth of the investments, and to the trend of recovery of the output observed during the period 1996-1997. With the existing information, we cannot forecast the order of magnitude of the growth level that could be reached by the sector, but it can be inferred that the predicted investments will strengthen its recovery.

The modest recovery that seems to be outlined for the sector will benefit the sector itself. Nevertheless, as it will be observed in the following paragraphs, due to the low impact that this sector shows both in the output and the regional employment, it seems it will not be able to counteract the negative impacts of the Maritime sector.

Issues in Sectoral Performance

In the Industrial sector, of three existing projects, a single one represents the 70.5% of the total investment of the sector. Clearly, this sector shows signs of serious difficulties that deserve a profound critical analysis of the sector's present development and promotion strategies.

Among the identified causes that could explain this performance, we could advance the following. This sector's strategy transfers the burdens of industrial facility's infrastructure construction costs to the private sector. Therefore, in order to promote an industrial project, the RA must first find a developer that is willing to invest in infrastructure ("that 'buries his money in the land"). But this developer must invest without knowing for sure or when an industrialist will appear and be willing to invest in a project in these facilities. With this uncertainty, it is difficult to find developers.

On the other hand, this policy faces international competition from neighboring countries like Nicaragua, Honduras and, the Dominican Republic, where the public sector invests in industrial infrastructure. Naturally, the industrial investors will prefer to settle in those countries. Panama also competes with the lower costs of manual labor in those countries. It could be for these two reasons, that the "assembles" industry or others, whose factor of wage production has a great weight, have not prospered in the reverted areas. Among reasons of local scope, there are restrictions in the labor legislation that could be inhibiting this sector.

Besides, the costs of electricity have also affected the installation of industrial activities.

The Regional Plan imposes a strict scrutiny to the industrial sector with respect to environmental impacts. Nevertheless, "clean processes" exist and they could be approved without significant problems. According to information from the Direction of Marketing, there is willingness to explore these types of projects.

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Table 17
Investments by Project under Contract in the Reverted Areas 1999-2005
Millions of B/. August 1999

Projects with Contract	Land Hectares	Total Investment
MARITIME SECTOR		19.6
Marina and Maintenance Center and Repair of Boats in Coco Solo	4.0	5.8
Storage Center and Repair of Containers in Coco Solo	5.1	1.0
Intertinal Sea Land Terminal Enterprises	3.4	1.0
Assignment of Lands in Coco Solo (MOINSA)	7.7	6.0
Diablo Spinning Club		4.1
Trainmar - Caribe Regional Center	0.1	0.2
Storage Center and Repair of Containers in Coco Solo	5.0	1.5
COMMERCIAL SECTOR		60.8
Sale of Building 880 in Albrook	0.3	1.0
Localization of Antenna Band B (C&W)	0.0	1.0
Commercial Lots in Bella Vista 1		2.0
Commercial Lots in Bella Vista 2 (Industrial Super Galleries)	1.8	1.0
Commercial Lots in Bella Vista 4	1.9	1.8
Commercial Lots in Bella Vista 5 (EuroAmerican)	2.1	1.0
Land Sale 2,941 and Building 843, 843A, and 843X in Balboa (C&W)	0.0	1.0
Rent or Individual Sale or Both in Building 300 - 307 Espinar		7.0
Localization of Antenna Band (C&W)	0.0	1.0
Lots 820 m (Espinar) (C&W)	0.1	1.0
Sale of Building 75 in Davis (C&W)	0.0	1.0
CDI - Commercial		42.0
TOURISM SECTOR		382.8
Hotel and Golf Club in Brazos Brooks (150)	93.2	12.0
Agroganadera Santa Fe -A2 (48)	0.7	1.5
Horoko Golf Club	32.0	7.0
Paradise Restaurant	0.1	0.2
Davis Hotel and Resort (100)	25.0	3.0
Fantasy Island Resorts:	9.6	275.0
Hotel in Naos (500)		188.0
Hotel in Perico (250)		70.0
Cabins (50 Cabins in Flamenco)		17.0
Anchorage Hotel	2.8	25.1
CDI - Golf Club - Amador Hotel (300)	28.1	54.0
UNESA (Amador Hotel)	1.7	5.0
INDUSTRIAL SECTOR		61.8
Processor Zone in East Albrook	4.9	4.8
Strategic Food Export Center	12.5	43.0
Processor Zone in Cardenas	25.0	14.0
AGRICULTURAL SECTOR		11.6
Reforestation Project		11.6
REAL ESTATE SECTOR		4.0
San Francisco Valley Project	13.1	4.0
TOTAL		540.6

Table 18
Employment and Gross Internal Product for Key Sectors of the Reverted Areas
Figures for 1997 in millions of B/. at 1996 prices. Excludes Panama Canal Output and
Employment

Sector	Economía Total				Areas Revertidas			
	1994	1995	1996	1997	1994	1995	1996	1997
Industrial	1.00	1.00	1.02	1.07	1.00	1.81	1.54	1.38
Commercial	1.00	1.00	1.02	1.04	1.00	1.20	1.48	1.83
Tourism	1.00	1.05	1.12	1.21	1.00	1.14	1.71	1.57
Maritime	1.00	1.11	1.12	1.33	1.00	1.40	1.65	1.60

Source:

To these economic reasons, other externalities are added, such as local non-fair local competition that results from the so-called “restrictions” of the Panamanian economy and, a lack of a tradition and even an industrial culture in the nation.

2.3.5.2 Maritime Sector

Observed Performance

The Maritime sector is a sector that exhibits a high degree of importance in the reverted areas, as the previous analysis demonstrated, and as it is possible to observe in the Tables 13 and de -14. It is also the key sector of greater importance, as it can be observed in the Table of-14. For these reasons, it can be considered the leading sector of the regional economy.

Nevertheless, the sector shows a tendency to diminish its degree of importance among the four key sectors, as it can be observed in Tables 13 and 14 and in the Graphics 5 and 6.

Among the key sectors, the Maritime sector has the highest participation in the GDP of the reverted areas and generates the greatest volume of employment, as it can be observed in the Table 22. In fact; the sector almost contributes 22.34% of regional output - a quarter of the total, and 14.17% of the employment to the economy of the reverted areas.

Table 19 shows the rates of growth of regional GDP of the Maritime sector and other sectors of the reverted area’ s economy, while the Table 17 summarizes the rates of growth for the four key sectors only.

The figures of Table 19, indicate that between 1994 and 1997, the growth rates of the sector are falling, having reached a negative rate of -0,03492 for the period 1996-1997.

This finding is alarming, since that sector, as the sector of greater degree of importance for the region, has an important role in the growth and development of the reverted areas.

The tendency shown by its rates of growth, which can also be observed in the Graphic 7 is alarming, since they are falling at a steady pace.

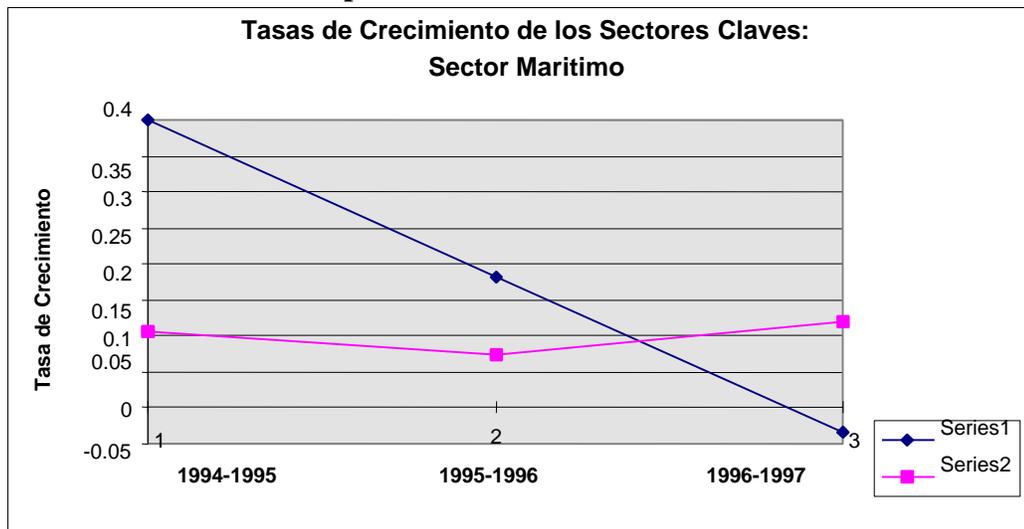
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Recession in this sector, as the one presently outlined, will have serious consequences for the region's economy, since the sector has a significant impact in the economy of the reverted areas, both in output and employment.

Table 19
Rates of Growth of the Gross Domestic Product by Added Sectors of the Total Economy and the Reverted Areas At 1996 Prices

Economic Sectors	Total Economy			Reverted Areas		
	1994-1995	1995-1996	1996-1997	1994-1995	1995-1996	1996-1997
Primary Activities	0.030	0.007	0.005	0.250	0.019	0.038
Manufacturing Industry	0.002	0.016	0.050	0.811	0.151	0.104
Construction	0.091	0.076	0.103	0.065	0.370	1.182
Transport without the Panama Canal	0.011	0.018	0.065	0.389	0.170	0.030
Other Transport in the Panama Canal	0.126	0.032	0.011	0.167	0.024	0.017
Total Transport ¹	0.093	0.019	0.025	0.187	0.039	0.018
Personal Services ²	0.008	0.032	0.067	0.212	0.019	0.033
Public and Government Services ³	0.027	0.050	0.066	0.050	0.072	0.032
Total Services ⁴	0.012	0.025	0.056	0.164	0.016	0.025
Total Product	0.003	0.038	0.067	0.119	0.047	0.033

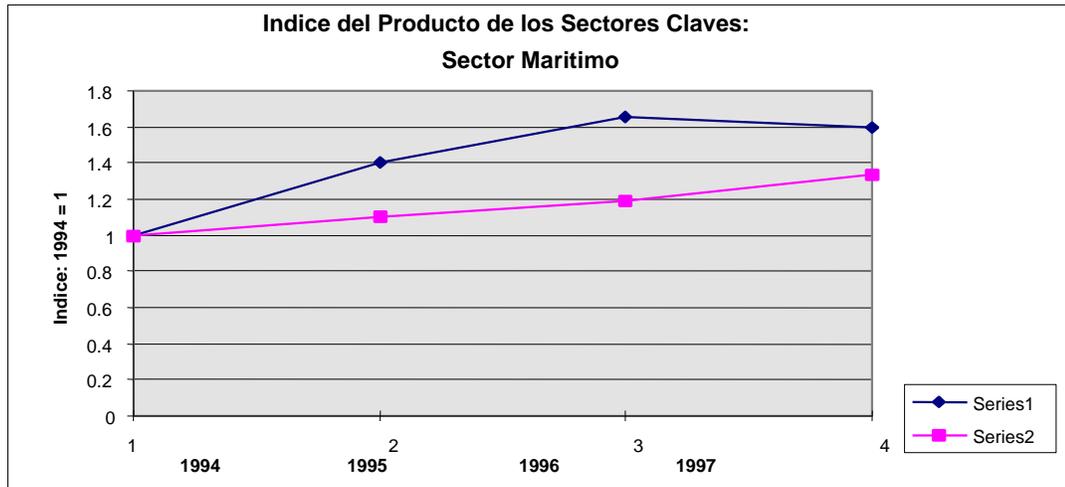
Graphic 7
Rates of Growth of the Output of the Maritime Sector of the Reverted Areas



Series 1: Reverted Areas
 Series 2: Total Economy

Although the product index has behaved well for this sector until 1997, its trend is also to fall during 1997 the last observed year, as it can be observed in the Table 16 and in Graphic 8.

Graphic 8
Product Index of the Maritime Sector of the Reverted Areas



Series 1: Reverted Areas

Series 2: Total Economy

Expected Investments

When observing the investment under contract for the Maritime sector in Tables 20 and 21, we find that, according to the numbers as of August of 1999, only 13% of the total investment under contract until the year 2005 for reverted areas correspond to this sector. Table 17 shows the projects that are under contract for the sector and the amounts of the investments.

The same Table shows the changes that the investment under contract with respect to the investment under execution represented for the sector. It represented a relation of negative growth with a value of -0,95, which indicates that the investment for this key sector fell by 95%.

These numbers are alarming since they indicate that the sector is going into recession. On the other hand the contracted future investments are relatively modest.

Considering that the Maritime sector is the sector of greater degree of importance in the regional economy, that among the key sectors it is the one that most contributes to the product and to regional employment, and therefore is a sector with an important role for the growth of the region, the amounts of the investments under contract that shows the Table 21, appear insufficient as to revert the sectors recessive trend, whose negative growth rates can be observed in Table 15. This finding is alarming both for the region's economy and for the sector's future.

Table 20
Investment under Execution and under Contract in Reverted Areas In Millions of B/
Figures to August of 1999

Sectors	Categories of Investment				
	Under Contract ¹ (Planned)	In Execution (Committed)	Total	Growing Relationship	Investment under Contract ³
Maritime	19.6	439.2	458.8		-0.95
Commercial	60.8	262	322.8		-0.76
Tourism	382.8	73.2	456		4.22
Industrial	61.8	45.3	107.1		0.36
Agriculture and Livestock Industry	11.6	60.1	71.7		-0.80
Real Estate	4	57	61		-0.92
Infrastructure	0	30	30		-1.00
Total	540.6	966.8	1507.4		-0.44

1: Planned Disbursement between 2000 and 2003

2: Execution underway, Planned Disbursement until 2003. Represents approximately 90% of all the projects of the sector up to now.

3: Represents the growth of the amount of the investment under contract (planned) according to the amount of the execution (committed)

Table 21
Investment under Execution and under Contract of the Key Sectors in Reverted Areas
In Millions of B/ Figures to August of 1999

Categories of Investment	Sectors							
	Maritime		Commercial		Tourism		Industrial	
	Amount	% ⁴	Amount	% ⁴	Amount	% ⁴	Amount	% ⁴
Under Contract ¹ (Planned)	19.6	13.0	60.8	4.03	382.8	25.39	61.8	4.1
In Execution (Committed)	39.2	29.13	262.0	17.38	73.2	4.85	45.3	3.00
Total	458.8	30.43	322.8	21.41	456.0	30.25	107.1	7.10
Growing Relationship								
Investment under Contract ³	-0.95	...	-0.76		4.22	...	0.36	...

1. Planned disbursement between 2000 and 2003

2. Execution underway, planned disbursement until 2003. Represents approximately 90% of all the projects of the sector up to now.

3. Represents the growth of the amount of the investment under contract (planned) according to the amount of the execution (committed)

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Sectoral Performance Issues

It is well known that some maritime subsectors work better than others. As far as the ports, for example, the fact that the ARI has been able to establish several new concessions for the extension and rehabilitation of several facilities – including Port Balboa, Port Cristobal, North Coco Solo Port, Port Colon – demonstrates, until now, a robust demand from the private sector to become involved in these types of projects. On the contrary, the secondary activities associated with the ports, for example the transfer, repair and the maintenance of ships, have been much less successful. Some auction for projects of this nature were either not adjudicated or had weak responses on the part of private companies. The investments in trans-shipping, and mainly repair of ships, have not reached the levels of interest expected by key specialists from the public sector. In absence of a market study, which escapes this diagnose, it is impossible to determine the exact factors that have contributed to the weak demand observed up to date. Among them it is possible that lower labor costs and less restrictive normative schemes in competing countries are the explanation. It also could be, that investors have been waiting for the official reversion of the Panama Canal.

Anyway, it is certain that the factor that causes the development of the Maritime sector is the “ captive customer “ - the guaranteed flow of ships that go through the Canal, and that represents, each one of them, a potential client. However, it seems that as far as the transfer and repair of ships are concerned, this comparative advantage of the canal area, has not been enough to foster their development, or RA’s marketing and promotion efforts have not been adequate. In any case, with the available information, it is not possible to identify “ economically formal “ causes that can explain the logical causes of low performance of these maritime activities, apart from the ones we have already mentioned.

Table 17 shows that the individual amounts of investments under contract of the Maritime projects are relatively modest, in comparison with the ones observed in the projects under execution. If the projects under procedure that appear in Table 24 are observed, it is possible to anticipated that the individual investments for each of these projects represent greater single investments than those of the projects presently under contract. It can be inferred that, at the moment, the Maritime sector does not have significant projects of great economic impact.

These behaviors explain this sector’s negative growth relation of -0,95 of the investments under contract with respect to the investments in execution.

2.3.6.3 Commerce Sector

Observed Performance

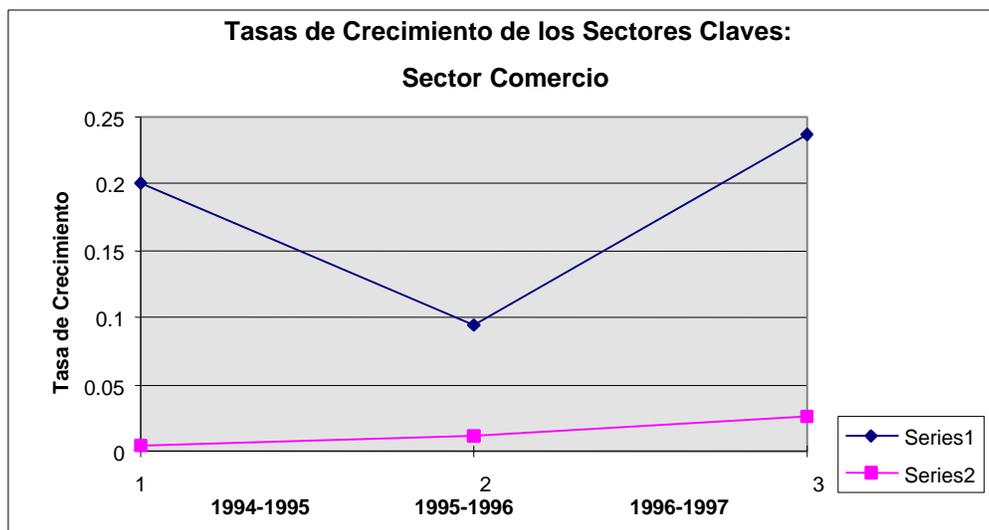
The Commerce sector is the third sector in degree of importance among the four key sectors and has a modest importance in the regional economy, as it was demonstrated previously. Nevertheless, its trend is to increase its degree of importance in the regional economy, as can be observed in Tables 13 and 14 and in the Graphics 5 and 6.

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Among the key sectors, this sector has the third highest participation in the GDP of the reverted areas and the second place in employment volume, as it is possible to observe in Table 19. In fact; the sector contributes with 2,4% of the regional product and 12,73% of the employment to the economy of the reverted areas.

Table 17 shows that this is the only sector among the key sectors, with a positive growth rate for all three observed periods and, with an increase in the last period's growth rate that can also be observed in Graphic 11. This is a satisfactory finding.

Graphic 11
Reverted Areas Commercial Sector's Product Growth Rate



Series 1: Reverted Areas

Series 2: Economy

This sector's product index shows a sustained growth that is consistent with its growth rates as it can be observed in the Graphic 12

This it is the only sector that shows positive growth trends of in the three examined indicators: degree of importance in the regional economy, rates of growth of the GDP, and product index.

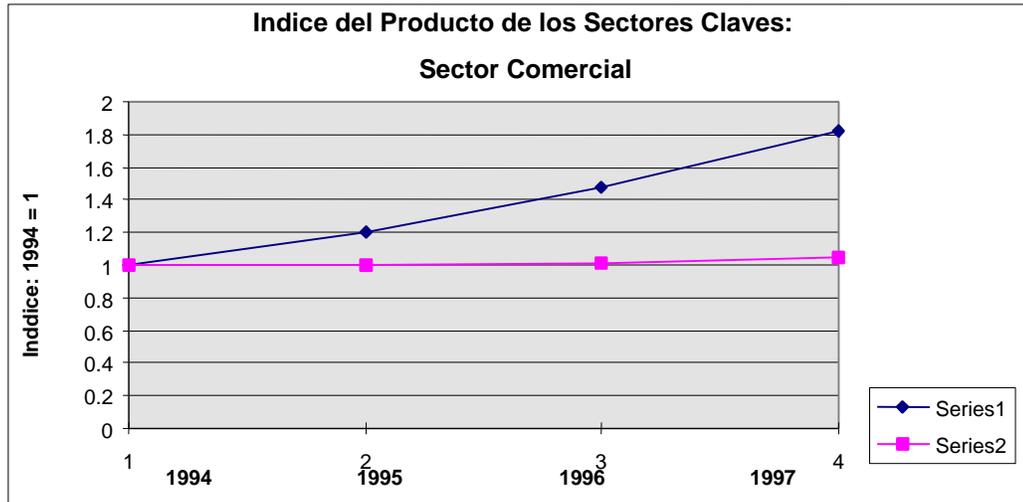
At the moment, among the key sectors, the Commercial sector has a relatively modest impact in the product of the reverted areas economy, but a greater relevance in employment. Its participation in the reverted areas GDP was the third highest among the key sectors, with a modest 2,4% but generated 12,73% of the total employment, surpassed only by the Maritime sector, as it can be observed in the Table 18.

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Anticipated Investments

When observing the Commercial sector's investment under contract in the Tables 20 and 21, it can be stated that, according to figures as of August of 1999, this sector obtained the 4,03% of total investment under contract to the year 2005 for the reverted areas.

Graphic 12
Reverted Areas Commercial Sector's Product Index



Series 1: Reverted Areas
Series 2: Economy

Table 17 shows the projects that are under contract for the sector and the amounts of investment.

The same Table 17 shows the change that the investments under contract compared to the investments in execution represented for the sector. This change represented a growth relationship that fell by 76% in relation to the investments presently under execution in the sector.

When observing the behavior of the sector's expected investments, it is reasonable to infer that there is the possibility that the sector begins to lose its positive growth trend, which was identified in the previous section. With the existing information it is not possible to forecast the order of magnitude of the level of decline that the sector can experience, but it can be inferred that the predicted investments will harm its present performance. This damage would be even more visible concerning employment, where the sector has greater impact.

The difficulties that the sector seems to be facing in the near future will be detrimental for the sector itself. Nevertheless, due to its high impact on employment, the sector's decline will contribute to the region's unemployment. This combined situation does not seem to be able to contribute to counteract the negative impacts that the recession of the Maritime sector will cause in the region.

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Sectoral Performance Issues

It is possible to observe that the Commercial sector has the greatest number of projects. Nevertheless, the average investment of the majority of the projects of this sector is little more than 1,0 million of B/. per project. The majority of these are land and buildings sale operations. A single project CDI Commercial represents 67% of the sector's total investment.

The types of projects contracted in this sector yield low investments per project. Even though there are numerous contracted operations, their nature explains the -76% decline in the sector's investments.

When comparing the types of projects under execution, under contract, and under procedures, it can be stated that the projects composition is similar, as showed in the Tables 17 and 22.

Among the projects under execution, of 24 projects and consolidated groups of small projects, it is known that there are big projects that as a whole represent 86% of the total investments of the sector. These are the Commercial Center 4 Altos, with an investment of 34,9 million B /; the Commercial Center Albrook (Los Pueblos and a Transportation Terminal) with an investment of 130 million B /.; and Project Fiber - Optic - Tyco ECATEL with an investment of 60 million B /.

A similar behavior is observed in the projects under contract, where among 11 projects, a single one represents 69% of the total investment. This is project CDI-Commercial, with an amount of 42 million Balboas, as it is can observed in the Table 17.

When we observe the composition of the types of projects under procedure, in absence of numbers to quantify the investments, we cannot do the same comparison, but it is possible to state that the number of operations diminishes and, the type and size of projects is more diverse, which could anticipate a correction in these trends from what has been observed until now. This could respond to a new approach of the strategy of projects promotion on the part of the Marketing Direction. This new approach seems to be adequate but we do not have "hard" data to make a final judgment on this.

It has been mentioned that the Commercial sector is very strong and developed in the City of Panama. This makes it difficult for the new commercial activities of the Reverted Areas to compete successfully considering the weight of the sector that has already been established in the city. This could also explain the type of commercial projects that can be promoted in the Reverted Areas. These are a great number of commercial lots and buildings, which are what the region can offer with comparative advantages with respect to the city. Lands that do not exist in the city and already built facilities would represent these comparative advantages in the Areas Reverted.

If this is so, this phenomena should be studied in depth, since if certain, apparently, it would be limiting the Reverted Areas to the promotion of this type of projects. As it was explained previously, although the land and buildings sales have a low supply cost for ARI,

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they do not report elevated amounts of investment compared with other types of projects like the above mentioned Los Pueblos or Optical Fiber.

Even though it is difficult to predict the productivity and volume of output that could result from the lands and commercial buildings that are being put on sale, it can be said that, in general, the output and employment generated from the small scale activities, which can be expected from selling lands and buildings, apparently will not make a significant contribution to the sector's total product.

Nevertheless, one should not derive mistaken conclusions from these findings that could tend to underestimate this type of small operations. In fact; when we examine the causes, it should be considered that the small-scale commercial activities are necessary for the "clusters" development anyway. The strategists of the Commercial sector should be convinced of this characteristic of the sector and take it as an inescapable element of the strategy.

In any case, the development of small and medium scale economic activities, will be stimulated by the market itself, as the resident population of the Reverted Area increases, without the strategist having to "plan it". This is already observable in the surroundings of Port Amador and Balboa. On the other hand, the normative facilities that allow turning residential uses into commercial uses in the Reverted Areas, will certainly help this to happen, as it has already.

2.3.6.4 Tourism Sector

Observed Performance

The Tourism sector is the fourth and last sector in degree of importance among the four key sectors, and it has a modest importance in the regional economy, as demonstrated previously. The sector shows a slight tendency to even diminish its position even more, as it can be observed in the Tables 13 and 14 and in the Graphics 5 and 6.

Among the key sectors, this sector was fourth in its participation in the GDP of the reverted areas and had the last place in employment, as it can be observed in the Table 18. In fact; the sector contributed the 0,3% of the regional product and the 1,07% of the employment to the economy of the reverted areas.

Among the key sectors this sector shows erratic rates of growth for the three observed periods, starting at 0,14 in 1994-1995, raising to 0,5 in 1995-1996, then falling to -0,08, as it can be observed in the Table 15 and in the Graphic 13.

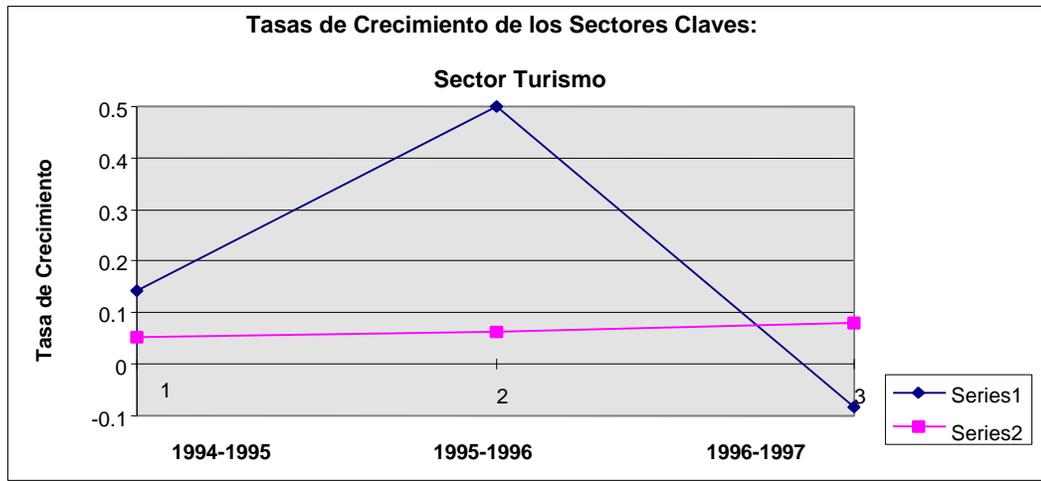
Among the key sectors, the Tourism sector, at present, has a relatively modest impact in the product and the employment of the reverted area's economy. Its participation in the GDP of the reverted areas was the lowest among the key sectors, with a modest 0,3%, and only generated the 1,07% of the total employment, surpassed by all the key sectors in both indicators, as it can be observed in the Table 18.

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Anticipated Investments

When observing the investment under contract for the Tourism sector for the reverted areas, in the Tables 17 and 18, it can be stated that, according to numbers as of August of 1999, this sector obtained 25% of the total investment under contract until the year 2005.

Table 17 shows the sector's projects under contract and their investment amounts.

Graphic 13
Rates of Growth of the Output of the Tourism Sector of the Reverted Areas

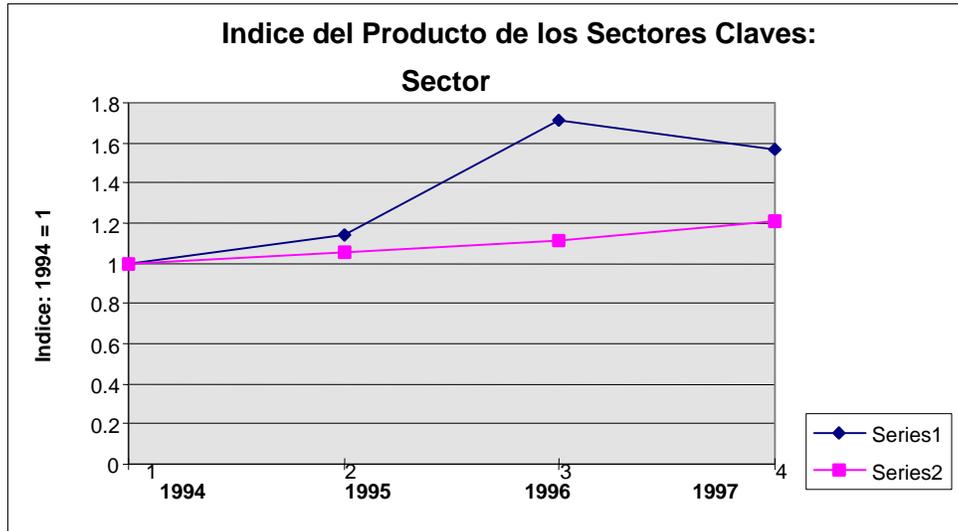


Series 1: Reverted Areas

Series 2: Economy

Even though its product index has been over the national index, it also shows a tendency to fall, as it can be observed in the Graphic 14.

Graphic 14
Product Index of the Tourism Sector of the Reverted Areas



Series 1: Reverted Areas

Series 2: Economy

The same Table 17 shows the change that the investments under contracts with respect to the investment in execution have represented for the sector. This change represented a very high growth relation of 422%.

When observing the behavior of the sector's expected investments, it is reasonable to infer that there is a probability that the sector will have more importance in the reverted area's economy. With the available information, we cannot forecast the order of magnitude of the level of growth that the sector can reach, but it can be inferred that the predicted investments will favor its present performance. This gain should be translated into sectoral product and employment growth.

Nevertheless, due to the low relative impact that this sector has on the product and the employment of the region, this gain will not have a significant impact on the regional economy. It seems that this combined situation will not be able to significantly counteract the negative impacts that the recession of the Maritime sector will cause in the region.

Sectoral Performance Issues

The individual amounts of investment of the projects of the Tourism sector, in general, are considerably higher than the other sectors, as it can be observed in the Table 17. This is so, because of the number of projects and the nature of the sector's projects. These projects are large, medium and small hotels, both resort and eco-tourism type. There are also other projects that take advantage of the natural and historical beauty of the region. A logical use of the tourism resources is observed.

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The types of projects contracted in this sector are of high investment by project. Naturally, the investment for the construction of a hotel-resort in a 2,8 has lot is considerably greater than the investment that is required for the purchase of an empty 2,8 has commercial lot, every other thing being equal.

The 422% rise in the investments of this sector is explained by the nature of the numerous contracted operations.

Among the favorable factors for the development of this sector the following ones can be identified:

- the presence of prestigious international investors like Melia Hotels with investments in Espinar, and other projects of lower scale in Gamboa, Gallego Island, and the Viewpoint in Ancon Hill, certainly gives the Reverted Areas a favorable international image in this sector.
- the existence of suitable extensions of natural areas with pristine flora and fauna that are attractive for eco-tourism;
- easy access to transportation nodes like Tocumen airport, the new airports of Albrook (regional) and France Field in Colon, that will soon operate as an international airport, and the maritime ports. These factors have demonstrated to be decisive in the development of Costa Rica during the last 10 years;
- the proximity of the old Canal Zone that is fit for architectural tourism, with its constructions and infrastructure from the beginning of the century, and the attractiveness of the operation of the Canal itself. These factors stimulated and were decisive for the tourism project of Gamboa;
- the clear and strict dispositions of the Regional Plan and of the Panamanian legislation on the conservation, protection and controlled development of the natural areas on which the development of eco-tourism and historical tourism is based. These factors give investors the confidence that the reason of their investments - natural areas, will not disappear.

Nevertheless, some unfavorable factors can also be observed:

- the regional competition in this sector, especially from Costa Rica that already has managed to capture a “ consolidated international niche “, and of others countries of the region like Mexico, and others of the Caribbean and South America. In other words, it is not enough to have the resources and the tourism potential. There are factors of market and competition that can prevent these resources and potential from developing;
- the expectation to benefit from passengers in the cruises that go through the Canal is somewhat optimistic. These cruises include lodging and food in their packages, reason why it is not probable that the passengers will land to lodge and eat in Panama, no matter how attractive the offer. The passengers of these cruises, against what is usually thought, are people of a middle/middle-low socio-economic profile which buy their passages in the cruises sometimes with much effort, and do it as the great and only trip of their life. Many are retirees living under a fixed income, usually senior citizens. In order to know if this market of passengers will work as it

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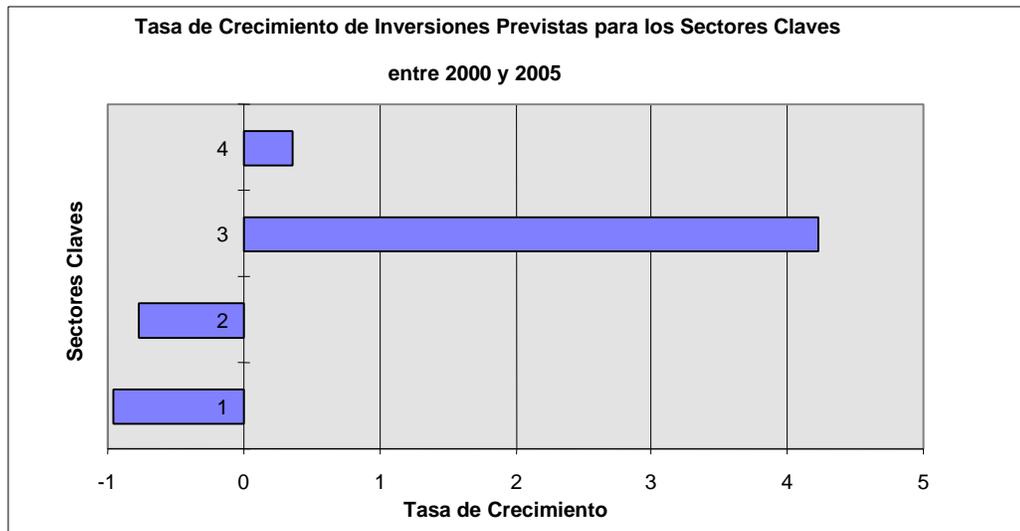
is expected it will be necessary to investigate thoroughly. Only then can any reasonable predictions be made;

- an almost invisible mosquito exists in the pristine areas of Panama and it produces a very annoying puncture. It does not have any known dangerous consequences for health but they can transform a “tour” or a stay in an unforgettably hideous experience. Although this is an apparently insignificant factor it must be studied;
- Panama’s “traditional” tourism is fundamentally business tourism, that is generally made in the city “after business”, that is to say, from 5 in the afternoon, that maintains the tourist in the city, and that generally lasts between three to five days. It is not reasonable to think that this type of tourist is going to transform itself into another type of tourist or to extend his/her business visit more than initially intended.

2.3.6 Comparative Analysis of the Behavior of the Investments of the Key Sectors

Graphics 15 and 16 shows the four key sectors comparative growth rates and amounts of investment among them.

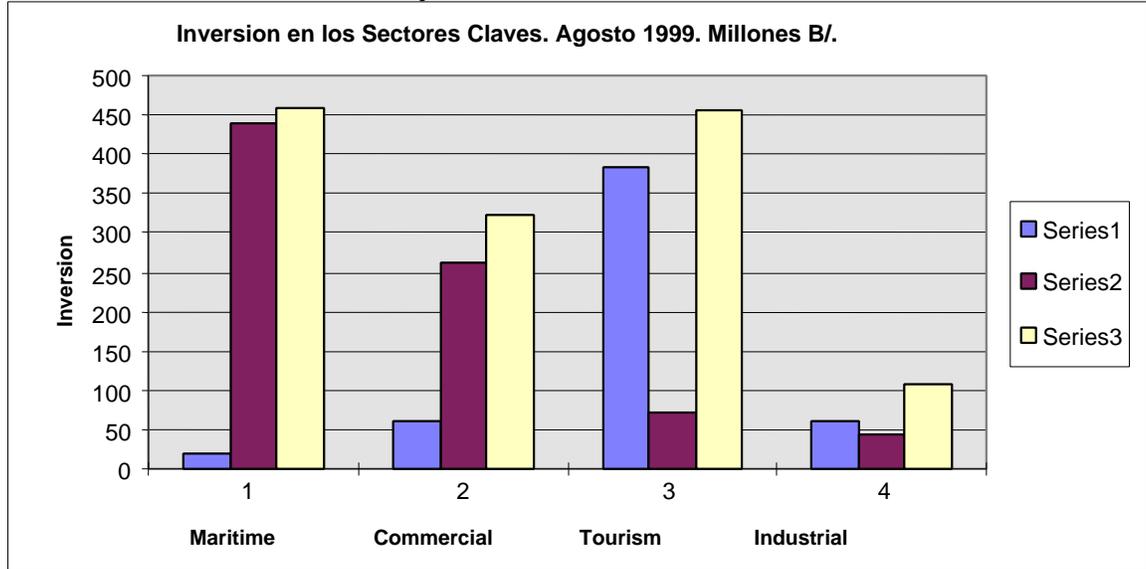
Graphic 15
Rates of Growth of Investments under contract between years 2000 and 2005 in Reverted Areas



Activity Sectors:

1. Maritime
2. Commercial
3. Tourism
4. Industrial

Graphic 16
Investment in the Key Sectors of the Reverted Areas



First Column from left to right: sector investment under contract.

Second Column from left to right: sector investment in execution.

Third Column from left to right: total investment in the sector. Fuente: Tabla anterior

It can be observed that the tendency of the investments under contract privilege the Tourism sector with a growth of 422% and to a lesser extent the Industrial sector, with a 36%.

For this last sector, the growth of the investments would allow its recovery, and this would place the sector in a position of greater economic importance, than the one that it has among the key sectors, at this moment. *Ceteris paribus*, this would result in a better economic performance of the Reverted Areas, and would improve the contribution of the sector in its role as one of the key sectors of the reverted area's development strategy.

It is not possible to say the same for the other key sectors, Maritime and Commercial. The Commercial sector, even though it appears as the healthiest sector of the four key sectors, shows a tendency to revert this situation due to the fall of the investments. The behavior of the Marine sector is the one that calls to greater alarm among the four key sectors. Not only its output falling steadily, but also the investments in the sector are falling too. This is serious for the future of the reverted areas, since this sector has an overwhelming impact in the region.

2.4 Urban Development Trends in a Metropolitan Context

This chapter presents an analysis of several aspects of the urban development process in the reverted areas, seen from the perspective of Panama and Colon metropolitan areas. After a discussion of the main tendencies, data on the population growth are presented, as well as the future requirements of housing and land for urban uses.

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2.4.1 Current Urban Development Trends

2.4.1.1 Ancón “Corregimiento”

Perhaps the best result of the reversion process is the incremental rehabilitation of the housing stock in the Pacific region. In towns where the RA decided on housing privatization, after their sale by public auction or direct contracting, a level of important new investment has occurred. The remodeling of many houses in Albrook and other towns confirms the success of RA’s housing privatization initiative, the results of which include: the rise of fixed capital formation; the improvement of the housing stock, which had previously suffered from substantial deterioration; and the improvement of the aesthetic quality of the built environment, due to a diversification of building forms and colors.

At the same time the lack of development of new mixed-use centers of in Clayton and Albrook stands out. In Clayton, the lack of progress is understood, because it just reverted. But the decision to turn the center of an old Fort into a university zone (City of Knowledge), mainly because the demand for this use has been weak to date, makes the perspective of creating a dynamic center of anticipated mixed use in the General Plan, doubtful. In Albrook, the high incidence of space assigned to governmental offices and NGO’s seems to limit commercial development.

Except in residential zones with high rates of housing purchase, the development is characterized by large projects: expansion of the Balboa Port, railroad rehabilitation, construction of the commercial center Albrook-Los Pueblos. They do not constitute “clusters” of small and medium investors, whose activities can create forwards and backward linkages, thereby facilitating local economic development. This is due to several causes, including:

- the RA policy of doing big projects,
- the lack of adequate definition by the RA on the types of use allowed (and wished for) in the mixed-use centers (for example, although they reverted 20 years ago, the Balboa and Ancon local development plans have not been prepared yet) and,
- perhaps some reticence during this period of rapid changes in the reverted areas, on the part of small and medium private investors.

It can be noticed, that in the East Pacific there is a high percentage of “institutional projects”. Many assets have been allocated or rented to public sector organizations and their employees. One of the area’s biggest projects is the institutional complex planned for Clayton/Cardenas, including electoral court offices, controller’s office’s, schools, and institutional housing. And finally the development of the Patacón-Valley de San Francisco corridor, constituted to a large extent by new educative and sport facilities is prioritized. The slums in Ancon, in spite of having stabilized during the years in the last, continue being able to threaten the ordered development of the “Corregimiento”, as the invasion of Howard in November of this year has demonstrated.

It is possible to indicate that there is little development to the west of the canal, because of its recent reversion.

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The urban infrastructure still has important deficiencies, in spite of investments in the road network and diverse networks for the tourist center of Amador. There is a still a substantial lack of improvements in wastewater (there is no wastewater treatment except in Gamboa), stormwater drainage, and potable water supply.

2.4.1.2 Cristobal “Corregimiento”

Unlike Ancon, in the Cristóbal Corregimiento the emergence of a legitimate urban metropolitan structure can be observed. To the south of Colon, the old military bases have become residential districts (Margarita, Espinar, Davis, Arco Iris), tourist centers (Espinar), and industrial centers (Davis). The zone to the northeast of Colon is becoming consolidated, through infill development near North Coco Solo port and France Field airport.

The large scale of the development in Colon’s metropolitan area also stands out. While there is relatively little residential development, a number of big projects are being carried out: rehabilitation of marine ports (Puerto Cristobal, North Coco Port, Colon Port); expansion of France Field, which attained the status of international airport recently; and industrial projects in Davis and Telfers. Informal development is occurring at a relatively low level along the lakes, for example in Port Escondido near Gatún Lake.

2.4.1.3 Urban Development Issues

The trends identified in both metropolitan areas mentioned above, are the result of the interaction, within the institutional and regulatory frameworks, of the demand for and the supply of land for different uses in the reverted areas. Since the RA is acting as a temporary real estate manager, its policies and activities related to the transfer of reverted goods are substantially influencing the observed results. As indicated above, the RA:

- focuses in big projects, which has increased their amount and the total proportion located in their investment;
- favors institutional projects and clients, which has as an intermediate result the high level of renting and allocation of improvements, and as a secondary consequence the non-emergence of mixed use centers like Clayton and Albrook, which lack adequate commercial investment;
- has not yet prepared guidelines for location of small and medium investors therefore creating the mechanism to foment the development of self sustainable “ clusters”;
- managed well, the sale of houses in Albrook, Curundú and other towns and old bases which resulted in the rehabilitation of the housing stock that is taking place at the moment in these areas.

Other aspects of the regulatory and institutional frameworks also have their effect in the reverted areas, for example the tax exemption on construction, which stimulates investments in the real estate sector, including the remodeling of privatized houses.

But the main factors that influence in the urban trends are those of the market. The RA directs the process of “ re-population “ of the reverted areas through the transfer of assets. Where there is demand for a type of good offered by the RA, there is a transfer of use

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rights, and the entity that receives the house, office, settles down in a given area, where the house, office, shop or another improvement is established; this is the case of Margarita, for example. Where there is no demand, for example in the case of the unanswered calls for bids for ship maintenance projects in Colon, there is no transfer nor result in terms of economic or urban development.

Indeed there is transference, where there is a *suitable correspondence* between, on the one hand, the demand profile (that is to say, the package of concrete characteristics which potentials buyers look for in a specific type of real estate), and the concrete characteristics of RA's offered goods. And in most of the cases, this good will be the beneficiary of some form of investment, which is described like development. Where there is no suitable correspondence, there is no transference, and no development.

Nowadays, it can be observed that in the reverted areas, although there are certain types of urban development, there is almost no urbanization. With the exception of a few cases of slums, and some housing projects, rural or undeveloped land is not being converted to urban uses. On the contrary the present urban development is produced by the *occupation of existing urbanized areas and large projects in the maritime commercial and infrastructure sectors*. However, sooner or later, the more the market absorbs the goods, so much the more the excess demand will impel new initiatives of urbanization, that is, construction of new centers or the densification of existing towns. At the same time, the more the RA *alienates* the reverted goods, preferably through sale of fee-simple ownership rights, so much the more a dynamic real estate market will arise and, it will be characterized by many different providers working in competition, which will improve the efficiency of the investments in the canal area.

2.4.2 Population Trends in the Reverted Areas and the Metropolitan Areas

Table 2-3 presents data on past and present population estimates for the metropolitan areas of Panama and Colon, and emphasizes the role that the reverted areas will play in their future population growth. The analysis of this data allows to make the following observations:

- Between 1990 and 2000, the rates of population growth were much higher in the reverted areas than in the metropolitan areas (16.0% against the 2.7% in Panama; the 9.8% against the 4.1% in Colon);
- The population of the Corregimientos of Ancón and Cristobal will increase rapidly in the next five years (the 26.3% annually in Ancon, the 21.4% in Cristobal);
- The rates of population growth of the metropolitan areas will rise until 2005, and then fall during 2005-2020 to levels lower than those obtaining today.
- As a consequence of the difference between the rates of growth of the reverted areas and those of the metropolitan areas, the proportion of the total metropolitan population living in the canal area will rise: in Panama, from 4% today to 11% in 2005 and 16% in 2000; in Colon from 23% today to 43% in 2005 and 58% in 2020. In 2010, most of the population of the metropolitan area of Colon will live in the old Canal Zone, therefore correcting the distorted settlement patterns inherited from the U.S. era.

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2.4.3 Urban Development Requirements

The data in Table 24 emphasize the following observations as far as the requirements of urban development by metropolitan area, and the perspective that the present and future offer coming from the canal area can satisfy them.

2.4.3.1 The Metropolitan Area of Panama

- According to the General Plan, existing and planned urban areas satisfy all urban land requirements of the metropolitan area up to 2005 and represent two thirds of total requirements during the period 2000-2020. However, in reality, in the absence of a (inadvisable) large scale intervention by Government less than half of the new development will take place in the reverted areas during next the 20 years, because development costs are beyond the reach of most of the population.
- The supply of land for services exceeds the requirements (112% of the needs between 2000 and 2020), whereas the supply of industrial, commercial and residential land uses represents 85%, 64% and 65% of needs, respectively, during the period 2000-2020.
- In the Ancon Corregimiento, the 3,500 available housing units represent 13% of the housing required in the Metropolitan Area of Panama during the period 2000-2005. In Chapter 2.5, we will discuss how this housing corresponds to several metropolitan middle and upper-income submarkets that together represent approximately one fifth of the total residential market. If the population increase from 2000 to 2005 is taken as the basis for requirement calculations (225,215, see table on population), the needs rise to approximately 40,948 units. In this case, the available housing only represents 9% of the requirements during this period.

2.4.3.2 The Metropolitan Area of Colon

- Existing and planned urban areas satisfy all needs for residential, commercial, industrial, and services land until 2005.
- The General Plan identifies existing and planned urban areas that almost double the requirements for the period 200-2020, according to the Urban Development Plan. This discrepancy indicates either excessive planned urban expansion by the General Plan, or the underestimation of land requirements on the part of the Urban Development Plan.
- The supply of commercial land appears particularly excessive, representing 362% of the estimated requirements.
- However, in the reverted areas the available housing units only represent one fifth of the requirements up to 2005, and 6% of the total needs between 2000 and 2020. If the increase of the population from 2000 to 2005 (68,286), is taken as the basis for the estimation of requirements, the needs increase by approximately 12,400 units. In that case, the available housing only represents 4% of the requirements during this period.

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2.5 Impacts on Real Estate Markets

Table 2.5 presents data on housing sold by public auction by the RA. It can be observed that, because of the homogenous housing stock and a consistent marketing approach, the characteristics of the houses (area, assessed value, sale price) vary little within each neighborhood. However, between them there are important differences: in the sample in the table, lot sizes vary from 280 m² (Davis) to 2,000 m² (Ancón), while unit sizes range from 135m² to more than 400m².

In the seven towns in which the RA sold substantial numbers by public auction, of houses, the average sale price was B /. 68.348, or 11% more than the assessed value (B / 61,335). On average, the estimated value of the lot represents 56% of the total value (lot and improvements). This high ratio reflects not only the depreciation of houses constructed mostly between 1920 and 1950, but also the excellent location of the properties in relation to the main centers of the metropolitan areas of Panama and Colon.

Table 2-6 presents data on nonresidential undeveloped plots sold by the RA. The supply is much more heterogeneous than the housing stock, with variation in average area from 293 m² in Davis to the 1,000-2000 m² in Brazos Heights, Amador and, Balboa. In certain towns (Amador, Ancon and Altos de Curundú), it can be observed that there is an important difference between the estimated and the sale prices (increases of between 20% and 26%). Since the analysis was based on *median* values, there is no major divergence at the level of the entire sample. The average sale price per square meter for nonresidential uses is B/.59

The reverted area's houses correspond to some of the existing residential submarkets of the metropolitan areas (to see Graph 2,1). The single-family and duplex units (the predominant types in the canal area) compete with middle and upper-income single-family and duplex houses in other non-Canal Area districts; once these units become available they enter the metropolitan submarkets. In the same way, the four-to six-unit apartments in the canal area compete with middle and upper-income apartments in the metropolitan areas. According to professional real estate brokers, these submarkets are characterized by a high degree of product substitution, which facilitates the integration of the reverted houses, and therefore maximizes the potential effect of these goods on the performance of the residential submarkets.

However, the impact of the integration of houses in the areas reverted on the house prices at the metropolitan level has been minimal to date. Contrary to the expectations at the beginning of the decade, the availability of a great number of houses did not result in a real estate market crash. The residential prices have stayed more or less constant for years, in spite of important changes in supply. Specialists in housing markets from the Panamanian Chamber of Construction (CAPAL) observe that there was overproduction of housing for the middle and high income gaps between 1992 and 1995. During the same period there was no corresponding increase in demand for this type of housing. In a well-functioning market, such a disequilibrium would have produced, beginning in 1995, a fall in prices. But this did not happen. On the contrary, real prices in these submarkets have increased slightly over the last five years. Although production has fallen, the substantial

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**Table 2-3
Population of the Metropolitan Areas of Panama and Colon by District**

District	1980	1990	1995	2000	2005	2020	Annual	Annual	Annual	Annual	Population Increase
							Growth Rate	Growth Rate	Growth Rate	Growth Rate	
							1980-1990	1990-2000	2000-2005	2005-2020	2000-2005
PANAMA CITY METROPOLITAN AREA											
Panama	484,726	596,697	658,102	755,633	924,160	1,261,717	2.1%	2.4%	4.1%	2.1%	168,527
San Miguelito	159,979	248,443	290,919	317,170	340,423	431,232	4.5%	2.5%	1.4%	1.6%	23,253
Arraiján	38,089	63,235	76,016	100,474	124,361	142,510	5.2%	4.7%	4.4%	0.9%	23,887
La Chorrera	68,251	91,724	102,491	109,602	117,740	165,845	3.0%	1.8%	1.4%	2.3%	8,138
New Corregimientos*	--	--	--	17,345	18,756	23,349	--	--	1.6%	1.5%	1,411
Total Metro Area	744,168	1,000,099	1,127,528	1,300,224	1,525,440	2,024,653	3.0%	2.7%	3.2%	1.9%	225,216
Reverted Areas**	--	11,747	13,604	51,658	165,810	321,424	--	16.0%	26.3%	4.5%	114,152
% of Total Metro Area	--	1.2%	1.2%	4.0%	10.9%	15.9%					50.7%
COLON METROPOLITAN AREA											
Barrio Norte/Barrio Sur	62,103	56,735	58,430	59,746	60,065	59,689	-0.9%	0.5%	0.1%	0.0%	319
Cativá	11,291	19,842	22,582	24,979	26,632	29,521	5.8%	2.3%	1.3%	0.7%	1,653
Cristóbal	4,038	15,777	18,909	40,083	105,595	210,997	14.6%	9.8%	21.4%	4.7%	65,512
Nueva Providencia	733	1,301	1,512	1,695	1,695	1,695	5.9%	2.7%	0.0%	0.0%	-
Puerto Pilón	8,800	10,623	10,821	11,231	11,231	11,231	1.9%	0.6%	0.0%	0.0%	-
Sabanitas	10,301	14,252	15,125	16,134	17,076	25,320	3.3%	1.2%	1.1%	2.7%	942
New Corregimientos*	--	--	--	23,749	23,749	23,749	--	--	0.0%	0.0%	-
Total Metro Area	95,350	118,530	127,379	177,617	246,043	362,202	2.2%	4.1%	6.7%	2.6%	68,426
Reverted Areas***	4,038	15,777	18,909	40,083	105,595	210,997	14.6%	9.8%	21.4%	4.7%	65,512
% of Total Metro Area	--	13.3%	14.8%	22.6%	42.9%	58.3%					95.7%
*Added by the Plan de Desarrollo Urbano de las Areas Metropolitanas del Pacífico y del Atlántico, Ministerio de Vivienda/Dames & Moore, 1997											
**Ancon Corregimiento, Panama District											
***Cristobal Corregimiento, Colon District											
Sources:											
Population figures 1980, 1990 and projections 1995: Dirección de Estadística y Censo											
Projections 2000, 2005 y 2020: Plan de Desarrollo Urbano de las Areas Metropolitanas											

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**Table 2-4
Housing and Land Supply in Areas Reverted in Relation to Future Urban
Requirements
Metropolitan Area of Panama**

	Unit	2000- 2005	2005- 2020	2000- 2020
Future Development Requirements				
Housing Units	qty	26,412	80,186	106,598
Residential Land	ha.	1,647.1	3,254.3	4,901.4
Commercial Land	ha.	428.0	1,762.2	2,190.2
Industrial Land	ha.	295.0	391.7	686.7
Land for Services	ha.	59.4	297.7	357.1
Total Urban Land	ha.	2,429.5	5,705.8	8,135.3
Canal Area Supply (Ancon Corregimiento)				
Available Housing Units	qty	3,507	-	3,507
% of Requirements	%	13%	0%	3%
Available Residential Land	ha.	1,647.1	1,516.1	3,163.2
% of Requirements	%	100%	47%	65%
Available Commercial Land	ha.	428.0	976.9	1,404.9
% of Requirements	%	100%	55%	64%
Available Industrial Land	ha.	295.0	289.0	584.0
% of Requirements	%	100%	74%	85%
Available Land for Services	ha.	59.4	340.8	400.2
% of Requirements	%	100%	114%	112%
Total Available Urban Land	ha.	2,429.5	2,672.1	5,101.6
% of Requirements	%	100%	47%	63%

Metropolitan Area of Colon

	Unit	2000- 2005	2005- 2020	2000- 2020
Future Development Requirements				
Housing Units	qty	2,399	5,428	7,827
Residential Land	ha.	335.28	813.43	1,148.71
Commercial Land	ha.	76.12	334.70	410.82
Industrial Land	ha.	137.44	22.74	160.18
Land for Services	ha.	22.38	113.35	135.73
Total Urban Land	ha.	571.22	1,284.22	1,855.44
Canal Area Supply (Cristobal Corregimiento)				
Available Housing Units	qty	486	-	486
% of Requirements	%	20%	0%	6%
Available Residential Land	ha.	335.3	925.4	1,260.7
% of Requirements	%	100%	114%	110%
Available Commercial Land	ha.	76.1	1,410.6	1,486.7
% of Requirements	%	100%	421%	362%
Available Industrial Land	ha.	137.4	550.6	688.0
% of Requirements	%	100%	2421%	430%
Available Land for Services	ha.	22.4	366.8	389.1
% of Requirements	%	100%	324%	287%
Total Available Urban Land	ha.	571.2	2,803.2	3,374.4
% of Requirements	%	100%	218%	182%

Sources: Requirements: Plan de Desarrollo Urbano de las Areas Metropolitanas del Pacífico y del Atlántico, Ministerio de Vivienda/Dames & Moore, 1997 Canal Area Supply: Calculated by the consultant using ARI databases

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supply increase did not have a significant impact on the prices. This suggests the existence of market imperfections, which could result from an excess of capital in the national financial system, and/or a relative lack of concern for short-term returns on the part of investors. A situation of this nature can explain the behavior of investors (and their associates, the real estate developers) who, while taking account of an increasing imbalance between the supply and demand of houses, chose not to lower their prices to capture the existing demand, but to wait instead for demand to increase, without lowering their prices.

Table 2-5
Characteristic of Houses Sold by Public Auction in the Reverted Areas

Town	Average Plot Size (m2)	Average Unit Size (m2)	Average Assessed Lot Value (B/.)	Average Assessed Total Value (B/.)	Average Sale Price (B/.)	% Change, Value to Sale Price	Ratio Land Value/ Total Value
Albrook	544	219	46,893	76,751	81,681	6.4%	61.1%
Amador	2,008	417	233,180	292,963	307,979	5.1%	79.6%
Ancón	534	281	48,027	74,393	97,930	31.6%	64.6%
Davis	300	135	7,493	28,661	28,700	0.1%	26.1%
Espinar	279	140	9,835	33,503	35,998	7.4%	29.4%
Llanos de Curundú	850	320	33,088	56,381	60,709	7.7%	58.7%
Quarry Heights	922	417	110,656	170,888	213,192	24.8%	64.8%
Total	458	168	34,224	61,335	68,348	11.4%	55.8%

Source: Dirección de Administración de Bienes Revertidos, ARI

N.B. Current prices. The sales took place between 1996 and 1999, with the large majority in 1998 and 1999. Given the low inflation rate (less than 1.5% annually), no conversion into constant prices was carried out.

In consequence, in Panama the middle and high income residential market is characterized by a high level of substitution among products (one type of unit is replaced easily by another), and at the same time there is a low level of price elasticity (changes of supply do not result in large price variations). For the task of administrating the reverted goods, that indicates that the canal area supply can be easily introduced in the market without causing great falls in prices. However, it does not guarantee that the supply will be sold as quickly as it is introduced. And the delays entail costs. For the RA, a house sold in 2000 is worth more than one sold in 2002, even if there is no fall in prices, since with time the inflation continues to erode the value of a constant sale price. For real estate developers who do not manage to sell their units because of a possible surplus caused by the RA's units; there are also opportunity costs that are translated in real income losses.

With respect to new construction, the reverted areas real estate has not had a negative impact, that is to say, it have not contributed to create a recession in the construction industry. This has two causes. First, this industry has been involved in an increase in building and infrastructure construction activities in the reverted areas. The second cause is due to the *Law of Preferential Interests*, that has stimulated the construction of houses with values smaller than \$25,000, having created a supply of 14 thousand housing units for this market segment in 1999. This market does not compete with the

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reverted goods because the users of houses that are benefited by that law, do not have access to the reverted areas market segments, and will not pay real estate taxes during 20 years, thanks to the exemptions granted to all new residential constructions.

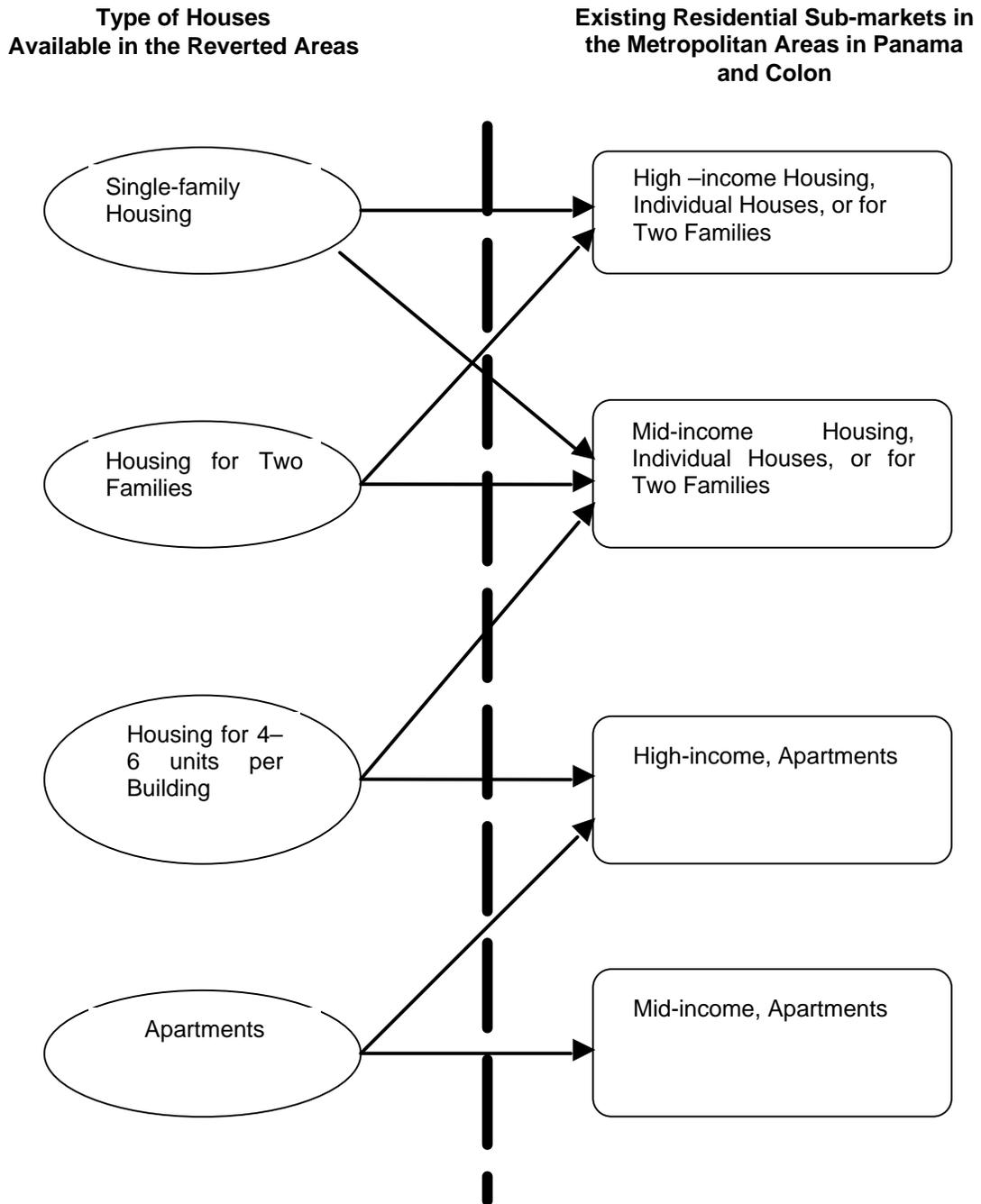
Table 2-6
Characteristic of Empty non-Residential Land Sold by the RA

Town	Average Plot Size (m2)	Average Assessed Value (B/.)	Average Sale Price (B/.)	Average Sale Price per m2 (B/.)	% Change, Value to Sale Price
Albrook	5,236	459,560	490,745	94	7%
Amador	1,978	197,784	237,440	120	20%
Ancón	809	72,200	90,475	112	25%
Davis	413	14,459	14,459	35	0%
Espinar	293	--	36,161	123	--
Llanos de Curundú	724	44,255	44,312	61	0%
Altos de Curundú	723	56,667	71,250	99	26%
Balboa	1,393	201,309	208,888	150	4%
Brazos Heights	1,156	42,266	43,294	37	2%
Margarita	649	22,066	22,242	34	1%
Total	791	46,259	46,350	59	0%

Source: Dirección de Administración de Bienes Revertidos, ARI

N.B. Current prices. The sales took place between 1996 and 1999, with the large majority in 1998 and 1999

Graphic 2-1
Links Between Houses in the Reverted Areas and Existing Residential Submarkets



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In spite of the housing market's apparent low price elasticity, the relations between housing and available land, on the one hand, and the metropolitan level requirements, that are evident in the table above, raise the necessity to handle the next phase of the reversion well. Specifically, it will be important to regulate the availability of uncultivated land for different uses in both metropolitan areas. Mainly in Colon, the RA and the municipalities will have to coordinate to open to urbanization, extensions of land that correspond to the requirements identified in the Urban Development Plan, plus an additional 15% to 20% necessary to guarantee competition between suppliers.

In Panama and Colon, the remaining canal area's available housing covers approximately half of the of middle/high income residential submarket requirements for the next the five years (using the average of two sources of requirements, population data and the Urban Development Plan). In order to avoid downward pressures on prices in the submarket, and to guarantee an acceptable level of revenue, it is recommendable to spread the transference of this housing (if it continues being for residential use) over a period of at least two years (maximum sale of 1,500 units per year in Panama, 300 per year in Colon).

2.6 Evaluation of Present Development According to the Strategies

As far as the passage of development in the reverted areas, it can be observed that the process handled up to now by the RA has been successful in reaching the "balanced growth" established by the General Plan. Development is located in the zones identified for that purpose by the Plan, and the only projects in conservation areas deal with the conversion of the use of the existing goods. Development in the big natural reserves has not been allowed, and continues preserving their ecological and heritage values. An excessive form of intensive growth has been avoided.

At the same time growth has not suffered from too much control. Although some private investors complain about delays associated with access to the reverted goods, generally the RA has managed an efficient transferal of key properties, thus promoting the implementation of big "productive" projects and the necessary infrastructure for the country's economic development in the medium and long term.

In synthesis:

- In the case of the Commercial sector, it seems as if its development strategy consists in selling lands and buildings, that have a low financial yield, compared with other bigger projects. The sector competes with Panama city that has comparative advantages in this activity with respect to the reverted areas. The types of projects under consideration show a tendency to diversify the scale and nature of the projects.
- The investments in the Tourism sector are dominated by the construction of hotels. These projects have a high investment value per project. It is therefore not surprising that this sector's investments are the highest. It will be necessary to review some of the assumptions on which the strategy is based, as it was indicated in the previous section on this sector.

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- The Maritime sector seems to be suffering from a lack of capacity to contract projects that involve comparatively bigger investments. It seems that the bottleneck faced by the sector is the lack of market studies for the proposed activities.
- The investments in the Industrial sector correspond to only three projects. This sector has five projects under consideration, as can be observed in Table 22. Serious economic restrictions caused by comparatively high costs of key production factors, and other economic externalities like projectionist and legal practices are preventing this sector's development. The sector's experts have analyzed these problems and are focusing on promoting different activities than the ones considered to date.
- The regional economy's trend is to improve the degree of economic importance of the personal service sectors in the region, especially of the commercial and financial operation activities. These activities tend to be located in areas where other compatible and/or complementary activities already exist and attract the public, which is then captured. This indicates that little by little favorable conditions "to cluster" are created in the reverted areas. The population and employment increase in the region will also fulfill an important role in stimulating the development of those activities.

2.7 Conclusions

Next we present the main conclusions of the diagnosis:

- While the reversion of the canal area's goods is almost complete, their process of integration is approximately half way through.
- The transference by the RA of reverted goods is characterized by the high incidence of renting (a third) and allocation (another third); only a quarter of the assets (improvements) has been sold. The inconvenience of these results as far as ownership is concerned is: (i) loss of potential gains, and (ii) real estate management of rented goods by a public sector that lacks comparative advantages in this area.
- The Transportation, Construction, and Public Administration and Defense sectors dominate the economy of the reverted areas; these are the sectors that have higher participation in the regional product. The importance of the Public Administration and Defense sectors indicates that there has been a planned policy to re-locate governmental institutions to the Reverted Area. Without any doubt, the jobs created by this sector have contributed to stimulate personal services sectors in support to its workers. The Construction sector is contributing to the growth of the economy, due to the numerous constructions of buildings and infrastructure that are being made in the region.

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- The operation of the Panama Canal is an old activity, previous to the reversion process, and has an unquestionable weight in the generation of income for the regional economy of the reverted areas. Nevertheless, even when we ignore this activity in the regional accounts of the reverted areas, the Ground Transportation, Marine Transportation and Coastal activities also contribute in a significant way to the economic growth of the region.
- The Primary Activities are of little economic importance for the region. This indicates that there are no investments in farming activities that, in general, are not allowed in the Regional Plans regulation. This is positive, but there are no investments in reforestation either, which is negative.
- The Reverted Area is still a region where most of those that work there, reside in other regions, and those that reside there, work in other places. Therefore, at the moment, the region exhibits the characteristics of a “suburb “ as in the U.S.A. This explains the smaller economic importance of public and personal service activities in the region.
- The tendency of the regional economy is to improve the degree of economic importance of the personal service sectors in the region, specially of the commercial activities and financial operations, since these activities tend to be located in areas where compatible and/or complementary activities already exist and attract public, which is then captured. This indicates that little by little, favorable conditions for “clusters “ are created in the reverted areas. The increase of population and employment in the region will also fulfill an important role in stimulating the development of these activities.
- The Marine sector is a leading sector of the regional economy. It is also the key sector of greater importance and contributes the most to output and regional employment. Nevertheless the growth of this sector between 1994 and 1997 has been falling, having reached a negative rate of -0,03492 during the period 1996-1997. This recessive tendency will have serious consequences for the economy of the region, given its significant impact in the economy, both in output and employment. The amounts of investments under contract are insufficient so as to revert the sector’s recessive tendency, which is alarming both for the economy of the region and for the sector’s future.
- The Industry sector is the second sector in degree of importance among the four key sectors. Nevertheless, it is of modest importance in its contribution to regional output and employment. Even though its rates of growth were negative during the two last observed periods, they improved during the last period, going from - 0.15104 to 0.10429. When observing the behavior of these rates of growth and the sector’s anticipated investments, one can infer that there is a probability that the sector will begin to recover. Nevertheless, while this described recovery will be beneficial for the sector itself; it will not have sufficient significant favorable impacts to be able to counteract the negative impacts expected from the Maritime sector’s recession.

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- The probable causes of the modest performance of the Industrial sector are economic, strategic, and of deficient international marketing. Unfavorable historical conditions for the sector also exist, since this has not been a strong sector in the Panamanian economy, as is demonstrated in its low participation in the national GDP. Among other externalities that act against the sector's performance, there are “ economic restrictions “, these are factors difficult to document but they consist in the imposition of monopolistic and control practices by economic groups which dominate certain economic activities “ closing them “ to possible competitors and, the “ normative restrictions “, that impose a restrictive legal and prescribed situation represented by elements like fixed shares of foreign employees authorized in the companies, prohibition to foreigners to exert certain professions in Panama, and dispositions of the labor code, among others. All these externalities tend to prevent free access of foreign and domestic investors in this sector.
- The Commerce sector is of modest importance among the four key sectors and in the regional economy. It is the only sector among the key sectors, with positive growth rates increasing during the last period. At the moment it has a relatively modest impact in the product but of greater relevance in employment. Observing the fall of the expected investments for the sector, it is reasonable to infer that the sector begins to lose its tendency towards positive growth. Nevertheless, due to this sector's relative impact in the region's output, its fall would not have a relevant impact in the output of the economy of the region, but because of its high impact in employment, it would contribute to unemployment. With this combined situation it seems this sector will not be able to contribute to counteract the negative impacts that the expected Marine sector's recession will cause in the region.
- The Tourism sector is the last sector in degree of importance among the four keys sectors, and is of modest importance in the regional economy. When observing the high growth of the investments anticipated for the sector, it is reasonable to infer that the probability exists that this sector begins to acquire more importance in the economy of the reverted areas. It seems that the Tourism sector will enjoy an economic bonanza in the near future. Nevertheless, due to the low relative impact that this sector exhibits on the product and the employment of the region, this gain would not have a relevant impact in the regional economy. With this combined situation it seems this sector will not be able to contribute to counteract the negative impacts that the expected Marine sector's recession will cause in the region.
- Even though the Tourism sector has a modest importance in the economy of the region, it is a sector in which there are numerous projects in preparation and execution, and this is the reason why it is premature to evaluate the roll that it will carry out in the future in the regional economy.
- The RA 's policy of “ great scale development “ is facilitating the execution of big, important projects for the long term development of the region, but this is done at the cost of not promoting the creation of self-sustainable networks of small and medium investors located in centers of mixed use.

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- The sprouting of new centers of mixed use in the Pacific region is restricted by the high incidence of allocation of key goods in these zones to governmental institutions and NGO's. Therefore, the predicted urban structure in the General Plan is not being consolidated.
- The urban structure of the metropolitan area of Colon is consolidating, with the conversion of military bases in the South sector and the interstitial development in the northeastern sector.
- The supply of land for urban uses in Colon, identified by the General Plan, exceeds by far the requirements of the metropolitan area.
- The housing available in the area of the canal covers approximately half of the requirements of the residential metropolitan submarkets of middle/high income for next the five years.

2.8 Guidelines for the Future Actions of the Direction of Technical Planning

- In order to assure the good health of metropolitan residential submarkets of middle/high income levels, it is important to spread the integration of the remaining reverted housing over a period of at least two years.
- The introduction of vacant land for urban uses should be done according to the estimated metropolitan requirements. This land could satisfy many of the needs of the two metropolitan areas; on the other hand, it is important that the supply of undeveloped land does not completely surpass the requirements in order to maintain the market equilibrium.
- At the moment of considering the urbanization of new, not developed zones, the Direction of Technical Planning should compare the supply of new land for different urban uses, to the requirements at metropolitan level to find a good match.
- In a more proactive way, the DTP should coordinate with the MIVI, the municipality and the agencies that deal with urban infrastructure to prepare, in a coordinated way, a Urbanization Time-Line that identifies the specific limits of zones to urbanize in the canal area, as well as the dates of their preparation and introduction to the market. This could become an execution mechanism of for the General Plan, at an intermediate phase between the guidelines of the itself and the preparation of the local plans by the DTP.
- The DTP and the Direction of Marketing should work more closely in the identification of the projects that the RA promotes, especially in those from the key sectors, in order to ensure that the projects that are offered to the market have the technical foundation and suitable studies. This way, it will be possible to improve the technical bases of the projects that will improve the market response.

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- The DTP will have to begin a process of evaluation of the economic and technical elements of the promotion strategies for projects in the Maritime, Commercial, and Industrial sectors in order to be able to offer recommendations for the appropriate changes that will allow the Direction of Marketing to revert the unfavorable economic performance of these sectors.
- In projects that are originated in the DTP, like for example the Local Development Plans, or operations for another type of projects, the projects of the key sectors that show an unfavorable economic performance such as: Maritime, Tourism and Commerce should be prioritized.
- The DPT will have to make a study to determine the yield of the investments by type of projects to be able to foretell the impact that new investments will have in the regional economy.
- Other specific recommendations will be proposed in chapter 3, Guidelines for the Evaluation of Projects.

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3. Guidelines for Criteria and Procedures in Project Analysis

- In this chapter proposed criteria and procedures that intend to strengthen the capacity of DTP project analysis will be proposed. Specifically, criteria and procedures will be recommended to respond to investors' requests for the use of goods, to support public auction for housing, and to support the evaluation of economic impacts of Local Plans.

3.1 Types of Projects/Operations that are Analyzed by the RA

RA must process four existing types of actions related to projects. Each one of these work lines is dealt with in a different way according to their specific nature. These are summarized as follows:

- **Public Auction:** proactive activity: it implies planning and market studies by the ARI. The technical responsibility to promote this type of operations corresponds mainly to the Direction of Marketing. It involves the following categories of action:
 - promotion and marketing of projects of the key sectors (maritime, commercial, industrial, tourism) and of other productive sectors;
 - selling/renting/concession of existing real estate.
- **Request of Investors for the Use of Goods:** reactive activity: it implies the analysis and evaluation of external initiatives to the ARI. The technical responsibility to examine this type of operations corresponds jointly to the Direction of Technical Planning and the Direction of Marketing. It involves the following categories of action:
 - technical identification/evaluation of initiatives of the private sector to use an existing good;
- **Requests of Allocations of Institutional Projects:** internal reactive activity of the ARI. The responsibility for decisions in this type of operations corresponds to the ARI's Administration. It involves the following categories of decision:
 - administrative decision/political decision.
- **Preparation of Local Development Plans:** internal proactive activity for territorial planning/organization of the ARI. The technical responsibilities to promote this type of operations correspond to the Direction of Technical Planning. It involves the following categories of action:
 - multi-disciplinary planning
 - inter-institutional coordination with other specialized agencies from the central government, local governments and, the community.

Of the four categories described previously, in ARI's evaluation process the following rolls correspond to the DTP;

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- **Productive Projects Promoted by the ARI:** under the premises that the Direction of Marketing does specialized market studies it will be possible for the DPT to express its technical opinion in the corresponding instance of such studies;
- **Productive Projects and Uses of Assets Requested by Private Promoters:** the DTP should ask for greater information than is presented in the requests at the moment;
- *Housing Sales:* under the premises that there has been a market study before selling the houses, the DTP will support the operation with technical information about the operation, including market prices estimates;
- **Allocation Requests for Institutional Projects:** the DTP is excluded from the decision making process and can only express a limited opinion;
- **Preparation of Local Development Plans:** the role of the DTP will be discussed in the final chapter of this report. The tools proposed to evaluate the economic impact of the Local Plans will appear further ahead in this chapter.

3.2 Definition of Approval Criteria

3.2.1 The Conceptual Context of Project Evaluation

The evaluation of projects is a phase among other phases that conform a set of the so called project cycle. In general, by means of specialized institutions, country's governments take part in the analysis of projects that will be the object of international loan contracting. Also, the financial institutions that will grant the loan for the project, develops - in general, all the phases of the cycle. This cycle has a well-defined sequence of activities that have been improved by international development institutions such as the World Bank and the Inter-American Development Bank, among others. The proposals for projects that enter the ARI, and that in a certain instance must be examined by the DTP, are located within an activity that the government and the law has delegated to this institution which is in charge of the reversion of assets in the Interoceanic Region.

Even though the proposals that enter the ARI are not indeed, subjects of international loans, but private sector initiatives that are sponsored by their own investments, the ARI, as Panama's government representative and guardian of the reverted assets, has the role of making recommendations on these proposals, in order to sponsor the best possible use of the resources. Therefore, its role is similar to the role fulfilled by a government or by an international development bank in that it needs to know about the development initiatives that will take place in the reverted areas. For this reason it is important to analyze ARI's role in the study of the project cycle for the reverted areas.

In order to better understand the role of the ARI, and specifically, of the DTP in the " evaluation " context of projects, it is necessary to briefly clarify the conceptual frame of the project cycle in general, and then establish where and what level to locate the evaluation activity of the DTP within the conceptual frame.

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3.2.1.1 The Project Cycle

In the project cycle, six (6) phases are defined and they are developed in a chronological sequence:

- identification of project;
- preparation (or design) of project;
- evaluation (or ex - ante analysis) of project;
- decision committee negotiations and presentations;
- execution and supervision;
- ex – post evaluation.

The development of the cycle up to the evaluation stage, where the technical preparation of the project stops, requires the aid of different specialized technicians in diverse disciplines.

In order to better understand what has been said, and to help give a context to the DTP's evaluation activity, we will briefly define the project cycle phases that are relevant to the DTP.

Project Identification

The stage of identification of projects consists of an analysis exercise by means of which it is decided if a project is apt to be considered, or should be discarded initially. In general, the first criterion to identify a project consists in being sure that the possible project is of interest to the country, which is determined by means of its compatibility with the nation's development objectives, and more specifically, with the objectives of sectoral development to which the project corresponds. In this stage, the project must pass a test of feasibility *prime facie*, which means that the project must present the technical solutions that it proposes, and give a preliminary idea of its expected costs and benefits. A more complete feasibility study is made in later stages of evaluation.

The identification, then, is an exercise of selection of some projects among many that can be considered and, as a result it produces a group of projects that receive authorization to continue their study in the following phases.

It can be observed that the level of information in this initial stage of identification goes much beyond a simple letter of intention, and even contains already preliminary information on the project, covering technical institutional, financial and economic aspects.

Evaluation of Projects

After the identification stage, the stage of project preparation follows. This stage consists in its detailed design and after this stage is finalized, it is possible to initiate the stage of evaluation of the project.

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It must be noted that in the preparation stage, feasibility studies are prepared. These contain preliminary designs of technical options comparative costs and benefits among different solutions, until the most advisable solution is obtained. That is why, the evaluation of the project can only take place with complete information on all its aspects.

The evaluation stage is perhaps the most critical, since it is in this stage in which the project is examined in depth and the results are given to a committee that has the authority to approve or to reject the project. In the experience of the international institutions, rarely a project at committee level is rejected, since the ones that arrive at that level, have been put under numerous scrutinies and double checks of all their elements.

In the evaluation stage, one can distinguish four (4) aspects that can give a definitive recommendation on the analyzed project:

- Technical aspects
- Institutional aspects
- Economic aspects
- Financial aspects

A summarized explanation of these aspects is given as follows:

- **Technical Aspects:** it is analyzed if the project is correctly conceived, if its technical design is appropriate, and if it is fitted to the technical and prescribed norms that are relevant to its nature; the considered technical options that demonstrate that the chosen option is the best one are analyzed; the proposed technical solutions, and the expected results are examined. In other words, this stage carefully examines aspects of design, technology, equipment that will be used, calendars of execution, etc. The most important part is the analysis of costs and the technical information that they are based on. The activities proposed for the implementation of the project and for obtaining the necessary material and human resources for execution are also examined.
- **Institutional Aspects:** the set of governmental policies, normative procedures, and the legal frame in which the project will be developed are analyzed, in order to ensure that institutional obstacles neither for their approval nor for later execution will appear.
- **Economic Aspects:** In general, the governmental agencies delegated to make this stage of evaluation must make comparative cost-benefit analysis among the different project designs, determine the best design, and soon compare it with other proposed projects of other sectors. This responds to the logic that all the proposed projects will not be able to be financed, no matter how very appropriate they are. This is about selecting those projects that can better contribute to the country's (or the region's) development. It can be observed that, practically, the first condition for the economic evaluation, is non-economic, which is apparently a paradox and it corresponds to a value judgment opinion that each government assigns to its political development objectives.

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Nevertheless, this non-economic condition is a fundamental one, because the decision to approve or reject a project has to be seen in the context of the public's welfare, which is defined by objectives based on the society's global priorities, expressed by the national governments.

Once these objectives are defined, the project is put into an analysis of its costs and benefits for the country, and not in an abstract economic space. Its results are expressed in an economic rate of return, for which efficiency prices of the projects have to be calculated and adjusted to other exchange and inflationary elements. This exercise requires specialized consultations between the economic analyst of the project and governmental employees. In general, these specialized studies take time and effort, and require specialized personnel.

- **Financial Aspects:** An important aspect in this stage is to determine if the financing sources to execute and to implement the project indeed exist. It is not of interest to approve a project that will consume natural or other resources if it becomes paralyzed by lack of funding, foregoing, the implementation of another alternative project.

Once this aspect is solved, another important aspect is to determine the financial feasibility of the project, that is to say, if it will be able to generate funds that will allow it to obtain a rate of reasonable yield. For this, it is important to know the project's price structure and its production costs.

This is done not only to make sure that the project will work as it is presented, but, in addition, to avoid possible State losses, in case its liquidation could involve public resources. Generally, the result of this analysis appears in the form of a financial flow that contains the project's costs and financial benefits (non-economic), and its internal rate of return (that is not the rate of economic yields).

Project Evaluation Expected Results

In every project, there is a mechanism for the recovery of investment costs. This is obtained by means of the gains that a company collects through the sale of goods or services, or by public income obtained through rates and/or taxes, for example in infrastructure, highways, or projects of social interest in general.

When evaluating the cost recovery mechanisms, what is really being done, is the quantification of the projects final costs, which must reflect in general the cost of opportunity of the economic resources used by the economy in the materialization of the project, or in other words, the indication of the options that have been given up when choosing this project and not another one.

As it can be appreciated, the process of project evaluation is complex, and requires that the project is formulated with all its integrating aspects, specialized personnel must do this. Only after this stage of the project cycle has been completed, it is possible to pass to

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the following stages of negotiations and committee presentations for decision, execution, and supervision and, ex - post evaluation.

3.2.2 The Marketing Stage in Project Analysis

ARI's procedures for the allocation of assets are described in the General Catalogue that is at public disposition. In that publication two types of assignments are defined:

- Public Auction witnessed by public notary
- Investor Request for the use of goods

Both assignments give the ARI different action approaches. In the case of Public Auction witnessed by public notary, in general, the ARI takes the initiative to offer assets to the market, for which a reaction is expected from the investors and/or buyers. In this type of operation, it corresponds to the ARI to identify the type of good and the use that is expected, which implies an activity of planning and programming.

In the case of the requests of investors for the use of goods, the ARI's role is to react to the demand, which implies an examination of the request. Both actions are different by nature, the first one is proactive and the second is reactive and they must be processed by different methods.

Although the publications explain the steps that have to be taken in each case, the internal technical procedures are made by the DTP and the Direction of Marketing, and in this last instance, by the project coordinators.

In the previous paragraphs the DPT's existing deficiencies in the procedures for the analysis of " projects " were described. Nevertheless, the procedures of the Direction of Marketing also suffer from certain imperfections that could be improved.

From our research on these procedures, the following elements of discussion appear:

- In the case of the planning of public auction witnessed by notary public, it is not clear if rigorous marketing studies that identify if the demand for these goods exists and, more important if there are favorable conditions for connected economic activities, are ever made.
- In the case of the requests of investors for the use of goods, the applicant is not asked to present information on the projects that satisfies the technical requirements described above, without this information it is very difficult to make a serious evaluation.
- The Direction of Marketing elevates a request to the category of project only after assessing the economic solvency of investors and the employment that will be generated by the potential project. The environmental impact study is requested only after a decision is adopted to approve the project, this is a dangerous practice

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and could waste institutional time in case the environmental impact prevents the implementation of the project.

- The investors do not present suitable technical information on the projects, arguing, on the one hand, that it is expensive to make studies before knowing if the project will be approved, and on another found, that they do not wish that their effort be filtered and be taken advantage of by other competitors. This results in a serious limitation to ARI´s project evaluation capacity from the first marketing instance.

3.2.3 The Evaluating Activity of the DTP in the Context of the Project Cycle

The “evaluation” of projects that the DTP does at the moment, corresponds in fact to the identification of projects activity, because the ARI does not demand that the complete projects be presented for the institution’s consideration.

It is important to establish the evaluation activity in its true dimension, because only then will it is possible to find the logic to define the analysis criteria to express technical opinions on the presentation of projects.

In the case of the project “evaluation” which the DTP faces, it is necessary to state the following:

- the “projects” that enter the DTP to be evaluated are not such, in the case of projects by external promoters. They are a letter of intent that describes, with a different manner in each case, the potential project that they want to invest in. In some cases, this letter can include a very rough profile of the project. In the case of projects that the ARI wishes to promote, these are presented in an executive summary form of the project, at best;
- The technical levels of these presentations do not conform to what has been previously defined in the project cycle, as a project;
- In the case of the letter of intent for the presentations of the so-called “ big “ projects, these generally go to public auction and the evaluation of this auction is not done by the DTP. The auctions are evaluated according to public auction norms established by national and international legal frameworks. The projects that would correspond to this category are, in general, projects of tourism, manufacturing industry, commerce, or marine, that correspond to the key sectors of the reverted areas’ development strategy;
- The present evaluation format is a so-called route paper and an already established evaluation form. Due to the information limitations that most of projects present, the DTP has to, as best as possible, offer its technical opinion, concerning physical, urban, spatial and economic aspects. After this opinion, the project follows the pre-established course.

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It can be concluded that the presentations of projects do not allow them to be analyzed within an evaluation context, according to the necessary conditions that were defined in the description of the project cycle.

At best, the presentations that the DTP must evaluate can be registered within the identification phase, according to the project cycle.

3.2.4 Obstacles in the Identification and Evaluation of Projects Presented by Other Entities

The projects presented by other organizations arrive at the DTP after being introduced in the ARI, and having been classified in two types: projects presented by the private sector, and projects presented by the public sector and NGOs. The DTP is asked to evaluate only the presentations of projects presented by the private sector. As a result of its evaluation activity, the DTP can only express a technical opinion on the presentation, and this will depend on the level of information that the presentation contains.

The DTP has 15 days to study and respond to each presentation of potential projects. The “evaluation” is distributed between the Department of Urban Planning, and the Department of Economic Planning. Each Department evaluates specific aspects, according to the guidelines and regulations of the General Plan.

Even that the introduced presentations corresponded to a finished level of the project cycle’s stage of preparation (as were described previously), it would be impossible to do the evaluation stage in 15 days, even assuming that the DTP had sufficient specialized personnel to do all the aspects of the evaluation. It can be observed that the stage of analysis or evaluation of a project in an institution as the I.D.B. takes several months. The group that develops this task is conformed by an interdisciplinary group of specialists advised by consultants, and this, with projects that have been designed up to the feasibility level.

When reviewing a presentation that the private sector has made to the ARIs, it is clear that these do not respond to any presentation format. The presentation can be a simple letter with very little information, or a project presentation with more elaborated information. But these last ones are approximately a 2% of the total.

Consequently, the great majority of the projects do not provide suitable information that could be used for a coherent identification process. Because they are presentations and not well prepared projects, they can much less be used for an evaluation that contains technical economic, institutional and financial aspects, as it was previously described.

The other option that the DTP has as far as “ evaluation “ of projects, is to plan operations to fulfill goals included in the budget, and the elaboration of local plans. In these cases, it is the DTP who must formulate, evaluate, and justify the operation, which corresponds better to the activities of the project cycle. This capacity of formulation of local plans will be the object of Phase II of this technical assistance and exceeds the scope of work in the present Phase.

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But, on the other hand, according to ARI's mandate, the need for greater precision's in the presentations of letters of intent for projects, could transform the institution into a manager of projects, increasing its normative attributes, which would imply re-designing some of its functions and, possibly, modifications of the ARI's organic law. Clearly, the implications of this process are complicated and would require a deeper study that escapes this work.

Reality indicates that, in absence of a uniform format for project presentation, and without established requirements on the level nor type of information that it must contain, it is not possible to establish a uniform format for evaluations that follow the previously discussed guidelines corresponding to the project cycle.

3.2.5 Useful Criteria To identify and To Analyze Projects in the Present Context

From the previous discussion, it is clear that it is not an attribution of the DTP to dictate neither the process nor the level of information required entering project presentations to the ARI. The scope of this work does not cover this aspect either.

While there is not a decision to modify the form that the public uses to ask for the use of the reverted assets, it will not be possible to modify the project cycle modality, and in consequence, the information will continue entering the DTP in the same way. Therefore, the DTP will not be able to use tools of project evaluation, since ARI doesn't receive projects, as defined above in the project cycle.

It will be possible, nevertheless, to introduce new work routines of sufficient flexibility to allow an examination of the presentations to a level of project identification (not of evaluation), that will have to be adapted to each case, since, as has been indicated, to be able to make a rigorous identification of a project, it is necessary to have a project (with a profile and a feasibility prime facie, at least), and second, with adequate information about it. In the present context, the DTP has no access neither to the first nor to the second.

Consequently, the role that fits the DTP in the process of examination of presentations for possible projects, can be summarized in the following points:

- According to the information level contained in the presentations of the potential projects, the DTP has the role of identifying these potential projects presented by private promoters;
- The information elements that comes with these presentations are insufficient to be able to make a suitable identification;
- The information that typically comes with these presentations does not allow a suitable evaluation because of the lack of the necessary information to do so.

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3.2.6 Recommendations to improve the Project Analysis Cycle

At present, project presentations that arrive are analyzed with very limited information, and the technical personnel of the DTP must adopt many assumptions and make estimations without real data.

Recognizing that the final solution to these DTP evaluation limitations escape their will, it is possible to propose within the frame of the present evaluation of the presentations analyzed by the DTP, that promoters be asked in a second instance of dialogue, to complement the letters of project presentation with certain minimal information that could allow the examination of the key aspects of the possible projects, knowing clearly that only the identification level will be reached.

According to the component elements of the stages of identification and evaluation of projects that were described for the cycle of projects, it is recommended that the ARI establishes a unique and uniform project profile form, and that projects should be presented according to it. This profile will contain the following information:

Project's Profile:

- Description of the project
- Technical Pre-feasibility
- Environmental Impact
- Financial Pre-feasibility
- Private Cost Benefit Analysis
- Estimation of Employment generation

Each element of this profile will vary in its degree of detail and complexity according to the nature and the scale of the project.

3.3 Quantitative and Qualitative Project Analysis Methodologies

In the previous section, criteria to evaluate or to identify projects were discussed. In the present section, DPT tools to support the processes of project/proposal analysis and, planning of Local Plans are presented. The selection of these tools will be based on the following criteria:

- The selected tools must be cost-effective and pragmatic. This means that tools should be selected as to work with data of easy access, existing or relatively easy to obtain;
- The tools that are selected must be of a technical level that allows its use by the existing technical personnel, and do not require disproportionate training investments for their application;
- The tools that are selected must serve to solve the practical problems that the DTP faces. It would be useless to have sophisticated tools that cannot be applied.

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The intended tools are:

- Guidelines for the analysis of pending projects
- Model of Hedonic Prices, to consider housing market prices in the reverted areas (MOPHAR);
- The employment multiplier, to consider generation of employment by the projects;
- Economic Impact Evaluation Methodology for Local Plans.

3.3.1 Guidelines for the Analysis of Projects in Proceedings

There is no existing model for the determination of the optimal size of a project, nor a family of models that can establish it, given the wide range of projects that are presented in the reverted areas.

In fact, as it was established in the Economic Diagnosis, the types of presented projects are of a wide diversity and, their evaluation requires project specific studies, and therefore, of diverse experts.

Consequently, it is not possible to have a model or models that can become general for the evaluation of such a wide range of projects. Even the scale within a same type of project will require different analysis.

The methodology of analysis and evaluation that is recommended here is based on the real projects that the DTP will have to examine and that denominate “ projects in proceedings or projects under consideration“.

3.3.1.1 Studies and Determining Factors of the Size/Scale of Projects and Operations

As of November of 1999, there were 108 projects under consideration, 40 different types, 8 types of activity, which included operations of the commercial, industrial, marine, environmental protection, institutional projects, and housing and land.

As it can be observed in Table 22, the range of these projects is wide and covers, in general, the future types of projects that can be presented.

When it is necessary to have studies that produce the necessary information to evaluate complex projects, like those that generally correspond to the key sectors, it will be recommendable to search for support in external experts to the ARI. As a guide of action for the contracting of such studies, we present a list of the types of studies and determining factors for projects that will be need this evaluation process.

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Table 23 shows a general matrix of the studies and determining factors of the projects by sectors, whereas Table 22 shows an application of the studies and determining factors that are necessary to evaluate for ARI's projects under consideration.

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Table 22
Necessary Studies and Determining Factors for the Evaluation and Planning of
Projects Application to the Reverted Areas Projects Under Consideration
According to Listings to November of 1999

Tipo de Proyecto por Sector	Estudios Necesarios								Factores Determinantes del Proyecto											
	E1	E2	E3	E4	E5	E6	E7	E8	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	
SECTOR COMERCIAL (15 Proyectos/Operaciones)																				
Venta de Terrenos (1)	0	0	0	1	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	
Venta de Edificios (9)	1	0	0	1	1	0	0	0	1	1	1	0	1	0	0	1	1	0	1	
Venta de Teatro (1)	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
Hospital (1)	0	1	0	1	0	0	1	1	1	0	0	1	0	0	0	1	1	0	0	
Comunidad de Jubilados (1)	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	0	0	0	1	
Reordenamiento Territorial (1)	1	1	1	1	0	1	0	0	1	0	0	0	0	1	1	0	1	0	0	
Instalaciones Bell South (1)	1	0	1	0	1	1	1	0	0	1	1	1	0	1	0	0	0	0	0	
SECTOR INDUSTRIAL (9 Proyectos/Operaciones)																				
Zona procesadora de exportación (5)	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	
Almacenaje de Grano (1)	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	1	0	0	0	
Canteras (1)	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	0	0	0	
Cultivo de Tilapa (1)	1	1	1	1	1	1	1	0	0	1	0	1	0	1	1	0	0	0	0	
Centro Multimodal de Howard (1)	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	0	1	
SECTOR MARITIMO (10 proyectos/operaciones)																				
Reparación/Mantenimiento Equip. Marít. (2)	1	1	1	0	1	1	1	0	0	1	1	1	0	1	0	0	0	0	1	
Reparación/Mantenimiento Contenedores (2)	1	1	1	0	1	1	1	0	0	1	1	1	0	1	0	0	0	0	1	
Almacenamiento/Trasiego de Combustible (1)	1	1	0	0	1	1	1	1	0	1	1	1	0	1	1	0	1	0	1	
Reparación/Mantenimiento Navas/Veleros (3)	1	1	1	0	1	1	1	0	0	1	1	1	0	1	1	0	0	0	1	
Almacenaje productos a granel(cemento) (1)	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	0	0	0	0	
Venta Terrenos (1)	1	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	1	
SECTOR TURISMO (8 proyectos/operaciones)																				
Terminal de Cruceros (1)	1	1	1	1	1	1	1	0	0	1	1	1	0	1	1	0	0	0	1	
Coordinación de Cruceros (1)	0	0	0	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	1	
Escuela de Turismo (1)	1	1	1	0	0	1	1	0	0	1	1	1	0	1	0	1	0	0	0	
Mirador Cerro Ancón (1)	1	1	1	1	1	0	1	0	1	1	0	1	0	1	1	1	0	0	0	
Desarrollo Turístico Playa Kobbe (1)	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	1	
Hotel/Proyecto Turístico Isla Gallegos (1)	1	1	1	0	1	1	1	0	0	1	1	1	0	1	1	0	0	0	0	
Parque Temático Lake View (1)	1	1	1	0	1	1	1	0	0	1	1	1	0	1	1	0	0	0	0	
Centro de Investigaciones STRI Gamboa (1)	1	1	1	0	1	1	1	0	0	1	0	1	0	1	0	0	0	0	0	
VENTA/ASIGNACION/ALQ. LOTES (31 operaciones)																				
Venta Lotes Comerciales (7)	1	0	1	1	1	0	0	0	1	1	0	1	0	0	0	1	0	0	1	
Venta Lotes Residenciales (13)	1	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	
Venta Lotes Industriales (2)	1	0	1	1	1	0	0	0	1	1	0	1	0	0	0	1	0	0	1	
Venta Lotes Otros Usos (6)	1	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	
Arrendamiento Lotes (2)	1	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	
Concesión Lotes (1)	1	0	1	1	1	0	0	1	1	0	1	0	0	0	0	1	0	0	1	
PROTECCION AMBIENTAL (3 proyectos)																				
Reforestación (1)	0	1	0	0	1	1	1	1	0	1	0	1	0	1	1	0	1	0	0	
Fijación de Carbono (1)	0	0	0	1	0	1	1	1	0	1	0	0	0	0	1	0	1	0	0	
Santuario de Primates Islas Tigre y Bruja (1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	
PROYECTOS INSTITUCIONALES (6 operaciones)																				
Asignación de Lotes/Edificios (4)	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Hospital Gorgas (1)	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	
Arrendamiento Lotes Zona Libre Colón (1)	0	0	0	1	1	0	0	0	1	1	1	1	0	0	0	0	1	0	1	
VIVIENDA (26 operaciones)																				
Venta de Viviendas Ocupadas (17)	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	1	
Venta de Viviendas Desocupadas (9)	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	
Total Proyectos/Operaciones: 108																				Total Tipo de Proyectos/Operaciones: 40

1=SI, 0=NO

E1 - E8, F1 - F11: Estudios y Factores Determinantes según Tabla xxx

Fuente: Cómputos/Reconciliaciones de listados: Proyectos en Trámite, DPT, 16 Nov. 1999;
 Planillas Electrónicas, DPT, 1999

Table 23
Matrix of Required Actions To Obtain Necessary Information for the Evaluation and Planning of Projects

TIPO DE INFORMACION	PROYECTOS EN TRAMITE POR SECTORES A NOVIEMBRE 1999							
	Comercial	Industrial	Maritimo	Turismo	Lotes	Protección Ambiental	Institucionales	Vivienda
ESTUDIOS DE PRE-INVERSION								
E1. Requerimientos de Infraestructura nueva								
E2. Estudio de Pre-Factibilidad.								
E3. Requerimientos nuevos de Accesibilidad.								
E4. Estudio de Mercadeo Local.								
E5. Estudio de Mercadeo Internacional.								
E6. Estudio de Impacto Ambiental								
E7. Estudio de Factibilidad Financiera.								
E8. Estudio Costo-Beneficio Económico								
<u>Total de Estudios</u>								
FACTORES DE MAYOR RELEVANCIA QUE DETERMINAN EL TAMAÑO O LA ESCALA OPTIMA DEL PROYECTO								
F1. Demanda Local								
F2. Demanda Internacional.								
F3. Competencia Mundial.								
F4. Inversion Empresarial.								
F5. Inversion Individual/Familiar.								
F6. Ingeniería propia del Proyecto.								
F7. Condiciones de Medio Natural								
F8. Restricciones Normativas/Legales/Externas								
F9. Objetivos de Desarrollo A.Rev./País								
F10. Salario Comparativo Internacional								
F11. Sinergia c/n actividades complementarias.								
Total de Factores								

1=SI; 0=NO

Fuente: Diagnóstico Económico

Pre-Investment Studies

The objective of these studies is to gather diverse technical information that is necessary to be able to seriously analyze a proposal or project. They are studies that are to be done as a previous condition to analyze a project. They represent an investment in the formulation of the project, that is why they are called pre-investment studies.

When a project a proposal is presented to the ARI, the businessman at issue has (or must have) the suitable information that allowed him to evaluate his proposal. This information emanates in general from the accomplishment of some type of previous pre-investment study, since it is known that when businessmen present a proposal, it is done with the security that the investment will be profitable. All businessmen do this exercise. When its evaluation is negative, the proposal is not presented.

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The ARI should demand that this information be presented, in order to be able to evaluate the presented project.

On the other hand, when the ARI offers to the private sector the use of some asset for a determined use, it is the ARI that must make these previous studies in order to be sure that the use is adequate and that it will be of interest. In other words, the ARI must know ahead of time that the offered activity will be profitable, so it doesn't find itself with a lack of responses to its proposals. Therefore the ARI must "invest" in previous studies.

The minimum types of studies that are required for the projects will vary according to the specific operation. For example, the sales of occupied houses do not require an environmental impact study since they are existing goods equipped with mitigation elements for negative environmental impacts (sewage system, streets, drainage, garbage collection, etc.). However, an operation that offers lands or coasts for activities of fuel storage and transfer, for example, requires a very careful environmental impact study.

For each specific project, it should be determined, through teamwork, which are the necessary studies, the level of depth of the studies, or if it is necessary or not to order some study. The judgment elements will arise from the joint discussions and the technical recommendations of the specialized employees. The minimum necessary types of studies for the accomplishment of this exercise are described next.

E1. New Infrastructure Requirements.

For each proposal, it will be necessary to identify the existing or nonexistent but necessary infrastructure, so that the project can be implemented. From this study the decision will be made on who will have to incur in these costs (investments), if it will be the investor or the ARI (or both).

In the case of industry for example, the result of this study should be compared to a study of international trade, in order to have orientations on who should incur in the infrastructure investment, if it is necessary to develop any.

E.2 Pre-Feasibility Study.

This study is a technical description of the project, the processes that it uses, etc. It is a minimum requirement to know if the project will work from technical, financial, and commercial points of view.

E.3 New Accessibility Requirements.

This study implies an infrastructure analysis, but it is referred more specifically to the cases of empty lands, ecological projects, or natural accessibility, for example coastal characteristics in the case of marine projects.

E.4 Local Trade Study

It is done specifically for projects of local scope, as referred to the project's sales of goods or service, and its possible investors.

E.5. International Marketing Studies

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The mere existence of some installation, infrastructure, or propitious condition for an economic activity, does not assure that it has comparative advantages with respect to other countries. For example, it is not enough to offer a site for an industry because it is near a port, if there are other factors of production for which Panama could be in disadvantage with respect to other countries.

This study is of vital importance for activities that compete in the worldwide market. It will be done specifically for projects of international scope, where there will be competition with other countries for the proposed activity. It also refers to the attraction of foreign investors.

E.6. Environmental Impact Study

This is the well-known study that will be applied according to the nature of the project. This type of information will have to present in all the projects to assure the fulfillment of the Regional Plan's environmental norms.

E.7. Financial Feasibility

This study intends to identify the financial standing of the project, both in its financial yield as in its availability of investment funds. This study is important since it demonstrates the project's viability.

E.8. Economic Cost-Benefit Study

It will be done when the scope of the project implies the use of resources of national interest. In general, this is a study for projects of great impact in the national economy, like the proposed multimodal center for Howard.

Factors of Greater Relevance that Determine the Size or the Optimal Scale of a Project

Each project has its own characteristics that define it, and, in addition, different scales. Some depend on many factors for their optimal determination, while other, more simple ones, depend on a few number of factors. A number of factors of greater relevance for the determination of size of the projects under consideration are described below.

F.1. Local Demand

A project will be very different according to the market to which it is oriented to. The demand for the project's product is a crucial factor of its viability. This factor will be determining on the type of project that will be viable.

F.2. International Demand

This factor is more difficult to identify and it is based fundamentally on studies of the international market. But it is a determining factor since if the factor is negative, the project will not be viable; no matter how much optimal physical conditions and modern technological processes it has for implementation.

F.3. World-wide Competition

This factor is related to studies of international market and the factor of international demand. Beyond the existence of an international market for a certain product that could be produced in the reverted areas, it will be necessary to have a profile of the

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international competition. Only then the “ success “ of the product can to be assured. In other words, this study looks for an “ appropriate niche “ for the product.

F.4. Business Investment

It is important to know what type of investor can be expected for a type of project. There will be projects that because of their scale are only available for industrialists. This way the promotion can be oriented better.

F.5. Individual/Family Investment

There are projects that because of their scale will be more attractive for an individual/family investor. This it is the case of retail trade, house sales, etc. A suitable promotion oriented to the individual will be very different from that oriented to the industrialist and will determine the size of the operation.

F.6. Project’s Own Engineering

In general the most determining factor of the optimal size of a productive project is its own engineering. This is still more valid for projects whose processes have defined thresholds of scale. The mechanization of a port is a typical case in where this factor is very important.

F.7. Natural Means Conditions

This factor is relevant in the case of harbor projects and similar activities, since they require of marine routes and special conditions of those routes. The natural means will be determining in the feasibility of projects that depend directly on this factor, and will be determining of the size and capacity of the operation. The same thing applies to ecological projects since they can only exist if the appropriate natural means exist.

F.8. Normative/Legal/External Restrictions

It is known that countries have a series of economic externalities that do not respond to economic efficiencies but rather, to the self-protection of national groups or to tariff and no- tariff protectionism. Cases as the described are called “ closed economy “. It is known by the Panamanians that in this country’s society there are factors of this type and they are locally named “ restrictions “.

These restrictions must be identified and corrected so that they do not interfere with the free competition of the possible projects in the reverted areas. If restrictions “ exist in Panama “, these will be transferred, without any doubt, to the reverted areas as these territories are integrated more and more to the national economy.

F.9. Development Objectives of Reverted Area/Country

There will be projects that originate from development objectives. In these, this will be a determining normative factor for the project.

F.10. International Comparative Wage

According to the proposed activity, it will be necessary to know if the level of wages of Panama is competitive or not in this activity. This it is an important factor especially for the Industrial sector.

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F.11. Synergy with Complementary Activities

There are some activities that require synergies from other activities. The existence or not of those activities will be a determining factor for its development.

3.3.1.2 Implementation of This Methodology

The complexity to apply these criteria in the evaluation of projects can be seen in Table of-22. The Table shows that for a total 108 pending projects/operations in reverted areas, there are a total of 40 types different of projects or operations. A model that can cover this range of operations does not exist. Each type corresponds to a different specialty that involves in greater or smaller degree the analysis and processing of the 8 types of specialized studies and the 11 determining factors indicated above.

The same Table of-22 shows that only in studies of international trade, 29 different types of studies are required and, they vary from as diverse activities as marine projects that include as diverse technologies as maintenance of containers and ship repair only to mention some; industrialists, who talk about very diverse products and commercialization; merchants, that have different items and operation sizes; and so on.

The same Table 22 shows that, while some types of evaluations talk more about marketing, others depend more on engineering factors or conditions of the natural environment.

It is not cost-effective to maintain technical personnel that can cover all these types of specialties within the institution. This would require an elevated number of diverse specialists, and because of their professional level they would be very expensive and, would be considerably idle.

In conclusion, because of the complexity of this type of evaluation, the ARI will have to contract external studies made by specialized consulting companies.

3.3.2 Hedonic Price Model for the Reverted Areas (MOPHAR)

3.3.2.1 Model Description

The model of Hedonic Prices is a econometric model that allows to forecast the market prices of a heterogeneous good, by means of the estimation of the effect that each one of its attributes has in the determination of its price.

It uses the word hedonic because the effect that each attribute exerts on the consumer, associated to the utility, preference, or degree of “ pleasure “ that each attribute offers the consumer, determines the decision of the consumer with respect to the purchase of that good, and the price that he is willing to pay for it. Because of this, there will be attributes that have more effect in the decision of the consumer. The model has the objective to assign a quantitative value to each qualitative attribute of the good.

This approach to determine market prices of a good has had ample use in the U.S.A. and recently, in Latin America. It was introduced for the first time by Ridker and Henning

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(1967) in order to forecast in an econometric way the values of the real estate market of the city of St. Louis, Missouri. But it was Rosen (1974) that formalized the theoretical bases of the model.

In the case of an heterogeneous good like housing, the market prices would be determined by the revealed preference of the consumers or, by each attribute, which, in this case, would be conformed by the characteristics of the house which would include variables like number of rooms, constructed surface, land surface, socio-economic level of the neighborhood, etc.

The applications in Latin America are relatively recent. Figueroa (1991), and Figueroa and Firinguetti (1992), applied this model in Paraguay to consider the prices of the social interest housing market. Other studies have been made using this model in Chile (1993,1991) and Venezuela (1992).

Generally for the governments, the determination of the market prices of the new houses of the social interest market is a great challenge, since the only known price for this type of houses is the private cost, which does not reflect its market price. The approach of the hedonic prices represents a good opportunity to solve this deficiency.

The model can be generalized to determine the market price of any heterogeneous good where attributes can be identified and conform their “ basket “ of consumer preferences. It would be possible, therefore, to construct a model for the determination of the prices for the land market, whose attributes could include socio-economic level of the neighborhood, accessibility to centers of services, infrastructure level, level of nearby equipment, square footage, etc.

In the case of the reverted areas, as a first step to introduce this methodology in the Direction of Technical Planning, a model of hedonic prices for housing will be constructed, taking advantage of the fact that there are databases that contain real market prices developed during the reversion process, with numerous housing attributes. Like all econometric models, this model will be perfected gradually, and in the future, taking advantage of the experience acquired with the first model, another one for the determination of prices of land will be constructed.

3.3.2.2 The Model's Functional Form

Like in all econometric applications, first, a functional form for the model's equations must be postulated. A way to solve this is “ to test “ diverse functional forms like for example, logarithmic, semilogarithmic, or reciprocal type logarithmic, and to select the one that gives the best statistical performance. This practice has been criticized since it represents a way “ to force “ the behavior of the model's variables.

However, it has become common to use a transformation called Box-Cox, which is more appropriate since it allows to obtain the functional form dictated by the own data used in the regression. In other words, this method allows that “ reality “ (the data) be modeled according to itself and without distorted forced mathematics.

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The estimation of models that use the Box-Cox forms requires complex maximization of functions of nonlinear probability. Four diverse forms of estimation of the parameters of the resulting functions have been proposed in the specialized literature: maximization of the probability function, maximization of the function of centered probability, estimation by nonlinear square minimums, and linear estimation by iterative ordinary least squares (OLS). These four forms of estimation give identical estimators for the parameters (regression coefficients), and identical matrices of covariance of the estimators. Thus, the conclusion is that the simplest method of the four, that is the estimation by iterative ordinary least squares should be used.

The model of Hedonic Prices of recent development in Paraguay was based on this theoretical evidence and used the linear estimation successfully using the model of the iterative ordinary least squares.

This theory and experience will save the DTP time and resources, since it will not have to repeat the experiments just described that would lead to the same conclusion.

Under circumstances where the method of Linear estimation by iterative ordinary least squares is relatively simple to apply, and that programs and computational routines of easy access in diverse computational packages already exist, and that recently it has been used successfully in an application similar to the present, it is evident and advisable to use this type of estimation method, for the MOPHAR.

The functional form of a linear econometric equation for the MOPHAR is defined:

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_n X_n \quad (1)$$

where:

Y: is the market price of the good (house); it is the endogenous, or dependent variable;

X₁, X₂... X_n: are attributes of the good; it is independent or exogenous variable

a: a number that is obtained from the regression and, called "constant"

b₁, b₂... b_n: are coefficients of regression of each attribute or exogenous or independent variable. n: it is the number of attributes that conform the good

a, b₁, b₂...b_n are unknown values (incognito) of the equation;

Y, X₁, X₂... X_n are known values, obtained from the existing databases.

Then, when knowing the prices in which the good was sold in the market (Y), and the "quantitative values" of the attributes of (X₁, X₂... X_n), one can calculate the unknown values of the coefficients a and b₁, b₂... b_n.

This is obtained using some method of econometric estimation, among which the most used is the one called ordinary least square, which is a method of iterative calculation.

When having the values of the regression coefficients, the first objective of the methodology has been fulfilled, but the final objective is to be able to predict the price Y of another good.

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This is obtained by replacing in the equation (1) the numerical values of the regression coefficients, and the values of the attributes of the good (X) of which we want to predict the price (Y). We will remember that each good has different attributes. Therefore, the values of the attributes (X) will be different for each good.

But the estimation of the coefficients of (1) using the variables of a single good, is not sufficient as to be able to be sure that the coefficients thus calculated will serve to forecast the price of another good. In general, the more information one has on the prices of different goods of the same type, like for example houses (values of Y), and of the values of the attributes associated to that good, like for example number of rooms, constructed surface, quality of the construction, etc. (values of X), the better the estimation of the coefficients of regression is (a, b1...), and there will be more confidence on the estimation of the market price of any good that we want to forecast.

This problem is solved extending the model of an equation, to another that will have the same functional form but that will be conformed by more than an equation. Each one of these new equations will contain values of Y and X₁, X₂... X_n, that correspond to other real examples of other goods that are known. If we have 14 known cases, and the attributes were 5 for the good, we would have the following collection of equations:

$$\begin{aligned} Y_1 &= a + b_{1,1} X_{1,1} + b_{2,1} X_{2,1} + \dots + b_{ij} X_{ij} + \dots + b_{5,1} X_{5,1} \\ Y_2 &= a + b_{1,2} X_{1,2} + b_{2,2} X_{2,2} + \dots + b_{ij} X_{ij} + \dots + b_{5,2} X_{5,2} \\ Y_{14} &= a + b_{1,14} X_{1,14} + b_{2,14} X_{2,14} + \dots + b_{ij} X_{ij} + \dots + b_{5,14} X_{5,14} \quad (2) \end{aligned}$$

- If the numbers from 1 to 14 (the number of observations) are called i, it would mean that in this case, i has values between 1 and 14, and would be thus expressed: i = 1.2.3...., 14.
- But i could be different from 14. It could be 8, 24, 654, etc. That is to say, i represents the number of equations of the model, or, in other words, the number of cases for which the values the prices (Y) and the attributes (X) of the good are known,
- with which we will calculate the values of the coefficients a and b of the model,
- with which the price (Y) of another good will be forecasted, a good of unknown market price, since it still has not been sold.
- In the same way, if we call j the number of attributes of the good, that in this case has values between 1 and 5, we can write j = 1, 2...., 5.
- In the same way that i, j can be different from 5. It could be 4, 8, etc.
- If we called m the number of attributes of the good (X), then we can write j = 1.2.... m, where m is the number of attributes of the good (X).

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We can rewrite the equation (2) in a more general way using the j and the i just described in the following way:

$$Y = \sum_{ij} b_j X_{ij} + a \quad (3)$$

Where Σ is a symbol that represent the sum of all the $b_j X_{ij}$ (a “matrix” of equation)
 a is the constant of the regression

$i = 1, 2, \dots, n$ (represents the number of cases, represented by equations)

$j = 1, 2, \dots, m$ (it represents the number of attributes of the good)

The equation (3) is run under a multiple regression using some technique of iterative estimation. The empirical evidence indicates that, in this case, the method of the ordinary least square minimum can be used, for which there is easy access through diverse software packages.

The result of the econometric estimation will consist of numerical values for the coefficients of regression a , and b_j . There will only be one value for a , and a value for each b of each attribute (b_j). The results of the estimation must be evaluated according to an established statistical methodology.

Once the values of the regression coefficients are known, the value of the dependent variable of the model will be able to be forecasted (Y).

In order to forecast the value of the dependent variable (Y), that represents, for example, the price of a good like a house:

- The values of the coefficients a , and b_j are replaced in the equation (3)
- The values of the attributes (X_1, X_2, \dots, X_n) that are known for the good for which we want to foretell the value (Y) are replaced in the equation (3);
- The equation is solved for Y .

3.3.2.3 Data that are needed to construct the MOPHAR

The MOPHAR is a model to forecast the market price of a house that will be put under public allocation. The objective of this is to project the effective earnings that will be obtained from that operation, since it is known that the authenticated price will be below the market prices.

The following data are needed to estimate the model and then to use it for the objective:

- Market prices of sold houses (endogenous or dependent variable, Y)
- Attributes that define the houses for which the market price is known, like quality of the town, land surface, constructed surface, etc. (independent or exogenous variable X_{ij}). Codification and mathematical representations of these variables.

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3.3.2.4 Experimental estimation of the MOPHAR

A general database from existing data was constructed in the direction of ARI Reverted Assets. It contains the market prices of the reverted houses that have been sold. These houses have series of data on attributes that will have to be selected.

With this database, that still must be prepared to run the model, two first estimations of the MOPHAR were made. The preliminary results appear in Annex mo1.

Function LINEST of the Excel Microsoft program was used in the estimation of the model. This it is a simple method, of easy access, known by computer users, and that fulfills the appropriate requirements to make the estimation.

3.3.2.5 Recommendations for the Future Use of This Tool

In the future, the knowledge of this quantitative tool will allow its improvement by the DTP personnel, to update the databases, and to replicate it to forecast prices of land, and of other real estate. Once the exercise to develop the MOPHAR is made, it will be used to forecast the market prices of houses that will be put out to the market in the future by public auction.

As an exercise for the personnel of the DTP, the future estimations of the MOPHAR will identify the steps to follow, and the technical necessities that will be required in the future to analyze the results. It will be possible, in addition, to experiment with other programs of econometric estimation.

For the maintenance and development of the model it is recommended that the DTP acquire the necessary the technical capacity, or that it becomes associated with some expert with knowledge and experience in multiple econometric estimation.

3.3.3 Employment Projection Techniques Using Economic Base Analysis

The basic sectors of the regional economy can be identified using the described location quotients in Annex CL.1. When knowing a region's basic employment, the non-basic employment is known (total employment must be known to be able to calculate these).

This data allows the use of a quantitative tool to be able to evaluate the impacts that a new investment will have in the regional employment. This is the basic employment multiplier that is described next.

3.3.3.1 The Basic Employment Multiplier

This method is based on the theory of the economic base, that postulates that a regional economy is formed by two types of sub-economies: basic and non basic. These concepts were already discussed in the Annex CL1 of Location Quotients. Validated by

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abundant empirical evidence, and ample use, this tool allows projecting the impact that a change of basic employment will have in an economy.

The basic employment multiplier (MBE) is calculated with the following formula:

$$MBE = (\text{Total Regional Employment}) / (\text{Basic Employment}) \quad (1)$$

Calling ET the total employment, and EB the basic employment, we can rewrite (1) like this

$$MBE = ET/EB \quad (2)$$

It is possible to notice that the MBE for total the basic employment of a region can be calculated, or for each basic sector of the region. The MBE will vary according to the sectors that are considered.

The total employment can be derived, if we know the basic employment and the MBE:

$$\Delta ET = MBE * EB \quad (3)$$

where Δ indicates “ change “

Change Δ in basic employment can be greater than one which means that new basic employment has been created, or less than one which means that basic employment has been lost. In any case, we will have the impact that the change will produce in the total employment.

The change in basic employment is studied because of the importance of the basic sectors in the regional economy.

For the evaluation of projects, it is useful to desegregate as much as possible in order to know which of the activities are basic. Thus, we can evaluate the impact on total employment for each “ basic project “.

3.3.3.2 Use of the MBE in the Evaluation of Projects

In the Diagnosis, the basic and non-basic sectors of the regional economy were identified. In the section describing the technique of the location quotient it was indicated that it is necessary to update the location quotient.

If this task is fulfilled, whenever a project is entered to be evaluated, it will be possible to locate it inside or outside the basic sectors.

When a project belongs to a basic sector, it will be possible to calculate the direct and indirect employment generated by that project on the total employment of the region. The theory behind this is that the direct basic employment generates non-basic indirect employment, which is captured by the MBE.

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Once the employment generated in all the economy by the new project from the basic sector is known, the new demand for services, land, infrastructure, etc. in the region will be able to be projected.

When the project corresponds to a non-basic sector, the increase in employment is the simple addition of the new employment to the total employment.

3.3.4 Economic Impact Evaluation in Local Plans

Perhaps the most interesting evaluating activity of the DTP is the formulation of Local Development Plans. It is precisely in the exercise of this activity that the technical capacities of the DTP can be applied the best way, and where ARI's best contribution can be done to the urban development of the reverted areas.

3.3.4.1 The Practical Context of Local Plans Design

The first decision to adopt is to identify if the planning process to design the Local Plans is normative or adaptive. These two approaches correspond to opposite philosophies that use different planning tools. It is therefore important to define beforehand which elements of both approaches will be used.

Normative Planning and Adaptive Planning

By normative planning we will understand a process by means of which in the design of the Local Plan, the planner determines a priori what must happen. This means that the Plan determines the level of population that is desired, the type and level of economic activities that must settle there, the composition of the different activities, the growth rates of the different activities, the population and the employment.

In contrast to the normative planning, adaptive planning is based on projections of population and employment based on the real situation and expected policies. The Plan, then, responds to the necessities of land use that is expected that population and employment will need for its development. In other words, the plan is designed as to accommodate to the population and the employment that is expected in the area. The market's response is important in this approach.

In the case of the design of the Local Plans in reverted areas, there are normative elements given by the General Plan, and adaptive elements since in reality, the development of the reverted areas has depended to a great extent on the private initiative, both concerning proposals for economic activities (proposed projects) and their financing (private investment).

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3.3.4.2 Criteria for the Selection of Quantitative Tools to support the Process of Planning of the Local Plans

When selecting the methods or quantitative tools to support the process of planning Local Plans, it is important to take into account the following conditions:

- Rigorous analyses of the population and the local economy will require the participation of specialists in urban economy and demography that understand population and economic dynamics, and that have knowledge on theories, methods, data sources, and that can synthesize findings suitably. In general, these professional levels require previous formal training that cannot be improvised, for this reason it is advisable to contract these studies with external companies. These studies will serve to nurture the process on formulation of Local Plans.
- It is necessary to recognize that the design of a Local Plan is mostly a participative and collaborative job. It requires, in the technical aspects, of multidisciplinary teamwork and Inter-institutional consultations, and in the political aspects, of consultations with organizations and representatives of different levels of government and of different organizations from the civil society. Because of this, it is impossible to define either a model or a methodology for the task. This process is iterative and implies the exercise of suitable judgments that emanate of the mentioned consultation and collaboration dimensions.
- In order to support the described planning process, it is possible to use both adequate formal quantitative and qualitative tools. The selected tools should be cost-effective and pragmatic. This means that the selected tools should be able to work with data of easy access, either existing, or relatively easy to obtain.
- The selected tools must be of a technical level that allows its use on the part of the existing personnel, and which does not require disproportionate investments for their application.
- The selected tools must help to solve the practical problems that the Plan faces. It would be of no benefit to have sophisticated tools that cannot be applied.

3.3.4.3 Analytical Scheme To evaluate the Economic Impact of Local Plans

Based on the previous considerations, and in order to begin the economic impact study for Local Development Plans, the following scheme of action is presented.

Background

Before doing the impact study, one has to compile a general economic background for the Local Plan's market area. Part of this information will be general for all the analyzed scenarios, and part will be specific to the individual scenarios. This information will conform the frame of reference for the Local Plan's study of economic impact, and will include the following elements:

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General information

- Description of the Market Area:
- Population Size
- Road, Arteries, and Transportation
- Sectoral Growth Trends
- Special Characteristic
- Development plans in progress

Economics of the Area

- Brief Market review of growth and development
- Analysis of the performance of local economic activities
- Employment: types and trends
- Main Employers
- Unemployment: levels and trends
- Average Family Income: levels and trends

Analyzed Scenario Specific Information

- Identification of potential new activities:
- Manufacturing Industry, Agroindustry;
- Offices, Research;
- Education and Training.
- Employment generation potential on the basis of Local Plan's new projected activities;
- Required infrastructure investments and public services for new activities

This information will have to be organized in a systematic way for each analyzed scenario to allow for comparisons.

Economic Impact Evaluation

The evaluation of economic impact is an exercise that searches for criteria on economic variables that have to be considered in decision-making processes concerning Local Development Plans. It should be done within the framework established by the Local Plan development goals. The objective is to identify what relevant new economic activities can be included in the Local Plan in order to strengthen the local and regional economic base.

Impact at Local Level

- *Employment:* The Local Plan will have an impact in the generation of employment. In order to measure this change we will first make a quantitative estimation using the MBE.
- *Infrastructure:* The local Plan will imply infrastructure investment to support projects (water provision, electricity, gas, telephones, etc.)

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- *Tax basis:* an important economic impact at local level is the increase in the collection of new taxes that will be generated by the new investments. Between these, the real estate tax excels. It can be estimated in the following way:
- Quantification of the type and number of new houses;
- Estimation of market prices using MOPHAR;
- Estimation of the volume of tax collections on real estate calculated by means of the real estate prices, the number of units, and the tax rates,
- In addition to the estimations of taxes by concept of real estate, the collection of taxes on commercial and productive activities that are expected to settle in the town can be considered.

Based on the calculation of real estate and productive activities tax collection, the level of return of that income for local use is calculated. This allows having a projected estimation of the local availability of public funds to improve, maintain, and to develop the town.

It can be observed that some local activities of regional impact will exist, whose scale will not only produce an important economic impact in the region but also in the country. The attraction of investments of this type of activities in the locality will depend on the favorable supply of service infrastructure and of existing roads. According to each case, these activities could reach scales of Offices and Research Parks, and/or of Industrial Parks.

Socioeconomic profile of the Locality

Based on the housing market prices estimated by the MOPHAR, it is possible to define the locality's real estate sub-market segments and the corresponding socioeconomic level of the town.

This delivers an orientation to the planner on the type and quality of services that can be promoted in the town. This analysis contributes to better define the local goals as far as investments for specific activities (boutiques, travel agencies, shopping centers, branch offices for real estate, retail trade, commercial banking, commercial credit, etc.).

Activities of National Impact

In the case of proposed projects of national impact in a town (international transportation center in Howard, for example), that fulfills land use requirements, environmental preservation, etc., detailed complementary studies, that involve other State organisms, should be made (cost-benefit economic analysis, for example), since this type of projects go beyond the evaluation capacity of the team, and most probably, will have to be put under a process of open international auction, evaluated by another organism.

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Implementation of this Methodology

As a strategy to train the multi-disciplinary team, in the first economic impact exercise that will be made in Phase II of this technical assistance, with the attendance of the consultant, we will collectively design tables, formats and electronic lists to organize the necessary inputs for the evaluation process, which will allow to analyze and to give a hierarchy to the results. This methodology will offer the multi-disciplinary team, quantitative orientations and ranges of relative economic importance on the proposed development scenarios.

The component elements of the evaluation of economic impact thus presented, will be used by the multidisciplinary team in an iterative decision making process. For this reason, it will be important to have the option to analyze the elements of economic evaluation separately, which would not be possible if these were transformed in a unique evaluation indicator (like for example, an internal rate of return, to mention a possibility).

This initial methodology when applied in a specific case, and, in successive studies will be modified and enriched.

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4. Guidelines for the Preparation of Local Development Plans

4.1 Context

One of the most important tasks of the Department of Urban Planning (DUP) is the operationalization of the General Plan for the Use, Conservation and Development of the Area of the Canal. Together with the other plans and laws in force, the General Plan constitutes a good legal framework for the development of the reverted areas. However, the locations of urban activities, its guidelines are very general. According to the Plan, for example, “employment areas” include industrial offices and facilities. But their exact location is not defined, nor the intensity of development, nor how they will be integrated with the adjacent towns. This lack of specificity makes necessary the preparation of local development plans.

Law no. 21, which codifies the General and Regional Plans, anticipated this need when it including Annex II (General Plan), paragraph IV, “ Area Special of Superposed Treatment “. Thus the right to prepare special plans for seven types of special areas is established:

- Areas of urban and cultural resources,
- Areas of tourism and eco-tourism resources
- Areas of compatibility with the Canal,
- Areas of scientific research and protected areas for the different management and conservation uses of river basins,
- Areas of lacustrine resources use,
- Areas of big development projects
- Areas for special urban developments.

Therefore, paragraph IV constitutes the legal foundation for the preparation of local development plans. In reality, they are not only used for special zones like the ones described above, but have also been prepared by the Department of Urban Planning, to *clarify* the uses that are allowed in different towns or neighborhoods. It is a tool that allows in this case the refining of the norms that guide the urban development process of the reverted areas.

4.2 Description and Analysis of Present Procedures at the DUP

Aware of the need to improve the guidelines of the General Plan, the Department of Planning has been dedicated for some years to the preparation of local plans for towns or certain bases. Until now, these plans are not called local development plans, they take the names of their three integrating elements: subdivision, street plan, and zoning plan.

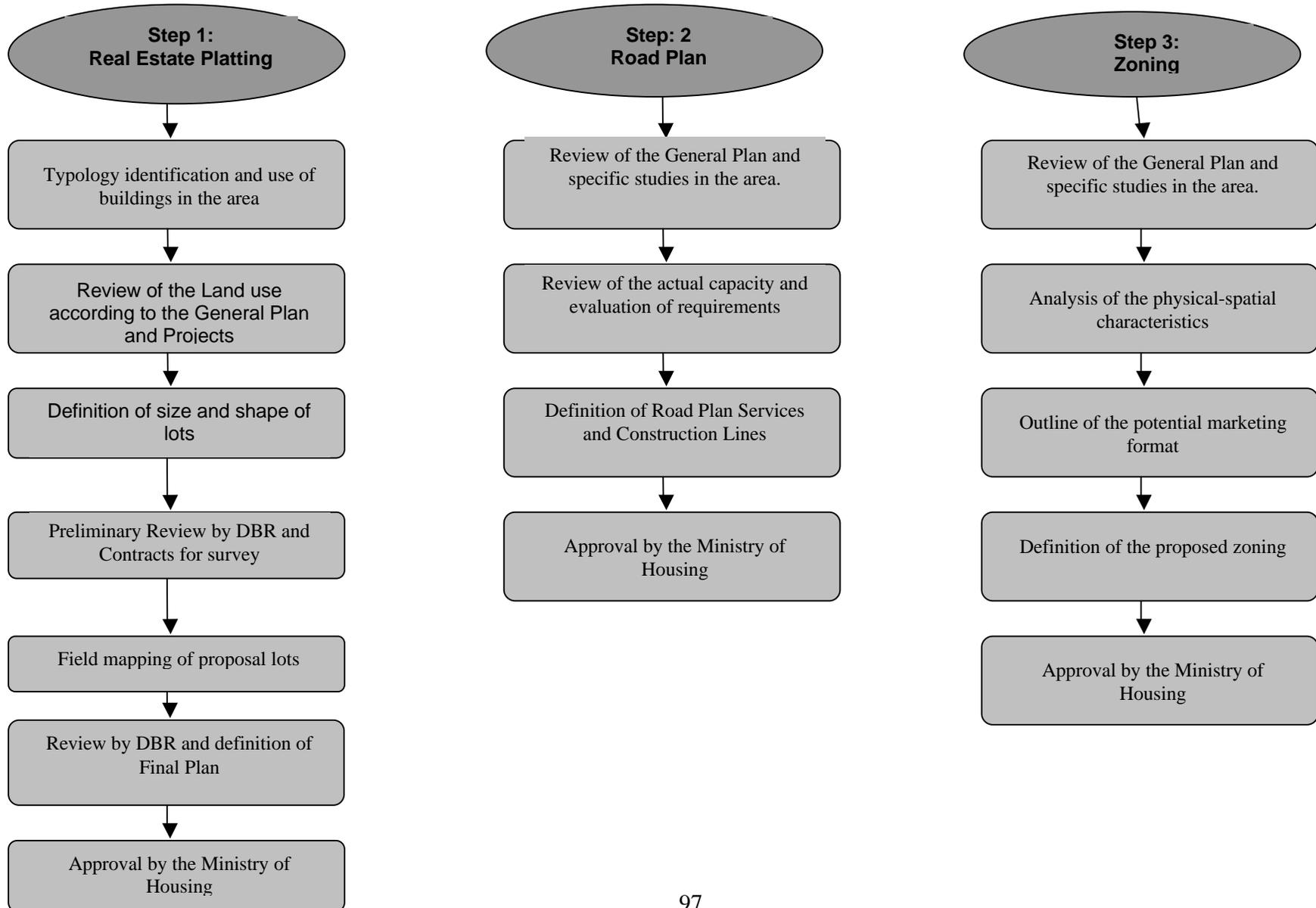
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The present procedures of the DUP as far as the preparation of local plans is concerned are presented in Graph 4.1. For each of the elements, an initial revision of the guidelines offered by the General Plan, as well as a site visit to find out about pertinent physical conditions are included. During the preparation of the subdivision, the process is coordinated with ARI's Direction of Administration of Goods Reverted; during the preparation of the zoning plan, it is coordinated with the Direction of Promotion and Marketing. Once finished, the three elements are given to the MIVI for their approval.

The concrete results offered by these procedures, for example the local plans of Clayton and Albrook, are of good quality, as a consequence, to a large extent, of the good prioritization of priorities that is emphasized in this process - a specific emphasis on (i) the conservation of the reverted areas attributes as a " garden city " and (ii) the diversification of the built environment, at the moment very homogenous, by the promotion of the rehabilitation of the housing stock as well as the densification of certain subsectors. However, the present procedures have some disadvantages:

- The preparation of the subdivision and street plans first, limits the consideration of a wide range of land uses, a critical task of the zoning plan. In fact, the selection of allowed uses would have to guide the subdivision and the preparation of the street plans. The order would have to be the other way around; or better, it should have an iterative process of simultaneous preparation of several elements;
- It lacks systematic consideration, at level of analysis and identification of projects, of the necessities as far as other types of basic urban infrastructure: stormwater drainage, potable water supply, wastewater, electrical power, etc. are concerned;
- It lacks an " operational orientation ": it lacks the consultation of key actors; there is no action plan.
- Dissociation of the three elements does not allow obtaining the synergy of several disciplines involved in the preparation of the urban development plans.

Graphic 4-1
Present DUP Procedures for the Preparation of Local Plans



4.3 Progress in the Preparation of Local Plans

Table 4-1 summarizes the level of progress in the preparation of local plans (road subdivision, and zoning plans) by town, until November of 1999. In total, zoning plan have been prepared for 62% of the towns, representing a little more than half of the existing and planned urban areas. The national progress as far as subdivision is similar: there has been more progress in the Pacific region than in the Atlantic. However, street plans have been prepared for three quarters of the towns, or 93% of the total area, thanks the preparation by the DUP and the approval by the MIVI of the “Street plan between the Reverted Area and the City of Panama. “Nationally, it can be concluded that two thirds of the work of local planning has been completed.

Until now the ARI has focused in the preparation of local plans for developed zones (former military bases or civilian towns). This has followed its own logic, since, at the market level, it is less expensive to use existing real estate before constructing more, and at level of the Authority’s management, the expenses of maintenance are cut down as assets are quickly transferred to others. Nowadays, there are big areas that still require local plans: Sherman, Howard, Farfan, Kobbe, etc. And in the long term, it will be necessary to prepare and to execute local plans to develop new areas, this almost constitutes half of the total urban areas in the old canal zone.

At the same time there is the need to consider the preparation of key local plans for subsectors in the operational areas of the canal. First, urban uses within that area already exists, as in the predominantly residential zones of Pedro Miguel and Paradise. Second, there are future mixed use areas identified by the General Plan, that are located in operational area of the canal, for example, Loma Borracho, half of which is within the “ Operational area of the Canal “. And third, important eco-tourism opportunities at the Gatun Lake islands also exist and are located in the General Plan’s “ blue areas”.

The fact of preparing locale plans within this area implies neither an intensification of urban uses nor the introduction of uses that are incompatible with the management of the canal. On the contrary, such plans can enforce the prohibition of noncompatible uses, becoming thus a useful tool for the future Panama Canal Authority (the ACP). Because the hierarchy of approvals of projects by the ACP and ARI in the operational area of the canal, and in the area of compatibility with the channel, are established in the Law 21, it is recommendable that the ARI and the ACP initiate discussions for the identification of a zone or zones within the operational areas of the canal where they could benefit from the joint preparation the of local plan among the two agencies.

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**Table 4-1
Progress on Local Plan Preparation in the Canal Area
Existing or Planned Urban Areas**

Number	Zone	Area (ha.)	Zoning Plan				Subdivision Plan				Street Plan			
			No Progress	In Process	Prepared	Approved	No Progress	In Process	Prepared	Approved	No Progress	In Process	Prepared	Approved
PACIFIC EAST/WEST REGION														
1	Albrook	467.2			+	+			+	+			+	+
2	Quarry Heights	16.4			+	+			+	+			+	+
3	Amador	177.0			+	+			+	+			+	+
4	Ancón	124.4			+	+			+	+			+	+
5	Arraiján (tanques)	325.6	+					+					+	
6	Balboa	216.8			+	+			+	+			+	+
7	Balboa Industrial	192.1	+					+					+	
8	Cárdenas	40.0			+				+	+			+	+
9	Clayton	843.1			+				+	+			+	
10	Cocolí	52.6			+				+	+			+	+
11	Corozal	433.1			+	+			+	+			+	+
12	Curundú Industrial	52.3	+					+					+	
13	Altos de Curundú	62.1			+	+			+	+			+	+
14	Bajos de Curundú	53.5			+	+			+	+			+	+
15	Diablo	75.4			+				+	+			+	+
16	Farfán	741.2	+						+	+			+	+
17	Howard	1,572.5	+					+					+	
18	Kobbe	659.2	+							+			+	
19	La Boca	31.8			+	+			+	+			+	+
20	Los Ríos	33.4			+				+	+			+	
21	Rodman	1,167.7		+					+	+			+	+
ATLANTIC EAST/WEST REGION														
1	Coco Solo Norte	184.6			+			+					+	
2	Campo de Francia	603.3			+	+		+					+	
3	Gold Hill	18.5			+	+			+	+			+	+
4	Arco Iris	64.3			+	+			+				+	
5	Mount Hope	150.8			+	+		+					+	+

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Number	Zone	Area (ha.)	Zoning Plan				Subdivision Plan				Street Plan			
			No Progress	In Process	Prepared	Approved	No Progress	In Process	Prepared	Approved	No Progress	In Process	Prepared	Approved
6	Telfer	270.1			+	+			+	+			+	+
7	Isla Margarita		+										+	
8	Isla Galeta		+										+	
9	Isla Cargo Remo		+										+	
10	Mindi	16.2			+	+							+	+
11	Margarita	88.9			+	+			+	+			+	+
12	Brazo Brooks													
13	Espinar	709.8			+	+			+	+			+	+
14	Davis	1,168.0			+	+			+	+			+	+
15	Sherman	285.3	+										+	+
16	Gamboa	140.0			+	+							+	+
17	Cerro Pelado	2.1	+										+	
18	Tanques Gatún	114.6	+										+	
CENTRAL EAST REGION														
1	Paraiso	67.6			+				+	+			+	+
2	Pedro Miguel	28.7	+						+	+			+	+
3	Summit	56.1	+					+					+	

N.B. Excludes ports and canal operation areas, which do not require local development plans.

Summary

	Area Total (ha.)	Zoning Plan Preparation				Subdivision Plan Preparation				Street Plan Preparation			
		Number	% Total	Area	% Total	Number	% Total	Area	% Total	Number	% Total	Area	% Total
Pacific Region	7,337	14	67%	2,627	36%	16	76%	4,535	62%	18	86%	6,767	92%
Atlantic Region	3,816	11	61%	3,414	89%	6	33%	2,320	61%	12	67%	3,700	97%
Central Region	152	1	33%	68	44%	2	67%	96	63%	2	67%	96	63%
Total	11,306	26	62%	6,109	54%	24	57%	6,951	61%	32	76%	10,563	93%

4.4 Proposed Procedures for Local Development Plan Preparation

- In this section they describe to the procedures even the preparation of plans of local development, proposed by the consultant. In comparison with the existing procedures, the recommended main changes are the following ones:
- New organization of the work: introduction of interdisciplinary teams.
- Iterative process of formulation and modification of proposals on the basis of economic, financial, engineering, environmental and urban design analysis.
- More emphasis on identification of required urban infrastructure improvements.
- More operational guidelines, including the use of the “Action Plan” instrument.

Next each of these proposed changes is described.

Interdisciplinary Work Teams – Work teams are formed to prepare each local development plan. The team, represented by the team head, is responsible for the preparation of the plan. The members and responsibilities of the team are stated in a memorandum prepared and circulated by the Director of the Department. The team has the following members:

- Urban planner
- Architect,
- Landscape Architect,
- Roads/drainage engineer,
- Water/Wastewater engineer,
- Electricity/telecommunications engineer,
- Urban Economist, and
- Financial Specialist

Some members of the team, as for example the economist and the landscape architect, can work in several teams at the same time, depending on the required level of effort. The presence from the beginning of the economist and the financial specialist confirms that the preparation of local plan is an interdepartmental exercise, handled mainly by the Department of Urban Planning but requiring the participation and contributions of the Department of Economic Planning.

Iterative Process of Formulation and Modification of Proposals on the Basis of Economic, Financial, Engineering, and Urban Design Analysis -After the preliminary analysis, proposals for development scenarios are developed, with certain densities and intensities of allowed land uses. These proposals will have implications for infrastructure improvements. In addition they will have different economic impacts. Then, the team carries out the following activities, that are described in greater detail further ahead:

- The engineers and the architect identify, in a schematic form, the necessary improvements to support the development and calculate the associated costs;
- The financial specialist analyzes the financial feasibility of the infrastructure investments and identifies mechanisms for the cost recovery.

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- At the same time, the economist evaluates the economic impact of the different development scenarios, using the tools and techniques described above in Chapter 3.

Based on the results of these analyses, the development scenarios are modified when needed. In case there are changes, one updates the identified improvements and the analysis of economic impact.

- More Emphasis in the Identification of Required Infrastructure Improvements -The identification of improvements becomes a basic task for the planning process. There are plans for each main type of urban infrastructure.
- More Operational Guidelines, on the basis of the “ Action Plan “ Instrument - From the beginning, the team works in narrow collaboration with the keys actors (MIVI, Municipality, IDAAN, MOP, etc.). Help form them in the execution of specific tasks is requested if required. Also consultations with appropriate groups to evaluate the housing demand, different land and urban uses, specific types of investments, etc., are incorporated These groups can include ACOBIR, CAPAC, the commercial or industrial Chamber of Commerce, associations, key actors in different economic sectors, etc. The technical elements bases of the Local Development Plan are the following ones:
 - Land Use Plan
 - Street plan
 - Stormwater Drainage Plan
 - Water Supply Plan
 - Wastewater Plan
 - Solid Waste Plan
 - Subdivision Plan Management

In some cases, there can be other additional technical elements such as the Open Space Plan or “area plans”, showing at larger scale details that are important for the development of certain streets or blocks.

The technical elements are complemented by the management element of the local plan: the Action Plan. Next the concrete steps for the development of local development plans are described and, can be observed in sequence in the Graph 4-2.

I. Definition of Goals

It is essential to define the specific goals for each plan local. The specific goals are derived from the general goals of the General Plan, the Regional Plan, other pertinent documents, and the ARI. But they can and must have variations for the different towns. One cannot expect, for example, to reach the same economic objectives for Cardenas and Howard. Given the important industrial improvements of Howard, more important economic benefits will be expected that those offered by a more residential town. And it is also necessary to specify the types of desired economic benefits: a goal to attract international investment can influence the preparation of the plan in a way different than the goal to maximize employment generation, for

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example. After a meeting or a series of meetings, the work team defines the goals of town development and states them in an internal memorandum of the Technical Planning Direction.

**Graphic 4-2
Indicative Implementation Calendar for a Local Development Plan**

Step	Activity	Responsible Party	Month															
			1	2	3	4	5	6										
Define goals		team leader	█															
Kickoff meetings		team leader	█	█														
Diagnostic	Inventory of existing improvements	team		█	█													
	Previous land use map	planner		█	█													
	Existing infrastructure map	engineers		█	█													
	Urban attribute map	architect		█	█													
	Permitted land use map	planner		█	█													
	Environmental risk map	engineers		█	█													
	Developable land map	planner			█	█												
	Diagnostic report	team				█	█											
Formulate developed scenarios		team			█	█												
Analyze developed scenarios	Evaluate economic impact	economist				█	█											
	Evaluate impact on real estate market	finance spect				█	█											
	Evaluate infrastructure requirements	engineers				█	█											
	Evaluate environmental impact	engineers				█	█											
	Calculate cost of improvements	engineers					█	█										
	Identify sources of funding	finance spect						█	█									
	Evaluate financial feasibility	finance spect							█	█								
Modify scenarios		team							█									
Update the analysis		team								█								
Select preferred scenario		team									█							
Marketing strategy		team										█						
Land use plan		planner											█					
Infrastructure plans		engineers												█				
Other required plans		team													█			
Action plan		team														█		
Local plan report		team															█	
Submission to MIVI		team leader																█

N.B. Preparation of the subdivision plan, for which the architect is primarily responsible, begins after approval of the local plan by MIVI and lasts about one month.

II. Beginning the Team Meetings

The team head organizes a formal meeting inviting representatives of groups involved in the preparation and/or execution of the local plan in order to begin the job. These will include:

- Selected departments of ARI (for example, Project Coordinator, Direction of Administration of Reverted Goods, Direction of Marketing Promotion),
- Ministry of Housing
- Urban infrastructure and service providers (MOP, IDAAN, municipalities, etc.)
- Ministry of Economy and Finances.
- Trade associations in key sectors for the town's future,
- Property associations owners (where they exist), and
- Community Groups (where they exist).

The meeting to begin the job has the objective of integrating, the groups that will be affected by the plan local and whose contributions will be important to have success in its execution, from the very beginning. If it were judged advisable, is possible to make one first meeting with the actors of the public sector, followed by a second meeting with a wider range of participants.

III. Diagnosis

In order to execute the several activities of the diagnose, the team can be divided in team groups, each one responsible for one or several tasks, as described next.

- **To Carry out an Inventory of Necessary Improvements** - After field trips, the team creates a matrix of existing improvements that describes for each one, the total built surface and by floor, construction materials, current condition, year of construction, and other useful data.
- **Prepared Maps of Previous Land Use** - The map must show the land uses at the moment of reversion. In case these were changed shortly before the reversion to other uses that reflect badly on the characteristics or attributes of the improvement, the map can be based upon the predominant use during the time the improvement was in place. It is not so important to delineate with much precision the exact site where use changes to another one, since this distinction is made difficult by the previous lack of subdivision that existed in the reverted area.
- **To prepare Maps of Existing Infrastructure** - A map is prepared for each main type of urban infrastructure: road networks, stormwater drainage, potable water, wastewater system, electricity, and street lighting. The maps show the existing systems with the level of detail necessary to evaluate the infrastructure's capacity to support the different types and levels of development in the future.

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- **Evaluation of the Potential of Economic Development** - The characteristics of the town's assets will be compared with the strategic sector's domestic and international companies demand profile, in order to evaluate the area plan's potential to promote different types of economic activities.

Description of the Market Area:

- Population Size
- Roads and Other Transport
- Growth Trends
- Special Characteristics
- Development Plans in progress

Economy of the Area

- Brief Market review of growth and development
- Analysis of the performance of local economic activities
- Employment: type and trends
- Main Employers
- Unemployment: levels and trends
- Average Family Income: levels and possible new trends
- Identification of activities:
 - Manufacturing Industry, Agroindustry, Offices, Research;
 - Education and Training
 - Other Activities.
- Potential for employment generation based upon new projected activities in the Local Plan;
- Investments in infrastructure and public services required by the new activities.
- **Urban Attribute Map** -The map identifies buildings of distinctive architectural quality, public open spaces (including parks and plazas), areas of distinctive vegetation, sites and corridors of existing or potential landscape value, historical sites, and any other aesthetic, cultural and/or natural attribute of the town.
- **To prepare Map of Allowed Uses under the General Plan** - The limits of each category of land use is defined, and the map indicates the different uses allowed under each category.
- **To prepare Map of Environmental Risk Map**- The location of surface water bodies and their affluent, aquifer recharge areas, steep slopes, sewage discharge points, as well as any other areas with possible environmental risks.
- **To prepare a Developable Land Map** --They are identified based upon the land uses allowed by the General Plan, the zones of environmental risk, and the urban attributes. It is necessary to pass all undeveloped plots through these three filters represented in the

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map: the lands that are not eliminated are lands for development. The filtration (or superposition) takes place easily using GIS.

- **To write up the Diagnostic Report** –This report explains the methodology used to execute each task, where it is not obvious. In addition it discusses the results and identifies the main findings. In the sections concerned with infrastructure the existing items are described, identifying the their deficiencies. For the writing of the report, a concise style is recommended, with data presented in tables. Including the tables, the report should not exceed 50 pages.

IV. Formulation of Alternative Development Scenarios

On the basis of the diagnosis, the team formulates several alternative development scenarios. Each scenario has specific proposals for economic activities, land uses, and development densities and intensities. It is important to review the possibility of promoting the development of some economic activities from the identified key sectors in the strategy.

The scenarios are defined by a combination of: maps of detailed land use, defining probable results based on the proportions of uses in mixed use zones; sections and elevations of some streets or typical blocks; and textual short descriptions (1-2 pages each). It is also possible to use drawings or perspectives to better communicate the urban surroundings in areas with substantial changes.

There is no methodology for the formulation of development scenarios. Based upon the diagnosis analysis and their objective always consider reaching the town's development goals. But, by any account, it is a creative activity, for which there is no prescription.

That said, many planners find that the process of identification of areas for different land uses is clarified when it is undertaken in the following order:

1. Open space and zones for the conservation of the environment,
2. Zones of urban transition, including new development and densification zones,
3. Employment Centers, including industrial centers for regional commerce and residential zones.

During this step it is important to summon another meeting of the involved groups in order to ask them for their ideas on the future economic activities and future ground uses that will characterize the development scenario. Instead of conducting a completely open-ended discussion, it is useful to prepare in advance a first set of possible scenarios to guide the discussion with the development partners. This does not prevent other ideas from arising and being incorporated during the meetings; since the intention of this step is to identify all possibly good ideas, most of which will be eliminated by next step of analysis.

V. Analysis of the Development Scenarios

Once the development scenarios are formulated, the team puts under the following series of analytical exercises.

To Evaluate Economic Impact

Local Level Impact

- Based on the anticipated investment of each anticipated economic activity, an evaluation on its estimated impacts on this activity's production should be made;
- *Employment*: The Local Plan will have an impact in the generation of employment in the locality. In order to measure these changes, first a quantitative estimation should to be done using the MBE;
- *Tax basis*: an important economic impact at local level is the increase of the tax basis that the new investments will generate by means of the collection of new taxes. Among these, the real estate tax excels. It can be estimated in the following way:
 - Quantification of the type and number of new houses;
 - Estimation of their prices of market using MOPHAR;
 - Estimation of the volume of real estate taxes collection based on the considered prices, the volume of units, and the tax rates.
- In addition to the estimations of taxes by concept of real estate, the collection of taxes from commercial and productive activities that are expected to settle in the town are also considered, and all these incomes are projected for local use.
- *Impact on the Real Estate Market*: See an explanatory format in the Table 4-2. The different scenarios are analyzed according to this format.

Based upon the calculation of real estate and productive activities tax collection, the level of return from those incomes are calculated for the local use. This allows having an estimation of projected local public resources available to improve, to maintain, and to develop the town.

It can be observed that there will exist some local activities with regional impact, whose scale will not only produce an important economic impact in the region but also in the country.

The attraction of investments for this type of activities in the locality will depend on the available favorable supply of services and road infrastructure. According to each case, these activities could reach scales of Offices and Investigation Parks, and / or Industrial Parks.

Activities of National Impact

In the case of proposed projects of national impact in a town (international transportation center in Howard, for example), that fulfills land use requirements, environmental preservation,

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etc., detailed complementary studies, that involve other State organisms, should be made (cost-benefit economic analysis, for example), since this type of projects go beyond the evaluation capacity of the team, and most probably, will have to be put under a process of open international auction evaluated by another entity.

This initial methodology when applied for a specific case and, through successive studies will be modified and refined.

- **To evaluate the Impact on the Metropolitan Real Estate Market** -This evaluation is done for each scenario, comparing, the additional supply of land and real estate with the requirements at the metropolitan level. It can be observed a format in the Table 4-2, prepared in Excel, for the use of the Department of Economic Planning's personnel. The house and land requirements for different uses come from the Metropolitan Area Development Plan (MIVI/Dames & Moore, 1997). One could modify the requirements in case better information or more detailed information is identified, for example, through different types of household or business surveys.

For each scenario, the data on the town's new housing and the land for different urban use supplies, are entered. Then the new supply is compared to requirements. The data on the housing is divided by quintile, on the basis of the ranges of market prices that include the cost of the land. In order to place the towns housing in the right rank, first it is necessary to calculate its estimated sale price using the MOPHAR, which will also serve to identify the socioeconomic profile of the new residents and to determine therefore the quality and type of services that they will require. After this information is entered in the Excel worksheet that automatically calculates the requirement percentage that it represents for two periods: the next year (2000), and the five next years (2000-2005).

The interpretation of the results is based on the guidelines of the format's second half. Indeed, the more the town's supplies represent for the requirements, as much the more impact can be anticipated on the real estate markets. For example, if the supply of the town represents between 0% and 25% of the following years requirements, then, the estimated the impact would be light that is to say, that there would be little prices and levels of production. However, if the additional supply is more than 75% of the requirements, a great impact can be expected, with the possibility of a fall of prices and controls for new production. So such a result give the Direction an indication to consider the possibility, or to change the mixture of uses or to spread the entrance of goods in the market over a longer period.

It can be observed that the interpretations in this format are very conservative. In a market that is functioning well, the introduction of a new supply of these magnitudes would cause much greater impacts on the prices and the production of the corresponding submarket. But the real estate markets of Panama are distorted by capital surplus. Many real estate investors in Panama appear to be not particularly concerned about the short-

**Table 4-2
Format for the Evaluation of Impacts on the Real Estate Market
Metropolitan Area of Panama Number of Scene =**

**Real Estate Market Impact Evaluation Form
Panama City Metropolitan Area
Scenario Number =**

		Minimum	Maximum	Metropolitan Requirements, 2000-2005		Supply by Scenario		
		Price	Price	U.D. Plan*	Other Srce**	Scenario	% Request	% Request
Type of Real Estate	Unit	(B./.)	(B./.)	U.D. Plan*	Other Srce**	Supply	2000-2005	2000
HOUSING								
Total Units	unit			26,412			-	-
Quintile 1	unit	--	15,000	5,282			-	-
Quintile 2	unit	15,000	25,000	5,282			-	-
Quintile 3	unit	25,000	40,000	5,282			-	-
Quintile 4	unit	40,000	70,000	5,282			-	-
Quintile 5	unit	70,000	--	5,282			-	-
LAND								
Residential Land	ha.	--	--	1,647.1			-	-
Commercial Land	ha.	--	--	428.0			-	-
Industrial Land	ha.	--	--	295.0			-	-
Land for Services	ha.	--	--	59.4			-	-
Land for all Uses	ha.	--	--	2,429.5			-	-

*Urban Development Plan for the Metropolitan Areas, MIVI, 1997

**Optional

Interpretation:

- If the supply is between 0% and 25% of requirements for 2000, a minor impact is to be expected.
- If the supply is between 25% and 50% of requirements for 2000, a moderate impact is to be expected.
- If the supply is between 50% and 75% of requirements for 2000, a substantial impact is to be expected.
- If the supply is greater than 75% of requirements for 2000, a major impact is to be expected.

Minor impact: Little variation in prices or levels of production.

Moderate impact: Little variation in prices, but would limit production increases.

Substantial impact: Should result in light/moderate drop in prices and decrease in production.

Major impact: Possibility of significant drop in prices and brake on new production.

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term financial return of the project. Consequently, they are less willing to lower their prices according to the state of the market; for example in spite of surplus housing in 1992 and in 1995, the prices have not been varied much in the last five years. On the contrary, since 1996, the prices show a slight market; for example in spite of surplus housing in 1992 and in 1995, the prices have not been varied much in the last five years. On the contrary, since 1996, the prices show a slight annual increase, at least in the middle to high income housing markets. The attached formats guidelines for interpretation were formulated, taking into account the true behavior of the Panamanian real estate markets- not the way a functional market should behave, but how this country's market would react.

- **To Evaluate the Urban Infrastructure Necessities** -For each development scenario, the engineers evaluate the required improvements to support the proposed uses and densities. The improvements are divided in the above-identified types of urban infrastructure. The appropriate collaboration with the MOP, IDAAN, involved municipalities and other organizations is carried out.
- **To Evaluate the Environmental Impact** -The environmental impact of the proposed development is evaluated, considering the effects of infrastructure improvements, on diverse aspects of environment: quality of potable water and alluvial areas, stormwater drainage, air and noise pollution, impacts on the natural and marine environment, etc.
- **To Calculate Cost of the Infrastructure Improvements** - The engineers calculate the cost of the required improvements, broken down by type of infrastructure.
- **To Identify the Funding Sources** -The finance specialist identifies the funding sources, including the mechanisms for the complete or partial recovery of expenses through the users/buyers of the reverted goods.
- **To Evaluate the Financial Feasibility** -The finance specialist and the economist evaluate the financial feasibility of each one of the development scenarios.

VI. To Modify the Development Scenarios

Based on the results of the analyses, the team modifies the development scenarios improving their feasibility and/or capacity to respond to their goals.

VII. Up Dating the Analyses

If, necessary the analyses are up dated after modifying the scenarios.

VIII. Selection of a Preferred Development Scenario

The team reviews and synthesizes the results of the different analyses. In agreement with the groups involved, including the Coordinator of the Project, the team selects their preferred development scenario. This scenario is the one that best responds to the areas development goals, and that demonstrates physical and financial feasibility.

IX. Outline of a Marketing Strategy

The teams meets with the ARI's Direction of Marketing Promotion to outline a Marketing strategy for the real estate types in the preferred scenario.

X. To Prepare Land Use Plans

The team prepares the Land Use Plan based upon the Reverted Area's Special Land Use Code, which is at the moment under production by the Department of Urban Planning in cooperation with the Ministry of Housing². The graphical plan must come with a textual description of the formulation process, analysis and selection of the development scenarios.

XI. To Prepare Infrastructure Plans

The team prepares the following infrastructure plans:

- Land Use Plan
- Street plan
- Stormwater Drainage Plan
- Water Supply Plan
- Wastewater Plan
- Solid Waste Plan
- Subdivision Plan Management

Each plan has a graphical plan and a textual description of the required improvements to support the preferred development scenario, including the identification of specific projects with costs and implementation schedule.

XII. To Prepare Other Required Plans

In some towns it will be necessary or preferable to prepare additional plans like plans of open areas and/or plans for areas of intensive development, showing for example, at a larger scale, the designs of streets or blocks determined for a new zone of mixed use. Several types of

² the consultant contributed to two iterations of this document and the associate Regulation of Urbanization. Key elements of the Code's rough draft are enclosed in the Annex A.

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additional plans are identified in paragraph IV of Annex II (General Plan) of Law no. 21 (see the discussion in Chapter 4.1 above).

XIII. To Prepare Action Plan

Once technical elements of the local plan are completed, the team prepares, in collaboration with involved groups, the Action Plan that needs the specific activities required to execute the local plan. For each activity, one specifies the responsible party, the start date, and the completion date. In order to assure the good participation of the involved groups, it is essential that they participate in the preparation of the plan, at least in an intermittent way, and that they are present during the formulation of the Action Plan. When feasible, it is recommendable circulate the Action Plan so that it is signed by each participating part. The active participation of the Project Coordinator during this step is critical for the successful execution of the plan.

XIV. To Prepare the Report of the Local Development Plan

The Local Development Plan's report has chapters on goals; diagnoses; formulation; analysis and selection of development scenarios; elements of the local plan; execution of the plan (discussion of the Action Plan). In the chapter on elements of the local plan, the subdivision guidelines are defined.

XV. To Give the Plan to the Ministry of Housing

The Plan is given to the Ministry of Housing for its approval.

XVI. To Prepare Subdivision

The subdivision is prepared on the basis of the guidelines defined in the local plan's report and the in country's mandatory procedures.

4.5 Institutional Guidelines to Support Plan Preparation

To facilitate the implementation of the proposed procedure for the preparation of the local plans, it is recommended to obtain the human resources necessary to constitute the interdisciplinary teams. Probably it could be done through the direct hiring of full or half time personnel. In any case, it will be necessary to increase the availability of urban planners; and, since they have the most interdisciplinary perspective of all the urban professionals, they should be, in the majority of cases, the heads of the teams. In addition, it is recommended to prepare a Work Plan every six-month, in order to globally guide the activities of the DUP. The Plan should specify all the Department's activities, including the preparation of the local development plans, as well as the person responsible for each one, being in the occurrence of the local plans, the head of the interdisciplinary team. The Plan of Work can be updated quarterly.

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Annex A:
Special Urban Development Code for the Reverted Areas

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Special Urban Development Code

I Introduction

The General Land Use Plan establishes, as one of its policies, the integration of reverted areas, to the urban and economic development of the Republic of Panama and, among other tasks to carry out, the establishment of regulations that regulate the best use of the related Land, and property. The peculiarity of the urban structure, with which the military base and the administrative areas, have proved the necessity of creating zoning codes that ease the civil transformation of those developed spaces and, at the same time, to maintain an harmony with the new development areas.

The proposed Urban Development Code is presented within the framework of actions carried out to incorporate the Ancient Canal Zone to a civil use to ease the transformation of wide spaces of common use, to public and private spaces in a divided manner; of maintaining the spirit and the essence of the Garden City within the Interoceanic Region.

The exercise has made evident that the zoning codes in force are not adjusted to the urban structure of the Interoceanic Region. Therefore new codes are proposed, to include and help to define better the concept of Garden City, that the Interoceanic Region Authority has proposed to maintain. Further, the planned matter tries to secure, with the regulation of the Garden City, a high level of life for those habitants, workers, and students, or those who recreate within the reverted areas.

It has been taken into consideration the mandates given for the Metropolitan Plan, in which it is establish the requirement of creating alternative urban centers and small scale development areas that allow to vent the congested City of Panama. In this sense, the proposed codes for the urban development grants the possibility of creating these urban centers in an economic manner and sustainable environment. The same permits that the peculiar activities of a city might be held in controlled scales in a dynamic and combined way and within environments that grant security and well-being, in addition to their connection with other spaces also active and independent.

II Objectives

To establish codes for urban development that include, as basic principle, the maintenance of the character of the Garden City within the Interoceanic Region, that promote a harmonious visual image with the natural and urban environment. Said codes must help to define the character of a space and, at the same time, be flexible and adaptable to the development dynamic.

To point out again the scale and structure of the city, in spaces that take into account the human scale, their requirements and comfort, as principal user of the same, through regulations for the construction, reconstruction and remodeling of any structure and infrastructure, as well as the design and development of open spaces within the Interoceanic Region.

III Glossary of Terms

- **Primary Activity:** Activity that takes the higher percentage of land use, with respect to the total subdivision and, therefore, it has priority to establish itself within the correspondent category.
- **Secondary Activity:** Activity that is complementary to the primary. It takes lesser percentage of land use, with respect to the total subdivision that will be developed.
- **Height (H): Permitted** height of any construction from ground level to the upper part of the roof, defined in function of the construction line, by a given numerical factor, namely: $h = xL$. This definition establishes a direct relation between the width of the road and the building that serves as frame, so that contributes to remark the specific character of each street. Internally, the buildings might have as much floors as the maximum height and the comfort so permit it.
- **Saleable Area:** Maximum surface area of the subdivision that may be subdivided into residential plots. In the remaining area, the necessary right-of-way should be located, in order to grant basic services, open space and services for the community.
- **Character:** Defines the function, form and physical characteristics of a specific space. The character is then translated in sensations and images defined from the perspective of human beings.
- **Urban Development Codes:** They are the group of regulations that define the character, specific use and the restrictions of urban design for a specific space.
- **Net Population Density:** Relation between the size of a plot or other developable area and the amount of persons that will live within it.
- **Horizontal Scale:** Relation between the lesser height and the major width of the group of buildings, observable from the human perception.
- **Urban Scale:** Quality that establishes a major scale and a high density of construction and services use, with respect to the environment and its users.
- **Neighborhood Scale:** Quality of space that establishes the lesser scale and the low density of construction use, with respect to the environment and their users. This term is also referred to the immediate, close and basic use of the constructions, with respect to the residential areas, where it is inserted, and its habitants.
- **Vertical Scale:** Relation between the highest height and the lesser width of the group of constructions, observable from the human perception.
- **Floor-to-Area Ratio (FAR):** It is defined, based on the character, maximum height and the density. This factor, multiplied for the lot surface, produces the total allowable built area, namely: $M2\ of\ lot\ (FAR) = total\ area\ of\ construction$
- **Frontage:** Distance in lineal meters that the front of a lot might have. The bottom and form of the lot is determined by the topography and the lot surface.
- **Visual and Environmental Impact:** For construction, is the effect produced on the natural and urban environment in a specific space. So it is, that the lesser impact is defined by a minimum alteration of the structure and the environment, and the highest impact is defined by the drastic changes of the structure, within the same environment.
- **Intensity:** The relation between the full and empty spaces, between the volume of the open and closed spaces. When the open space is predominant, with respect to the constructions, we are talking about high density.

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- ***Building Line:*** Distance given from the axis or center of the right-of-way, to the point from which the location of permanent structures is permitted.
- ***Lot Coverage:*** Maximum surface that may be used in permanent constructions directly to the land. It is in contra-position with the open and free space left within a lot.
- ***Subdivision:*** Group of two or more lots.
- ***Lateral Setback:*** Distance from the property line, to the nearest permitted permanent structure, referred to the lateral boundaries of the lot.
- ***Rear Setback:*** Distance from the property line to the nearest permitted permanent structure, referred to the back boundaries of the lot.
- ***Total Area:*** Is the lesser or highest surface permitted by subdivision, square or lot.
- ***Horizontal Multifamily Housing:*** Construction composed by two or more units of housing, one placed over the other.
- ***Vertical Multifamily Housing:*** Construction composed by two or more units of housing, one placed over the other.
- ***Single-Family House:*** Construction composed by an individual housing.

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IV Urban Development Codes

Following are details of the methods applied to develop code proposals and the proposed categories that will be used in the Interoceanic Region.

Applied methods

In first instance, we have started from the premise that the proposal is referred only to the urban area, which defines, in principle, which kind of activities will be presented, the kind of relationships that will be raised with the different activities and the intensity with which the same will be developed. The object visual image is of a city with all its functions, but meeting, efficiently, the open spaces and the surrounding vegetation. The project has, as basic principle, to regulate the relation between the full and open spaces that conform the city, causing a better use of the open spaces; since the same should satisfy the necessity of relief and scattering, instead of the common remaining space that it is not known how to use.

The activities have been defined, based on the provisions of the General Land Use Plan and the definition of urban character of the Interoceanic Region. This definition is based on a remarking of the traditional relationships raised in the activities of inhabit, study, work and recreation, under a new focus that measure the development and the impact that each activity have on the environment and the urban area. These activities are:

- Residential
- Mixed
- Institutional
- *Tourism*
- Industrial
- Infrastructure
- Open Space
- Transport

Additionally, the land use categories, with their respective codes, were then defined. These categories are defined, based on the activities to be performed and the permitted typology, spatial and administrative scales. For instance, the Mcu category stipulates that the mixed commercial activity is caused in a urban scale, and gives the idea of its grade of influence, of the kind of relationship established with their more immediate use, and of the distance and amount of the residents with more benefits. In the case of residential activity, the factor of population density produces a very particular definition of categories, resulting in very specific categories also with specific functions.

Once the categories are defined, then the intensity of the same was defined, establishing the subcategory; in principle, only a maximum of 3 subcategories per category were defined, but the planned system permits to add higher or lower levels, to the intensity of the defined uses. The proposal is prepared to permit the inclusion of new activities, categories and subcategories in an ordered and coherent manner. Further, the possible mix of compatible categories, permitting the inclusion of one inside the other, is defined, but the original category does not lose its priority.

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ACTIVITY	SCALE	INTENSITY	CODE
Mixed Use-Residential	Neighborhood	1	Mrv1
			Mrv2
	Urban	2	Mrv3
			Mru1
			Mru2
		3	Mru3

This scheme shows the structure of a category and its respective code. Each code is composed by a capital letter that defines the activity; then the dimension in small letters and finally the intensity with a number. In the case of residential housing, it is also defined the density with a small letter. The proposal permits to add new activities, categories and subcategories, as per the dynamic of the development itself so determines it.

Each activity has objectives and general restrictions, and each category has objectives and specific restrictions. The restrictions for the categories and their subcategories are planned, based on the analysis and regulations in force, for the Republic of Panama and the characteristics proper of the Interoceanic Region and in international patterns studied for the case. The restrictions for the categories should be complied in all their correspondent subcategories. There are specific restrictions that govern only for the subcategories, as the density (in the case of residential housing), the lot surface, the percentage of land occupation, the total factor of construction and the height.

The proposal includes a total of 38 proposed categories, with their respective subcategories. The following is a summary of all the codes, their description and compatible codes.

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Scheme of Summary of Proposed Zone Codes

ACTIVITY	CATEGORY	CODE	DESCRIPTION	COMPATIBLE CODES
Residential	Low Density, Low Intensity	R1d1	Regulates groups of horizontal single-family and multifamily duplexes; the scale is horizontal, combined with open space and community services.	Mcv1. Siv1
	Low Density, Medium intensity	R1d2	Regulates groups of horizontal single-family and multifamily buildings, from 2 to 4 units and vertical Multifamily of 2 units; the scale is horizontal, combined with open spaces and community services.	Mcv1.Mcv2.Siv1
	Low density high intensity	R1d3	Regulates groups of vertical multifamily housing of 2 or more units, at a vertical scale, combined with open spaces and community services.	Mcv2.Mrv1.Siv1
	Low density cluster	R1c	Regulates groups of several kinds of low density and mixed intensities housing, in the middle of a common green area, combined with community services in a relation of Horizontal Property.	Siv1 Mcv1.Mcv2.Mrv1
	Medium density Low Intensity	R2d1	Regulates groups of vertical multifamily housing, of 4 or more units, at a vertical scale, combined with open spaces and community services.	Mcv2.Mrv2.Siv2
	Medium density Medium intensity	R2d2	Regulates groups of vertical multifamily housing, of 6 or more units, at a vertical scale, combined with open spaces and community services.	Mcv2.MCv3 Mrv2. Siv2
	Medium density high intensity	R2d3	Regulates groups of vertical multifamily housing, of 8. or more units, at a vertical scale, combined with open spaces and community services.	Mcv2.Mcv3 Mrv2.Siv2
	Medium density cluster	R2c	Regulates groups of several kinds of medium density and intensity. housing, mixed in the middle of a common green area, combined with community services in a relation of Horizontal Property.	Mcv2.Mcv3 Mrv2.Siv2
	High Density Low intensity	R3d1	Regulates groups of vertical multifamily housing, of 12 or more units, at a vertical scale, combined with open spaces and community services.	Mcv3.Mrv3.Siv3

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Scheme of Summary of Proposed Zone Codes

ACTIVITY	CATEGORY	CODE	SUBCATEGORY	DESCRIPTION	COMPATIBLE CODES
Mixed	Mixed Use – Local Residential	Mrl	Mrl1 Mrl2 Mrl3	Apartment houses, All with retail uses on the ground floor, combined with common areas, in low, medium and high, intensity, destined to satisfy the requirements of the immediate residents.	Prl,Rbpv3, MC13 BI1, SI1, Isl1 Prl, Rmpv3, Mc13,A12 E12, S12, Is12 Prl, Rapv3, Mc13, A13 E13, S13, Is13
	Mixed Use – Urban Residential	Mru	Mru1 Mru2 Mru3	Apartment houses with retail uses on the ground floor combined with common areas; at low, medium and high intensity destined to satisfy the immediate requirements and the nearer communities	Su3 Isu1, Tu1 Isu3, Tu3 Pru, Au1, Eu1, Su1 Pru, Au2, Eu2, Su2_Isu2, Tu2 Pru, Au3, Eu3
		Mcl	Mcl1 Mc12 Mc13	Retail trade and services, destined to satisfy the requirements of the immediate residents, in low, medium and high intensity.	AI1, EI1, SI1, 1sl1 AI2, EI2, SI1, Isl1 A13, E13, S13, Is12
	Mixed Use – urban commercial	Mcu	Mcu1 Mcu2 Mcu3	Retail trade and services, destined to satisfy the requirements in the urban area, in low, medium and high intensity	IL 1 IL 2 IL 3
	Neighborhood Institutional	Siv	Siv 1 Siv 2 Siv 3	Code in process of preparation	
	Urban Institutional	Siu	Siu 1 Siu 2 Siu 3	Code in process of preparation	
Institutional	Neighborhood Institutional	Siv	Siv 1 Siv 2 Siv 3	Code in process of preparation	
	Urban Institutional	Siu	Siu 1 Siu 2 Siu 3	Code in process of preparation	
Open Spaces	Kindergarten	Pj		Code in process of preparation	
	Neighborhood Park	Pv		Code in process of preparation	
	Neighborhood Recreation	Prl		Code in process of preparation	
	Urban District Park	Pdu		Code in process of preparation	

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	Square/Plaza	PL		Code in process of preparation	
	Metropolitan Park	Pm		Code in process of preparation	
	Green Area Not to be Developed	Pad		Code in process of preparation	
	Ecological Tourism	Te	Te1 Te2 Te3	Code in process of preparation	
	Urban Tourism	Tu	Tu1 Tu2 Tu3	Code in process of preparation	
	Light Industry	IL	IL1 IL2 IL3	Code in process of preparation	
	Heavy Industry	Ip	Ip1 Ip2 Ip3	Code in process of preparation	
	Local Infrastructure	Inl	Inl1 Inl2 Inl3	Code in process of preparation	
	Urban Infrastructure	Inu	Inu1 Inu2 Inu3	Code in process of preparation	

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Annex B:

**Data from the Panamanian Chamber of Construction, on
the Production of Real Estate in the Metropolitan Area of
Panama (Formal Sector)**

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**Category 1
Low Density Residential - Low Intensity (R1d1)**

Specific Objective: Regulate group of residents of housing of low visual and environmental, where open spaces predominates highly with relation to the constructions.

Character: Group of single-family or multifamily residential housing with wide free spaces per parcel, where the horizontal scale prevails. The superficial green areas are combined with several basic community services.

Permitted Uses:

- Primary Activities: - Single-family housing
- Multifamily housing of 2 units.
- Pl, Pv, Prv, Pd with their respective restrictions.

- Secondary Activities: -Particular structures within each residential parcel, not-for-profit if and when they are not incompatible with the residential character, to the environment or to its habitants.
- Mcv1 with their respective restrictions.
- Siv1 with their respective restrictions.

Subdivision Restrictions	Minimum	Maximum
Total Surface Area	5 has	10 has
Saleable Area	6.5 %	75%
Open Space	7.5%	_____
Community Service Reserve	4%	10%

Lot Restrictions	Minimum	Maximum
Visitor Parking	0.1 per unit of d. houses	_____
Net Density p/h	50 p/h	100
Surface Area m2	500 m2	1000
Frontage	18 mts	30 mts
Lateral Setback	4 mts. In free lateral	_____
Rear Setback	7.5 mts.	_____
Lot Coverage	_____	40%
Total Factor of Constr.	_____	0.35
Height	_____	0.4L
Parking	2 per units of housing	_____
Green Open Space	40%	_____

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**Category 5
Low Density Residential - Group (R1c)**

Specific Objective: To regulate residential groups with housing of several kinds under the regimen of horizontal property with a low visual and environmental impact, where the common open spaces are highly prevailing with relation to the modifications, preserving the character of City Garden.

Character: Residential group of individual or joined residential housing with each of two free spaces per parcel, where horizontal scale still prevails. The superficial green areas are combined with several basic community services.

Permitted Uses:

Primary Activities: - Multifamily vertical housing of 4 or more units.
- Pj, Pv, Prv, Pd with their respective restrictions.

Secondary Activities: - Particular structures within each residential parcels, not-for-profit if and when they are not incompatible with the residential character, to the residential character, to the environment and to its habitants.

- Mcv2 with their respective restrictions.
- Mrv2 with their respective restrictions.
- S1v2 with their respective restrictions.

Subdivision Restrictions	Minimum	Maximum
Total Surface	1 ha	10 ha
Saleable Area	50%	70%
Open Space	10%	_____
Subdivision Restrictions	Minimum	Maximum
Community Service Reserve	5.0%	15%
Lot Restrictions		
Net Density	300 p/h	400 p/h
Total Surface	1000 m2	2500 m2
Frontage	25 mts.	35 mts.
Lateral Setback	3.00 mts.	_____
Rear Setback	7.5 mts.	_____
Lot Coverage	_____	35%
Total factor of construct.	_____	1.20
Height	_____	0.9L
Visitor Parking	1 per unit of housing	_____
Open Green Space	40%	

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**Category 7
Medium Density - High intensity (R2d3)**

Specific Objective: Regulate residential groups of vertical Multifamily housing, of visual and environmental medium impact, where open spaces are balanced with respect to the constructions, preserving the character of a City Garden.

Character: Residential group of apartment housing with sufficient open spaces per parcel, where a vertical scale prevails. Superficial green Areas are combined with several community basic services.

Permitted Uses:

Primary activities: - Multifamily vertical housing of 3 or more units.
- PJ, Pv, Pr, Pd, with their respective restrictions.

Secondary Activities: - Particular structures within each residential parcel, without lucrative purposes, if and when they are not prejudicial to the residential character, to the environment or their habitants.
- Mcv2, Mcv3 with their respective restrictions.
- Slv2 with their respective restrictions.

Subdivision restrictions	Minimum	Maximum
Total Surface	2.0 has	20 has
Saleable Area	60%	70%
Green Open space	15%	_____

Subdivision restrictions	Minimum	Maximum
Net density	500 p/h	600 p/h
Total Surface	1500 m2	3500 m2
Front of the lot	25 mts	45 mts
Lateral Setback	None	None
Rear Setback	10.0 mts	_____
Lot Coverage	_____	30%
Total factor of construct.	_____	2.1
Height	_____	1.5L
Parking	1 per unit of housing	_____
Open Green Space	35%	_____

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**Category 8
Medium Density – Group (R2c)**

Specific Objective: Regulate residential housing of several types under the regime of Horizontal Property, with a visual and environmental medium impact, where common open spaces are highly prevailing with respect to the constructions, preserving the character of a City Garden.

Character: Residential group of apartment housing with different and mixed types, with wide and free spaces per parcel, where vertical and horizontal scales are combined. Superficial green Areas are combined with several community basic services.

Permitted Uses:

Primary activities: - Single-family housing.
- Multifamily vertical housing of 2 or more units.
- Multifamily horizontal housing of 2 or more units.
- Pj, Pv, Pr, Pd with their respective restrictions.

Secondary activities: - Particular structures within each residential parcel, without lucrative purposes, if and when they are not prejudicial to the residential character, to the environment or their habitants.

- Mcv2, Mcv3 with their respective restrictions.
- Mrv2 with their respective restrictions.
- Siv2 with their respective restrictions.

Subdivision restrictions	Minimum	Maximum
Total Surface	2.0 has	20 has
Saleable Area	60%	60%
Open Space	35%	_____
Community Service Reserve	7.5%	15%

Square restrictions	Minimum	Maximum
Net density	300 p/h	600 p/h
Total surface	.4 ha	2 has
Saleable Area	80%	90%
Visitor Parking	0.3 per unit of housing	_____
Parking	1 per unit of housing	_____

Lot restrictions	Minimum	Maximum
Total surface	150 m2	Second design
Lot Coverage	Second design	Second design

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Frontage
Height

8 mts.
——

Second design
Low Plant and 7 floors

**Category 9
High Density – Low Intensity (R3d1)**

Specific Objective: Regulate groups of Multifamily vertical residential housing of high visual and environmental impact, where open spaces are necessary, preserving the character of a City Garden.

Character: Residential group of individual housing with reduced free spaces per parcel, but, at the same time, they have wide public open spaces accessible to the residents. The vertical scale prevails. Superficial green areas should be combined with several common basic.

Permitted Uses:

- Primary activities: - Vertical Multifamily housing of twelve or more units.
- Pj, pv, Prv, Pd with their respective restrictions.

- Secondary activities: - Particular structures within each residential parcel, not-for-profit if and when they are not prejudicial to the residential character, to the environment or their habitants.
- Mcv3 with their respective restrictions.
- Mrv3 with their respective restrictions.
- Siv3 with their respective restrictions.

Subdivision restrictions	Minimum	Maximum
Total Surface	3 has	20 has
Saleable Area	50%	60%
Open Space	15%	_____
Square restrictions	Minimum	Maximum
Community Service Reserve	7.5%	15%
Visitor parking	0.4 per unit of housing	_____
Lot restrictions	Minimum	Maximum
Net density	600 p/h	800 p/h
Total surface	1500 m ²	4000 m ²
Frontage	25 mts	50 mts
Lateral Setback	None	None
Rear Setback	10.00 mts	_____
Lot Coverage	_____	30%
Total factor of constr.	_____	2.4
Height:	_____	1.7L
Parking	_____	1 car per unit of housing

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Open Green Space

30%

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Annex C

Location Quotient

Annex C Location Quotient

Description

The Location Quotients technique (LC) is a simple accounting technique of calculation (non stochastic), and economical in its data requirements. It has been of use in urban and regional economics, and used in the U.K., United States. It has various types of applications, like its use as Input-Output Model proposed by Leontief. Its several uses and its use by development agencies in other countries, grants legitimacy to this quantitative tool.

The assumption of the LC is that legitimacy productivity is uniform in the analyzed sectors. However, when there are indicators of sectoral productivity for the region analyzed and the country, the LC can be corrected, applying a parameter of productivity weight by sector.

Definition

The LC is an indicator that depicts the level in which an economic activity (sectoral or industrial) is of higher or lower importance in its region (for example, the reverted area), and its relative importance in the nation. But, its strength resides in its capacity to analyze a regional economy in its interior, namely, of a region (in this case, the reverted area), contained within an area of reference that, in this case, would be the nation. This technique, as any other technique, is not infallible but gives a strong indication of the subjacent strength in a given economy.

Basic and non basic regional economies

A fundamental consideration to analyze a regional economy, is the identification of basic and non basic economic sectors, of this economy.

A basic sector is one that “exports” goods and services out of the producing region and, therefore, creates economic gains for the region (is a growth sector).

A non basic sector is one that should import to the region in order to produce the goods and services that are consumed in the region and, therefore does not generate economic gains for the region. (It is not a growth sector).

A region where the economy is not basic, will be a region that is not growing and should be supported by the rest of the country in order growing to function.

A region where the economy is basic, will be a region that grows, generates net income for the region and contributes to the country’s economy. These are important analysis elements, in order to evaluate the economic performance of a region and to analyze its economic trends.

Sectors with a LC higher than 1, are basic; an LC equal or less than 1, is not basic, as will be explained below.

Why is it named Location Quotient ?

It is named Location Quotient, as it “locates” a determined sector or activity of a region, within a range of *measures of relative level of economic importance of that sector, with respect to the region*. Further, within the region, it “locates” or characterize the sector as a basic or non basic economy. In this context, there should not be confusion with the word “location” as referred to “geographical or spatial location”, i.e., it is not used to determine the physical location of a specific project.

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Calculation and meaning of Location Quotient

In general, the LC is calculated by dividing the percentage that represents the employment of one sector within a region (regional variable), by the percentage of the same sectoral employment at national level (national variable).

As an example, in the case of regional employment, the LC is calculated, dividing the percentage that represents the employment of a sector within a region with respect to the total employment of that region (regional variable), by the percentage of the same sector at national level, with respect to the national employment (national variable).

If: (X_{jr}) represents the employment level of sector j for the region r ; with $(X_{jr}) > 0$
 (X_{tr}) represents the total employment of the region; with $(X_{tr}) > 0$;

then,

$[(X_{jr})/(X_{tr})]$ represents the participation of employment j of the region r over total employment of the region r

where $[(X_{jr})/(X_{tr})] < 0$

If (X_{jn}) represents the employment level of sector j in the nation; with $(X_{jn}) > 0$
 (X_{tn}) represents the total employment level of the nation; with $(X_{tn}) > 0$

then,

$[(X_{jn})/(X_{tn})]$ represents the employment participation of sector j of the nation, with respect to total employment of the nation.

Where $[(X_{jn})/(X_{tn})] < 0$

The Location Quotient of the employment of sector j in the region r , is defined as:

$$(Cl_{jr}) = \{[(X_{jr})/(X_{tr})]/[(X_{jn})/(X_{tn})]\}$$

where $(Cl_{jr}) > 0$

where (Cl_{jr}) is the location quotient of sector j in the region r .

The Meaning of the Location Quotient

The (Cl_{jr}) indicates the degree of importance of employment of sector j in region r , taking into account the country in which is located, since it is not calculated in an empty space. This level of relative importance cannot be obtained from single percentages of the sectoral, regional and/or country's employment. The values of the LC for all the employment sectors in a region, enable us to compare the economies that each sector generates in the region. Some sectors will contribute more in the increasing of the region's growth, comparatively among them. In order to compare, the values of the LC are indicated as follows:

$LC > 1$, means that the particular sector produces economic gains for the region and, therefore, contributes to its growth. This is because the sector with $LC > 1$ is a basic economic sector in the region, indicating that the sector exports part of its production abroad. Generally, this is called a "dynamic sector", or "high productivity sectors" (in general, transportation,

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manufacturing, commerce, even though it can be of other type of “non productive” sector). When above the value of one (1) the higher the LC, the higher the degree of importance of this sector.

$LC \leq 1$, means that the sector does not generate economic gains for the region. This consumes all its production in the region, and it depends on imports for its operation.

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Annex D
mo-1 Report on Regression of MOPHAR

ANNEX D
mo-1 Report on Regression of MOPHAR

Construction and Preliminary Valuation of Mophar

As explained before, the Model of Hedonic Prices for reverted areas (MOPHAR), for existing housing, will be initially constructed. Using information on effective market selling prices and, on the attributes of the sold houses the purpose of this exercise is to build a simple econometric model that forecast the market prices for future sales of existing housing. In the future building from the experience and management of this model and its techniques, other models can be constructed in order to determine the market prices of other properties, as lands and buildings.

DataBase

Using data on market prices of housing from the Administration of Reverted Properties, a database was created, with useful information for the construction of the MOPHAR. This database contains variables that has been tabulated for each house effectively sold in a public act. The sale of housing that were the object of any kind of negotiation between the RA and its occupants, were excluded from this database.

The criteria used for the selection of variables, were based on the empirical experience of other similar studies. Each house sold at a market price appearing in the database, will be called “observation”. Each observation then shall be specified by a row of figures that will correspond to the variables of the observation. The variables selected for each observation are:

- Location of the house
- Type of house
- Number of bedrooms in the house
- Built surface
- Land surface
- Year of construction
- Selling Price (effective price in the market)

Among these variables, the selling price is the endogenous variable (or dependent variable) that is to be forecast. All other variables represent the characteristics or attributes of the sold house and constitute the exogenous variables (or independent variables) of the model.

Description of the exogenous variables (housing attributes)

Location

The location is an indicator of neighborhood quality. One of the considerations made by the buyer in order to decide what to buy, is to evaluate the socio-economical characteristics of the neighborhood in which the house is located. This location variable was given a hierarchical value according to a comparative quality perception among the communities in which sales have occurred.

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The hierarchical order indicates 1 as the best location. The following is the order reached, indicated in the MOPHAR Chart 1:

MOPHAR Chart 1
Hierarchical order of Quality of a Town in Reverted Areas
Location Variable

Hierarchical order	Town	Indicator in the Model
1	Querry Heights	6
2	Altos de Amador	5
3	Albrook	4
3	Davis	4
3	Espinar	4
3	Margarita	4
3	Gold Hill	4
4	Balboa	3
4	Diablo	3
4	Los Rios	3
5	Ancon	2
5	Corozal	2
5	Llanos de Curundu	2
6	Altos de Curundu	1

Source: Perception from the Section of Real Estate officials record of the Administration of Reverted Properties, RA.

In order to indicate this qualitative hierarchy as a quantitative variable in the model, it was initially expressed as an indicator ranging from 6 to 1. 6 corresponds to hierarchy 1, and so on. This index order will be used as a first approximation of possible values of this variable in a first estimation of the model. In future analysis of the results of the estimation the index classification will be adjusted.

Type of housing

The type is described in the MOPHAR Chart 2, and corresponds to the database type of real estate official record of the Administration of Reverted Properties of the RA.

The type of housing is classified in hierarchical order, assuming that the single family house is more appreciated by the market, and so on, in descendent order.

MOPHAR Chart 2
Preference Order as per Type of House in the Reverted Areas

Type	Preference Order	Indicator
Single-family	1	7
Duplex	2	6
Triplex	3	5
Quadruplex	4	4
Quintuplex	5	3
Sixtuplex	6	2
Apartment	7	1

Source: Database, Section of the real estate official record of the Administration of Reverted Properties, RA.

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In addition to this criterion and, as in the previous case, in order to specify the qualitative hierarchy of the type of house as a quantitative variable in the model, it was initially expressed as an indicator from 7 to 1. 7 corresponds to hierarchy 1, and so on. This index order will be used as a first approximation of possible values of the variable to determine a first valuation of the model. In future analyses of the results of the estimation the index classification will be revised.

This indicates that the typological characteristic of the house will be one of the first criteria that the buyer will consider in his decision on what house he will buy. In this case, the preference will reconcile utility and the disposable income to buy..

Number of Bedrooms in the House

This housing attribute is expressed as a quantitative variable, matching the number of bedrooms of the house.

Built surface

This is an attribute of direct quantitative nature. It is necessary to make two considerations with respect to this variable:

- When estimating the model, this variable may be redundant with the variable “number of bedrooms”, since the number of bedrooms is directly related to the constructed area. This may be even more valid in the case of houses in the reverted areas that have standard design features.
- The quantitative form of this variable, shall be specified in the model, according to the empirical experience of other studies.

Land Surface

This is also a quantitative attribute of the house. As in the case of the Constructed Surface, the quantitative form of this variable in the model, will be specified according to empirical experience of other studies.

Year of construction

The year of the construction is generally a consideration that the buyer takes into account in his buying decision. In the case of houses in the reverted areas, this were grouped in brackets of years of constructions, assigning an index to each bracket as expressed in MOPHAR Chart 3.

MOPHAR Chart 3
Order of Housing in Reverted Areas, as per Year of Construction

Period of Construction	Index
1914 – 1940	1
1941 – 1960	2
1961 - forward	3

Source: Database, Section of the Real Estate Official Records of the Administration of Reverted Properties, RA.

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As in the former cases, the orders of magnitude of the index might be changed when analyzing the subsequent estimations of MOPHAR.

It is important to indicate that the buyers of reverted housing have not give attention to this variable, since there is a level of confidence that these houses have been well maintained and, therefore, their constructive quality state are similar and, in consequence, the age of construction is of no interest.

Endogenous or Dependent Variable

Market Price

This is the variable to be forecast by the model. The values that appear in the database are the prices effectively paid for the sold houses in public acts. Therefore, they reflect market prices.

Preliminary Estimations On MOPHAR

Using the database described above, two MOPHAR preliminary estimations were performed.

First Estimation

LINEST from Microsoft Excel program, was used to perform this first MOPHAR estimation.

The database contained 472 observations, and the following variable were used:

Endogenous Variable

- Sale price

Exogenous Variables

- Constructed surface
- Land surface
- Type of housing

The Constructed Surface and Land Surface variables, were indicated in form of natural Logarithm of its value, as previous studies suggest.

Type of Housing was numerically expressed, as described in MOPHAR Chart 2.

The operational form (simplified) adopted by MOPHAR in this application, is the following:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

in which:

Y : observed sale price;

X₁ : Natural logarithm of the Constructed Surface;

X₂ : Natural Logarithm of the Land Surface;

X₃ : Type of Housing (index as per MOPHAR Chart 2);

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- a : Constant of the regression;
- b₁: coefficient of regression of X₁ (Ln of the land surface)
- b₂: coefficient of regression of X₂ (Ln of the land surface)
- b₃: coefficient of regression of X₃ (index indicating the type of housing).

The MOPHAR Chart 4 presents the results of the regression, while the MOPHAR 1 Graphic expresses the comparison between the estimated prices and the real prices of the market, for a limited number of observations, since a graphic for the 472 observations would be an illegible spot.

MOPHAR Chart 4 Regression Chart 1

S	Q	P	O	Coeffs.	Std.of
41659.7	74396.8	108540	-710835		
4425.18	5	8		Error	
	5412.04	6585.45	31953.4	Coeffs.	
3	4		9		
R ²	39209.4	#N/A	#N/A	Std. Err or Y est.	
0.57347					
5	4				
F	209. 467	#N/A	#N/A	Levels of Liberty	
298					
Sum	7.18E*1	#N/A	#N/A		
	9.65				
E+1					
Sq. Reg.	1	1			
	Residual				

Source: First Regression of MOPHAR, as delivered by the LINEST of Microsoft Excel program.

In accordance to the specifications of the variables and the coefficients of regression in the equation (1), the values obtained in MOPHAR Chart 4 correspond to the following:

$$\begin{aligned}
 a &= O = -710835 \\
 b_1 &= P = 108540.8 \\
 b_2 &= Q = 74396.85 \\
 b_3 &= S = -41659.7
 \end{aligned}$$

The values of the statistical indicators R² and F, indicate that this first estimation is promissory.

Validation trial of the preliminary estimation of the model.

An initial form to test the validity of the model, is to perform a simulation of the model, to forecast the observed sale prices of each observation, using the actual values of the exogenous variables of the observations and the coefficients of regression obtained from the application, and then, comparing them with the actual values of market prices of the observations.

The values of the model for the observations are obtained through a simulation performed in the following manner:

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In each observation, the value of each exogenous variable is multiplied by the value of its regression coefficients and the forecast of the observed price is so obtained. Then the behavior of the price forecast by the model with the actual price is compared. Replacing values in the equation (1), the following is obtained for this case:

$$Y^* = -710835 + 108540.8 * X_1 + 74396.85 * X_2 + (-41659.7) * X_3 \quad (2)$$

where:

- Y^* : is the forecast price for the observation;
- X_1, X_2, X_3 : are the values of the exogenous variables of each observation;
- the numbers that appear in the equation correspond to the respective values of the regression coefficient.

The MOPHAR Chart 5 indicates the real values of the housing located in the 5th row of the database, which will be simply referred to as observation No. 5.

MOPHAR Chart 5
OBSERVATION No. 5
Values of Attributes of the Observed House

Ln. Of Area of Const.	Ln. of Area of Land	Index Type	Actual Market Price	Forecasted Price
6.261567017	7.100637541	7	206,110.00	205447.7679

Source: MOPHAR database.

Applying these values from observation 5 to the equation (2), the following is obtained:

$$Y^* = -710835 + 108540.8 * 6.261568017 + 74396.85 * 7.100637541 + (-41659.7) * 7 \quad (3)$$

which results in a forecast value of :

$$Y^* = 205447.7679.$$

This value, is the value of the forecast market price house in observation No. 5. The actual price is 206,110.00. The proximity of the prediction can be noticed which indicates that the model is promissory. Of course, in other observations, the predicted value will vary up and down, since MOPHAR is a stochastic econometric model.

MOPHAR Chart 6 presents values of actual prices with its correspondent forecast prices for 30 observations:

MOPHAR Chart 6
Comparison Between Actual Market Values And Values Forecast By MOPHAR

Actual Market Price	Forecast Price
560,520.00	350,544.6214
321,950.00	271,477.4208
155,000.00	181,822.191
206,110.00	205,447.7679
169,151.15	171,598.1266
125,101.11	136,134.8133
126,504.10	145,006.5811
130,000.00	134,524.3806
132,000.00	130,676.3473
128,516.10	129,678.9202
130,000.00	155,234.8628
201,980.99	187,235.6569
165,000.00	186,628.1145
121,800.00	143,236.5022
151,001.00	170,938.849
145,541.00	123,717.6393
126,641.11	136,881.5827
145,305.99	147,679.5173
132,987.98	139,966.5461
124,501.00	129,086.7948
133,388.96	135,367.5207
126,124.07	127,873.8916
125,001.99	120,876.8198
120,999.99	127,035.7264
113,000.00	147,301.3495
91,000.99	98,066.93031
78,312.99	92,989.52141
74,283.13	86,411.90978
76,500.00	90,012.85986
57,050.01	48,972.07405

Source: MOPHAR Estimation 1

The MOPHAR 1 Graphic also indicates a reasonable approximation of the forecast values for 37 observations with the actual market values of those observations.

Graphic 1
Comparison between values of actual market prices and prices forecast by MOPHAR
Forecast of Market Prices
MOPHAR



Series 1: Observed Prices (effective sale prices)
 Series 2: Forecasted prices (calculated with the values of the regression coefficients).

Second Estimation

Following the same method described before, a second MOPHAR estimation was performed. The differences of this estimation with the first one, are the following:

- The database was cleaned, and was reduced to 453 observations, compared with 472 observations of the first estimation.
- Instead of type of housing, the exogenous variable of describing Hierarchical Location (Town Quality) in reverted areas was used. The remaining exogenous variable are the same as in the first estimation.

MOPHAR Chart 7 presents the results of the regression, while the MOPHAR 2 Graphic expresses the comparison between the estimated prices and the actual market prices for a limited number of observations, since the graphic for the 453 observations would be an illegible spot.

MOPHAR Chart 7 Regression Chart 2

S	Q	P	O	
-25679.4	43610.87	44716.3	-342634	Coeffs.
1897.198	3766.543	6232.49	33325.9	Error Std.of Coeffs.
R^2 0.595615	34594.99	#N/A	#N/A	Std. Err or Y est.
F 219.9519	448	#N/A	#N/A	Levels of Liberty
Sum Sq 7.9E+11	5.36E+11	#N/A	#N/A	
Reg.	Residual			

Source: Second Regression of MOPHAR, as delivered by the LINEST of Microsoft Excel program.

In accordance to the specifications of the variables and the regression coefficients in the application, the values obtained are the following:

a = O = -342634
 b₁ = P = 44716.37
 b₂ = Q = 43610.87
 b₃ = S = -25679.4

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The values of the statistical indicators R² and F, indicate that this estimation is promissory.

Validation Trial of the Preliminary estimation of the Model

Following the same method that in the previous estimation, the results of the forecast are then evaluated. Replacing values in the equation (1), the following is obtained in this case:

$$Y^* = -342634 + 44716.37 * X_1 + 43610.87 * X_2 + (-25679.4) * X_3 \quad (4)$$

MOPHAR Chart 8 indicates the actual values of the variables that conform the attributes of house located in the 14th row of the database, which will be referred to simply as observation.

MOPHAR Chart 8 Observation No. 14
Values of Attributes of the Observed Housing

Ln. of Constructed Area	Ln. Of Area of Land	Location of House	Actual Market Price	Forecast Price
5.391033275	6.0403499	3	84,319.88	84,820.15481

Source: MOPHAR database.

Applying these values from observation 14 in the equation (4), the following is obtained:

$$Y^* = -342634 + 44716.37 * 5.391033275 + 43610.87 * 6.0403499 + (-25679.4) * 3 \quad (5)$$

which results in a forecast value of

$$Y^* = 84,820.15481.$$

This value is the value of the forecast market price house in observation No. 14, with an actual market prices of 84,319.88. The proximity of the prediction can be noted which indicates that the model is promissory. Of course, in other observations, the forecast will vary up and down, since MOPHAR is a stochastic econometric model.

The MOPHAR Chart 9, presents values of actual prices with its correspondent forecast prices for 30 observations:

MOPHAR Chart 9
Comparison Between Actual Market Values and Values Forecast by MOPHAR

Market Price	Forecast Price
124,501.00	128,983.1465
133,388.96	132,664.8605
126,124.07	128,272.1519
125,001.99	124,170.5214
120,999.99	127,780.8258
113,000.00	139,660.3806
91,000.99	99,082.24996
78,312.99	96,105.91132
74,283.13	92,250.1652
76,500.00	94,361.01486
57,050.01	70,303.21706
75,558.00	85,458.14528
84,319.88	84,820.15481
78,788.88	82,359.79131
61,800.99	77,517.7879
91,299.99	99,523.95257
68,000.99	67,232.88371
68,642.02	86,204.77561
125,000.77	120,788.9033
66,000.00	78,991.39468
92,000.99	103,899.1946
71,300.00	82,406.01889
73,500.91	82,389.55554
67,125.74	65,639.26121
61,315.52	76,848.59855
92,915.63	107,767.4021
113,810.01	107,168.2489
86,999.90	89,312.94254
86,999.90	89,438.26928
142,700.00	149,661.9644

Source: MOPHAR Estimation 2

The MOPHAR 2 Graphic also indicates a reasonable approximation of the forecast values for 37 observations with the actual market values of those observations.

Graphic 2.
Comparison between values of actual market prices and prices forecasted by MOPHAR



Series 1: Observed Prices (effective market sale prices)

Series 2: Forecast Prices (calculated with the values of regression coefficients).

Preliminary Conclusions

A preliminary analysis of the results of the two estimations of MOPHAR, allow the following conclusions:

- The statistical indicators of R2 and F of both estimations are satisfactory which indicates that the three variables selected in each case, in high probability, are neither self-correlated, nor presents colineality;
- The exogenous variables used in the estimations seem to explain the endogenous variable in a reasonable manner;
- The signs presented by the variables that represent Type of Housing and Location are negative, which seems to be counterintuitive, and are a signal that the model should have to be better studied.
- It would be useful to explore further the specification of the variables representing the Constructed Surface and the Land Surface, in order to find a more adequate manner of quantification of these variables, especially when the land surface is shared for more than one housing unit.
- In future stages, as soon as a better quantitative specification of the variables of the model is obtained, it will be useful to test other structural representations of the model.

The first MOPHAR estimations are a first step to illustrate this method and to prove the initial behavior of the variables that comprise it. The construction of every econometric model and, in this case, MOPHAR is a gradual and experimental process that takes time that exceeds available time for this technical assistance at this stage.

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However, the regression coefficients of MOPHAR that has this preliminary stage of the model produced, will enable the DPT to forecast market prices for upcoming sales of housing a public act.

In the future, the DPT must continue to develop this quantitative tool that, at first approximation, is presented very promissory. For this purpose, the DPT should strengthen its technical capacity in analyzing the econometric regression.

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Residential Activity: Summary of Codes

SUBDIVISION RESTRICTIONS											
CAT	Permitted Use	Sup	Total	Saleable Area		Open Space	Community Service		Parking	Net Density	
		Min	Max	Min	Max		Min	Max		Min	Max
R1d1	Unif. D. House Vph 2 units P1, Pv	0.5h	10 hs	65%	75%	7.5%	4%	10%	2	50 ph	100ph
R1d2	Unif. D. House Vph 2 or 4 units Vpv of 2 units PL Pv	1h	15hs	65%	75%	7.5%	4%	10%	25	100 ph	200 ph
R1d3	Vpv of 2 or more units Pj, Pv, Piv	2hs	20hs	65%	75%	10%	4%	10%	25	200ph	300ph
R2d1	Vpv of 4 or more units P1, Pv, Piv	1h	15hs	60%	70%	10%	5%	15%	0.3	300ph	400ph
R2d2	Vpv of 6 or more units Pj, Pv, Piv	2hs	15hs	60%	70%	10%	5%	15%	0.3	400ph	500ph
R2d3	Vpv of 8 or more units Pj, Pv, Piv	2 hs	20 hs	60%	70%	15%	5%	15%	0.3	500ph	600ph
R3d1	Vpv of 12 or more units Pj, Pv, Piv	3 hs	20 hs	50%	60%	15%	7.5%	15%	0.4	600ph	800ph
R1c	Unit D. House Vph 2 or more units Vpv Pj, Pv, Piv	3 hs	10 hs	50%	60%	30%	5%	15%	.025	100ph	300ph
R2c	Unit D. House Vph 2 or more units Vpv Pj, Pv, Piv	3 hs	15 hs	50%	60%	35%	7.5%	15%	0.3	300ph	600ph

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Residential Activity: Summary of Codes

LOT RESTRICTIONS												
		Sup	Total	Front		Lateral Setback	Rear Setback	Occup.	(Illegible)	(Illegible)	Park	Green Area
		Min	Max	Min	Max							
R1d1	Unif. D. House Vph 2 units P1, Pv	500 m ²	1000 m ²	18m	30m	4m	7.5m	40%	(Illegible)	(Illegible)	2	40%
R1d2	Unit. D. House Vph 2 or 4 units Vpv of 2 units PL Pv	200 m ²	500 m ²	10m	20m	3m	5m	50%			2	30%
R1d3	Vpv of 2 or more units Pj, Pv, Piv	800 m ²	2000 m ²	20m	40m	4m	5m	40%			2	40%
R2d1	Vpv of 4 or more units P1, Pv, Piv	1000 m ²	2500 m ²	25m	35m	3m	7.5m	35%			1	40%
R2d2	Vpv of 6 or more units Pj, Pv, Piv	1200 m ²	3000 m ²	25m	40m	3m	7.5m	30%			1	35%
R2d3	Vpv of 8 or more units Pj, Pv, Piv	1500 m ²	3500 m ²	25m	45m	(illeg.)	10m	30%			1	35%
R3d1	Vpv of 12 or more units Pj, Pv, Piv	1500 m ²	4000 m ²	25m	50m	(illeg.)	13m	30%			1	30%
R1c	Unit D. House Vph 2 or more units Vpv Pj, Pv, Piv	200 m ²		8m				30%			2	30%

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R2c	Unit House Vph 2 or more units Vpv Pj, Pv, Piv	D.	150 m ²		8m				35%			1	35%
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