

# Infrastructure in Latin America: Recent evolution and key challenges

(Seven Country Briefs) – C.B. 5/7: Jamaica

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## Notes

Lower middle-income countries: Colombia, Guatemala, Jamaica, Peru  
Regional average: Argentina, Brazil, Colombia, Costa Rica, Guatemala, Jamaica, Mexico, Peru

## Weights and Measures

Metric System

## Government Fiscal Year

1 April – 31 March

## Acronyms

**AAJ:** Airport Authority of Jamaica  
**ANEEL:** Electric Energy National Agency  
**BOT:** Build, Operate and Transfer  
**C&WJ:** Cable & Wireless Jamaica Limited  
**CAA:** Civil Aviation Authority  
**CIA:** Central Intelligence Agency  
**DC:** Domestic Carriers  
**DHS:** Demographic and Health Surveys  
**ECLAC:** Economic Commission for Latin America and the Caribbean  
**EIA:** Energy Information Administration  
**ENHAHO:** Encuesta Nacional de Hogares  
**ENIGFAM:** Encuesta Nacional de Ingresos y Gastos Familiares  
**ENIGH:** Encuesta Nacional de Ingreso-Gasto de los Hogares  
**EPH:** Encuesta Permanente de Hogares  
**ESMAP:** Energy Sector Management Assistance Programme  
**FCA:** Fair Competition Act  
**FCC:** Federal Communications Commission  
**FTZC:** Free Trade Zone Carrier  
**FTZSP:** Free Zone Service Providers  
**GOJ:** Government of Jamaica  
**HDI:** Human Development Index  
**HPI:** Human Poverty Index  
**IBGE:** Instituto Brasileiro de Geografia e Estatística

**IDB:** Inter-American Development Bank  
**IFC:** International Finance Corporation  
**IMF:** International Monetary Found  
**IMO:** International Maritime Organization  
**INEI:** Instituto Nacional de Estadística e Informática  
**IPPs:** Independent Power Producers  
**IRF:** International Road Federation  
**ISPs:** Internet Service Providers  
**ITU:** World Telecommunication indicators  
**IVSPs:** International Voice Service Providers  
**JPSCo:** Jamaica Public Service Company Limited.  
**JRC:** Jamaica Railway Corporation  
**JSLC:** Jamaica Survey of Living Conditions  
**JUCT:** Jamaica Urban Transit Company.  
**KMTR:** Kingston Metropolitan Transport Region  
**LNG:** Liquefied Natural Gas  
**MME:** Ministry of Mining and Energy  
**MTW:** Ministry of Transport and Works  
**NIBJ:** National Investment Bank of Jamaica  
**NRCA:** Natural Resources Conservation Authority).  
**NTCS:** National Transport Cooperative Society.  
**NWA:** National Works Agency  
**NWC:** National Water Commission  
**OECD:** Organization for Economic Co-operation and Development  
**OLADE:** Organización Latinoamericana de Energía  
**OSINERG:** Organismo Supervisor de Inversion en Energia  
**OUR:** Office of Utilities Regulation  
**PAJ:** Port Authority of Jamaica  
**PCJ:** Petroleum Corporation of Jamaica.  
**PHO:** Pan-American Health Organization  
**PNAD:** Pesquisa Nacional por Amostra de Domicílios  
**PNP:** People’s National Party  
**PPP:** Public-Private Partnerships  
**REP:** Rural Electrification Program  
**SIA:** Sangster International Airport

**SISS:** Superintendencia de Servicios Sanitarios  
**TOJ:** Telecommunications of Jamaica  
**UNDP:** United Nations Conference on Trade and Development  
**USAFJ:** Universal Service Access Fund of Jamaica  
**WDI:** World Development Indicators  
**WHO:** World Health Organization  
**WRA:** Water Resource Authority

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## 1. OVERVIEW

Jamaica is a constitutional parliamentary democracy. Jamaica's executive branch has been held by Queen Elizabeth II since 1952. The crown is represented by Governor-General Sir Howard Felix Cooke, who was appointed by the monarch on the recommendation of the Prime Minister in 1991. The Prime Minister, following legislative elections, is the leader of the majority party and of the majority coalition in the House of Representatives. The Governor-General appoints the Prime Minister. The legislative branch is a bicameral parliament consisting of the Senate and the House of Representatives. The Senate is composed of 21 members with senators appointed by the Governor-General on the recommendations of the Prime Minister and the leader of the opposition party. 13 seats are allocated to the ruling party and the other 8 to the opposition. The House of Representatives consists of 60 seats with members elected by popular vote to serve five-year terms. The last election was held on October 16, 2002. The People's National Party, or PNP, won the election with 52% of votes and it held 34 seats. Its leader, Percival James Patterson, has been Prime Minister since 1992 (re-elected in 1997 and 2002).

Figure 1.1 – Map of Jamaica



Source: *The World Factbook, Jamaica 2004, CIA*

Jamaica is an island located in the Caribbean Sea, about 150 km south of Cuba. It has a **land area** of 10,831 square kilometers<sup>1</sup> and a **population** of 2,713,130<sup>2</sup> (July 2004 estimate). Its **growth rate** in 2004 was estimated at 0.66%<sup>3</sup>, with a **median age** of 26.8 years.

The country continues to derive most of its foreign exchange from tourism, remittances and production of bauxite and alumina. The global economic slowdown, particularly after the terrorist attacks in the United States on September 11, 2001, stunted economic growth but the economy rebounded moderately in 2003, with one of the best tourist seasons on record. However, the economy faces serious long-term problems: high interest rates; increased foreign competition; a pressured, sometimes sliding exchange rate; a sizable merchandise trade deficit; large-scale unemployment; and a growing internal debt resulting from government bailouts to ailing sectors in the economy. The debt/GDP ratio is close to 150%; namely, its estimate in

<sup>1</sup> Source: The World Factbook – Jamaica 2004 – CIA.

<sup>2</sup> Source: The World Factbook – Jamaica 2004 (Estimates) – CIA.

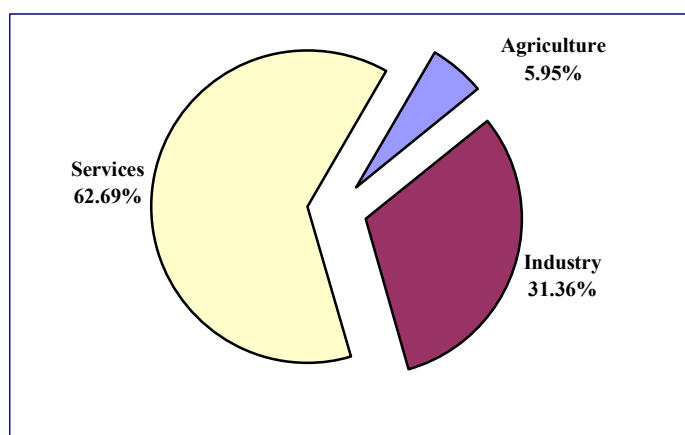
<sup>3</sup> Ibidem.

2004 was 145.6%<sup>4</sup>. Inflation, previously a bright spot, is expected to remain in the double digits (10.3%, 2004 estimate)<sup>5</sup>. Depressed economic conditions have led to increased civil unrest, including gang violence fuelled by the drug trade. In 2004, government faced the difficult prospect to pursue fiscal discipline in order to maintain debt payments while simultaneously attacking a serious and growing crime problem which is hampering economic growth.

Additionally, the country's *GDP (PPP)* in 2002 was estimated at international \$8,615,200,000<sup>6</sup>, and the *per capita GDP (PPP)* in the same year reached international \$3,526.8<sup>7</sup>. The trend, however, is positive; in fact, the growth of GDP per capita in 2001 and 2002 was 2.39% and 2.21%<sup>8</sup> respectively.

Jamaican economy is heavily dependent on services, which, in 2002, contributed almost 63% to GDP. Industry followed next with 31% while agriculture participation accounted for only 5,95%. Figure 1.2 shows the breakdown of the *GDP composition* in 2002.

**Figure 1.2 – Value Added by Sector (% GDP)**



With regard to the country's *unemployment rate*, between 1991 and 2003, the figure was stable, at around 16% of the total labor force. What is notable is the discrepancy between male and female unemployment rate during this period since female rate was double compared with the other one.

Source: *World Development Indicators 2004 – The World Bank*

<sup>4</sup> Ibidem.

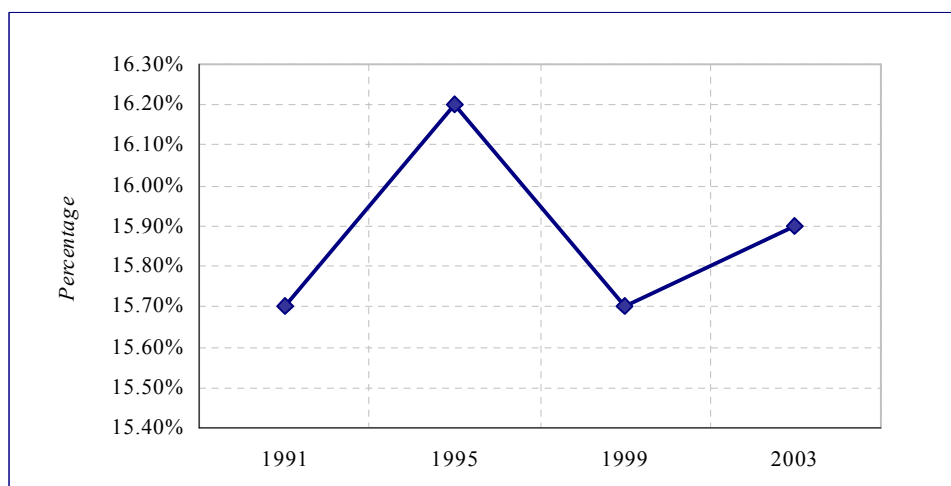
<sup>5</sup> Source: The World Factbook – Jamaica 2004 (Estimates) – CIA.

<sup>6</sup> Source: World Development Indicators 2004 – The World Bank. Values in constant 1995 international \$.

<sup>7</sup> Source: World Development Indicators 2004 – The World Bank. Values in constant 1995 international \$.

<sup>8</sup> Source: World Development Indicators 2004 – The World Bank. Values in constant 1995 international \$.

Figure 1.3 – Unemployment Rate (% of Total Labor Force)



Source: World Development Indicators 2004, The World Factbook – Jamaica 2004 - CIA

As for **development indicators**, the *Human Development Index* (HDI) ranked Jamaica 79<sup>th</sup> in 2002<sup>9</sup>: a good-standing position when compared with that one characterizing on average the lower middle-income group, made up of Peru (85<sup>th</sup>) and Guatemala (121<sup>st</sup>). Moreover, Jamaica ranks 13<sup>th</sup> in the *Human Poverty Index* (HPI-1)<sup>10</sup> among developing countries.

In considering another social indicator, the *infant mortality rate* was estimated at 17 deaths per 1,000 live births<sup>11</sup> in 2002, representing a good indicator in comparison with the other Latin American countries which have been analyzed. In fact, it is the highest ranking country among the lower middle-income group, and only Costa Rica, which is in the higher middle-income group (Argentina, Brazil, Costa Rica and Mexico), shows a significantly better performance (9 deaths per 1,000 live births<sup>12</sup> in 2002).

In viewing other aspects concerning the country's health-care quality, in particular, *malnutrition prevalence*, Jamaica reported 3.8% in 1999; that is, the percentage of children under five years of age who are malnourished<sup>13</sup>. For comparison, in 2000 Guatemala's figure was 24 in 1999, while Peru's was 7.1. As a result, it is clear that the Jamaican health-care system is the best ranking one among its peer group.

Finally, taking into account the quality of education, Jamaica's *literacy rate* was assessed at 87.64% (the population that is over 15 years of age) in 2002<sup>14</sup>; surprisingly, the *female literacy rate* stood at 91.37%<sup>15</sup>, which is higher than the rate of the *male* indicator, at 83.78%<sup>16</sup>. The female literacy rate indicator, together with the indicator for the *female labor force*, which in 2002 was 46.2%<sup>17</sup> (by far the highest percentage of the seven Latin America countries that are considered), imply that Jamaica has undertaken remarkable improvements in dealing with the problem of gender inequality and has positioned itself on the cutting edge of this issue.

<sup>9</sup> Source: Human Development Report 2004 – UNDP.

<sup>10</sup> Ibidem.

<sup>11</sup> Source: World Development Report 2004 – The World Bank.

<sup>12</sup> Ibidem.

<sup>13</sup> Ibidem.

<sup>14</sup> Source: World Development Indicators 2004 – The World Bank.

<sup>15</sup> Ibidem.

<sup>16</sup> Ibidem.

<sup>17</sup> Ibidem.

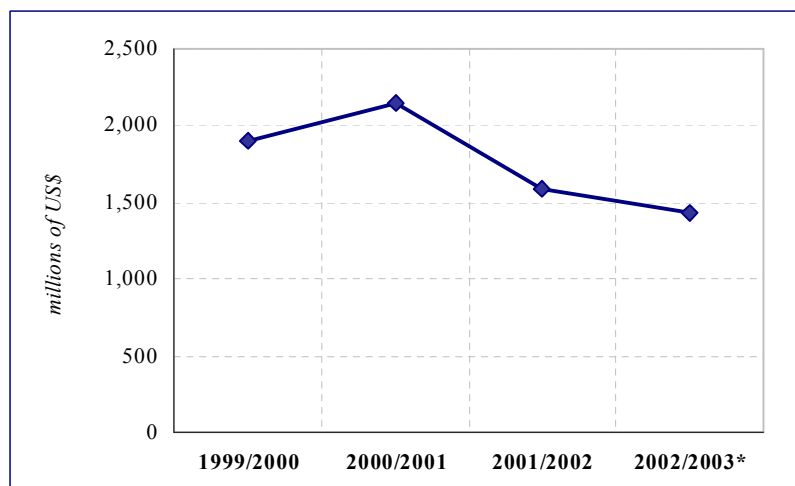
## 2. TRANSPORT

### 2.1. OVERVIEW

Jamaica’s transport system shows better indicators compared to those of the countries belonging to the same income group, that is, Colombia, Guatemala, and Peru. Although road and railway systems are characterized by some weaknesses, which could be associated mainly to infrastructure quality and density, port and airport industries play a key role for the national development. Jamaica holds several ports, including some ones providing sophisticated services: Kingston Port and Montego Bay Port serve more than twenty international shipping lines and, incidentally, Kingston has the seventh largest natural harbor in the world. Moreover, there are 35 airports, two of them covering international flights. Jamaica also has a more than adequate highway density.

Nevertheless Jamaica’s problematic fiscal situation has caused sharp reductions in public investments in the infrastructure sectors, both in their expansion and maintenance. The result has been loss of competitiveness in the economy, which is reflected in the country’s low economic growth rate in recent years. In fact, if it’s true that primary surplus is around 9% of GDP, the public budget is constrained by a high level of public debt (approximately 148% of GDP) and a high level of public deficit (9% of GDP). This poor performance has not changed despite recent years tax increase, which has brought the tax collection level at 13% of GDP. The main expense items of GDP are interest, 15% of GDP, and wages, which accounts for 13% of GDP. Figure 2.1 describes for instance the public recurrent and capital expenditures in Jamaica’s road sector. Data confirm the downward trend experienced in the sector: during 2002/2003 fiscal year the public expenditure for roads was estimated to be US\$ 1,434.2 million, the lowest expenditure recorded within the four years analyzed.

**Figure 2.1 – Roads – Public Recurrent and Capital Expenditures**



Source: Ministry of Finance and Planning - \* estimate

In light of this macroeconomic outlook, the government cannot provide further investments to infrastructure facilities and services, and the only possible way for their improvement would be through a stronger participation and a greater involvement of private capital. Nevertheless, in order to foster this action, significant framework changes must take place in different field,

government policy, legislation and regulation in particular. Although the country has begun this process, it has not yet concluded.

## 2.2. ASSESSMENT OF THE KEY POLICY AREAS

### 2.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

In order to provide a detailed and exhaustive description of Jamaica's infrastructure stock and transport situation, the following four main important areas will be investigated in the technical dimensions sector:

- roads;
- rail system;
- ports;
- airports.

Jamaica has a well-developed transport system (when compared to other Caribbean countries); however, inadequate services, high costs and maintenance remain the main issues the government have to solve.

In 2001, Jamaica's road length measured 18,700 kilometers; 70% of these roads were paved, resulting in a 1,727 road km/1,000 km<sup>2</sup> density and 7.2 km/1,000 people. In comparison with other Caribbean countries, Jamaica has a high road density value, along with high access and participation of paved roads. In fact, the percentage of paved roads is about 40% higher than both Cuba and the Dominican Republic, while highway density is, respectively, around 500% and 300% higher than those of the two countries before mentioned (see Table 2.1).

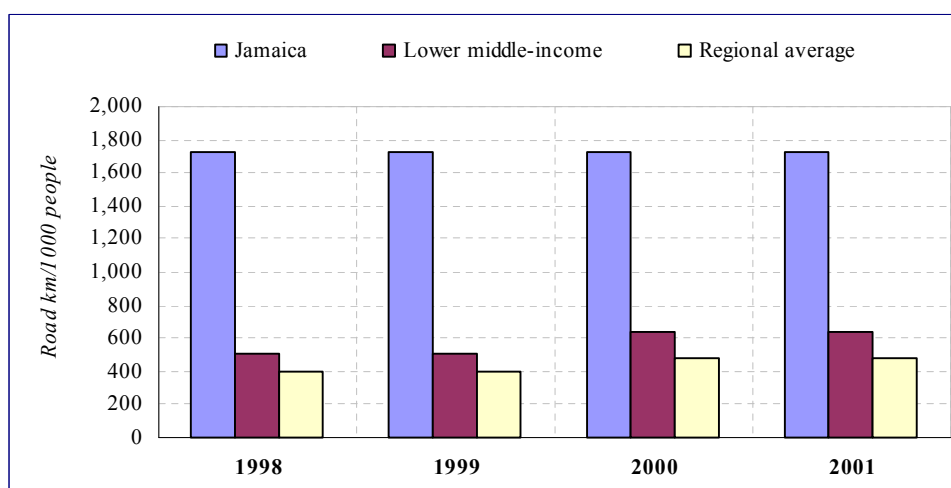
**Table 2.1 – Roads – Indicators for selected Country – 2001**

	Roads (Km)	Paved Roads	% Paved	Country Size – (1000 sq Km)	Road Density (Road Km/1000 sq Km)
<b>Jamaica</b>	18,700	13,100	70.10%	10.83	1,726.69
<b>Peru</b>	78,230	10,452	13.36%	1,280.00	61.12
<b>Guatemala</b>	14,118	4,871	34.50%	108.43	130.20
<b>Cuba</b>	60,858	29,820	49.00%	100.86	603.39
<b>República Dominicana</b>	12,600	6,224	49.40%	48.73	258.57

Source: World Development Indicators 2004 (WDI) and International Road Federation (IRF)

Expanding this analysis to the countries belonging to the regional sample, Jamaica's income group in particular, *road density* indicator is significantly higher than benchmarks' ones, as shown in Table 2.1 and in Figure 2.2.

Figure 2.2 – Road Density



Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data (Anuario Estadístico America Latina y el Caribe 2003)

In addition, taking into consideration the *paved road percentage on total roads*, Table 2.2 confirms that Jamaica performance overcomes both lower-income and regional average .

Table 2.2 – Roads – Benchmarks Indicators

Paved Road % on total Roads	1998	1999	2000	2001
Jamaica	70.10%	70.10%	70.10%	70.10%
Lower middle-income	32.09%	33.01%	41.72%	41.73%
Regional average	27.85%	27.73%	33.26%	33.27%

Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data (Anuario Estadístico America Latina y el Caribe 2003)

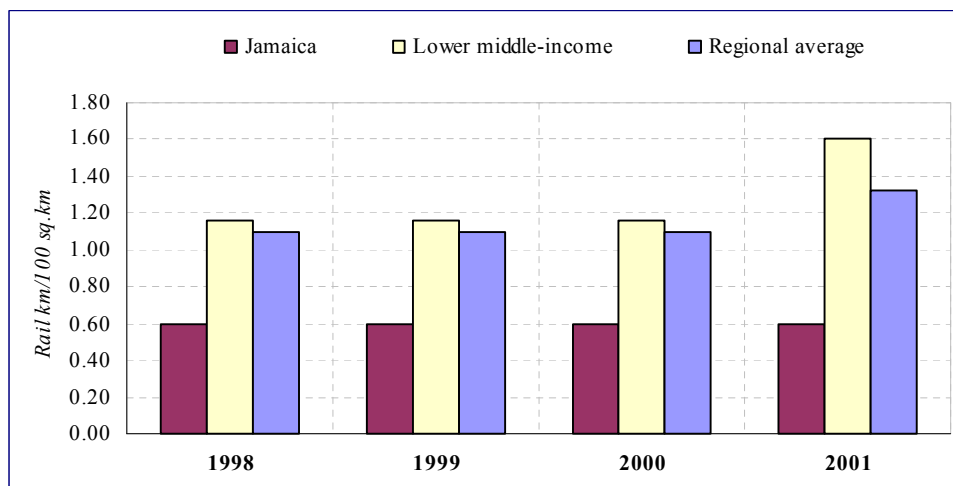
When looking at *road infrastructure quality*, Jamaica doesn't reach outstanding levels due to fiscal crisis it has recently experienced: according to Paredes (2003), we have evidence of this scenario from the fact that the highways' maintenance expense during fiscal year 1999/2000 was one fourth of that one characterizing 1996/1997 fiscal year. Furthermore, Paredes states that, in 2000, 48% of highways were in poor condition whereas only 13% were in good condition. The indicators of car accidents and fatalities reflect this unbalance since Jamaica shows one of the worst rates with a negative trend: the number of deaths in national highways was 361, 408 and 391 in 2001, 2002 and 2003,<sup>18</sup> respectively.

As for *railway* sector, Jamaican system has an endowment of 272 km of lines. The Jamaica Railway Corporation owns 207 km but services were deactivated in 1992 (the company had operated a common carrier service but services ended in 1992). Private companies own and operate in the remaining part of the network (ALCAN owns the largest stake – 57 km), which is mostly used for transporting bauxite. The government of Jamaica has been taking initiatives to

<sup>18</sup> Source: Ministry of Health – traffic report 2003.

privatize more and more the sector and it has recently signed an agreement with Rail India Technical and Economic Services Ltd to rehabilitate and improve the railway system.

Figure 2.3 – Rail Density

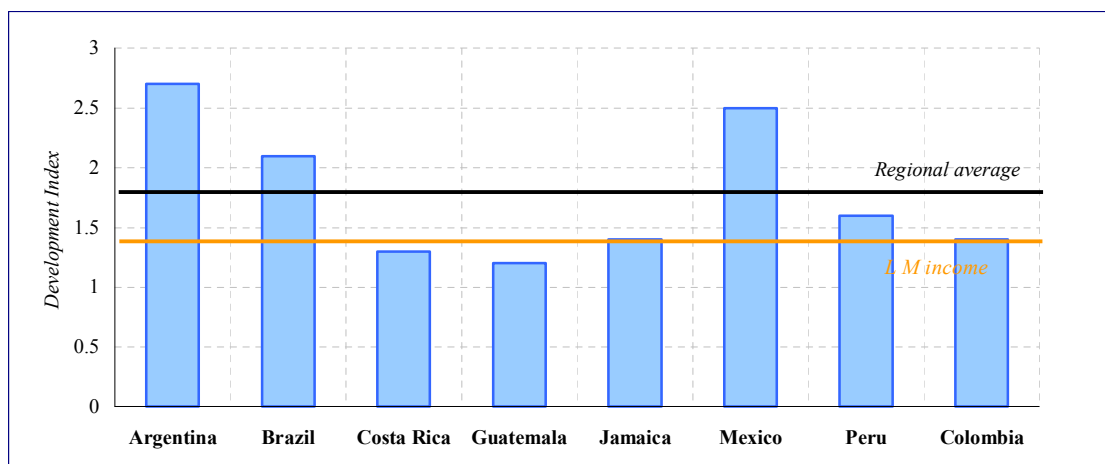


Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data (*Anuario Estadístico America Latina y el Caribe 2003*), except for Jamaica, whose source is CIA – *The World Factbook*

The shortage of railways, as certified by also by the inadequate degree of rail density (see Figure 2.3), is one of the reasons why Jamaica has scored low performance on the railroad infrastructure development index. According to the World Economic Forum 2004 Executive Opinion Survey<sup>19</sup>, Jamaica’s index was estimated at 1.4 (where 1 = underdeveloped and 7 = as extensive and efficient, the world’s best), a value which reflects the average of its income group but lower the 1.8 characterizing for the regional sample (see Figure 2.4).

<sup>19</sup> World Economic Forum (WEF) 2004 Executive Opinion Survey Results, produced in collaboration with the Center for International Development at Harvard University and the Institute for Strategy and Competitiveness, Harvard Business School.

Figure 2.4 – Railroad Infrastructure Quality – 2004<sup>1</sup>



Source: World Economic Forum 2004 Executive Opinion Survey

<sup>1</sup>Scoring: 1= underdeveloped and 7= as extensive and efficient, the world's best

On the contrary, Jamaica **port sector** represents a key area also because it can benefit from its geographic location. In fact, proximity to the Panama Channel makes Jamaica an attractive stopping ground for maritime transport companies. The country holds some international ports, such as Kingston Port, which attracts 80% of total Jamaican imports; it is also the main operator of containers and general cargos for the country. Table 2.3 shows seaport movements in Jamaica including a comparison with other Caribbean countries: Jamaica has one of the highest indicators for port turnover per inhabitant (four times more than the Dominican Republic and one third more than Trinidad and Tobago). In addition, when compared to countries with the same levels of development (Colombia, Guatemala and Peru), the Jamaican indicator *ton per 1,000 people* is astounding.

Table 2.3 – Seaports Movement

Country	Tons			Ton/1000 people		
	2001	2002	2003	2001	2002	2003
Jamaica	15,563,901	16,962,635	17,479,294	6,139.61	6,691.37	6,895.19
República Dominicana	15,967,297	16,312,481	16,097,011	1,840.19	1,879.97	1,855.14
Trinidad and Tobago	3,898,257	5,059,524	6,744,386	3,047.89	3,955.84	5,273.17
Panama	23,364,317	19,834,982	10,492,311	7,635.40	6,482.02	3,428.86
Guatemala	13,272,006	14,221,026	14,639,900	1,125.89	1,206.40	1,241.93
Peru	15,544,476	16,060,874	17,268,478	590.37	600.43	626.94
Colombia	52,352,407	52,888,358	52,316,979	1,216.62	1,209.35	1,178.31

Source: Perfiles Marítimos, ECLAC

Kingston, the largest port, covers 28% of the total distribution, followed by Rhoades with 27% and Esquivel with 16%. Rhoades, in particular, is a general cargo port, with significant movement of containers and transshipment operations. The other ports are, in general, specialized in a single activity and administered by a sole company. Rhoades, Estivel and Kaiser Ports, for instance, specialized themselves in the handling of bauxite and aluminum.

Table 2.4 – Seaports Movement – Jamaica – 2003

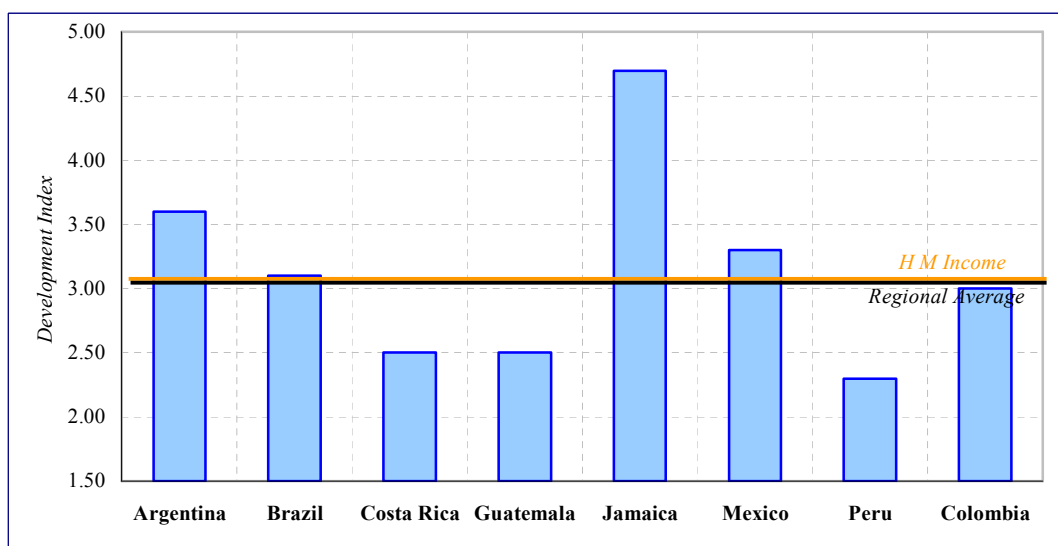
Ports	Tons-2001	Tons-2001	Tons-2003	2003/2001	Participation
Kingston	4,370,900	4,600,342	4,981,307	14%	28.50%
Rhoades	4,209,600	4,975,173	4,766,547	13%	27.27%
Esquivel	2,474,100	2,641,319	2,769,519	12%	15.84%
Kaiser	2,254,700	2,239,748	2,444,537	8%	13.99%
Rocky Point	1,251,400	1,500,467	1,491,441	19%	8.53%
Montego Bay	676,700	638,869	657,674	-3%	3.76%
Ocho Rios	236,400	238,204	222,174	-6%	1.27%
Port Antonio	45,100	48,229	50,892	13%	0.29%
Rio Bueno	28,600	40,661	31,364	10%	0.18%
Old Harbour	16,400	29,611	43,839	167%	0.25%
Lucea	0	10,012	20,000	n.a.	0.11%
<b>Total</b>	<b>15,563,900</b>	<b>16,962,635</b>	<b>17,479,294</b>	<b>12%</b>	<b>100.00%</b>

Source: *Perfiles Marítimos*, ECLAC

This sector is a strategic industry for Jamaica’s economy because it’s the most important channel through which imports and exports are managed. The key role played by the sector is furthermore testified by the observation of imports/GDP and exports/GDP ratio, which reaches 40% and 20% respectively. The country’s main export products are sugar, banana and bauxite, while its imports are mostly consumption goods, materials for construction and capital goods. Nevertheless, looking at the contribution of exports to the GDP it should be noted a declining participation (from 32% in 1994 and 1995 to 18.7% 2001).

Anyway, this loss in competitiveness hasn’t to be retraced to a sector crisis but to macroeconomic variables and structural conditions such as currency appreciation, wages, inappropriate financing, high costs of public services (water, energy and telecommunication), poor condition of highways and crime and violence. A proof of the improvements reached through the process of privatization is represented by port infrastructure quality: at this end data from World Economic Forum (see Figure 2.5) show an index fixed at 4,7 which is far higher than the regional average and that one of the lower-middle income group (both fixed at 3,1).

Figure 2.5 – Port Infrastructure Quality – 2004<sup>1</sup>



Source: World Economic Forum 2004 Executive Opinion Survey

<sup>1</sup>Scoring: 1= underdeveloped and 7= as extensive and efficient, the world's best

With regard to the **airport** sector, the country has 35 airports, 11 with paved runways. The two main airports with international routes are Norman Manley International Airport, in Kingston, and Sangster International Airport, in Montego Bay. Residents mainly use the former, which is located in the capital city and in the main commercial center of Jamaica for business purposes; it has a passenger carrying capacity of 500 passengers per hour. The latter airport is located in the main tourist area and has a carrying capacity of 1,240 passengers per hour. Domestic air transportation is oriented in particular toward the smaller airports (regional ones). In this instance the country provides also with sufficient air services in terms of both population size and area extension. A large number of small airports implies a significant presence of small aircraft traffic.

Compared with other Latin American countries characterized by the same levels of development Jamaica presents an indicator for *Airport/1,000 km<sup>2</sup>* which is tenfold that one of Colombia and Guatemala; the Peru indicator, on the other hand, is so poor that it cannot be used for comparison. In addition, concerning an other indicator, *Airport/million people*, Jamaica shows a value which places it as the best country (the cutting edge) among its peer group.

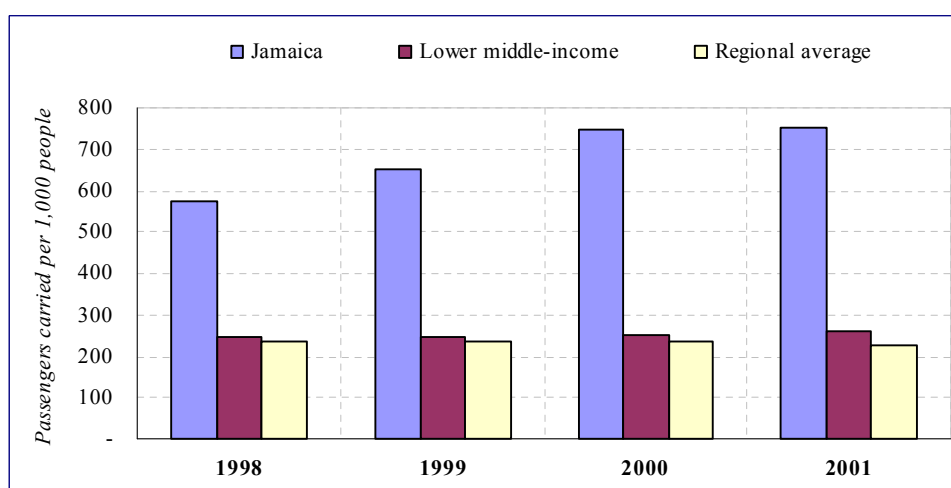
Table 2.5 – Airports with Paved Runways Classified by Length – 2003

	Perù	Colombia	Guatemala	Jamaica
<b>Total</b>	52	101	11	11
<b>over 3,047 m</b>	5	2	0	0
<b>2,438 – 3,047 m</b>	20	9	3	2
<b>1,524 – 2,437 m</b>	16	39	2	0
<b>914 – 1,523 m</b>	9	39	4	4
<b>under 914 m</b>	2	12	2	5
<b>Population – million</b>	27.1	44.4	12.3	2.6
<b>Land - sq Km – thousand</b>	1,280.0	1,038.7	108.43	10,831
<b>Airports (with paved runways) /1000 sq Km</b>	0.04	0.10	0.10	1.02
<b>Airports (with paved runways) /million people</b>	1.92	2.27	0.89	4.19

Source: The World Factbook - CIA

Government manages airport sector through the Airports Authority of Jamaica, but private players manage the two international airports which have been recently privatized. When the state privatized Sangster International Airport, it maintained ownership of infrastructure together with the right to terminate concessions in case of contractual obligations’ failures. Private investment will allow airport facilities to expand and develop, thereby increasing tourism traffic. Jamaica’s economy should benefit from this service enhancement given the fact that tourism is the most profitable economic activity in the country. Airports manage not only cargo transportation, but well-known and important airline companies such as American Airlines, British Airways and Air Canada operate in these airports too.

Figure 2.6 – Airport Sector – Passengers Carried



Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data (Anuario Estadístico America Latina y el Caribe 2003)

In order to make a comparison between Jamaica and the other Latin American countries based on passengers carried for 1,000 people, Figure 2.6 above shows air transport service in Jamaica

is well developed, with national indicator estimated at 700 for 2001 which is by far higher rather than those ones of benchmarks, both at about 250.

Further, taking into account *ton-kilometers of freight per 1,000 people* (Table 2.6), Jamaica has a better performance with respect to the other Latin American countries.

**Table 2.6 – Airports – Ton-Kilometers of Freight per 1,000 People**

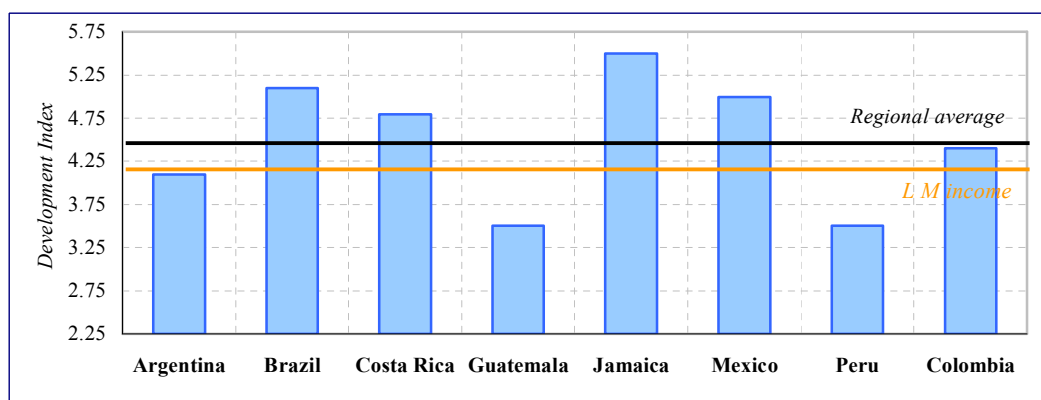
Country/Year	1998	1999	2000	2001
Jamaica	9,448.82	11,523.44	11,317.83	10,173.41
Lower middle-income <sup>1</sup>	9,698.61	9,011.79	9,195.66	9,596.19
Regional Average <sup>1</sup>	10,568.47	9,767.95	9,825.28	7,090.11

Source: Ernst & Young Italy and Cohen&Co. elaborations on ECLAC data (Anuario Estadístico America Latina y el Caribe 2003)

<sup>1</sup>Guatemala excluded

Of course, the foregoing discussion about Jamaica’s air transport infrastructure is confirmed by the ranking in Figure 2.7 taken from the WEF for 2004. As indicated, Jamaica was ranked number one in comparison with the other Latin American countries. It received a score of 5.5 while the average of the sample was only 4.5 and that one of its income group 4.2.

**Figure 2.7 – Air Transport Infrastructure Quality – 2004<sup>1</sup>**



Source: World Economic Forum 2004 Executive Opinion Survey

<sup>1</sup>Scoring: 1= underdeveloped and 7= as extensive and efficient, the world’s best

## 2.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

Efficiency in the system has declined in recent years due to reductions in capital expenditures for ordinary maintenance and improvements. Table 2.7 presents indicators for the government's capital expenditures and shows the shrinkage of expenditures during the period between 1996 and 2003. The expense for infrastructure development dropped from 5.6% of GDP to 2% due to the overall increases in interests and wages expenses.

**Table 2.7 – Jamaica – Public Sector Budget and Investment Programs**

Jamaica - Public Sector Budget and Investment Programs (% of GDP)							
Accounts	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Revenues and Grants	26.4	25.4	26.6	29.8	30	27.6	29.6
Expenditures	32.6	33	33.5	34	31	33.3	37.6
Wages	10.1	11.1	11.5	10.5	10.5	11.5	13
Interests	11.4	9.4	12.4	13.8	12.8	13.7	15.7
Other	5.5	7.5	6.9	6.6	5	5.4	6.9
Capital	5.6	5	2.8	3	2.8	2.7	2

Source: IMF and Planning Institute of Jamaica; apud The World Bank

Furthermore, looking at the public sector capital investment breakdown it's possible to observe a decreasing trend in infrastructure from 52.6% of capital expenditures in 2000/2001 to 39.9% in 2002/2003. The transport sector was the most affected as in 2000/2001 that sector had a participation rate of 27.8% (0.8% of GDP), while in 2002/2003 that rate had dropped to 12.1% (0.24% of GDP). In 2003/2004, the sector suffered yet another reduction, reaching 8.5% of investments.

**Table 2.8 – Jamaica – Public Sector Capital Investment Breakdown**

Jamaica - Public Sector Capital Investment Breakdown			
Accounts	2000/01	2001/02	2002/03
Total Capital	100	100	100
Directly Productive	3.2	4.3	4.3
Economic Infrastructure	52.6	58.8	39.9
Transportation & Comm.	27.8	23.2	12.1
Power & Energy	6.1	13.4	7.3
Water & Sewerage	5.5	5.1	6.4
Others	13.2	17	14.1
Social Infra-Structure	24.8	25.6	30
Administration	18.9	10.2	23.4
Funds & Loans	0.5	1	2.5

Source: IMF and Planning Institute of Jamaica; apud The World Bank

Recently, however, in order to improve the transport's situation, the government has been making efforts to involve the private sector into financing investments.

In *road* segment, for instance, government defined Highway 2000 project, considered a fundamental step to establish a synergetic platform with the scope to catalyze economic growth, job creation and sustained development. The project will be implemented through a combination of Build, Operate and Transfer (BOT) contracts and public-private partnerships (PPPs). The project aims at the construction of a 230 km highway which will connect Kingston, Montego Bay and Ocho Rios. This highway will be the first island's toll road: private investor will collect financial resources from tolls associated to highway's utilization but it won't receive subsidies from the government. The French company Bouygues Construction, one of Europe's largest contractors, was the winner of the proposal.

The *railway* segment has already introduced reforms and the government has already signed a Memorandum of Understanding with Rail India Technical and Economic Services Ltd, which aims to revitalize the Jamaica Railway Corporation in two stages:

- (i) the first phase concentrates on revitalizing the commuter service from Kingston to Spanish Town and, then, from Kingston to Linstead;
- (ii) the second phase aims to revitalize the freight service from Kingston to Montego Bay.

About *port* segment, although Jamaican Port Authority manages the terminals of containers located in Kingston Port, Ocho Rios and Port Antonio, as well as in Montego Bay Port, other ports are managed mainly by private investors and government is going to increase private operators' participation in port management and in services provision.

In *airport* segment, government launched an Airport Reform and Improvement Program. The program, which consists basically of a joint project between Inter-American Development Bank and the government of Jamaica (IDB/GOJ), aims at improving efficiency and quality of the air transport system. The program will be concentrated on civil works, such as the recovery of taxing areas, the development of runways security (illumination and recovery), and the improvement of conditions of areas surrounding airports. Nevertheless, the key reform is represented by the reorganization of Civil Aviation Authority (CAA) and it's oriented to allow further privatization in the airport sector. At this end, the auction for Sangster International Airport (SIA) in 2001 has been the most relevant initiative: four bidders had shown interest, with the concession eventually awarded to Vancouver Airport Consortium, which then formed a Special Purpose Company – Montego Bay Jamaica Airport Ltd (MBJ) – to operate the airport. The privatization contract was signed in January 2003 and, under that agreement, the Airport Authority of Jamaica was able to contract from MBJ all the rights and responsibilities for the management, maintenance, operation and development of SIA. MBJ will collect all the operating income and will pay an annual fee to the government based on the airport's traffic flow. Every airport activity will be carried out as a private business and the government will not provide financial guarantee. CAA will be responsible for regulation and surveillance, including airports duties.

### 2.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

Regulation issues could jeopardize the recently instituted privatization process. The uncertainty associated to the regulatory framework could infact diminish the interest of private investors for infrastructure privatizations<sup>20</sup>.

Jamaica began its privatization process in 1981, after a decade during which companies passed through a nationalization program. Initially, only small companies have been involved by this

<sup>20</sup> At any rate, negotiations among involved parties become an alternative way to proceed in front of specific regulation lacks like it occurred, for example, for the Highway 2000 project: in this case, government and private sector negotiated tax exemptions for the imports of construction materials.

operation, but the process got stronger after 1986 when the government privatized also some banks, a cement factory and the telecom sector. Energy, water and sanitation, refinery, international airports and ports' sectors, though, remained under the control of the state.

A direct effect of this partial privatization phase could be identified with an emerging and widespread need of authorities which could put under control the competitive environment.

In 1993, the Fair Competition Act (FCA) was approved. The act, articulated on two sub-components -Antitrust Act and Consumer Advertising Act - aimed at encouraging and preserving a competition landscape and at providing consumers with better products and services at the best prices. The Act established also the Fair Trading Commission, a body in charge of deciding cases of conflicts and complaints<sup>21</sup>.

In 1995, the Office of Utilities Regulation (OUR) was established by the OUR Act of 1995<sup>22</sup>. Its Board of Directors is composed of a General Manager and a number of Deputy Directors. The General Manager is appointed, among qualified persons, by the Governor-General on the recommendation of the Prime Minister, and serves a term between three and seven years, with the possibility of re-election. The Prime Minister, on the recommendation of the Minister, appoints the Deputy Directors, and their appointments range from three to seven years, also with the possibility of re-election. It should be noted that this institution is not independent from government; therefore, risks of political pressures are high also considering its functions. In fact, this multi-sector agency monitors the efficiency and quality of services provided by private investors and regulates the fair return on their investments. OUR does not have authority to set tariffs, but only to review the tariff applications submitted by the providers and to recommend their approval or disapproval to the respective Ministers. The main task of the regulatory agency is the establishment and maintenance of consistent and transparent rules for the utility providers and the promotion of efficient provisions consistently with the government's policy. Services under OUR regulation are the provision of public passenger transportation via roads, railway or ferry.

In 1998, the Ministry of Transport and Works (MTW) was established. Tasks and programs of the former Ministries of Local Government and Works, Public Utilities and Transport, as well as Health were assigned to the MTW too. The MTW is so responsible for island's land, sea and air transport as well as for the majority of the road network, including bridges, drains and embankment. MTW's main responsibility is both to secure resources and to advance effective policies, plans, standards and regulations for the provision of safe and sustainable transport systems, for the movement of people and goods and for the achievement of efficient, high quality and timely engineering and technical works.

**Roads.** The basic legal framework for roads is represented by the Main Roads Act of 1973 and by the OUR Act of 1995 (see introduction to this section).

The National Works Agency (NWA) - under the MTW control - was created in 2001 with the Public Sector Modernization Programme and its responsibilities refer to the management of the island's public works infrastructure.<sup>23</sup> Specifically, it is in charge of the maintenance of the national road network and associated structures, maintenance and replacement of bridges and the maintenance of other civil engineering facilities, including drainage and flood protection structures. In addition, in 1998, Jamaica Urban Transit Company (JUTC) - always under the MTW control - was established in 1998 (according to the Public Passenger Transport Act) to

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<sup>21</sup> The Commission is integrated by up to five commissioners appointed by the Minister of Industry, Commerce and Technology, and a staff that is headed by the Executive Director. The staff consists of lawyers, economists, research officers, complaints officers and administrative and support staff.

<sup>22</sup> This information is also applicable to the other sectors.

<sup>23</sup> See National Work Agency (NWA) for details on the creation and objectives of this program.

operate public passenger transport in the Kingston Metropolitan Transport Region (KMTR).<sup>24</sup> The JUTC also grants exclusive licenses to provide public passenger transport services within and throughout the KMTR. The Island Traffic Authority, under the MTW, is responsible for vehicle safety. Lastly, the Transport Authority, always under the MTW, is the regulatory body which handles the licensing and monitoring of all public and commercial vehicles and the regulating and monitoring of public transportation throughout the island.

**Railways.** The basic legal framework for railway transport is the Jamaica Railway Corporation Act of 1973 and the OUR Act of 1995.

The Jamaica Railway Corporation (JRC), established with the Jamaica Railway Corporation Act, has the power to purchase, take, hold and dispose of land and other property of whatever kind to aim the purposes described by the Act. Although JRC is in charge to manage, operate, expand or extend railway together with the obligation to provide with all reasonable facilities for transporting passengers and goods<sup>25</sup>, the major part of railway service has been suspended since 1992.<sup>26</sup> Only 57 km out of the 272 km track network is functioning under a private company to transport bauxite. Over the past three years, there have been plans for the privatization of the JRC and the reintroduction of rail service in Jamaica. Negotiations have been taking place with an India-based company which would have the responsibility of overseeing the successful re-start of the service.

**Ports.** The basic legal framework for Maritime Transport consist of the Port Authority Act (1972), the Shipping Act (1998), which provides for the establishment of maritime administration), and the OUR Act (1995).

The Maritime Authority of Jamaica,<sup>27</sup> under the MTW control, was established in order to implement provisions of the Shipping Act. The Shipping Act prescribed to Maritime Authority to pursue the development of shipping and to regulate matters relating to merchant shipping and seafarers. Accordingly, Maritime Authority is responsible for the wide-ranging activities regulated under the Act and ensures that these activities are handled in an efficient and sustainable way.<sup>28</sup> The Port Authority of Jamaica (PAJ), established by the Port Authority Act and controlled by MTW, is the principal maritime agency responsible for the regulation and development of Jamaica's port and shipping industry.<sup>29</sup> Its specific functions include safety of all vessels navigating the entry ports, regulation of tariffs to charge on goods passing over the public wharves, expansion and upgrading of port facilities and development of public sector export-free zones.<sup>30</sup> PAJ is headed by a Board (of ten members) appointed by the Minister of Transport and Works.

**Airports.** The basic legal framework for air transportation consist of the Civil Aviation Act of 1995, the Airports Authority Act of 1974 and the Airports (Economic Regulation) Act of 2002.

<sup>24</sup> Initially, the JUTC began by operating the school bus service in September 1999 and, in 2000, another franchise, CONURBAN, which operated in the Papine and Spanish Town areas, was taken over by the JUTC. Negotiations between Ministry and National Transport Cooperative Society (NTCS) concluded on March 7, 2001, with the Ministry taking over that franchise. A full takeover of the KMTR took place on April 23, 2001.

<sup>25</sup> Source: The Ministry of Transport and Works, Jamaica.

<sup>26</sup> See The World Factbook, CIA.

<sup>27</sup> See The Ministry of Transport and Works of Jamaica for a complete description of functions.

<sup>28</sup> As part of its mandate, the Authority sought to establish a shipping registry in Jamaica. Following a series of Ship Registry launches in various parts of the world, during November of 2000, Jamaica was added to the International Maritime Organization's (IMO) 'White List'. Jamaica's appearance on the 'White List' means that it will now be recognized as an international shipping services center offering a quality shipping registry, seafarers of high caliber, as well as shipping services of the highest standards.

<sup>29</sup> PAJ owns and controls the Kingston Transshipment Port, the Port of Montego Bay and the cruise shipping terminals at Ocho Rios and Port Antonio.

<sup>30</sup> See The Ministry of Transport and Works of Jamaica for a complete description of functions.

The Civil Aviation Authority (CAA), established by the Civil Aviation Act, became operative in 1996 under the former Ministry of Public Utilities and Transport (nowadays MTW). The Airports (Economic Regulation) Act of 2002 designated CAA also as the regulatory authority over economic issues. As a consequence of that, CAA is currently responsible for regulating air navigation and all matters related to safety in civil aviation in the country, regulating charges and granting both permits for charter flights and licenses for aircraft operators. All scheduled carriers operating flights in Jamaica have both to file airfares and rates (as well as the conditions governing these tariffs) with CAA before they could be available to the public and to respect conditions of their respective Air Service Agreements. From another point of view CAA is responsible for regulating Jamaica's major airports (according to the Airports Economic Regulation Act, 2002), currently Sangster International (Montego Bay) and Norman Manley International (Kingston). At this purpose the Authority has the power to regulate airport charges, to ensure accounting transparency and to deal with public interest issues, including anti-competitive and discretionary behaviors by the airport operator. Airport charges are regulated by a price cap formula, which must include all components of infrastructure and service use: on aircraft operators, for the landing, parking and aircraft take off; and on passengers, for their arrival or departure from the airport by air. Annual changes in charges are linked to the changes in the United States Consumer Price Index. The formula is reset at five-year intervals, developing knowledge and experience of worldwide utility regulation. Another part of its mandate includes the creation of an enabling environment for potential investors in airports, the encouragement of investment in new facilities to meet user demand and the alignment of airports with best industry practices and standards and international requirements.

The Economic Regulation Department under CAA is responsible for the orderly development and expansion of Jamaica's air transport on a sound economic basis. This Department advises government on economic aspects of national aviation industry too.

The Airport Authority of Jamaica (AAJ), established under the MTW by the Airports Authority Act of 1974, serves as an independent statutory body whose functions are to administer, control and manage prescribed airports and to provide and maintain such services and facilities that are necessary for their operations. AAJ can grant leases, subleases or other interests or concessions for any land or building within a prescribed airport. AAJ owns and operates the island's two international airports and four domestic aerodromes.

## 2.3. POLICY OPTIONS AND IMPLICATIONS

Despite the availability of a good level transport infrastructure in Jamaica, specially if compared to similar countries, the entire sector suffers some problems related to the quality and efficiency of services provision as well as to the deterioration of the infrastructure stock. Road and railway sectors have to face the most problematic situation: the former needs a solution for its seriously poor conditions whose improvement finds reductions in public investments as additional handicap. The latter is practically non-functioning.

Jamaican government has been taking action to modernize the transport sector and to increase investments, especially through a greater involvement of the private sector. It should be noted that in order to attract private investments, especially considering Jamaica's economy, the quality of the transport sector has tremendous importance because it can ensure greater economic and social development for the country. For this reason, Jamaica has made continuous efforts to privatize airports and to increase private operators' participation in port management and in services provision. In road sector, concessions of some stretches have been awarded to the private sector, mainly based on toll collections to recover costs – the main example is the Highway 2000 project – but more efforts in this direction are required. Also in the railway sector this attitude towards the research of private partnerships became a priority as testified by a government looking for private companies involvement in order to reactivate the major part on lines, currently out of order.

A greater private participation along with budgetary constraints will require service operators become even more financially independent from public resources. From the other hand, although regulatory changes aiming at the participation of the private sector have been recently approved, there still remain some progresses to realize about the set of a clear and stable institutional framework. Uncertainties and doubts such as the political autonomy of the regulatory management, could in fact diminish the interest of private investors for infrastructure privatizations.

## 2.4. PRIORITIES FOR FUTURE REFORMS

Jamaica's government has been making major efforts to modernize and improve services provision in the transport sector, assuring the recovery of investments. These first two goals have been pursued in fact through a promotion of private sector investments which should generate enough capital both to maintain the existent services and to enlarge the infrastructure stock.

Significant improvements have been made in airports' and ports' sector. In the former, main national airport management has been transferred to the private sector. In the latter, Jamaica can counts on several private port terminals and private agents carry out a significant share of ports' operations. Very little advances could be noticed in the road sector, where toll collections have recently begun. As for the railway sector private operators are still looking for partnerships to recover and upgrade sector activities.

Starting from this scenario sector priorities include investments recovery, increasing services availability and improving quality standards. These priorities become crucial in a country where commercial opening level is very high and where tourism is its most profitable economic activity.

Budget deficit calls for efforts towards private participation in the management of transport infrastructure with the idea to stimulate new investments. Given the fact that a model based only on private operators is not feasible, the government should undertake fiscal adjustments to

overcome its shortage in investment capacity and to allow for the creation of Public-Private Partnerships (PPP) for particular types of projects.

Nevertheless, in order to attract private participation in the transport sector there is a need for establishing a stable regulatory framework and a tariff plan adequate to recover the investments guaranteeing investments' recurrence.

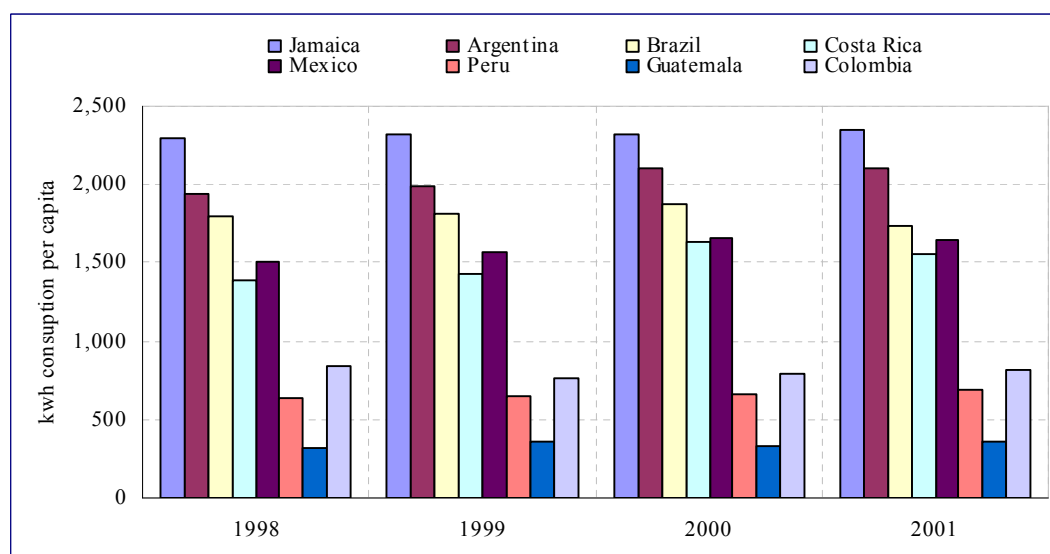
A final point worth to be underlined and always correlated to the private players attraction is represented by the security issue. High indexes of criminality in Jamaica reduce the amount of investments and increase the cost of services. Thus, finding a solution for criminal problems is a fundamental point in order to stimulate investments as well as to allow higher efficiency by lowering insurance and security costs.

## 3. ENERGY

### 3.1. OVERVIEW

Jamaica is a small country with a population of around 2.7 million people (July 2004), but it has a larger than expected industrial diversification for a country of that dimension. Bauxite and aluminum industry is an important segment and it has large international reserves. However, this industry is a heavy consumer of energy making *per capita consumption of energy* in Jamaica much larger than is expected for a country with its level of development (Figure 3.1). Moreover, Jamaica's high level of energy consumption stems from an additional problem: most of its generators are steam plants, which are not very efficient.

Figure 3.1 – Electricity Consumption



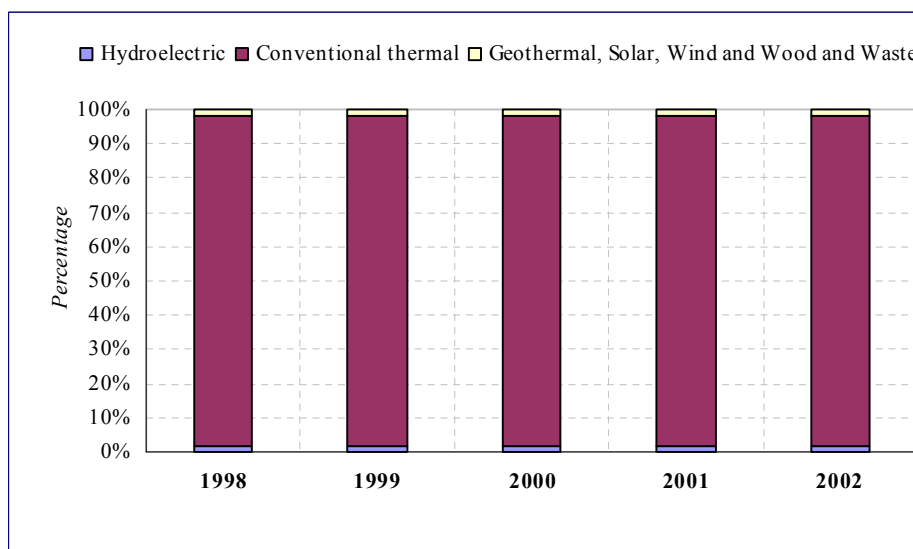
Source: World Development Indicators 2004

Looking at its geographical position and configuration it's possible to understand the reasons why electricity sector depends heavily on oil imports and on its inefficient refinery system.

Firstly, it is difficult for this island to interconnect the electrical system or have a gas pipeline. Although some alternative ways have been considered and initially started up it will not be simple to advance in the direction of a reduction of the nation's heavy dependence on imported petroleum. In seeking to diversify its energy sources, initiatives in oil and gas exploration to complement the construction of hydropower plants, solar energy, and biomass and wind energy have been undertaken. Moreover Jamaica has been considering the possibility of importing liquefied natural gas and building a re-gasification plant and also producing ethanol from sugar cane so as to reduce the strong reliance on petroleum and reduce electric power costs (especially in the aluminum and bauxite sectors which are intensive users of this energy source). If it's true that this new solution would reduce the dependency on the local oil refinery, the small size of the Jamaican economy still leaves little scope for efficient competition in the generation stage. The scenario is even worst looking at the transmission and distribution stages which remain natural monopolies. For this purpose the regulatory framework is and will be a key leverage to develop the sector.

Secondly, the country holds neither petroleum reserves nor important waterways for hydroelectricity generation (24 MW with maximum potential of about 115 MW). The electricity sector is so mostly composed of conventional thermal generation, as shown in Figure 3.2.

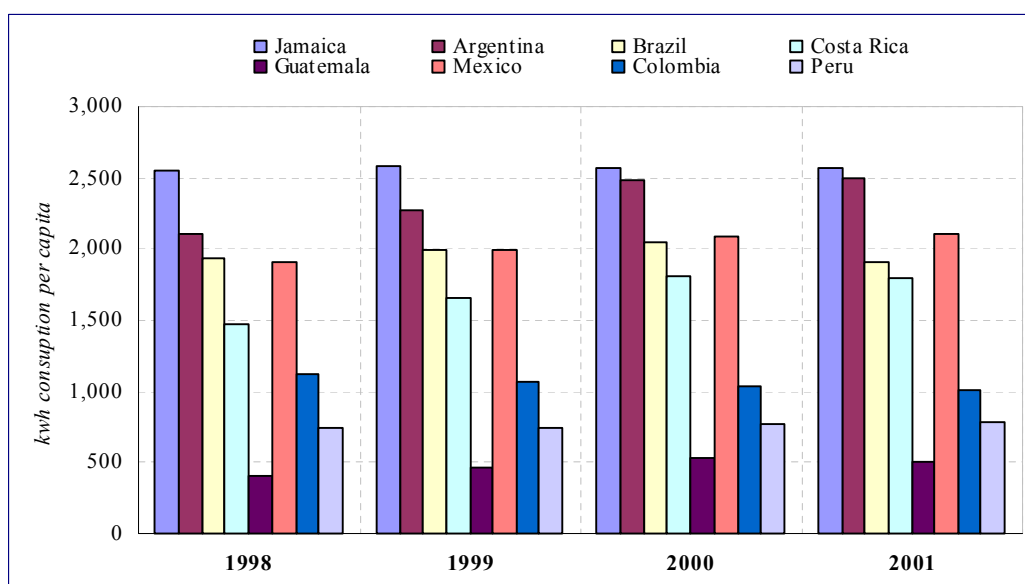
Figure 3.2 – Electricity Production by Source



Source: Energy Information Administration, U.S. government, EIA

Figure 3.3 summarizes data on *electricity production per capita* and shows that Jamaica has the highest values when compared with other Latin American benchmark countries, thereby balancing its high level of energy per capita consumption.

Figure 3.3 – Electricity Production



Source: World Development Indicators 2004

Between 1966 and 1973, the vertically integrated Jamaica Public Service Company Limited (JPSCo) was the sole provider of electricity for public distribution and sale, with exclusive responsibility for generation, transmission, distribution and retail supply. JPSCo was established in 1923 as a private utility company. Afterwards it acquired the assets of West India Electricity Company, which had established operations in 1898. Over the period 1971 to 1974, approximately 99% of its assets were taken over by the state and the state remained in control until 2001, when 80% of equity was sold for US\$ 201 million, to Mirant Corporation, in Atlanta, Georgia (US), with approximately 20% retained in the hands of the state. The privatization process was carried out through the National Investment Bank of Jamaica (NIBJ), which negotiated directly with investors; as a result, the price was not determined by open bids. In July 2003, Mirant filed for protection under Chapter 11 in the United States, and it is currently engaged in a debt rescheduling exercise. Jamaican government could examine the opportunity to introduce provisions in the new legislation allowing it to change the concession framework in case the majority ownership of JPSCo will pass from Mirant to a new owner.

At any rate, electricity sector is currently dominated by the JPSCo, which owns about 80% of generation, transmission and distribution assets. There is also a public company, Rural Electrification Program (REP), responsible for implementing the government's policies and priorities for rural electrification and providing electricity services to those not connected to the grid.

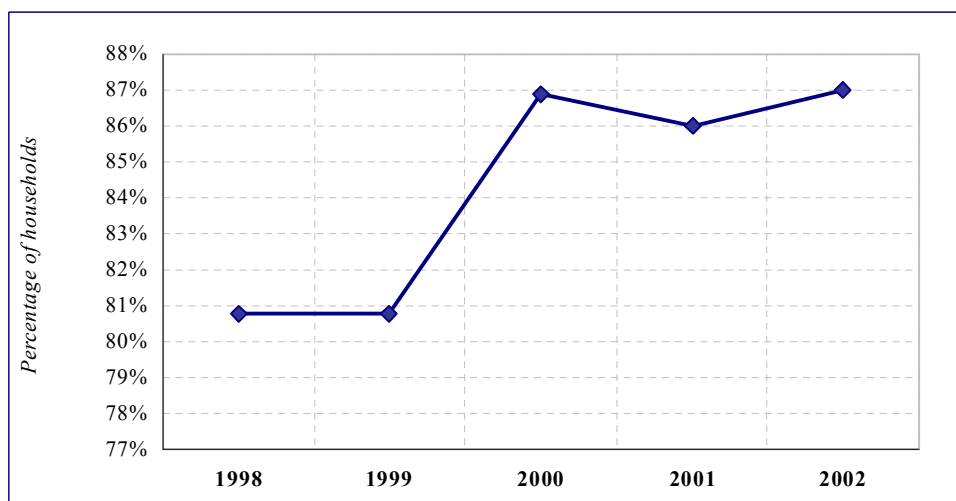
Prior to 1966, regulation was limited mainly to rates, handled through *ad hoc* rate boards. An American style multi-sector (electricity and telephone) regulator, the Public Utilities Commission (PUC) regulated the private company between 1966 and 1975. However, in the period between 1975 and 1996, the PUC was latent and the Sector Minister exercised the regulatory responsibilities. Between 1996 and 2000, the Sector Minister exercised the regulatory functions with advice from a new multi-sector regulator, the UK style Office of Utilities Regulation (OUR). In 2000, the policy of ministerial regulation terminated and OUR received the mandate to be in charge of the independent regulation of the electricity sector, especially on matters relating to core regulatory duties, tariffs, technical regulation and dispute resolutions. However, the decision power to admit new entrants into the industry remained in the hands of the sector Minister advised by OUR.

## 3.2. ASSESSMENT OF THE KEY POLICY AREAS

### 3.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

Household access to electricity services in Jamaica is relatively low. As demonstrated in Figure 3.4, from 1998 to 2002, the figure remained in the range of 80%-90%, reaching 87% in 2002.

Figure 3.4 – Households Reporting Access to Electricity



Source: Jamaica Survey of Living Conditions overviews, Planning Institute of Jamaica

Consistently with the indication of a national level of electricity access relatively low, especially concerning the access in rural areas, Table 3.1 presents the percentages of households reporting access to electricity associated with the other Latin American countries. In particular, Jamaica's percentage is lower than the figures presented by higher middle-income countries; however, it is higher than those ones presented by countries belonging to its income group like Guatemala.

Additionally, although Jamaica performs better than some countries (i.e. Guatemala) in terms of rural access, its position in this sample in terms of overall access isn't so encouraging also because there are countries such as Brazil and Mexico with a much larger area to cover in order to provide access.

It's notable to emphasize that an element contributing in a relevant way to this low level of electricity access is represented by the substantial electricity theft which characterizes the country: according to JPSCo documentation this component accounts for 9.5% of all electricity generation.

**Table 3.1 – Access in Latin America Countries – Benchmarking**

Households reporting access to electricity			
Country	Total	Urban	Rural
Argentina (2002)	n.a.	99.57%	n.a.
Brazil (2002)	96.25%	99.42%	79.48%
Costa Rica (2002)	98.41%	99.81%	96.30%
Guatemala (2000)	73.11%	95.34%	56.20%
Jamaica (2000)	86.88%	92.04%	79.49%
Mexico (2000)	97.18%	n.a.	n.a.
Peru (2002)	71.90%	93.70%	30.80%

Source: Argentina - Encuesta Permanente de Hogares (EPH) 2002; Brazil - PNAD (IBGE) - National Sample Survey of Households (2001,2002) and Brazilian Census (2000); Costa Rica - Encuesta de Hogares de Propósitos Múltiples (2002); Guatemala - Encuesta Nacional de Ingresos y Gastos Familiares (ENIGFAM) 2000; Jamaica - Jamaica Survey of Living Conditions (JSLC) 2000; Mexico - Encuesta Nacional de Ingreso-Gasto de los Hogares (ENIGH) 2000; Peru – DHS ( Demographic and Health Surveys), Instituto Nacional de Estadística e Informática (INEI), Encuesta Nacional de Hogares (ENHAHO) 1999, and Household Energy Use in Developing Countries-A Multicountry study 2003- ESMAP

More recently, rural electrification has been extended to 90% of the country and 20,000 houses remain to be electrified. The government is planning to reach 100% coverage by expanding the grid to 13,000 houses, partially financing the expansion with further sales of JPSCo shares, and reaching the remaining 7,000 houses located in isolated rural areas through photovoltaic schemes. So far, two pilot photovoltaic schemes have been introduced: Middle Bonnet, in St. Catherine, and Ballymony, in St. Ann.

Electricity tariffs have been recently increased, mainly as a consequence of these three factors:

- (i) the high cost of oil (mostly imported);
- (ii) the extensive use of aging steam plants;
- (iii) the reduction of subsidies.

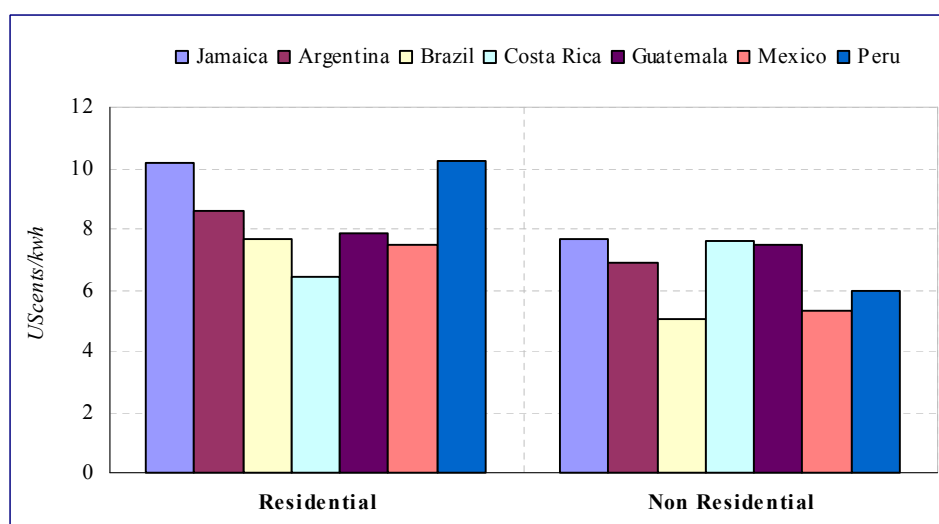
Table 3.2 below shows residential prices increased by 25% between 2000 to 2002, reaching 13.06 US cents/kWh. Non-residential prices followed almost the same pattern, increasing by 33% in the same period and reaching 10.97 US cents/kWh in 2002. As evidenced by Figure 3.5, although data refer to 2001 and not to 2002, Jamaican electricity prices are much higher than those ones exhibited in other Latin American countries.

Table 3.2 – Residential and Non-Residential Tariffs in Jamaica

Average electricity end-user prices (US cents/kWh)	2000	2001	2002
Residential	10.49	10.14	13.06
Non-residential	8.26	7.64	10.97

Source: Energy Information Administration, EIA and OLADE

Figure 3.5 – Electricity End-Users Tariffs – 2001



Source: Jamaica – EIA; Argentina – WDI 2004; Brazil – ANEEL (Electric Energy National Agency); Costa Rica – ECLAC; Guatemala – EIA, OLADE; Mexico – EIA; Peru – OSINERG (Organismo Supervisor de Inversion en Energia)

The government of Jamaica has recently taken important steps to allow electricity tariffs to reflect all costs, eliminating all subsidies existing in the past. This policy has increased the price of electricity for residential consumers up to US cents/kWh 17.0 during the period 2001-2004. The trend for non-residential tariffs is quite similar even if they were not so affected by the decision to remove subsidies. Such a high price for electricity in a developing economy may hamper economic growth, since electricity is a key cost driver both for companies and for households. Moreover, it brings and augments the risk of energy theft which, as already mentioned, has reached very high levels in Jamaica (8%-10% according to JPSCo).

Although there are no data available to support an analysis of the quality of electricity service provided by JPSCo, interesting observations come from the study, “Jamaica: The Road to Sustained Growth,” prepared by the World Bank in 2003. The study concluded that the unreliability of power supply might be the most significant electricity-related constraint to growth. After JPSCo’s privatization, significant increases have occurred in generating capacity, but reliability has improved only marginally. In fact, the reliability of supply in Jamaica is a key issue for electricity consumers. JPSCo is making extensive efforts to overcome this problem, which stems mainly from aging generating units and equipment.

Over the last ten years, total system losses have ranged from 17% to 20%. Measures to reduce system losses have been made since 1986, but have been unsuccessful. They include:

- (i) capacitor installation to achieve a system power factor of 0.95%;
- (ii) voltage standardization to operate all primary distribution circuits at 24 kv;
- (iii) distribution trunk reinforcement for the primary distribution system to improve reliability;
- (iv) balancing the distribution phases.

These efforts have reduced technical losses, as Table 3.3 shows, but more vigorous steps are needed, especially to reduce the non-technical losses. Non-technical losses, which amount to 8%-10%, are not completely under the control of JPSCo and create further complications for the company because, according to JPSCo, the 15.8% maximum loss tolerance fixed by the regulatory framework has reduced the company's revenues.

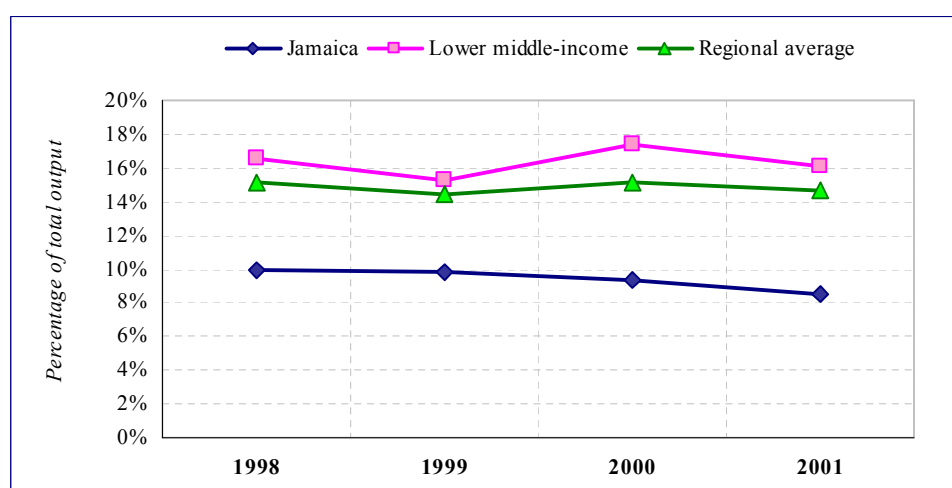
**Table 3.3 – Electricity Transmission and Distribution Losses**

	1998	1999	2000	2001
<b>Electricity transmission and distribution losses (% of total output)</b>	9.91%	9.82%	9.38%	8.47%

Source: *World Development Indicators 2004 – The World Bank*

Technical losses are more in line with countries characterized by same size and geography, as Costa Rica, which has had transmission and distribution losses between 6.8% to 7.8% within the same period. However, a comparison between Jamaica and the other Latin American countries drives to a positive outcome for Jamaica since, as Figure 3.6 shows, Jamaica's indicator of 8%-10% is lower than both the average of the regional sample (14%-15%) and the average of the comparable countries (15%-17%) over the considered period.

**Figure 3.6 – Electricity Transmission and Distribution Losses – Benchmarking**



Source: *World Development Indicators 2004*

Another area of inefficiency relates to the heat rate of the Jamaican generation plants. The heat rate can be defined as the total amount of heat (measured in BTU or Joules) input into a

generator divided by the net output of the plant in terms of kwh. The higher is the heat rate, the more inefficient is the generating plant. An inefficient heat rate carries high costs reflected in higher oil consumption bills. In 2002, the JPSCo's heat rate deteriorated and increased for the fourth consecutive year and this inefficiency represents obviously a pass-through cost item that has been transferred to the customer.

### 3.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

Unfortunately, financial indicators data that could be used to infer the financial health of main electricity companies in Jamaica do not exist nor there are enough information about private investments in energy. The World Development Indicators, for instance, report only that private investment in that sector totalled US\$ 201 million in 2001.

However, the explicit government policy to associate tariffs to all costs and the consequent relatively high tariff rate might indicate that return to private investments should be favorable. Another indication of favorable returns is represented by the financial information about the international investments of Mirant Corporation, the parent company of JPSCo.

**Table 3.4 – Operations in International Business of Mirant Corporation (Millions of US\$)**

<b>Operating Revenues:</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>
<b>Generation</b>	502	525	497
<b>Integrated utilities and distribution</b>	523	485	475
<b>Net trading losses</b>	n.a	n.a.	-1
<b>Total operating revenues</b>	1,025	1,010	971
<b>Cost of fuel, electricity and other products</b>	280	228	213
<b>Gross margin</b>	745	782	758
<b>Operating Expenses:</b>	n.a	n.a	n.a
<b>Operations and maintenance</b>	257	322	309
<b>Depreciation and amortization</b>	116	116	157
<b>Goodwill impairment losses</b>	n.a	697	n.a
<b>Long-lived asset impairment losses</b>	1	101	82
<b>Other impairment losses and restructuring charges</b>	13	65	n.a
<b>Loss (gain) on sales of assets, net</b>	1	-36	-2
<b>Total operating expenses</b>	388	1,265	546
<b>Operating (loss) income</b>	357	-483	212

Source: Mirant Corporation form 10-K filed on April 19, 2004

As reported by its 10-K form filed on April 19, 2004, (see Table 3.4)<sup>31</sup>, reduction in its gross margin in 2003 should be noted. The downward trend was due in part to its plants in the Philippines with just a small connected with higher fuel costs and increased use of gas turbines in Jamaican operations. More important, however, was the analysis of the operating expenses. Expenses increased sharply from 2001 to 2002 and experienced an equivalent reduction from 2002 to 2003, due mostly to goodwill impairment losses in Asia operations. Excluding the goodwill impairment losses, profitability in international investments would have been positive for all periods.

31 On July 14, 2003, Mirant filed for protection under Chapter 11 of the Bankruptcy Code in the United States.

The application of tariffs strictly correlated to all costs of generating, transmitting and distributing energy - including losses – drives electricity sector in Jamaica not to be very dependent on government funds. Electricity prices now reflect actual costs and it should be recognized that all government subsidies have been removed. However, some subsidies are expected in the future basically for two issues: to let JPSCo extend electricity grid to areas scarcely populated (less than 20 houses per mile) and to help REP reach the 7,000 households not covered by using photovoltaic devices.

### 3.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

**Electric Power.** The basic legal framework for electricity is the OUR Act of 1995 (see introduction to regulatory framework in the transport sector). Services under OUR regulations in this sector are supply and distribution of electricity.

The All Island Electricity License of 2001 defines the role of the main actor, the Jamaica Public Service Company Limited (JPSCo), which has a license to operate across the country. Jamaica started its reforms in the sector in 1990, by privatizing JPSCo in 2001<sup>32</sup>, after a failed attempt in 1996. JPSCo conserved the vertical structure in the segment of generation, transmission and distribution. The privatization contract (the All Island Electricity License of 2001) granted by the Minister of Mining and Energy, consisted of a license for 20 years and assigned a monopoly right to the company to develop new generation capacity for the first three years. In addition, it foresaw an increase in tariffs. Some other aspects of sector regulation were left opened for future determination.

JPSCo is the main electric power generator in Jamaica, but it purchases power from three independent power producers (IPPs) under long-term contracts<sup>33</sup> too. The License specifies that OUR can decide (subject to the consensus of both parties) on any dispute about terms and conditions on which such transactions take place. According to the All Island Electricity License, charges for using transmission and distribution networks are elaborated on a basis which is cost reflective and consistent with the price controls as approved by OUR. As for end-user tariffs, JPSCo charges its customers according to published tariffs (approved by OUR). These tariffs must be cost reflective of the service, unless directed by OUR. Each tariff category will apply uniformly across the country and there will be no discrimination to customers on the tariff charged based on location. Tariff revisions by JPSCo are not allowed without the consent of OUR. Tariffs for the supply of electricity could be subject to price controls by OUR.

The Electricity Division, under the Ministry of Commerce, Science and Technology, is instead responsible to ensure island-wide electrical installations are safe and consistent with the Jamaica Standards Regulations; a second its task refers to the monitoring of electrical installation practices with the aim of preventing loss of life and property as a result of electrical accidents.

Generation is in private hands since 2001, mainly produced by JPSCo and, as described before, complemented by some IPPs. On the other hand, the small size of the economy does not leave much scope to competition in transmission and distribution. Starting from these two considerations the regulatory framework appears to be a key instrument for an efficient functioning of the sector. Nevertheless, it's true that reforms of the electricity sector observed in Jamaica correspond to a general regional tendency towards privatization, but this process didn't drive to a liberalization of the industry because the main features of the economy led to define a scheme which is different from those developed in other Latin American countries (such as Argentina, Brazil or Chile). In Chile, for example, not only it occurred a restructuring and a

<sup>32</sup> Mirant Corporation, a US-based company acquired 80% of JPSCo, whereas the rest is shared between the government of Jamaica and a small group of minority shareholders.

<sup>33</sup> About 20 % of the generation capacity corresponds to IPPs.

privatization of electricity enterprises and the creation of the Electricity Bureau, but unbundling at different stages (generation, transmission and distribution) and open-access requirements were introduced. Unbundling mechanism would have been suitable also in Jamaica instead of having privatized a vertically integrated company.

**Hydrocarbons (crude oil and natural gas).** The basic legal framework for hydrocarbons is the Petroleum Act of 1979, which created the Petroleum Corporation of Jamaica (PCJ) as a Statutory Corporation, under the Ministry of Mining and Energy (MME), with the exclusive right to explore oil, to develop Jamaica's petroleum resources and to enter all stages of the petroleum industry. The right to negotiate import contracts, to operate the refinery, to transport and sell petroleum and derivative products was included.

### 3.3. POLICY OPTIONS AND IMPLICATIONS

Jamaica's government has taken enormous steps towards the modernization of its electricity sector by privatizing, reinforcing the regulatory agency, placing targets for transmission and distribution losses (which are stringent compared to current losses), targeting 100% coverage, and developing an important renewable energy program. All of the above efforts, together with the elimination of subsidies, have made the electricity sector in Jamaica attractive for private investments, domestic or international. Moreover, starting in 2004, OUR changed the methodology of tariff settlement from the rate-of-return regulation to price cap, which is more in line with the modern trend towards incentive regulation.

One of the main goals is to reduce losses and make the business environment more attractive for private operators. It is worth noting that approximately 50% of losses are due to energy theft, which has reached an unacceptable level and which has negatively affected the financial performance of the sector's operators. Crime is rampant in Jamaica and the government needs to face this problem not only to reduce energy losses but also to reduce many other costs of production in all economic sectors. Many studies have mentioned the high crime rate as hampering the country's development. The annual economic loss due to crime is estimated to be 3.7% of GDP. Private expenditure for installing and maintaining security can account from 2.7% to almost 18% of private annual revenues. Furthermore, in a worst-case scenario, that is, if the crime issue is not addressed properly, it has been estimated a loss for Jamaica's economy of 7.5% of GDP due to the migration of firms and families abroad.

The combination of infrastructure investment efficiency, good government policies for the sector and an endemic crime problem lead to a scenario where private investment in electricity in Jamaica could arise, but it will going to be dependent on the new measures government is going to take in order to improve current conditions. In other words, policy of allowing tariffs to fully reflect costs, commitment for enlarged coverage and reduced dependency of imported fuel generation plants, creation of opportunities for private investments represent good starting points for a full industry development which shouldn't be repressed by the high costs of violence connected with economic activity. The government has to address the crime issue to make Jamaica an attractive place for private investors.

### 3.4. PRIORITIES FOR FUTURE REFORMS

Even though Jamaica has already taken some necessary measures to create a modern and stable system for regulating the electricity sector some regulatory issues are still pending:

- (i) the absence of pricing for transmission as an independent stage;
- (ii) the lack of dispatch regulations;
- (iii) the absence of pricing for distribution which makes the entry of a competing firm to JPSCo absolutely unlikely in any of the relevant stages.

In addition, another fundamental task is to alleviate some institutional and social problems, such as corruption and crime, which negatively affects the whole economy.

With respect to improving sector performance, policies which would improve efficiency are still required. The level of per capita consumption is high in comparison with other countries and, combined with other factors such as the heavy dependency on imports, it contributes to reduce Jamaica's competitiveness. The main problem is that there is a large base of aging steam generation plants which should be replaced with more modern heat-efficient plants.

Starting from 1990 Jamaica's government has put in place a policy of developing renewable energy sources. JPSCo and OUR have statutory obligations to promote renewable, clean and eco-friendly power. The target is to reach 114 MW of renewable energy capacity for cogeneration power to come on-stream from 2004 to 2012. The capital cost to meet this requirement is US\$ 230 million. After adding renewable capacity to the base load expansion, by 2012 the installed capacity should be 1,184 MW. Peak demand has been estimated to be 802 MW in 2012, with a reserve margin of 33%. Renewable energy resources represent for this reason an important opportunity to pursue and to develop. Therefore, renewable energy will be an important business for private investments, and instruments are already in place to make it a viable source of energy in Jamaica. The needed capital, around the amount invested in 2001 for the purchase of 80% of JPSCo, is a sizable investment chance even considering price setting mechanism associated to this kind of energy. Currently OUR regulates contracts between IPPs and JPSCo by setting IPPs' generation prices at the maximum of JPSCo's avoided cost. However, renewable energy facilities of 15 MW and below shall be eligible for an additional premium up to 15% above JPSCo's avoided costs.

## 4. WATER AND SANITATION

### 4.1. OVERVIEW

The water and sanitation sector has all the features related to public utility sectors; it is a natural monopoly with scale economies, irreversible investments with high sunk-costs and network economies.

This sector is noted by its essentiality, which is a peculiarity of this service, and by the presence of broad positive externalities in public health, living standards and in the environment. The absence of basic sanitation services has led to several risks due to the lack of water decontamination and sewerage collection, creating the perfect environment for the proliferation of diseases and the contamination of rivers and soil. The social benefits gained by improving water and sanitation services have stimulated many governments to grant subsidies (and other means) in order to guarantee widespread access. However, in many cases, this approach has led to an over demand and hence wastefulness of these services. Moreover, low profits derived from this activity with a trade-off between the first ones and the service diffusion. Improvements in terms of service distribution have to be correlated in fact with economic losses and low levels of efficiency, increasing the difficulty in realizing the necessary investments.

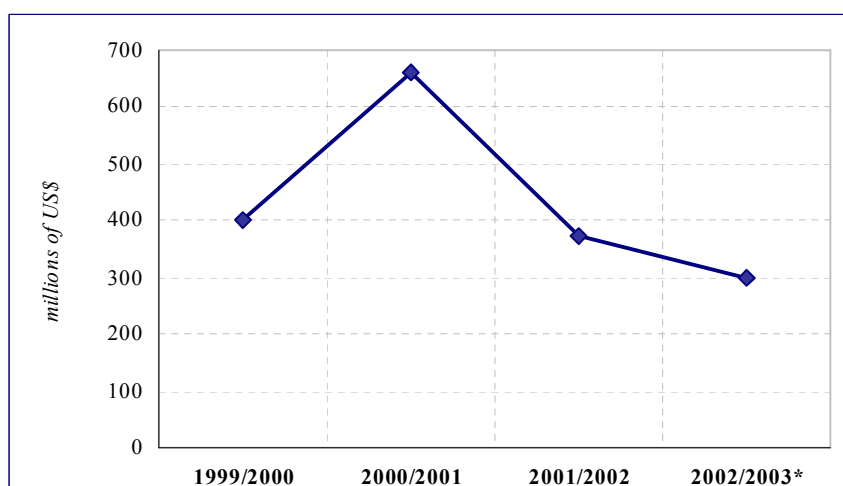
In Jamaica, the Office of Utilities Regulation (OUR) regulates water services industry. OUR activities in 2002 included:

- (i) finalizing the regulatory framework, including performance targets for the sector;
- (ii) issuing of two licenses for the provision of water, in anticipation respect the introduction of competition;
- (iii) processing a total of 122 complaints from customers.

The National Water Commission (NWC), a public entity, is the sole operator responsible for water management in the country. It covers the entire country except for a marginal segment covered by “Parish Councils”, another water management institution.

Recently, OUR allowed a tariff increase and imposed an efficiency target on NWC, but this decision represented a strong handicap to make the necessary investments required for the service improvement. Importantly, large disparities exist concerning access to this service between urban and rural areas and, in particular, between the country’s capital and its regions. In order to cope with this problem, the Ministry of Water and Housing launched the Rural Water Supply Program in September 2002, which states as a necessity new legislation to further facilitate communities owning and operating their water supply system.

Figure 4.1 shows the public recurrent and capital expenditures in water supply. As illustrated, the expenditure decreased sharply, in line with the fiscal constraints, after the peak reached during 2000/2001. The low expenditure level confirms the need to take a step forward in the privatization process given the consensus about the fact that government cannot fund water supply and sewerage expansion in the same way it has done in the past. From another point of view the process of privatization should take into account the high impact of water and sanitation costs to the individual expenditure, especially for the poorest income brackets.

**Figure 4.1 – Water supply – Public Recurrent and Capital Expenditures**

Source: Ministry of Finance and Planning - \* estimate

## 4.2. ASSESSMENT OF THE KEY POLICY AREAS

### 4.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

In Table 4.1, *access to improved water sources* data show that in 2000 80.52% of Jamaica's population was connected to a drinkable water source, provided either by means of direct connections (38.32%) or by reasonable access (42.20%). Population did not have access to water services – 19.48% – remains excessively high while it is obvious that more than half of those people connected are forced to leave their dwelling in order to access the service.

**Table 4.1 – Water Coverage: Percentage of Population – 2000**

	Total	Urban	Rural
<b>With Connection</b>	38.32	59.05	12.88
<b>Without Connection</b>	61.68	40.95	87.12
- Reasonable Access <sup>34</sup>	42.20	38.68	46.51
- Without Service	19.48	2.27	40.61

Source: Pan American Health Organization, PHO

Rural areas, like in other Latin American countries, are the hardest ones hit by the inefficiency: less than 60% of the population had access to drinkable water, either by means of connections (12.88%) or by means of accessing to a facility (46.51%). In urban areas, instead, this performance was much higher, since only 2.27% of the population did not have any way of connecting to the service. According to the analysis provided by the Pan American Health Organization (PHO: 2001)<sup>35</sup>, the average distance covered to reach a water source is 330 meters in urban areas and around 540 meters in rural areas.

<sup>34</sup> Availability of at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters from users.

<sup>35</sup> PHO (2001); "Disparities in Access, Use and Expenditure in Drinking Water in Latin America and Caribbean – Jamaica"; Technical Report Series n° 7.

Although this scenario is close to that one characterizing other similar countries with the figure related to water coverage in line with those ones presented by countries with same levels of development (80.46%), the same percentage is lower than that one representing the regional average (84.98%). Further, when compared to the other lower middle-income countries, Jamaica shows the lowest indicator within its peer group (38.32%) in terms of percentage of the population with water connections (see Table 4.2).

**Table 4.2 – Water Coverage: Percentage of Population – 2000 – Selected Countries**

	Peru	Colombia	Guatemala	Jamaica	Lower middle-income countries
<b>With Connection</b>	61.35	75.16	61.71	38.32	59.14
<b>Without Connection</b>	38.65	24.84	38.29	61.68	40.87
<b>- Reasonable Access <sup>1</sup></b>	14.07	15.45	18.55	42.20	22.57
<b>- Without Service</b>	24.58	9.39	19.74	19.48	18.30

Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

<sup>1</sup>This percentage is the sum of the one of people having direct access to the network with the percentage of population having at least 20 litres of safe water per person per day from a public water point (public standpipes, rain water collection, etc.) located within 200 meters

With regard to **sanitation coverage**, Table 4.3 illustrates Jamaica’s situation. According to PHO in 2000 90.45% of the population was served by the sewerage system: in particular 29.10% by means of connections and 61.35% by other means. Unlike the water service, the sewerage service distribution across the country is quite uniform between the rural and the urban areas – 90% and 91% – and, in particular, 30% and 28% by means of connections, and 60% and 63% with on-site systems.

**Table 4.3 – Sanitation Coverage: Percentage of Population – 2000**

	Total	Urban	Rural
<b>With Connection</b>	29.10	30.00	28.00
<b>Without Connection</b>	70.90	70.00	72.00
- On Site <sup>36</sup>	61.35	60.00	63.00
- Without Service	9.55	10.00	9.00

Source: Pan American Health Organization, PHO

Jamaica shows poor indicators even when compared to other Latin American countries characterized by same levels of development. As observed in Table 4.4, the population with connection to sanitation coverage accounted for 29.10%. Jamaica’s indicator is much lower than the average value, fixed at 46.05%. However, it should be noted that, by contrast, Jamaica shows the lowest indicator in terms of the percentage of the population without service at all

<sup>36</sup> On-site sanitation system includes any of the following technology: connection to septic systems; latrines, wet or dry etc. Obs: Adequate disposal of human excreta refers to a private or shared satisfactory sanitary means of excreta disposal, such as any of the above, that hygienically separates human excreta from human contact.

(9.55%), thanks to the high percentage of the population using on-site sanitation systems (61.35%).

**Table 4.4 – Sanitation Coverage: Percentage of Population – 2000**

	Peru	Colombia	Guatemala	Jamaica	Lower middle-income countries
<b>With Connection</b>	52.73	60.21	42.15	29.10	46.05
<b>Without Connection</b>	47.27	39.79	57.85	70.90	53.95
<b>- On Site<sup>37</sup></b>	20.99	23.19	37.34	61.35	35.72
<b>- Without Service</b>	26.28	16.60	20.51	9.55	18.24

Source: Ernst & Young Italy and Cohen&Co. elaborations on data from Pan American Health Organization

The deficiency in coverage, both of water and sewerage services, also creates a problem for the tourist industry since tourism is one of the main economic activities of the country – tourists are generally not attracted to countries having inadequate basic services such as those in Jamaica. Since the quality of the network is unsatisfactory, it is clear that government should undertake stronger measures in order to improve this sector.

In order to compare Jamaica's *water and sanitation service quality* with the quality provided by the other Latin American countries classified by OECD as lower middle-income countries, it is necessary to analyze three main indicators:

- (i). Water supply time (hours a day);
- (ii). Disinfection urban system – drinking water;
- (iii). % of treated volume collected from sewerage system.

With reference to water supply time, Jamaica's performance is quite adequate: in fact, Jamaica's indicator (16.0), as shown in Table 4.5, is lower than Colombia's (21.30) but higher than Peru's (13.7) and Guatemala's (12.0). As for disinfection urban system – drinking water, according to the Pan American Health Organization, Jamaica presents the best performance in the peer group (90.0%). Unfortunately, data are not available for the indicator percentage of treated volume collected from sewerage system, but considering Jamaica's poor collection system as well as the findings resulting from a research based on National Water Service documents, treatment index should be quite insignificant.

To summarize, the overall quality of the sector is better than expectation even though there is a still room and a strong need for further improvements.

<sup>37</sup> On-site sanitation system includes any of the following technology: connection to septic systems; latrines, wet or dry etc. Obs: Adequate disposal of human excreta refers to a private or shared satisfactory sanitary means of excreta disposal, such as any of the above, that hygienically separates human excreta from human contact.

Table 4.5 – Water and Sanitation Sector: Quality Indicator – 2000

	Perù	Colombia	Guatemala	Jamaica
Water supply time (hours a day)	13.70	2.30	12.00	16.00
Disinfection urban system – Drinking water	80.00	83.60	25.00	90.00
% of treated volume collected from sewerage system	14.00	10.80	1.00	n.a.

Source: Pan American Health Organization, PHO

#### 4.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

According to PHO, in 2000 the *average production and distribution cost of drinkable water* in Jamaica was US\$ 0.15 per m<sup>3</sup>, while the *average tariff paid for drinkable water* was US\$ 1.07 per m<sup>3</sup>. Therefore, the tariff paid per each m<sup>3</sup> is more than enough to cover the costs of producing and distributing water. Furthermore, in 2000 the *average tariff paid per sewerage services* was US\$ 1.07 m<sup>3</sup>. The policy adopted by the National Water Commission (NWC), the agency responsible for basic sanitation in Jamaica, establishes a sewerage tariff, which corresponds to 100% of the water tariff. Moreover, water and sewerage tariffs are re-adjusted according to a mechanism that takes into account movements in the exchange rate, the consumer price index as well as the electricity tariff - all of them approved by the Office of Utility Regulation.

Expanding the analysis to include other comparable countries, Table 4.6 shows that tariffs, both for drinkable water and for sewerage service, are higher in Jamaica than in the other lower middle-income countries. Certainly, this evidence raises an issue on the affordability of these types of services.

Table 4.6 – Production and Distribution Costs and Tariffs: US\$/m<sup>3</sup> – 2000

	Perù	Colombia	Guatemala	Jamaica
Producing and Distributing costs of water	0.18	0.22	0.04	0.15
Mean tariff of drinkable water	0.27	0.25	0.39	1.07
Mean tariff of sewerage	0.12	0.14	n.a.	1.07

Source: Pan American Health Organization, PHO

Even though tariffs have been set at a high level, infrastructures in Jamaica do not efficiently cover the territory and the quality of the services is unsatisfactory. The data might imply high costs concerning distribution and invoicing activities with losses for these operations lowering the economic results of service providers and their capacity for investing. The government may require service providers to achieve surplus targets in order to ease fiscal adjustment and to reduce subsidized investments. This approach could find an explanation looking at the reduction of investments recently occurred. In fact, as documented in Table 2.7 and in Table 2.8,

investments in this sector have been approximately 6.4% of the overall capital expenditure (2002/2003), and have suffered a significant reduction following fiscal adjustments. Considering the overall public investment of 2% of GDP, only about 0.1% of GDP was invested in this sector, an insufficient figure to meet the required needs. To provide a broader picture, during 2000 investments in Jamaica's sanitation sector were about US\$ 14 million, of which 79% came from external resources and 21% from national resources. From another point of view, investments can be classified as follows: 14% was invested in the urban water supply, 7% in the rural water supply and 79% in urban sewerage services.

The average tariff value increases according to consumption – applying a system of *cross-subsidies* accordingly. Nevertheless, expenditures for water and sewerage have a higher income impact on the poorest social classes; Table 4.7 shows the impact of the water tariff on the total expenditure of an individual. The ratio of water expenditure on total expenditure decreases in proportion to the increase of an individual's income, independently of the area – Kingston, urban or rural. Moreover, the largest average expenditure is found in the region of the capital, where service coverage is significantly higher.

**Table 4.7 – Participation of Expenditure with W&S Percentile of Income According to Areas – 1998**

Annual per capita income percentile	Survey Area			
	Kingston	Urban	Rural	Total
<b>1 (poorest)</b>	6.5	3.8	4.0	4.6
<b>2</b>	5.5	3.8	3.2	4.2
<b>3</b>	4.4	3.6	2.8	3.6
<b>4</b>	3.2	2.6	2.4	2.8
<b>5</b>	3.2	2.2	2.9	2.9
<b>6</b>	3.1	2.8	2.4	2.8
<b>7</b>	2.3	2.2	2.1	2.2
<b>8</b>	2.2	2.5	2.2	2.3
<b>9</b>	2.3	1.5	2.1	2.1
<b>10 (richest)</b>	1.6	1.5	1.8	1.6
<b>Total</b>	3.0	2.6	2.8	2.8

Source: JSLC '98 data apud PHO

Another relevant economic indicator is the cost of connection. In 2000, the *average cost to achieve a water connection* in the urban area and in the rural one was US\$ 150.00 per person and US\$ 140.00 per person, respectively. Moreover, the cost of building a public source of water was US\$ 14.00 per person. Sewerage services present the following average costs: (i) US\$ 275.00/person for a *domicile urban sanitation connection* and (ii) US\$ 330.00/person for a *domicile rural sanitation connection*. These numbers draw attention to the need of both obtaining new investments, so that a greater number of people can have access to this essential service, and lowering the connection fees.

#### 4.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

In Jamaica, sanitation sector governance could be described looking at the responsibilities assigned to some institutions whose related functions are summarized as follows:

- (i) Ministry of Water and Housing: general planning and financing of the sector;
- (ii) Ministry of Health: general planning, definition and surveillance of water quality in accordance with health patterns and financing of the sector;

- (iii) National Water Commission (NWC): general planning, surveillance of quality and financing of the sector;
- (iv) Office of Utility Regulation (OUR): tariff approval;
- (v) Ministry of Finance: budget determination to finance the sector.

Regulatory framework is a formal structure that aims at guaranteeing the quality of sanitation services through the establishment of certain compliances related to water quality, sources contamination and disposal of liquid residues. Moreover, according to PHO, the standards of drinkable water have to follow the guidelines defined by WHO.

Despite the existence of several institutions related to the sector and some guidelines formulated by the regulator, PHO points out the following issues as the main limitations to the development of the sanitation sector in Jamaica:

- (i) lack of a defined and specific policy for this sector;
- (ii) presence of a common regulatory agency.

The basic legal framework anchor points for water and sanitation are the OUR Act of 1995<sup>38</sup> and the National Water Commission Act of 1980.

The statutory organization National Water Commission (NWC) is the main institution in the sector, responsible for producing water and collecting, treating and disposing urban disposals.<sup>39</sup> There are also some small private water suppliers.

The services under OUR control are the distribution of water and provision of sewerage services through the construction of sewers and accessories. The agency is responsible for recommending to the Minister of Water and Housing the approval of tariffs at the level that allows NWC to recover the whole capital and operating costs under efficient provision. However, the Ministry of Water and Housing, through an official document dated in 2002, has stated that “*where exceptional circumstances dictate the need for additional funds for systems improvement and rehabilitation, OUR will take this into account in setting tariffs*”.

The Water Resources Act of 1995 established the Water Resource Authority (WRA) as the regulatory body in charge of allocating, conserving and managing Jamaica’s water resources. The Act also establishes the requirement of a license for using water or for constructing or altering works for the abstraction and the use of water. The Act establishes the requirement of planning permissions to discharge effluents too. OUR receives and processes all license applications for utility services and makes recommendations to the Minister. It has the responsibility to safeguard consumers’ interest with respect to the quality of services provided by the utility and set the standards to measure the quality and performance.

The Natural Resource Conservation Authority Act, enacted in 1991, aims to take care of the environment in Jamaica, and it created the Natural Resource Conservation Authority to set qualitative standards for water and the discharge of wastewater.

NWC, together with the National Irrigation Commission, manage domestic and irrigation water supply. Other agencies also have a role in the development of the sector, including the Ministry of Local Government in the rural systems.

The situation of domestic wastewater systems and trade effluent standards are not considered under a relevant Act. The Ministry of Health, rather than NRCA, approves the design of wastewater systems.

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<sup>38</sup> See introduction to the regulatory framework in the Transport sector – Chapter 2.

<sup>39</sup> NWC was established through the amalgamation of the Kingston and St. Andrew Water Commissions and the rurally focused National Water Authority. This amalgamation resulted in the merging of some major systems under the same authority.

Private initiative in this sector practically does not exist. Besides the national services supplier, just a few decentralized bodies provide services. Whereas NWC is responsible for all major water supply systems in Jamaica, the Parish Councils have the role of operating the small systems, rainwater catchments and wayside tanks. The poor performance of the state, as well as the need for new and significant investments dedicated to infrastructure development, requires a more intense private initiative as exists in many other Latin American countries.

NWC increased coverage of water supply in 14 years (Paredes, 2003), reaching 84% in 1998 (80.5% in 2001), but the service trend did not follow that of supply, mainly due to the high level of water that was spilled. Moreover, the sewerage service remained low. In 2001, about 90% of households had access to sewerage systems, but an important percentage of access corresponded to individual sanitation systems (only 24% were connected to sewerage systems).<sup>40</sup> Consistently with this situation, in the water-sector policy paper<sup>41</sup> government recognized the need of private funds to expand water supply and sewerage systems, emphasizing the importance of isolating the sector from political and interest-groups intervention.

Taking into account the international evidence of decentralization in infrastructure and service provision (even at the municipal level), the possibility of revising the role of NWC and/or divesting it in several local providers could be analyzed. In this case, the experiences of countries such as Argentina or Brazil could be illustrative. Otherwise, if the option is to keep centralization of regulation and provision, it is instructive to recall the case of Chile, as this country stands as a good general reference on privatization and regulation matters. Chile reformed the water system in the late 1980s with the new regulatory framework for the sector, centralizing a great part of regulations on provision. This framework was based on the electricity sector, with the application of the price cap regulation with a reasonable return under efficient operation (“*empresa modelo*”). In 1989, it created the regulatory body *Superintendencia de Servicios Sanitarios* (SISS). SISS was in charge of inspecting the sector and regulating charges and fees. With this institution, the pre-existing dual role of operator and regulator was broken up. In 1989, the public operators were converted to corporations. But the government privatized them in 1997, only after an important re-adjustment – increase – of prices. The privatizations pursued the double objective both of getting private resources to finance infrastructure and services and allowing government’s exit of the productive activities. In this respect, some debate was open as to whether the government should have awarded concessions for services rather than privatized companies.<sup>42</sup>

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<sup>40</sup> Source: Paredes (2003).

<sup>41</sup> The water-sector policy paper dates from 1999.

<sup>42</sup> For further details, see Fischer and Serra (2003), “*Efectos de la Privatización de Servicios Públicos en Chile: Caso Sanitario, Electricidad y Telecomunicaciones*”, *Serie Estudios Económicos y Sociales*, IDB.

### 4.3. POLICY OPTIONS AND IMPLICATIONS

In Jamaica, as we mentioned in the previous analysis, coverage indicators for water and sanitation services are unsatisfactory. Access to water and sewerage services is lower than the average of the Latin American countries taken into consideration; however, it is in line with the average of the sample made up of countries with similar levels of development.

In particular, the coverage is lower in rural areas rather than urban areas. In addition, service availability varies dramatically among the different regions of the country: the country's capital presents patterns significantly higher than other regions. These disparities are due also to the differences in income brackets: for the poorest ones the impact of water and sanitation costs on their individual expenditure is significantly high.

Services provision is mainly concentrated in the public sector, according to the provisions made by NWC (National Water Commission). Local providers, in some regions, are companies related to the local communities.

The reduction of public sector investment, along with the fact that private participation is still insignificant in this sector, leads to poor technical and quality efficiency indicators for the main public providers. Moreover, public providers have suffered high losses due to a dysfunctional invoicing system and services with frequent supply interruptions.

Deficiencies in the access of sewerage services and lack of water treatment have caused environmental and public health problems, even despite the recent improvements in the sector.

Moreover, poor indicators in coverage and services bad quality may negatively affect the most profitable economic activity of the country – tourism. Thus, the diffusion of coverage and the improvement of the quality of services are priorities for the incumbent government.

With consideration of the above, in order to reach these goals private sector participation should be promoted in light of its financing capacity as well as for increasing the sector's efficiency. However, there are still several institutional problems hampering the involvement of private operators. From a regulatory point of view, although important improvements have been recently achieved, some changes are still to be implemented to guarantee more independence from the government. Under the NWC Act, the Minister is responsible for setting rates and OUR should advise the Minister on the issue of rate setting; an essential point is to enforce the current regulator (OUR) to set tariff plans that will help to recover operational and investments costs and, therefore, to enhance the attractiveness of investing in this sector. Some issues become relevant:

- (i) there is no consensus about who should be entitled to water and sanitation services' representative;
- (ii) what should be the future of NWC;
- (iii) which should be the autonomy of OUR;
- (iv) finally, a specific regulation for the sector should be established in order to mitigate the uncertainty about the rights and obligations of the service providers.

#### 4.4. PRIORITIES FOR FUTURE REFORMS

The priority for Jamaica's water and sanitation sector lies in the development of appropriate incentives to attract private investments, since it seems the most appropriate way to enhance service coverage. The fiscal crisis and the need of generating a budget primary surplus do not allow public providers to recover their investments. Given that the priority now is enlarging service coverage and improving efficiency, new mechanisms to recover investments coming from a higher involvement of the private sector have to be advanced and implemented.

The involvement of the private sector depends on the following issues:

- (i) OUR should become basically a supervising entity and not a normative one and it should be the only institution setting rates for private sector suppliers – following clear guidelines, not subject to its criteria;
- (ii) a tariff policy which allows for the recovery of capital and operational costs has to be established;
- (iii) the unaccounted water has to be reduced;
- (iv) an independent regulatory structure, not subordinated to political pressures, has to be introduced and enforced;
- (v) an authority for services provision has to be appointed;
- (vi) the future of NWC (privatization, decentralization or spin off?) has to be clearly defined;
- (vii) overlapping between the different institutions in this area, that is a policy inconsistency, has to be solved;
- (viii) the lack of a specific regulation on sewerage standards needs an appropriate answer.

A more centralized administrative model allowing for a greater participation of the private sector could lead to higher efficiency in the service provision as well as greater surveillance in guaranteeing contract implementation (tariffs, constraints, and so on). Since the current situation affects mostly the lower income brackets, it perpetuates greater social inequalities in the country.

## 5. TELECOMMUNICATIONS

### 5.1. OVERVIEW

Before the 1960s, Cable and Wireless held a monopoly over telecommunications services in Jamaica. Afterwards, its operating company, Telecommunications of Jamaica (TOJ), was taken over by the new independent government of Jamaica. In the late 1980s, financial problems forced the Jamaican government to sell its participation to C&WJ, allowing the British company to regain control; in fact, between 1987 and 1989 C&WJ reacquired 79% of equity and control of TOJ. At the end of this process, a new company was created in place of TOJ: Cable & Wireless Jamaica Limited (C&WJ). Under the new agreement, the Jamaican government granted to C&WJ a monopoly license by which it would be the sole provider of domestic and international services in Jamaica.

Local service was subsidized by termination charges from long-distance incoming calls. During the 1990s, cross-subsidies sharply dropped owing to the FCC's Benchmarks Order that reduced international termination rates paid by U.S. operators to C&WJ. The high rates provided the funds for financing the expansion of the domestic network. In spite of the service's diffusion, problems remained, in particular, the issue with the billing system.

In 1997, the Office of Utilities Regulation (OUR), headed by a Director-General, undertook to be a cross-sector agency with responsibility for telecommunications, electricity, water and some aspects of public transport.

The liberalization process, undertaken in the context of the World Trade Organization Basic Services Agreements, included an opening up to the competition which has to be realized in three stages. The opening to competition concerned mobile and data services, allowed additional Internet access providers, free trade zone service providers, international wholesale of switched voice minutes (e.g. prepaid calling cards) and the provision of retail customer equipment.

Phase I of the liberalization process started in 1998 and it was followed by the signing in September 1999 of a Heads of Agreement with C&WJ, which ended C&WJ's monopoly. In fact, the monopoly that C&WJ had held over the provision of fixed voice telephone services and international voice traffic would be removed on a phased basis. This phase would guarantee pro-competitive regulatory principles. Moreover, during the first phase the Telecommunications Act (2000) was enacted and it entitled OUR as the independent regulator of the telecommunication sector.

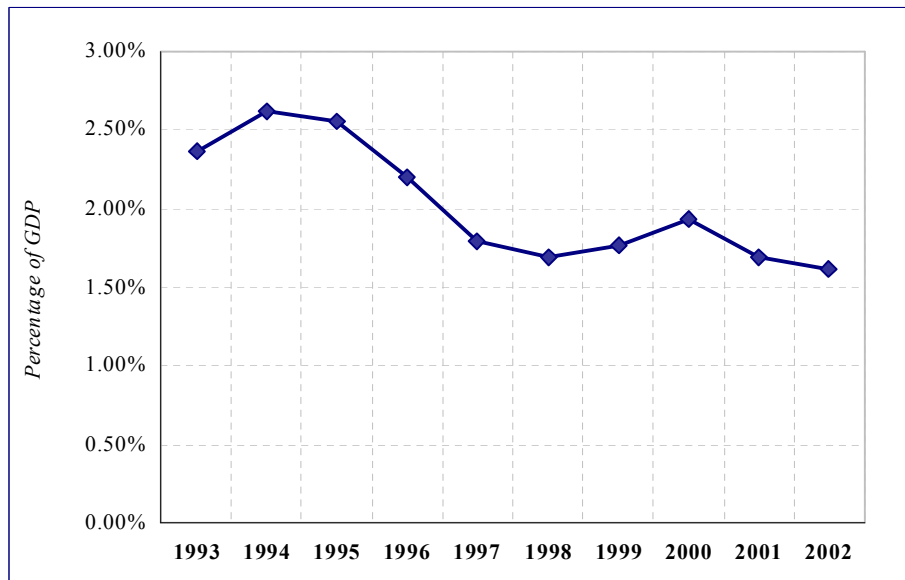
Phase II began in September 2001 and it lasted until March 2003. This phase concerned access to satellite services and facilities and the granting of licenses for domestic voice facilities and services, that is, wireless in the local loop and wires services, which included the resale of C&WJ's switched domestic voices minutes and Internet access on facilities of subscribers television (STV) operators. In 2002, 43 new licenses for telecommunication services were issued:

- (i) 12 to Internet service providers (ISPs);
- (ii) 10 to international voice service providers (IVSPs);
- (iii) 8 to domestic carriers (DC);
- (iv) 8 for domestic voice services;
- (v) 2 for provision of data services;
- (vi) 2 free trade zone carrier (FTZC) licenses;

(vii) 1 free trade zone service providers (FTZSP) license.

Phase III started in 2003 and is expected to end in 2013. In 2013, the whole market is due to become fully deregulated and open to foreign investment and competition, including voice and data facilities and access to international services.

**Figure 5.1 – Annual Telecom Investments**



*Source: International Telecommunication Union (ITU) and Bank of Jamaica*

Public investment in the telecommunication sector, as percentage of GDP, started to decrease in 1994; it slightly recovered in the years between 1998 and 2000 but then declined again in 2001 and 2002.

In 2001, OUR changed the rate-of-return regulation system, which had guaranteed C&WJ an after-tax return on equity between 17.5% and 20%, it and established a price cap system regulation.

New operators entered the mobile market joining C&WJ – the first company that had provided mobile telephone services. The most successful new operators were Digicel Jamaica Limited and Centennial Digital Jamaica. A great amount of the current investment level mostly relates to the new mobile projects carried out by Digicel and C&WJ.

## 5.2. ASSESSMENT OF THE KEY POLICY AREAS

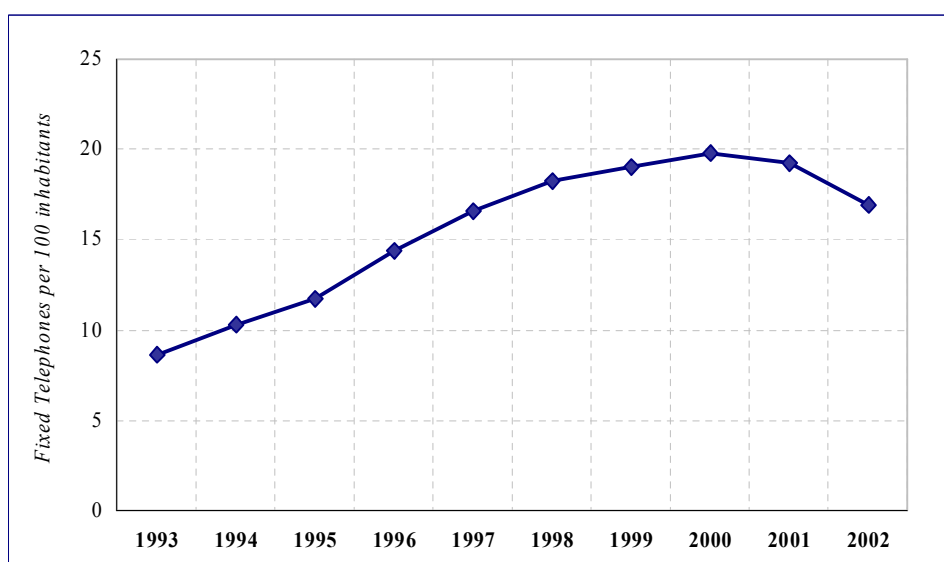
### 5.2.1. ANALYSIS OF THE TECHNICAL DIMENSIONS OF THE SECTOR

In order to *assess* the diffusion of the telecommunication services in Jamaica, three main indicators have been analyzed:

- (i) mainlines teledensity;
- (ii) mobile lines teledensity;
- (iii) number of Internet users.

*Fixed teledensity.* Jamaica's monopoly situation did not provide incentives for extending fixed wire services; consequently, *fixed teledensity* grew slowly, and steadily, until year 2000 when it reached its peak of 19.8%. Afterwards the diffusion of mainline services declined due to the penetration of mobile telephone services (see Figure 5.2). In fact, in 2002, main stations in service numbered 436,890 compared with the 487,729 ones recorded in 2001. A 13.2% drop reflects, in part, the impact of technological substitution (customers substituting land lines for wireless services), which was driven by intense competition in prices that followed the liberalization process

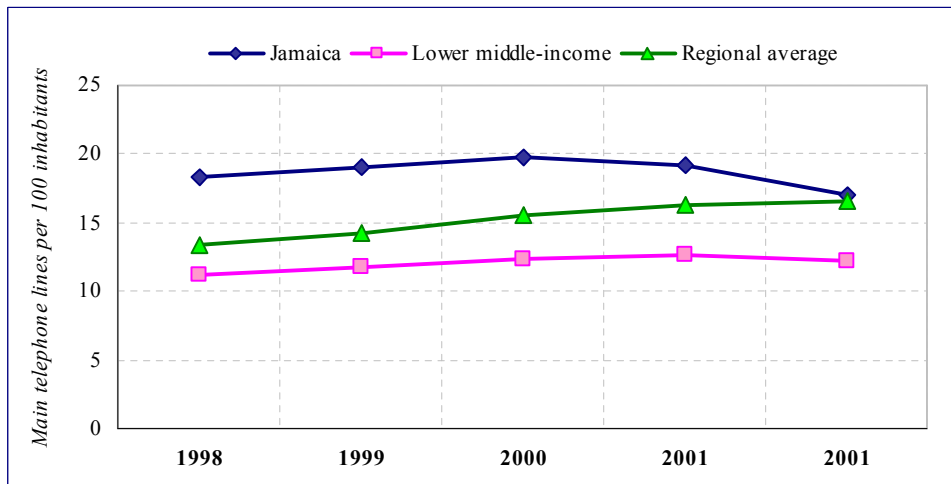
Figure 5.2 – Fixed Teledensity



Source: The Yearbook of Statistics - ITU

In comparison to other Latin American countries, Jamaica has a higher indicator in fixed teledensity (Figure 5.3). However, as mentioned, this figure has recently decreased, while average of the regional sample and the value related to the lower middle-income countries slightly increased from 1998 to 2002.

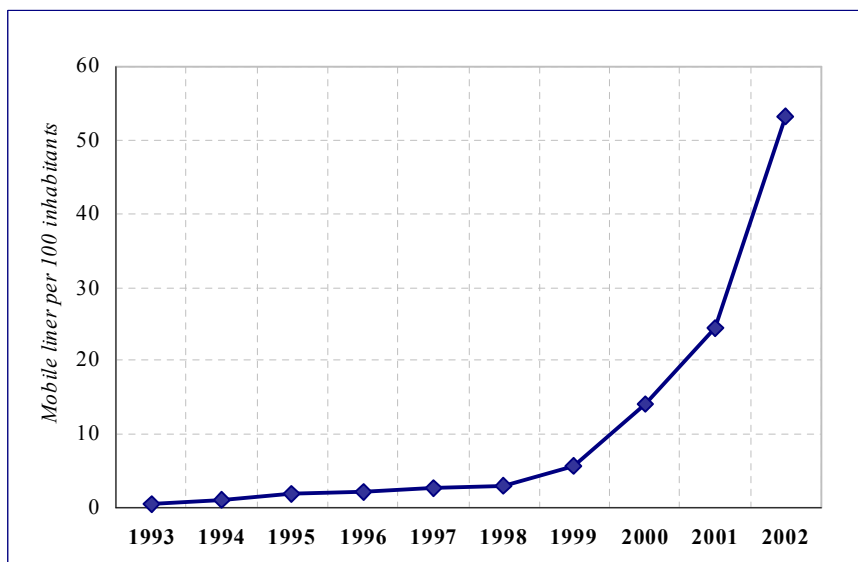
Figure 5.3 – Fixed Teledensity Benchmarking



Source: World Telecommunication Indicators 2004 and International Telecommunication Union (ITU)

*Mobile lines teledensity.* The introduction of new technology and the diversity of options which are offered has made cellular phone usage grow rapidly in all levels of society. The mobile-fixed ratio was 3.5 in 2002 and increasing, in line with the decrease in fixed teledensity.

Figure 5.4 – Mobile Teledensity

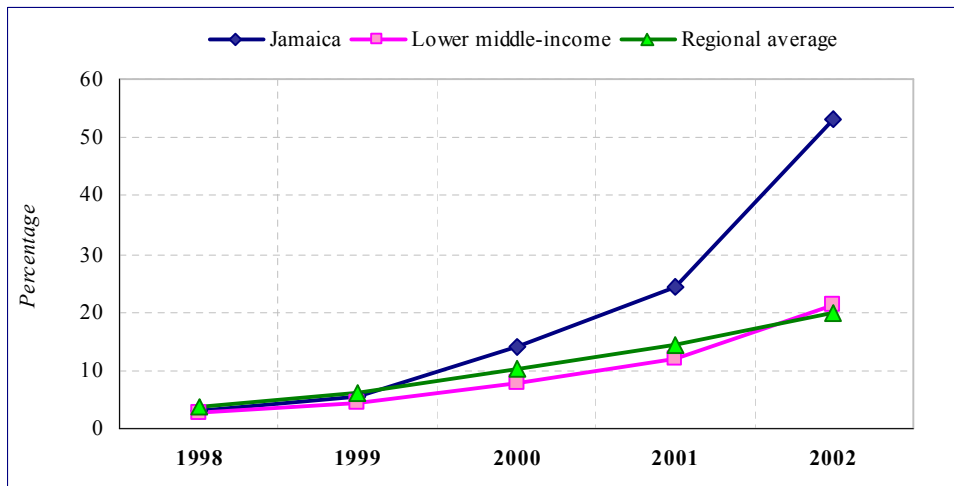


Source: The Yearbook of Statistics - ITU

Figure 5.4 illustrates a surprising surge of cellular teledensity, especially in years 2001 and 2002 (when there was a twofold increase). Mobile phones in Jamaica switched from being a luxury good item to being a basic commodity; consequently, many people now use mobile phones as their primary or unique telephone service. In addition, a key innovation to improve coverage

and competitive pricing has been the introduction of prepaid phone cards. Since no monthly access fee is due, it allows users to spend as much as they can afford. In Jamaica, more than 90% of all mobile telephone customers uses this method of payment, which is offered by all providers. In comparison with other Latin American countries, Figure 5.5 clearly demonstrates that not only a huge gap exists in mobile teledensity, but that it also favors Jamaica. In fact, in 2002, Jamaica's indicator of 53.3% was two times greater than benchmark figures. This is proof that the liberalization process has been successful in Jamaica at least under this point of view.

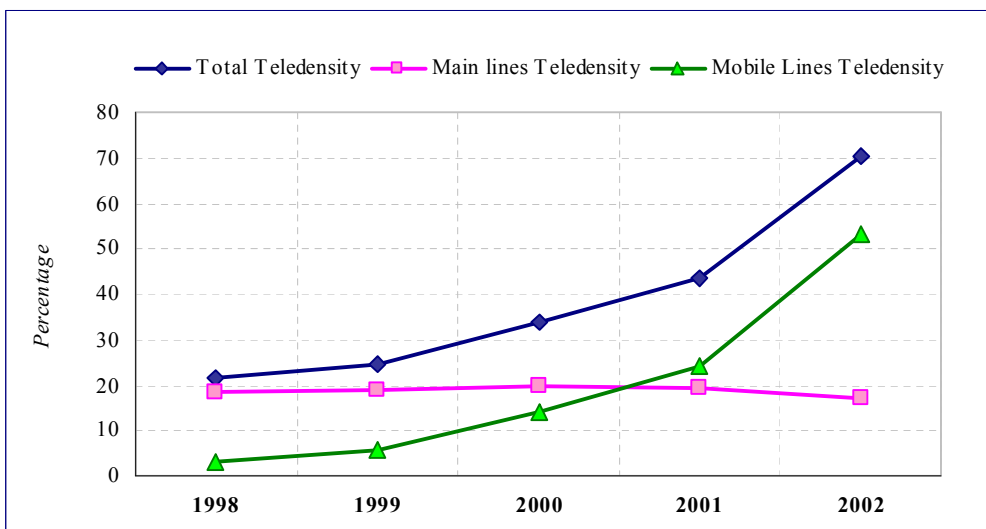
Figure 5.5 – Mobile Teledensity Benchmarking



Source: World Telecommunication Indicators 2004 and ITU

Furthermore, Figure 5.6 provides a general picture of the telecommunications service diffusion in the country; it is interesting to underline the total teledensity of 70.28%, which places Jamaica at the cutting edge of this service.

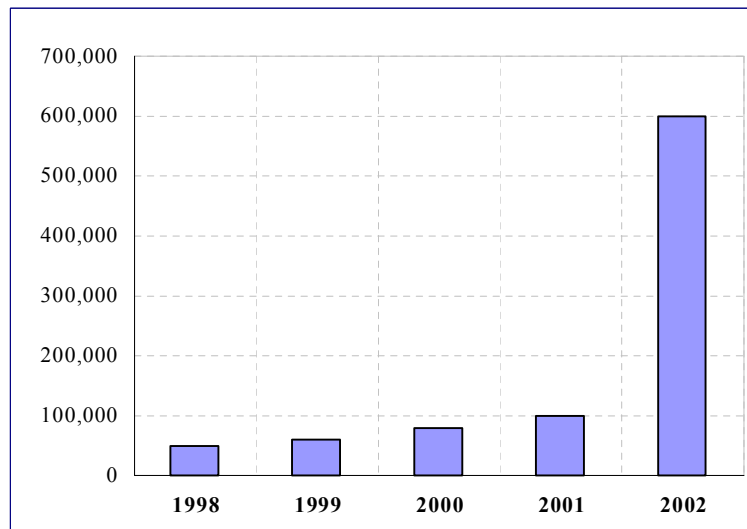
Figure 5.6 – Teledensity in Jamaica



Source: World Telecommunication Indicators 2004 and ITU

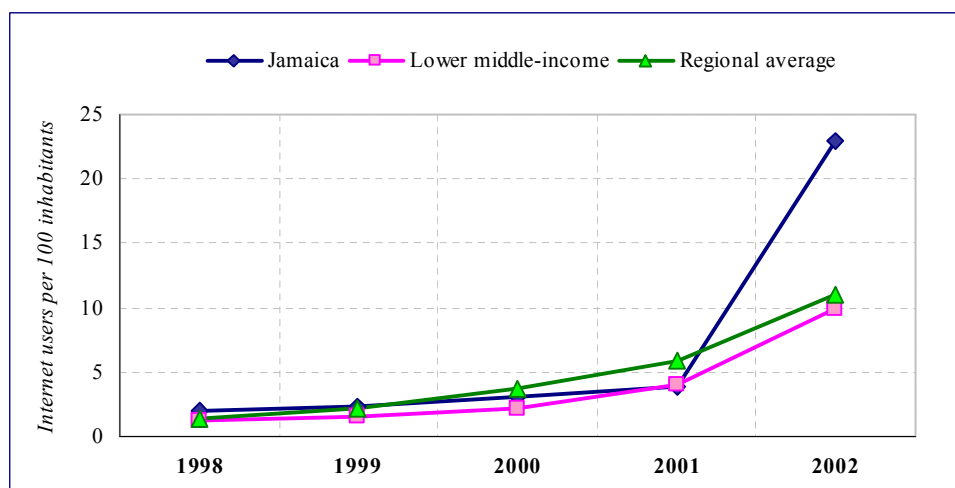
The indicator for *Internet users* is relatively high. In Jamaica, the use of the Internet as an information and communication tool has expanded in recent years. Significantly, in 2002, there was a tremendous increase, even more surprising than in the mobile sector. In comparison with other Latin American countries, Jamaica has confirmed its leadership in the diffusion of telecommunications services; in fact, its indicator is significantly higher than those of benchmarks even though also their figures had improved considerably during 2002.

Figure 5.7 – Internet Users



Source: World Telecommunication Indicators 2004 and ITU

Figure 5.8 – Internet Users Benchmarking



Source: World Telecommunication Indicators 2004 and ITU

Telecom sector liberalization didn't substantially affect local calls price because it focused mainly on mobile sector. The *cost of a local phone call per three minutes* fell from US\$ 0.06 in 1999 to US\$ 0.05 in 2000, but it increased in 2002 to US\$ 0.07, a cost in line with benchmarks.

Table 5.1 – Cost of Local Phone Call (US\$ per 3 Minutes)

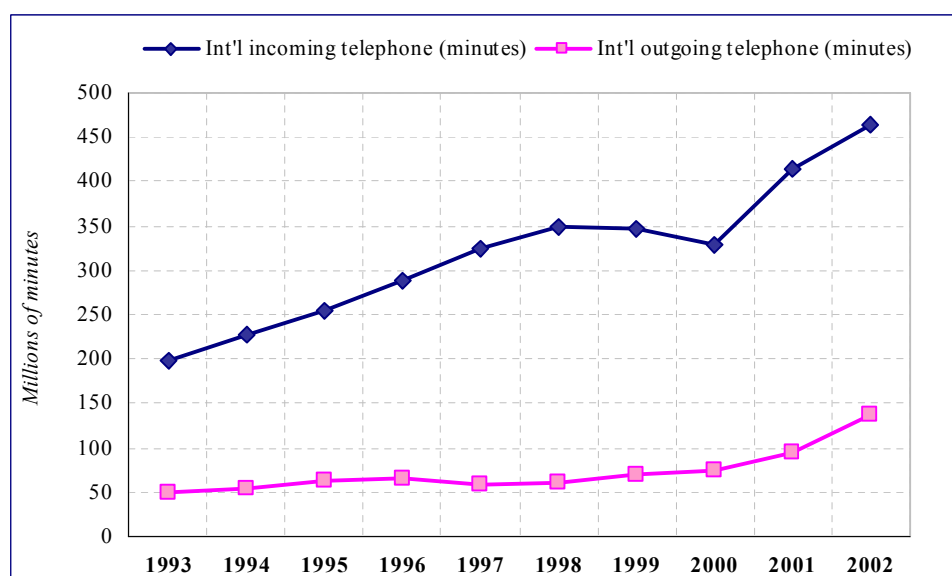
	1998	1999	2000	2001	2002
<b>Jamaica</b>	0.06	0.06	0.05	0.05	0.07
<b>Lower middle-income countries</b>	0.07	0.06	0.06	0.06	0.07
<b>Regional average</b>	0.07	0.07	0.07	0.07	0.05

Source: World Development Indicators 2004 – The World Bank

Moreover, it is worth noting that in the past, cross-subsidies for local calls came from high fees charged for incoming long-distance calls. Regulatory decisions carried out in 2002 promoted a reduction for long-distance incoming calls rates<sup>43</sup> and they forced local calls to rise. Therefore, it is likely that both incoming and outgoing traffic in long-distance calls, will continue to grow.

<sup>43</sup> In 1999, the U.S. Federal Communications Commission (FCC) began an international effort to reduce the settlement rate paid to foreign companies for completing overseas calls. the FCC's explicit aim (according to Jamaican officials) is to reach US\$ 0.19 by 2001 from US\$ 0.575 per call."

Figure 5.9 – International Incoming and Outgoing Traffic



Source: The Yearbook of Statistic - ITU

Table 5.2 summarizes *cost of a three-minute off-peak mobile call*. The trend had been nearly stable in Jamaica, but this indicator reached US\$ 0.50 in 2002. This result is unusual, especially in light of the liberalization process: in Jamaica cellular calls appear to be more expensive than those ones in the lower middle-income countries and in Jamaica's peer group.

Table 5.2 – Cost of Cellular Local Call (US\$ per 3 Off-Peak Minutes)

	1998	1999	2000	2001	2002
<b>Jamaica</b>	n.a.	0.18	0.16	0.15	0.50
<b>Lower middle-income countries</b>	0.53	0.40	0.20	0.25	n.a.
<b>Regional Average</b>	0.67	0.53	0.51	0.37	0.35

Source: World Telecommunication Indicators 2004 and ITU

In order to measure the *quality of service* and the quality of the fixed-line infrastructure in particular two indicators have been considered:

- (i) number of *phone faults per 100 mainlines*;
- (ii) *unmet demand* (calculated as the waiting list for mainlines/waiting list for mainlines + mainlines in service).

As concerns the first indicator it had been reducing since 1999 when reached its peak of 79%. In 2002, this indicator decreased to 39%; nevertheless, Jamaica's performance is inadequate if compared with other Latin American countries performances (Table 5.3).

**Table 5.3 – Phone Faults per 100 Mainlines**

	1998	1999	2000	2001	2002
<b>Jamaica</b>	63.60	79.20	48.00	n.a.	39.65
<b>Lower middle-income countries</b>	47.80	52.07	46.15	n.a.	n.a.
<b>Regional Average</b>	30.04	32.25	20.47	13.77	21.93

Source: World Development Indicators 2004 – The World Bank

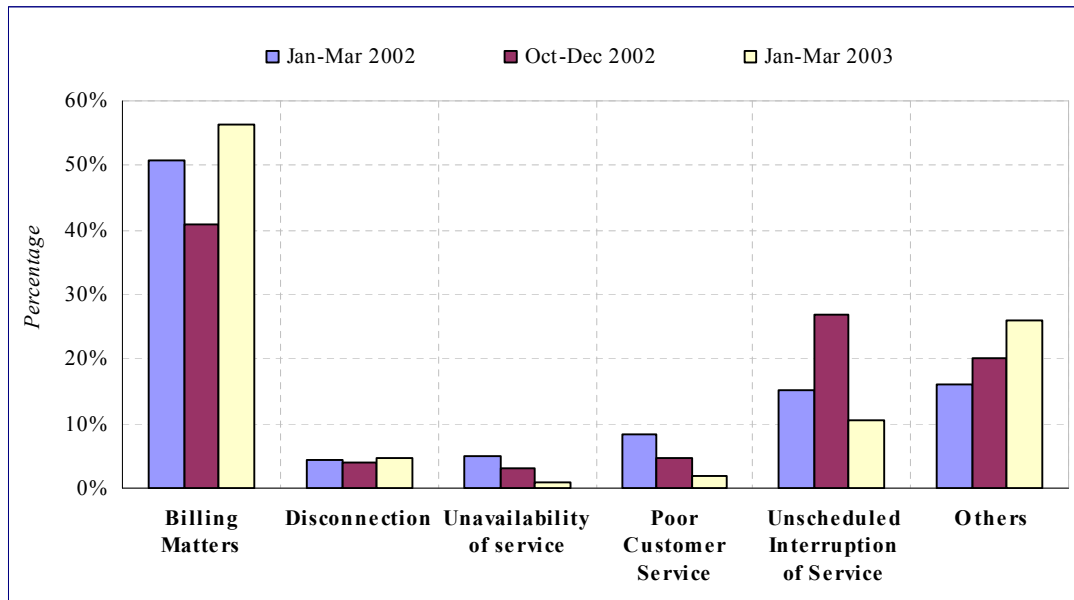
As concerns the second indicator, though Jamaica’s figure displays a decreasing trend, in 2002 its unmet demand was still higher than those ones recorded on average in benchmark countries.

**Table 5.4 – Unmet Demand**

	1998	1999	2000	2001	2002
<b>Jamaica</b>	31.27%	31.29%	29.01%	n.a.	27.51%
<b>Lower middle-income countries</b>	15.86%	15.92%	15.28%	7.90%	n.a.
<b>Regional average</b>	8.97%	9.35%	7.12%	4.59%	14.50%

Source: World Telecommunication Indicators 2004 and ITU

A lot of work has to be done to improve mainline telephone service efficiency. However, the greatest profitability recorded by mobile sector drives to consider a long period before quality improvement process completion, especially if new investments will focus on mobile segment.

**Figure 5.10 – Contacts Details – Telecommunications (Fixed Line)**

Source: Office of Utilities Regulation - OUR

Finally, Figure 5.10 summarizes the complaints made by consumers to OUR. Unquestionably, in recent years one of the main problems relates to billing issues; in fact, more than 55% of complaints deals with billing matters. Another important problem is the interruption of service, an option which represents approximately 10% of total complaints.

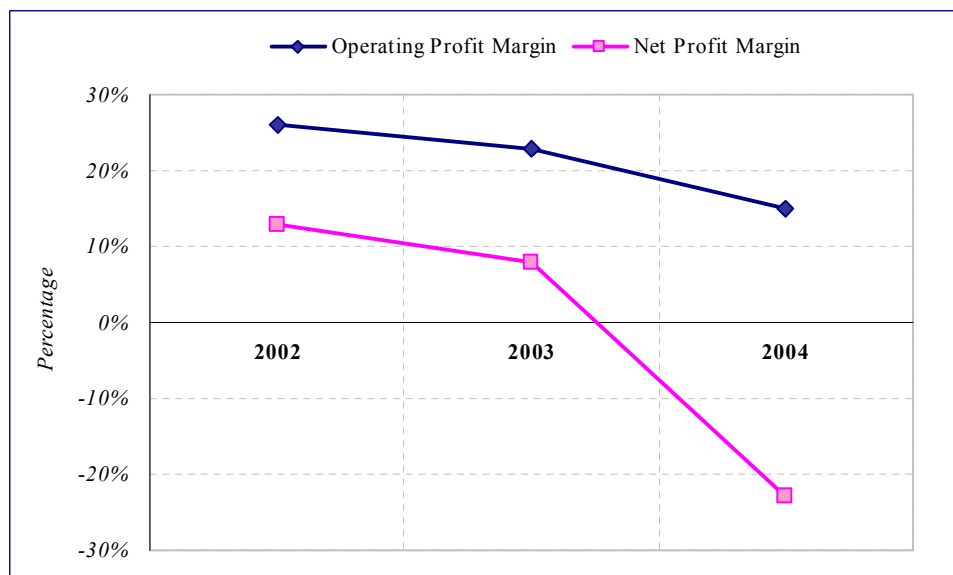
## 5.2.2. ECONOMIC EFFICIENCY AND PRIVATE SECTOR FINANCING

Digicel's participation in the telecommunications market has had tremendous impact on overall sector efficiency. The initial support of International Finance Corporation (IFC) to Digicel has contributed fundamentally to develop telecommunications in Jamaica influencing the market of fixed telephones - on the grounds of the potential fixed-mobile substitution - but mainly the mobile segment. IFC provided financing for the construction of Digicel (formerly known as Mossel) digital cellular network in 2001 with an initial loan of US\$ 35 million. Following the commercial launch of the company in April, IFC invested a further US\$ 8 million in equity and a US\$ 12 million loan in order to expand the network capacity to 300,000 subscribers.<sup>44</sup>

As mentioned before, newcomer's activities have influenced also the mobile market by forcing C&WJ to implement new mobile networks (GSM) and consequently to expand services. From another point of view, ending cross-subsidies to local calls (coming from high fees in long-distance incoming calls) has improved the sector's efficiency and encouraged C&WJ's efficiency as well. In 2002, C&WJ recorded a 35% reduction in net profits compared to the previous year, dropping from US\$ 65 million to US\$ 41 million; this resulted from an increase in its operating expenses and from the doubling of financing costs arising from changes in the foreign exchange rate.

<sup>44</sup> Document of The World Bank Group Report N° 24689-JM.

Figure 5.11 – C&WJ Financial Ratios

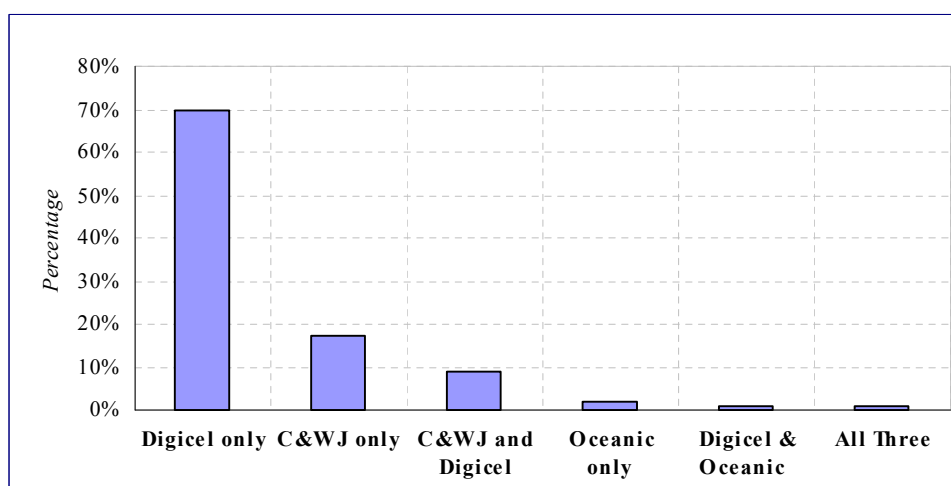


Source: Jamaican Stock Exchange

During 2003, revenues decreased around 10% and profits halved for C&WJ. This reduction was partially linked to a drop in 50,000 fixed lines, the costs related to the company’s reorganization and the setting up of the new GSM network. In March 2004, C&WJ announced financial losses of US\$ 91 million over the one-year period ending on March 31; this bad result was the product of a massive write-down of the value of the company’s fixed assets, including its TDMA network and fixed-line equipment.<sup>45</sup>

On the other hand, although Digicel had losses in its first years of operation this company is expecting positive results for the future also as a consequence of the renegotiation of its debt duration profile (US\$ 200 million) in 2003, from three and four years to seven years, thereby reducing its debt service burden. Digicel had planned to enter fixed-line and to target specifically the corporate market. Futhermore, it has borrowed US\$ 80 million to develop additional cellular sites between September 2004 and March 2005. At the time of the acquisition of the license, Digicel announced that it would use Jamaica as a springboard for launching into the Caribbean region. After investing about US\$ 500 million in the region, the company now provides services in Aruba, Grenada, Jamaica, St. Lucia and St. Vincent & the Grenadines, and is seeking a license for Trinidad & Tobago. The company also began servicing the Cayman and Barbados markets in 2004.

<sup>45</sup> C&WJ’s parent company, Cable and Wireless plc is also having problems of its own. Revenues and profits are decreasing and the company has also retreated from the U.S. market and most recently in Japan.

**Figure 5.12 – Service Providers of Mobile Phones**

Source: Office of Utilities Regulation - OUR

As shown in Figure 5.12, Digicel Jamaica Limited dominates the service providers market with a market share of approximately 70%. In order to give an idea of Digicel's fast growth, C&WJ, its main competitor, took approximately ten years to reach 400,000 mobile subscribers, while Digicel reached that figure in only 13 months after beginning operations. Digicel crossed the one million customer landmark in June 2004. Digicel and C&WJ are the dominant players in the mobile market while the other operator, Oceanic, has a 1% market share.

### 5.2.3. REGULATORY FRAMEWORK AND INSTITUTIONAL DEVELOPMENT

The legal framework for telecommunications sector is based on both the OUR Act of 1995<sup>46</sup> and the Telecommunications Act of 2000.

The Telecommunications Act aims at:

- (i) promoting and protecting the public interest by encouraging competition, access, quality and variety of telecommunications services and equipment supplied;
- (ii) spreading access to telecommunications services in Jamaica, in a consistent way with Jamaica's international commitments towards telecommunications liberalization process;
- (iii) facilitating profitable investments in infrastructure to provide specified services in Jamaica.

The Act vests OUR in the regulation of telecommunications services and facilities, the reception, processing license applications, the promotion of consumer interests and the promotion of competition among carriers and service providers.

Upon OUR's recommendation, the Minister grants carrier licenses (to own and operate the facilities), and licenses to sell, trade in or import any prescribed equipment and spectrum licenses. OUR sets regulatory fees, calculated as to cover costs related to OUR's activities of regulation of the telecommunications sector.

The Act establishes the obligation to grant interconnection on a non-discriminatory, reasonable and transparent basis. Interconnection charges shall be cost oriented.

<sup>46</sup> See introduction to the regulatory framework in the transport sector.

Whenever the office sets prices characterizing the interconnections provided by a dominant carrier, it will respect the following principles:

- (i) costs shall be borne by the carrier whose activities cause those costs to be incurred;
- (ii) charges must be split between non-recurring and recurring depending on the cost nature;
- (iii) charges must be split between flat and variable depending on the nature of costs; costs shall include operating expenditure, depreciation and a reasonable rate of return;
- (iv) prices for interconnection shall be established between the total long-run incremental cost of providing the service and the stand-alone cost of providing the service, and they shall be calculated so as to avoid a disproportionate burden of recovery of common costs on interconnection services.

The Act establishes a general service condition. A licensee who is required to provide a widespread service shall be entitled to compensation in relation to the net costs incurred in meeting that requirement. The obligation arises from an agreement between Minister and licensee.

The telecommunications operator Cable & Wireless Jamaica Limited (C&WJ) was granted a 25-year license with exclusivity over the fixed-link network and the provision of all the domestic and international telephone services, in addition to a guaranteed return of 17.5 % to 20% on yearly revaluated assets (by independent auditors and subject to the Minister's approval).<sup>47</sup>

The elaboration of the Telecommunications Act started the liberalization of the sector in three phases.<sup>48</sup> During the first phase, between 1998 and 2001, pro-competitive regulatory principles had been arranged by opening to competition the domestic mobile and data services. The second phase, until 2003, concerned the granting of licenses for accessing satellite services and facilities, domestic voice facilities and services, and Internet access on facilities of subscriber television (STV) operators. The last phase, started in 2003 and ending in 2013, will ensure the opening of all markets to foreign investment and competition.

The reform that Jamaica recently started in the sector parallels the ones performed by other Latin American countries (Argentina, Brazil, Chile and Mexico, among others) as part of a deregulation and privatization process. Chile was one of the precursors in privatization reforms in Latin America. This country started reforms in the 1970s-1980s by creating a regulatory agency (in 1977), a regulatory framework for the sector (in 1982, defining objective and non-discriminatory access, continuity and quality criteria to grant concessions) and privatizing the fixed-link and long-distance companies (CTC and Entel, respectively, between 1985 and 1988). The regulatory framework defined in Chile regulated charges for fixed telephony and access (the latter since 1994). Competition started to develop with the entry of mobile telephony operators, multi-carriers and cable TV companies in telephony and broadband.

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<sup>47</sup> The company is an 82% subsidiary of Cable & Wireless plc. The other 18% is owned by the public.

<sup>48</sup> See details in Paredes (2003).

### 5.3. POLICY OPTIONS AND IMPLICATIONS

Jamaica has shown success in fixed-mobile substitution in telecommunications access due to market liberalization and technological changes. Nevertheless, the three technologies (CDMA, GSM, TDMA) currently employed by Jamaican operators in mobile services are not compatible. Consequently, changing from one operator to another involves purchasing a new handset and getting a new telephone number as they are not transferable. Future trends in technology will put pressure on operators to upgrade networks and to finance additional investment.

Competition will increase in the coming years given government plans to auction two additional licenses in the near future.

Another interesting point is the definition about access coverage obligations. In fact, the sector is characterized by low incentives given the high ratios of mobile/fixed substitution. According to C&WJ, the high rates for mobile-to-fixed calls as well as those for mobile-to-mobile could finance the fixed wire expansion in urban and non-urban areas. If OUR sharply reduces the interconnection charge, it is likely that prepaid mobile area would decrease its market share leading to a reduction of the access diffusion as well. Nevertheless, some fixed charges in the bills will be eliminated and fixed service penetration will not continue to fall in the future. Internet penetration could be limited in the future if decreasing trend of fixed-wire business reduces the possibility to expand dial-up and ADSL services.

### 5.4. PRIORITIES FOR FUTURE REFORMS

The expansion of Jamaican successful mobile operators to other Caribbean countries will impose the need to improve coordination on regulatory issues among different countries. Some regional agreements have already been made, but they will require continuous monitoring in the future. The development of competition in the Caribbean also requires harmonization on the allocation of frequencies not only to avoid interference but also to provide a larger competitive playing field for new operators. Fixed mobile substitution will increase over time and competition in mobiles needs to be improved with a transparent competitive criteria to allocate frequencies.

Another main future challenge is the promotion of broadband Internet access into schools and public institutions, among others, through competitive minimum subsidy criteria. Resources from Universal Service Access Fund of Jamaica (USAFJ) have to be used to implement broadband Internet access at higher speed and USAFJ should propose flat rates to avoid payment problems similar to those recorded in fixed telephony.

Finally, a strong commitment has to be carried out to face those criticalities will arise also for people living in rural areas to access telecommunications services. Since fixed lines are decreasing, USAFJ should increase the number of pay phones based on competitive minimum subsidy criteria. Fixed wire business will require developing smart commercial practices and customer retention policies based on new tariff plans for fixed telephone, such as flat tariffs for a certain quantity of minutes.

## 6. REGULATION: THE WAY FORWARD

The changes in the roads' policy in recent years, associated with improving the road network, have been of great importance to the Jamaican economy. Positive steps in the reforms include the recognition of several road infrastructure projects, the analysis of the modality of building and operation, the extensive social appraisal of projects (evaluating the cost of land expropriations or including the National Resources Conservation Authority in the evaluation of projects), and the pursuit of efficiency. However, according to Paredes (2003), there are some challenges ahead that could pose risk in these projects. Some arguments cited by the author are (i) the recurrent attribution to positive externalities and non-measurable benefits, which may inflate the real value of the projects, and (ii) the risk allocation to the operator, which implies that it may be subject to government risk (to be included in the operator's premium). Another aspect to take into consideration is the risk of *lowball*, which is usually related to the interaction between projects of this kind and weak governments (for example, when the awarding rule is the "lowest transfer" required from the government).<sup>49</sup> On the base of this information, government needs to embark in a full and comprehensive reform program for infrastructure, which includes a revision of the rules that will guide concessions or contracts, the possibility of competition, the regulation of tariffs, the requirements on coverage, access, quality and efficiency of services and infrastructure. Complementing this, a sound regulatory agency (OUR or specific regulators) with autonomy and independence to take on regulatory decisions would be important. In the other sectors, railways, ports and airports, the government has initiated private participation in the building and operation of infrastructure and services. This process involved Kingston and Montego Bay Ports, Sangster International Airport and negotiations have begun with an India-based company that would have the responsibility of overseeing the successful re-start of the railway service. Specifically, in the airport sector, and given the changes made to allow private participation, it is important to strengthen the role of CAA as the authority to create an environment for potential investors in airports, encourage investment in new facilities and ensure that airports operate at standards in accordance with best industry practice and international requirements.

As pointed out in the section on regulatory framework for electric power, Jamaica is an island; as a consequence of that, electricity sector has to be necessarily a closed system without the possibility of international interconnection. The main sources of generation are hydro and liquid fuels. In 2001, the operation of the whole system transferred to private hands in a vertically integrated business for 20 years. Unfortunately, at the moment of privatization several important issues regarding regulation remained undefined. First, incentives to invest at any stage of the sector remained silent, due to the fact that regulations for dispatch, transmission and distribution charges are absent, leaving the participation of the input price (energy) in the final price blurry. Second, the role of the regulatory agency (OUR) is crucial. Since it is practically regulating one firm, it must stay independent from the company's pressures (in addition to staying independent from government pressures).

In the water and sanitation sector, the government has also started to study the possibility of letting private companies to manage water utilities (as recognized, for example, in the water-sector policy paper), insulating the sector from political and interest-group intervention. However, the government faces several challenges in the future. First, there is no consensus of switching to a private-operation model. Some arguments by opponents are represented by possible increases of tariffs and increases in collection rates (due to current low tariffs and high proportion of uncollected revenues), which are deemed socially (although not economically)

<sup>49</sup> Paredes stated "The negotiation process with a single firm, something that in principle is not desirable, is again characteristic of the process in Jamaica".

undesirable. This contrasts with the current problems of low quality of service and the financial conditions of NWC. Second, the international best practices should be applied to define a clear and uniform regulatory framework before moving through concessions. Third, part of the agenda should include a full revision of the NWC activities, removing away all regulatory powers and redefining the institution as a service and infrastructure provider. Fourth, the unification of regulatory powers in a particular agency (say, OUR, as already suggested by the Ministry of Water) as much as possible (for example, it would be advisable to leave the environmental regulatory aspects under the environmental agency) is recommended. Fifth, moving to concessions requires a clear objective on universal coverage, especially for poor and rural areas. Finally, given the evidence of decentralization in infrastructure and service provision (even at the municipal level), the possibility of revising the role of NWC and/or divesting it in several local providers could be analyzed.

In the telecommunications sector, the government has already paved the way for competition to appear gradually. On the normative side, it has put deadlines in three stages to ensure the opening of all markets to foreign investment and competition. The sector that evolved more dynamically is mobile telecommunications services (which also put some competitive pressure to the incumbent fixed-link operator in long-distance telecommunications services). Therefore, as emphasized in the other sectors, the deepening of reforms to ensure access, quality and efficiency of infrastructure and services should not be left aside. Moreover, the strengthening and specialization of the regulatory body (currently OUR), in order to shape a strong regulatory capacity is needed to face the future challenges in this sector.

Finally, the government in Jamaica has defined a multi-sector regulatory agency, which sometimes conflicts with specific entities. To allow for additional private participation in infrastructure, a deep assessment of the benefits of having a specific regulatory agency versus a multi-sector agency would be positive for the evolution of control of infrastructure.

Table 6.1 summarizes the main challenges regarding regulation.

Table 6.1 - Regulation: The Way Forward

SECTOR		WAY FORWARD	
Sub-Sector		Short Term (0-2 years)	Medium Term (2-5 years)
TRANSPORT	Roads	<ul style="list-style-type: none"> <li>* Define contract criteria that avoid unnecessary renegotiation.</li> <li>* Give all regulatory responsibilities to one independent and autonomous agency (OUR or specific)</li> </ul>	<ul style="list-style-type: none"> <li>* Design a complete reform program for infrastructure that includes rules for concessions, possibilities of competition, regulation of tariffs, quality and access requirements, etc.</li> </ul>
	Ports and Railways	<ul style="list-style-type: none"> <li>* Strengthen the process of opening the sector to private participation.</li> </ul>	-
	Airports	<ul style="list-style-type: none"> <li>* Strengthen the process of opening the sector to private participation.</li> <li>* Reinforce the role of CAA to foster private investment and to render services that meet international standards.</li> </ul>	-
ENERGY	Electricity	<ul style="list-style-type: none"> <li>* Strengthen regulatory framework at all stages.</li> <li>* Clarify the role of OUR, maintaining independency from electricity company and government</li> </ul>	<ul style="list-style-type: none"> <li>* Further develop alternative energy sources (biomass, solar, NLG etc.)</li> <li>* Develop rules to give incentives to invest in generation.</li> </ul>
WATER & SANITATION		<ul style="list-style-type: none"> <li>* Build a strong consensus about switching to a private concession model.</li> <li>* Define a clear and uniform regulatory framework prior to moving through concessions.</li> <li>* Revise NWC activities, removing its regulatory powers and redefining its role as a service/infrastructure provider.</li> <li>* Delegate the regulatory responsibilities to a specific agency.</li> <li>* Analyze possibility of decentralization of infrastructure and service provision, based on international experience.</li> </ul>	-
TELECOMMUNICATIONS		<ul style="list-style-type: none"> <li>* Strengthen and specialize regulatory agency.</li> </ul>	<ul style="list-style-type: none"> <li>* Deepen reforms to ensure access, quality and efficiency of infrastructure and services during the transition towards competition.</li> </ul>

## 7. ESTIMATES OF INVESTMENT NEEDS

The aim of this section is to provide some indicative estimates of infrastructure investment required in Jamaica for the 2003-2010 time period. We rely on a fairly simple procedure. First, we estimate the underlying relationship between infrastructural investment and a set of socio-economic variables for a sample of 40 countries. Second, we use these estimates to assess Jamaica's infrastructural gap at the end of 2002. Third, we project the country's investment needs over the full projection period, from 2003 to 2010. For this latter step, we rely also on projected values of the determinants of infrastructure over the 2003-2010 period. Finally, we convert projected physical investment needs in money terms.

We consider four different types of infrastructure: electricity generating capacity, roads, railroads and telephone mainlines. In Table 7.1, we list the sources of all those variables as well as those of the socio-economic variables which are assumed to determine the demand for infrastructure stock.

**Table 7.1 – Variables Description**

Variable	Notation	Source
Electricity generating capacity (000s of Kw)	Energy	Calderon and Servén (2004)
Main telephone lines in operation	Tcom	Calderon and Servén (2004)
Paved Road Length (in km)	Road	Calderon and Servén (2004)
Railroad route length (in km)	Rail	Calderon and Servén (2004)
Agriculture, value added (% of the GDP)	Agr	WDI
Manufacturing, value added (% of the GDP)	Man	WDI
Population density (people/sq. Km)	PopDen	WDI
Urban Population (% total)	Urb	WDI
GDP per capita in constant 1995 US\$	GDP	WDI

The first step is the estimation of a statistical relation linking infrastructures with the explanatory variables listed in Table 7.1. Table 7.2 reports the econometric estimates. We rely throughout on the GMM-IV procedure. Our sample spans from 1960 to 2001 and covers 40 countries, including East-Asian, industrialized and less-developed countries. The choice of the GMM estimator was dictated by the need to control for possible endogeneity problems. Dependent variables are defined as the ratio between a given considered infrastructure stock and total population in order to avoid problems of non-stationarity in time series.

Table 7.2 – Estimated Models for Infrastructure Predictions

Dep. Var.:	RAIL	ROAD	ENERGY	TCOM
Constant	0.000571 (12,619)***	0.018174 (16,007) ***	-0.000282 (-5,144)***	-3.038919 (-6,140) ***
Lagged dep. Var.				0.000312 (8,657) **
GDPCAP	-8.86E-09 (-3,693)***	9.38E-07 (4,035) ***	1.80E-07 (11,647)***	2.82E-05 (27,264) ***
MAN	5.70E-06 (7,177) ***	3.11E-06 (4,505) ***	1.47E-06 (0,152) ***	-0.00236 (-7,820) ***
AGR	1.00E-06 (1,357)	-8.54E-07 (-1,236)	5.16E-06 (4,569) ***	-0.000423 (-1,352)
POPDEN		2.16E-06 (9,082)***		-0.000246 (-3,163) ***
POPURB	-6.37 (-11,639) ***	2.38E-06 (3,197) ***	9.70E-06 (14,802) ***	0.001499 (4,535) ***
TIME				0.001509 (5,854) ***
R <sup>2</sup>	0.985	0.976	0.983	0.976
N. of obs.	1,037	1,031	1,018	1,064

Notes: Estimates are obtained with GMM-IV procedure with fixed effect, for which instruments are all lagged variables

\*\*\* significant at 99%; \*\* significant at 95%; \* significant at 90%

To forecast infrastructural investment needs for the period 2003-2010, we must project the values of the regressors in Table 7.2. Fay and Yepes (2003) rely on UN projections for population and on the Global Economic Prospects by the World Bank for the other variables. Unfortunately, those figures are only available at the regional level. We follow, therefore, Loayza *et al.* (2004) and rely on the dynamic simulation of simple stochastic processes (ARMA). Results are summarized in Table 7.3.

Table 7.3 – Projected Values

	GDP	Population Density	Man	Agr	Urb
2003	2,105.04	243.83	13.30	7.39	57.44
2004	2,106.34	245.63	13.25	7.39	57.82
2005	2,107.61	247.41	13.20	7.40	58.19
2006	2,108.86	249.18	13.16	7.40	58.56
2007	2,110.09	250.93	13.11	7.40	58.93
2008	2,111.29	252.66	13.06	7.40	59.28
2009	2,112.48	254.39	13.02	7.41	59.64
2010	2,113.65	256.10	12.97	7.41	59.98

For the percentage of agricultural value added, we simply assume a constant value over the projection period.

We can now project future investment needs in physical terms. To assess the required amount of spending, we use the following unit costs (Fay and Yepes, 2003):

- (i) \$1,900 per kilowatt of generating capacity, including associated network costs;

- (ii) \$410,000 per kilometre of paved road;
- (iii) \$900,000 per kilometre of rail;
- (iv) \$400 per telephone mainlines.

**Table 7.4 – Infrastructure Investment Needs (% of GDP)**

	Jamaica		LAC median	EAP median
	Average (2004-2010)	To fill the gap (2003)		
<b>Energy</b>	0.96	0.92	0.98	1.24
<b>Rail</b>	0.06	0.17	0.06	0.06
<b>Road</b>	0.90	0.92	0.89	0.50
<b>Tcom</b>	0.36	0.38	0.41	0.85
<b>Total</b>	2.28	2.39	2.42	3.33

In Table 7.4 we distinguish between the initial level of investment, required to bring Jamaica's infrastructure stock in line with what is warranted by its socio-economic characteristics, and subsequent investment spending, required to keep the pace with the changes in GDP and the other determinants of infrastructural needs. According to our estimates, Jamaica should invest about 2.39% of its GDP in 2003 simply to bring to the country's infrastructural stock in line with our estimated benchmark. Alternatively, we could have assumed that the large initial investment should be spread over the full projection period. From 2004 onward, further investment in infrastructure is mainly driven from the demand factors in regressions in Table 7.2 and it's therefore designed so as to keep the supply and the demand in infrastructure in equilibrium.

Table 7.4 reports investment needs as a percentage of GDP. In order to meet the increasing demand, Jamaica should invest on average about 2.28% of GDP to infrastructure during 2004-2010 period; of this amount, about 1.86% should be allocated in road and energy sectors. Notice that the investment of 1.6% of GDP in the telecommunications sector as reported in Table 5.1 greatly depends on new investment projects for mobile phones, while our dependent variable only consider fixed telephone mainlines (Table 7.1).

The overall amount of investment for Jamaica is slightly behind the regional average (2.42%) whilst almost 1 percentage point of GDP lower than the EAP median.

## 8. CONCLUDING REMARKS

The aim of this country brief has been to give a snapshot of the current infrastructure outlook in Jamaica, with particular focus on key challenges and on priorities for implementing future reforms in order to meet the Millennium Development Goals. In particular, the country has been analyzed by comparing it with two main benchmarks:

- (i) *the regional sample* consists of seven Latin American countries, namely Argentina, Brazil, Colombia, Costa Rica, Guatemala, Mexico and Peru; and
- (ii) *a peer group of countries* (the lower middle-income group) characterized by the same level of development – Colombia, Guatemala, Jamaica and Peru.

The main results of this report are summarized.

With regard to the **road sector**, it appears to be quite well developed in comparison with the benchmarks; in fact, in terms of *road density* and *paved road on total road* Jamaica shows better indicators than both featuring its peer group and the regional sample. At any rate, a main issue is the maintenance of the existing infrastructure stock, given the budget deficit reflected in the reduction of public investment in this sector. Consequently, the quality of the service, according to the Global Competitiveness Report of the World Economic Forum, is lower than expected.

By contrast, looking at the **railroad sector**, Jamaica presents poor indicators both in terms of *rail density* (0.6) and *railroad quality* (1.4). In particular, it is worth underlining that only 65 km over 272 are operating, most of them (57 km) being used by a private operator (ALCAN) to transport bauxite. In light of this situation, Jamaica's government has recently signed an agreement with Rail India Technical and Economic Services Ltd to rehabilitate and improve the rail system.

The **port sector**, another crucial sector for Jamaica's economy, contributes in a significantly way to the developments of international trades, both imports and exports. The main ports are Kingston and Rhoades, which account for more than 50% of the total *seaport movement*. When comparing this latter indicator with the other Latin American countries, seaport activity in Jamaica is well developed.

Finally, the **airport sector** consists of 35 airports, 11 with paved runways. The industry is well developed both in terms of *passengers carried* and *in terms of tons-kilometers of freight*. In addition, according to a survey by the World Economic Forum, Jamaica's *airport service quality* is ranked as the best one among the Latin America countries taken into account (5.8). Of course, Jamaica's tourist industry has positively influenced this indicator and has resulted in profitable airport services.

Overall, the priorities of the transportation sector include the recovery of investments, increasing services availability and improving quality standards. These priorities become crucial in a country that has a high commercial opening level and where tourism is its most profitable economic activity.

To attract private participation in the transport sector, there is a need for establishing a stable regulatory framework and a tariff plan adequate to recover the investments guaranteeing investments' recurrence. Given the fact that a model based only on private operators is not feasible, the government should undertake fiscal adjustments to overcome its shortage in investment capacity and allow for the creation of Public-Private Partnerships (PPP) for particular types of projects.

In conclusion, given the tremendous importance that tourism has in Jamaica's economy, since this business activity is strongly influenced by the transport sector, the government should make

greater efforts for improving transport services, which are quite widespread but, in regard to the road and the rail sectors, show poor quality indicators and impede economic growth.

Concerning **energy sector**, the diffusion of this service is adequate in urban areas (92%) while in rural ones it is still problematic (74%). In order to improve this indicator, government established the Rural Electrification Program (REP) in 1975 as a legally separate body from the state-owned power utility, but there is still room for further improvements. In Jamaica, electricity tariffs have been increasing in recent years due to three main factors:

- (i) the high costs of (mostly imported) oil;
- (ii) the extensive use of aging steam plants;
- (iii) the reduction of subsidies.

As a result, when compared to other Latin American countries, Jamaica's tariffs are quite high. The quality of service has been difficult to assess owing to the lack of available data for this indicator; yet in Jamaica, service quality remains a key issue, although it has improved in recent years. With regard to technical efficiency, Jamaica's performance in the *electricity transmission and distribution losses* as a percentage of total electricity production was more than acceptable (8%-10%) when compared with the benchmarks (14%-17%) and, in particular, it has been experiencing a decreasing trend.

Overall, Jamaica's government has taken giant steps towards the modernization of its electricity sector by privatizing, reinforcing the regulatory agency, placing targets for transmission and distribution losses that are now stringent compared to current losses, targeting 100% coverage and developing an important renewable energy program. Yet, some regulatory issues are still pending:

- (i) the absence of pricing for transmission as an independent stage;
- (ii) the lack of dispatch regulations;
- (iii) the absence of pricing for distribution which makes the entry of a competing firm to JPSCo absolutely unlikely in any of the relevant stages.

In addition, one of the main issues to be addressed is energy theft, which has reached an unacceptable percentage and which has negatively affected the financial performance of the sector's operators. In Jamaica, crime and violence hamper the country's development. It is estimated that annual economic losses due to crime represent about 3.7% of GDP. The government has to address the crime issue in order to make Jamaica an attractive place for private investors, who are frightened of this problem.

With regard to the **water and sanitation sector**, the *access to improved water source* is in line with that one recorded in its benchmark countries even though in rural areas it still remains a criticality affecting 59.40% of the population. At this end the Ministry of Water and Housing has addressed this problem by launching the Rural Water Supply Programme in 2002 and promoting new legislation for the sector in the Legislative Programme 2003/2004.

Conversely, the *access to improved sanitation* is quite similar in urban and in rural areas, showing a more than acceptable figure, approximately 90%, compared with the other Latin American countries.

Since the service provision is carried out by the public sector, namely by NWC (National Water Commission), which covers most of the country except for a marginal segment that is covered by "Parish Councils", the private initiative in this sector hardly exists. Therefore, the priority for Jamaica's water and sanitation sector lies in the development of appropriate incentives to attract private investments, since it seems the right way to enhance service coverage. In light of this purpose, OUR recently allowed a tariff increase in order to make the business more attractive by

improving the financial performances of the operators. According to the analysis of this paper, the involvement of the private sector depends on the following factors:

- (i) OUR should become basically a supervising entity and not a normative one and it should be the only institution setting rates for private sector suppliers – following clear guidelines, not subject to its criteria;
- (ii) a tariff policy which allows for the recovery of capital and operational costs has to be established;
- (iii) the unaccounted water has to be reduced;
- (iv) an independent regulatory structure, not subordinated to political pressures, has to be introduced and enforced;
- (v) an authority for services provision has to be appointed;
- (vi) the future of NWC (privatization, decentralization or spin off?) has to be clearly defined;
- (vii) overlapping between the different institutions in this area, that is a policy inconsistency, has to be solved;
- (viii) the lack of a specific regulation on sewerage standards needs an appropriate answer.

Finally, it is worth noting that poor indicators for coverage and low quality services in the water and sanitation sector may negatively affect the most profitable economic activity of the country – tourism. Thus, the diffusion of coverage and high-quality services are the main priorities for the incumbent government.

In the **telecommunications sector**, the liberalization process started in 1999. A monopoly over the sector had existed until then, but it was dismantled in 2003. The successful outcome of this process is represented by the astonishing diffusion of *mobile phone services* (53.3% in 2002), which when added with the *main line teledensity* (17%), leads to a impressive *total teledensity* of about 70%, i.e. double of the benchmark averages. One of the key drivers for cellular expansion has been the introduction of the prepaid phone card system.

By contrast, the service quality of fixed lines, measured by the *number of phone faults per 100 fixed lines in service* along with the *unmet demand*, is lower than the average indicators of the other Latin American countries, even though in Jamaica these indicators have been recently decreasing. Probably this poor performance reflects the obsolete infrastructure in this sector as well as the decision to switch to mobile telephony. Unfortunately, no data are available to assess the quality of mobile lines, although it is likely high since this type of service is successful.

Moreover, taking into account service affordability, both the fixed and the mobile services are quite expensive if compared to the average costs of the other benchmark countries. It is worth mentioning the progressive elimination of cross-subsidies in local phone calls.

A critical point in Jamaica's telecom service is the billing system; specifically, the customer complaints to OUR.

In spite of the high telephone rates and the large service diffusion, the two largest companies that dominate their market sectors, fixed and mobile, respectively C&WJ and Digicel, showed poor financial results in the recent period. The challenges for these private operators will be to enhance their productivity, especially by reducing costs and fostering efficiency given the limited scope for increasing their market share.

Finally, the legal framework for the telecommunication sector is based on:

- (i) OUR Act (1995); and
- (ii) the Telecommunications Act of 2000.

In particular, OUR activities with regard to telecommunication sector involved:

- (i) the processing of applications of all categories of licenses to offer telecommunication services;
- (ii) the development of service quality standards for C&WJ;
- (iii) the resolution of complaints received about the sector.

Finally, to summarize the main conclusions achieved in Chapter 7 regarding *investment needs*, as shown in Table 7.4, estimated average for the period 2004-2010 is around 2.28% of GDP. The breakdown of this figure is described as follows: Road, 0.90%; Rail, 0.06%; Energy, 0.96%; and Telecommunications, 0.36%. Furthermore, the initial investment level needed to bring Jamaica's infrastructure stock in line with what is warranted by its socio-economic characteristics accounts for 2.39% of GDP.

## MAIN REFERENCES

*Airports (Economic Regulation) Act of 2002.*

*Airports Authority Act (1974).*

*All Island Electricity License (2001), for the Jamaica Public Service Company Limited.*

*Björn Wellenius, Vivien Foster, and Christina Malmberg-Calvo, "Private Provision of Rural Infrastructure Services: Competing for Subsidies", World Bank Policy Research Working Paper 3,365, 2004.*

*Cable and Wireless Jamaica (C&WJ) "Comments on the Responses to: Towards Universal Service Access Obligation for Telecommunications Services in Jamaica", April 14, 2003.*

*Calderon Cesar and Luis Serven (200): "The Effects of Infrastructure Development on Growth and Income Distribution, mimeo".*

*Civil Aviation Act (1966).*

*Cohen Remy, Faini, Riccardo and Marco Percoco (2004), Public Investment, Fiscal Policy and Infrastructure Needs in Latin America, mimeographed, paper in preparation.*

*ECLAC, "Anuario Estadístico America Latina y el Caribe 2003".*

*ECLAC, "Perfiles Marítimos".*

*EIA, Department of Energy (2004), "Caribbean Fact Sheet".*

*Everhart Stephen and Mariusz Sumlinski (2001), "Trends in Private Investment in Developing Countries, IFC Discussion Paper No. 44".*

*Fay, Marianne and Tito Yepes (2003), "Investing in Infrastructure. What Is Needed from 2000 to 2010", World Bank Policy Research WP no. 3,102.*

*IRF, "World Road Statistics 2004".*

*ITU, "World Telecommunication Indicators 2004".*

*ITU. Yearbook of Statistics - Chronological Time Series 1993-2002./Jamaica.*

*Jamaica Railway Corporation Act (1973).*

*Main Roads Act (1973).*

*National Water Commission Act (1980).*

*Natural Resource Conservation Authority Act (1991).*

*Office of utilities regulation (OUR) "Annual Report & Financial Statements 2002/0"3.*

*Office of utilities regulation (OUR) "Toward Universal Service/Access Obligation For Telecommunication Services in Jamaica" A Consultative Document. December 2002.*

*Office of utilities regulation (OUR) "Assessment of Dominance in Mobile Call Termination". Document No: TEL 2004/10 September 2004.*

*Office of utilities regulation (OUR) "Dominant Public Voice Carriers Supplementary Consultative Document: Market Definition for Telephony Access", Document No: TEL 2003/05 July 18, 2003.*

*Office of utilities regulation (OUR) "Toward Universal Service/Access Obligation for Telecommunication Services in Jamaica Recommendation of the Office of Utilities Regulation*

to the Minister of Commerce, Science and Technology”. Document No: TEL. 2004/07 May 14, 2004.

*OUR Act (1995).*

*Pan American Health Organization - PAHO (2000) “Disparities in access, use and expenditure in Drinking Water in Latin American and Caribbean – Jamaica” Technical Report Series n° 7.*

*Pan American Health Organization (2000), “Evaluacion de los Servicios de agua Potable y Saneamiento 2000 en las Americas – Jamaica”.*

*Paredes, Ricardo D. (2003) “Privatization and Regulation Challenges in Jamaica” IADB, Regional Operation Department 3, Country Division 3.*

*Paredes, Ricardo D. (2003), “Jamaica: Privatization and Regulation Challenges in Jamaica”, IDB Economic and Sector Study Series, RE3-03-004.*

*Petroleum Act (1979).*

*Shipping Act (1998), Port Authority Act (1972).*

*Stirton, Lindsay and Martin Lodge. “Rethinking Institutional Endowment in Jamaica: Misguided Theory, Prophecy of Doom or Explanation for Regulatory Change?”.*

*The Broadcasting Commission “The Jamaica Cable Industry: Ready for an Open Communications Framework?” Kingston Jamaica May, 2004.*

*The World Bank (2002) “Memorandum of the President of the International Bank for Reconstruction and Development to the executive directors on a country partnership strategy for Jamaica”.*

*The World Bank, “Jamaica: The Road to Sustained Growth. Country Economic Memorandum”, Report No. 26088-JM, 2003.*

*Water Resources Act (1995).*

*WEF – World Economic Forum, “Global Competitiveness Report 2004-2005”.*