

Financing Road Infrastructure in Jamaica

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Abstract

This paper undertakes an investigation of the traditional as well as the new schemes used to finance Road Infrastructure in Jamaica since 1962 - 2002. With expenditure on education, health, and other public expenditure competing for financial resources and the limited budgetary resources, the government has seen it necessary to find alternative sources of financing road projects. This paper also compares the schemes used by Barbados for road development to those used by Jamaica and considers the implications that the new schemes have on Jamaica's public debt expansion.

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1. Introduction

For centuries, roads have been a major form of land transport for goods and people in Jamaica. Despite the experiences with poor road infrastructure, they continue to serve as a channel for economic activity but can be viewed as a source of economic weakness for the economy. Competing financing needs of other sectors, such as health and education and the government's deteriorating financial situation reduces the amount of funds available for funding road projects. Owing to the fairly high capital expenditure required for road construction and maintenance, the government is unable to completely cover such costs.

The government has been financing road infrastructure from domestic budgetary resources and has made use of loans on concessional terms from multilateral and bilateral agencies. The government has also sought new ways of financing road construction due to declining resources from the above mentioned institutions and the much needed reallocation of budget funds to other sectors in the country. These

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experiences establish the usefulness of reviewing the alternative schemes¹ used to finance road projects and the need to highlight the new schemes which have been adopted.

Jamaica has witnessed a rapid expansion in its road network over the years. Unfortunately, time and the availability of information does not allow for all road infrastructure to be studied. In light of these constraints, a discussion of selected major road rehabilitation programmes which serve to improve road infrastructure across the country are examined. Road improvement and rehabilitation programmes are important because they improve transportation services for the country. Additionally, a brief discussion of the sources of funding for major highways and bypasses is presented. This brief discussion excludes Highway 2000 which is presented as a case study. The remainder of this paper is organized as follows. Section 2 pulls together instruments used for financing infrastructure, including roads. Section 3 presents an analysis of the schemes used in Jamaica and a case study of Highway 2000. Section 4 compares the financing schemes used by Jamaica and Barbados. Section 5 concludes and discusses some implications of the new schemes for Jamaica.

¹ In this paper, schemes and instruments will be used interchangeably. They are synonymous.

2. Literature Review: Instruments in Infrastructure Financing

Infrastructure financing is the practice of providing funds for investment in physical systems. Physical systems may be required for a country to function efficiently and productively. Infrastructure includes but is not limited to: transportation and communication systems, airports, power and water supply, irrigation, sanitation and sewerage system and parks.

The responsibility to finance public infrastructure falls under the government's portfolio. In financing public infrastructure, governments frequently seek new financial schemes as well as

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assistance from institutions providing such funding facilities. Financial assistance has ranged from public-private partnership arrangements (government and the private sector jointly funds) to full private ownership (private sector is the only financier).

This section highlights a variety of instruments that have been used to finance infrastructure with specific emphasis on those used for road infrastructure. The next section draws attention to those instruments used by Jamaica.

Multilateral Development Agencies

These are international or regional institutions which carry out all or a considerable amount of their activities to promote development. They give financial and technical assistance as well as expert advice for economic and social development activities in developing countries. Worldwide, countries have entered into agreements with multilateral agencies in which they hold membership. These multilateral organizations have played a major role in supporting infrastructure finance for borrowing member countries. They have provided a variety of financial support facilities to countries to aid infrastructure development in various sectors of their economies. However, the financial facilities they offer differ across institutions. They include: long-term loans, guarantees, high concessional funding (for the poorest countries), interest free credit and grants. These institutions

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include: World Bank, Inter-American Development Bank and the Caribbean Development Bank.

Bilateral Agencies

These are government institutions which provide assistance to specific countries and regions. Basically, bilateral support is given from the government of one country to another. Such support may include: money, food or technical assistance and comes by way of the well-developed relations that governments of developing countries have with governments of developed countries. Bilateral agencies have provided loans on concessional terms to governments of developing countries. The Canadian International Development Agency and the United States Agency for International Development are two main bilateral agencies which provide bilateral support.

Bond Markets

The bond market is one that facilitates the issuance and trading of debt securities for the purpose of raising capital. Debt securities are financial instruments denoting an amount of money borrowed which must be repaid with interest payments at a specific date. These securities include, among others, bonds, treasury bills and notes. In general, a bond is a debt obligation (which may be issued for more than a year) repaying a principal amount and a fixed interest payment to bond holders when the date of maturity arises; a treasury bill is a

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short term government debt bearing no interest and matures in one year or less; a note is an instrument bearing interest with a maturity period usually at five years or less.

Governments issue debt instruments through commercial and central banks to raise capital on bond markets to finance their expenditure. Governments have made use of domestic, regional and/or international markets to mobilize financial resources. However, not all countries have access to international capital markets – Organization of Eastern Caribbean States (OECS) countries are unable to access such markets because they do not have international credit ratings. These countries instead resort to the Regional Government Securities Market.

A remarkable development in the bond market in the 1990s has been the occurrence of project bonds to finance long-term infrastructure projects in some developing countries. With a project bond, the borrower issues the bond to fund a capital investment project whose earnings provide the only source to meet financial responsibilities and to pay out returns to investors. Project bonds vary in maturity (less than 3 to 100 years), issue size (from millions to little over a billion), project structure, legal distinctiveness and agreements. Due to the considerable infrastructure needs, a project bond is a useful tool for

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developing countries. Qatar, Venezuela and the Philippines have raised funds using international project bonds.²

Securitization Market

Securitization refers to claims against future anticipated cash flows connected to the income earnings from specific assets. It uses markets to sell these assets as securities which are expected to generate revenue at some future date. These assets can include but not limited to tax revenue receivables and revenue from toll roads. In a typical future cash flow transaction, the borrower who owns the future assets sells to a Special Purpose Vehicle which converts future assets into securities. This vehicle pays the borrower for the assets by issuing debt instruments to investors. The payment for debt instruments is made to an off shore account. The investors are paid principal and interest when cash flows are received from assets. Securitization provides more liquidity and has been used to mobilize resources for infrastructure projects.³

Securitization of future flow receivables has been used in some developing countries. The first transaction took place in Mexico (1987) where telephone receivables were securitized. Securitized

² Kim, Yun-Hwan (2005). "Financing Infrastructure Development: Asian Developing Countries Need to Tap Bond Markets More Rigorously," *ERD (Economics and Research Department) Policy Brief*, Series No. 34, February, p.7.

³ Vives, Antonio and Martin D. Chrisney (1995). *Fostering Infrastructure Development in Latin America and the Caribbean: A Strategy Proposal*. Infrastructure and Financial Markets Division, p. 22.

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transactions increased after the Mexican crisis in 1994/5 and peaked around US\$12 billion due to an export receivable transaction. Other Latin American countries such as Venezuela, Brazil and Argentina have also used the securitization market.⁴

Public-Private Partnership Arrangements

A public-private partnership arrangement is an agreement in which the public (government agency) and the private (private company) sector work together to finance public sector projects. This agreement facilitates increased participation for the private sector; that is, it takes a greater share of the responsibilities and risks involved in the execution of projects. These responsibilities include maintenance and costs. Projects usually covered under this arrangement are: roads, bridges, tunnels and airports.

Most widely used public-private partnership schemes are:

- Build-Own-Operate-Transfer

Under this arrangement, a private consortium takes the responsibility of designing, financing and building the facility. The consortium qualifies as the temporary owner and operates the facility charging user fees to cover the costs of its operation before transferring ownership to the government at no cost.⁵

⁴ Ketkar, Suhas and Dilip Ratha (2004). "Recent Advances in Future-Flow Securitization," *The Financier*, Vol. 11/12, 2004 -2005, p. 5.

⁵ Seader, David L. (2002). *The United States' Experience with Outsourcing, Privatization and Public-Private Partnerships*, December, p.5.

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- Build- Transfer- Operate (BTO)

In this model, the private sector designs, finance and constructs the facility on behalf of the public sector. When the facility is completed, the title is transferred to the government but the private sector operates for a specified number of years until the cost of the project is recovered. At the end, full ownership is returned to the public sector.⁶

- Build-Operate-Transfer

This is similar to the BTO contracting arrangement except that the title of the project is not transferred to the government until the private contractors operate the facility for a set time period. After this time has passed, all operations are transferred to the government at no cost. This approach allows the government to lessen its capital cost while realizing a project at a time when it is unable to meet its financial obligations.⁷

- Build-Own-Operate

This arrangement is more focused on private sector participation. The private consortium provides the financing required and manage the facility as the owner. When completed, a transfer to the government is not required. This type

⁶ Aecom Consult Team (2005). *Synthesis for Public-Private Partnership Projects for Roads, Bridges & Tunnels from around the World - 1985-2004*. US Department of Transportation, p. 15.

⁷ Seader, op. cit., p. 5.

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of arrangement is usually preferred because the transfer element is absent which enables the owner to take full advantage of the returns on its investment.⁸

- Design-Build-Operate-Maintain

The contract awardee has the task of designing, building, operating and maintaining the facility for a period of time. Payment is made based on the performance criteria concerning the physical condition, capacity and congestion.⁹

- Build-Own-Lease-Transfer

This technique involves the private contractor financing, designing and building the facility. The contractor signs an agreement with the government so that the loan used for the development of the project can be repaid with interest by payments of lease rentals from the government.¹⁰

- Management Contract

This contracting arrangement requires that the private team manages the provision of certain functions in line with a set of performance criteria. This responsibility is to be carried out over a specified time period. The use of private finance is not involved but the contract team has added responsibilities and risks.

⁸ Ibid, p. 6.

⁹ Aecom, op. cit., p. 15.

¹⁰ Puri, B.N. (2003). "Private Sector Participation in the Transport Sector in India," *Transport and Communication Bulletin for Asia and the Pacific*, No. 73, p.60.

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- Concession Contract

This type of contract awards the private concessionaire the responsibility of providing a given infrastructure in an extensive time period. The responsibility involves operating and managing the facility. Although the facility is owned by the government, the concessionaire owns all improvements and extensions made. In order to operate and obtain profits, the concessionaire may be obligated to pay a concession fee to the government.

Land Leasing¹¹

Land leasing has been used by local governments in China as a financing tool to pay for urban infrastructure investments. Land leasing entails the direct sale of 'occupancy' and 'development rights.' Sale of such assets has the benefit of generating large quantities of revenue in a shorter time than taxes. This financing strategy has continued and covers a significant portion of urban infrastructure investments.

This financing tool generates special risks which ought to be considered by the government. The first regards the use of earnings from asset sales to fund the government's operating budget. Payment for land is sometimes received in the form of future revenue stream.

¹¹ Peterson, George E. (2006). *Land Leasing and Land Sale as an Infrastructure Financing Option*, World Bank Policy Research Working Paper 4043, November.

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The literature pointed out that local governments have become dependent on future income streams from asset sales for more than investment intentions - such as cover recurring expenditure. The associated fiscal risk is that when these assets are completely paid for, the government might face a severe budget deficit.

The second is a financial risk which results from the volatility of land prices. Several of China's policies for infrastructure financing have been based on constant increase of land prices for their feasibility. Although the prices of land have been increasing, the possibility exists that prices can decline. In response to the Asian financial crisis, land prices in India declined from 1998 - 2002. Thus, increased dependence on revenues from asset sales may be fatal if the success of the real estate market is reduced.

Syndicated Loan Market

A syndicated loan market is one in which banks diversify their portfolio to act in accordance with capital-adequacy conditions and as a matter of commercial foresight. In this market, banks collaborate to provide financial resources to clients under one loan agreement. Therefore, a syndicated loan is a cooperative loan advanced by a pooling of resources priced at a margin over a benchmark rate. Clients benefit from syndicated lending in three ways: a wide range of maturities are offered - starting from a 364 day revolving credit to a ten year project finance loan; facilitates loan 'drawdown' while project

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is being executed; and loan repayment without penalty. Syndicated loans (in the international market) have contributed to 62% of investment in the infrastructure of developing countries for the past decade and have longer maturity periods when compared with loans for other activities. Commercial Banks in Japan, the United States and Europe were responsible for infrastructure finance in developing countries for 1990-1997.¹²

Electronic Road Pricing

Electronic Road Pricing (ERP) is a mechanism that requires road users to pay for the building and maintenance of new roads. This eliminates the use of toll booths so payment for using roads is “automated with traffic electronically recorded and periodically billed.”

It uses automatic vehicle identification where each vehicle has an electronic number plate placed underneath the vehicle. Each time a vehicle uses a toll site an “interrogator power loop implanted below the road surface sends out electronic signals to the vehicle’s number plate and communicate the vehicle’s identification code to a roadside computer.”¹³ This information is conveyed to a control centre which

¹² World Bank (2004). “The Challenge of Financing Infrastructure in Developing Countries,” *World Bank Global Development Finance*, Chapter 6, p. 155.

¹³ Hau, Timothy (1990). “Electronic Road Pricing: Developments in Hong Kong 1983-89,” *Journal of Transport Economics and Policy*, Vol. 24, No.2, May 1990, p. 205.

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sends a monthly bill to the driver. This scheme has been used as a source of revenue for building roads in Hong Kong, Singapore and Europe. In this scenario, the government is not responsible for providing roads so the burden on the government is removed. Another benefit of ERP is that it permits communities to own roads. However, electronic road pricing is expensive to set up and issues often arise concerning the automation process.¹⁴

Impact Fees

An impact fee is a cost that is imposed on real estate developers to provide funding for public infrastructure projects. This cost is actually levied by authorities. Developers may build new commercial and residential buildings which require facilities such as roads and drainage facilities to serve these new developments. The developers are charged because of the infrastructure needs that their projects create. They may be required just to pay impact fees as a way of sharing the cost of providing public facilities or they may be asked to provide facilities such as local roads and street lights. Once these are provided, the operation and maintenance tasks are transferred to public agencies.

¹⁴ Cox, Wendell, Ronald Utt and Janet Corcoran (2003). *Building for Tomorrow: Innovative Infrastructure Solutions*, National Association of Home Builders, p. 26.

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Impact fees have become an important tool that governments use to finance public infrastructure, particularly in developed countries. In North America, they have been used to finance urban transport infrastructure and have been seen as an “economically efficient way of delivering road infrastructure.” Florida’s use of impact fees for transport infrastructure dates back to 1977; and in Chile (1973-1990), private developers were responsible for building and paving streets within their real estate developments. Impact fees were used even more in the 1990s to finance major roadway development in Chile. An identified risk associated with impact fees is that land owners may ‘free-ride’ on infrastructure funded by developers who pay impact fees.¹⁵

Privatization

The World Bank defines privatization as “the transfer of ownership of State Owned Enterprises to the private sector by sale (full or partial) of going concerns or by sale of assets following their liquidation.” Privatization facilitates market efficiency while reducing government deficits and international debt. This has been a major activity of governments in developing countries which have engaged in privatization for various reasons. For many developing countries,

¹⁵ Zegras, Christopher (2003). “Financing Transport Infrastructure in Developing Country Cities: Evaluation of and Lessons from the Nascent Use of Impact Fees in Santiago de Chile,” *Transportation Research Record*, March, p. 3, 5 & 11.

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privatization was apart of structural adjustment programmes set up by institutions such as the IMF and the World Bank.

In the face of fiscal crises, privatization has been used reduce the financial burden on governments. To this end, it has served as a means of attracting private resources for infrastructure investment in order to save public capital for other government activities. Some privatization activities have entailed groups of foreign and domestic firms acquiring ownership of public assets.¹⁶

Privatization initiatives have been successful in a number of countries. The benefits include reduced financial dependence on government resources for various activities and enhanced and increased efficiency in delivering services to the public.

Corporatization

This is the case where the government maintains complete ownership but requires the technical know-how of the private sector to enhance its performance in managing infrastructure projects. Improving the efficiency of operations requires public institutions operating infrastructure to act independently, increase accountability by setting clear objectives and provide suitable pricing guidelines to reflect costs. Corporatization accomplishes this goal by converting a government division that deals with infrastructure services into a

¹⁶ Dammu, Leelakrishna Sai et al (2000). *Infrastructure Development and Financing: A Comparative study of Infrastructure in India and China with focus on the Power Sector*, Indian Institute Of Management, Ahmedabad p.8, 16-17.

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separate legal unit operating under the same laws that a private firm is subjected to.¹⁷ Operation by separate entities involves private sector participation regarding specific infrastructure developments.

According to the World Bank, Corporatization in developing countries with good governance has been successful (Chile, Singapore, Botswana just to name a few) but the benefits when derived are difficult to sustain.

*Output-based Contracts*¹⁸

An output-based contract is an agreement in which the government uses the private sector for road rehabilitation and maintenance. These contracts are usually awarded in two stages. The first covers the maintenance of paved roads and contractors are paid monthly for specific services. If the work fails to meet standard requirements, penalties are imposed on a daily basis (until output satisfies required specifications) and deducted from future payments. The second contract stage involves rehabilitation and maintenance of paved roads. For a lump-sum payment, the contractor is required to repair and then maintain the road network for five years. The design of this contract is based on the experience with maintenance contracts.

¹⁷ Vives, Antonio and Martin D. Chrisney (1995), op. cit., p. 12.

¹⁸ Liautaud, Gerard (2001). "Maintaining Roads: Experience with output-based contracts in Argentina," *Contracting for Public Services: Output-based Aid and its Applications*.

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Output-based contracts provide reimbursements when costs generated are outside of the contractor's control (earthquakes and hurricanes). Although government authorities make frequent inspection to ensure compliance with specific standards, road users monitor the performance and reports made to government office in charge are publicized in the local media.

These contracts promote innovation and cost efficiency by giving contractors added responsibilities; create more stable financial support for road maintenance; and meet the needs of road users. Output-based contracts only apply to roads with 300 to 3,000 vehicles per day.

This scheme has been used in Argentina and was funded by the government and the World Bank. This move towards road maintenance proved to be a useful way of improving efficiency by making contractors responsible for the quality of roads. Countries such as Chile and Colombia have used similar contracting arrangements.

Deferred Financing

This scheme involves private contractors bidding for government projects. These private contractors are responsible for mobilizing financial resources without receiving any immediate payment from the government. When a project is complete, the contractor is paid and the government takes the responsibility of any added debt

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acquired during the execution of the project.¹⁹ In addition, ownership of the project is transferred to the government. Deferred financing is a special tool confined to major infrastructure projects such as road construction and the improvement of schools, hospitals and police stations and has been in use since the late 1990s.²⁰ The benefit of this tool is that it allows infrastructure projects to be undertaken without immediate funds from the government. However, government's deficit has worsened through the use of this scheme since funds used by private contractors must be paid at a future date. Most times, this deterioration in the government deficit is attributed to road repair programmes.

3. Financing Road Infrastructure in Jamaica

This section highlights the sources from which Jamaica receives assistance to finance its road infrastructure projects. These sources comprise of multilateral agencies, bilateral agencies and local development banks. Section 3.1 discusses road projects that are carried out under deferred financing; highlights projects that are financed by multilateral and bilateral institutions as well as the Development Bank of Jamaica; and presents a brief discussion of the sources of funding for some highways and bypasses. Section 3.2 focuses on the details of Highway 2000.

¹⁹ Contractors take on the ownership of projects with payment extending beyond the end of the financial year in which the project was completed (The Financial & Administration Audit Act, 24E. Credit Agreements, Ministry of Finance).

²⁰ *IMF Raps Jamaica's Deferred Financing Policy* - www.caymannetnews.com

3.1 Deferred Financing²¹

Meeting the financial requirements of major infrastructure projects has been a major constraint on the government. It is difficult to secure adequate funding from budgetary resources. In light of this, the government has searched for other ways of financing such infrastructure, for example, road projects. One such alternative has been deferred financing which covers road construction and rehabilitation, thus, excluding regular maintenance.

Since 1997/1998, millions of dollars have been approved for road construction and rehabilitation under deferred financing agreements. Between 1997/1998 and 2003/2004, road projects have benefited tremendously from this financing scheme. Some of these projects include:

- o Rural Road Development Programme - Pamphret to Morant Bay, Negril to Savanna-la-mar and Cement Company to Harbour View Roundabout
- o HUB Programme - Arterial Roads Island-wide with total mileage of 268 km
- o Dualisation and Road Improvement Works to Howard Cooke Boulevard & Alice Eldermire Drive

²¹ Ministry Paper No. 20, April 15, 2004.

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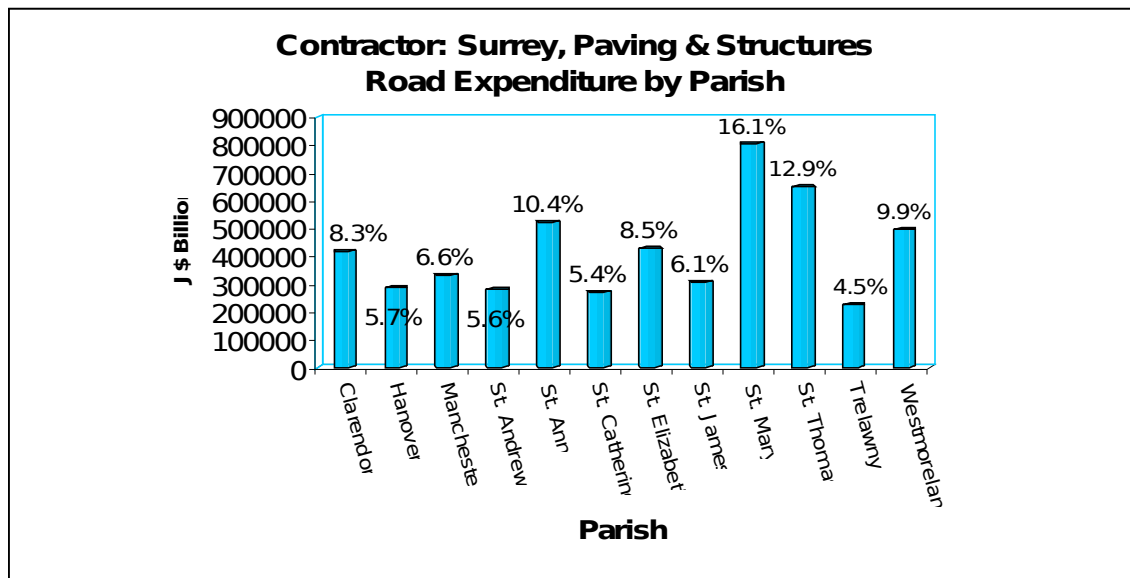
Table 3 (Appendix 1) provides more details on deferred financing road projects carried out under the Ministry of Water, Housing, Transport & Works.

There are other programmes that have been specifically set up to deal with road rehabilitation and maintenance under deferred financing.

Most notable are the National Road Services Improvement Program (NARIP), the “HUB” Deferred Financing Programme Phase 1 and 2.²²

Under NARIP, road rehabilitation and upgrading works have been done on primary, secondary, tertiary and urban main roads in thirteen parishes covering approximately 1000 km. The private contractors for NARIP were Surrey Paving & Aggregates Company Limited and Pavement & Structures Limited. Figure 1 and Figure 2 below depict road expenditure by parish for each contractor.

Figure 1



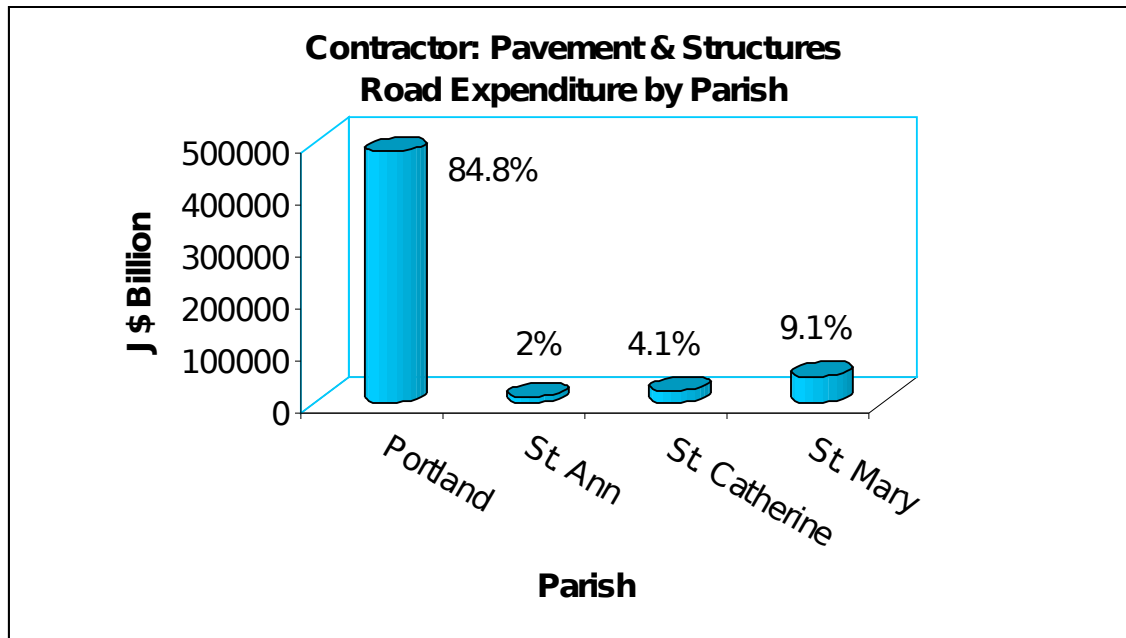
Source: NARIP Deferred Financing Phase 2 Final Report

²² The exact years for these programmes are uncertain but they have been undertaken since deferred financing was introduced in 1997/1998.

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Figure 1 shows those parishes that were contracted to Surrey, Paving & Structures for road rehabilitation. Of total expenditure, more funds were allocated to road repairs in St. Mary and St. Thomas using approximately 16.1% and 12.9% respectively. St. Ann was the only other parish that used over 10% of the total cost while cost from all other parishes was under 10% with Westmoreland – 9.9% and Trelawny – 4.5%.

Figure 2



Source: NARIP Deferred Financing Phase 2 Final Report

Figure 2 shows the four parishes that were contracted to Pavement & Structures for road rehabilitation, three of which were part of the foregoing contractor's work. Expenditure on road rehabilitation in Portland was significantly greater than those of all other parishes under both contractors.

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An observation of the total road lengths and the associated costs (under both contractors) revealed that in some parishes the cost of rehabilitation may be less dependent on the length of the roads repaired and more on the condition of the roads while in other parishes the costs may be more dependent on the length. The latter relationship could imply that the conditions of roads in those areas are not as poor as those of other parishes. A noteworthy case is that of Portland which had the highest expenditure and the shortest length repaired in comparison to Clarendon, Hanover, Manchester, St. Andrew, St. Catherine, St. Elizabeth, St. James and Trelawny. This indicates that roads in Portland were probably in a poorer condition while the cost of the roads projects in those parishes might have had a direct relationship to the length of the roads. Table 4 in Appendix 1 provides more details on the relationship between the cost and road length in each parish.

The “HUB” programs were implemented to complete projects that were started in 1997/1998. The first phase covered 82 road segments at a cost of approximately J\$40 million and the second phase covered 104 road sections (760 km) in all parishes at a cost of J\$2,700 million. West Indies Home Contractors Ltd; Surrey, Paving & Aggregates and Pavement & Structures undertook the road contracts.

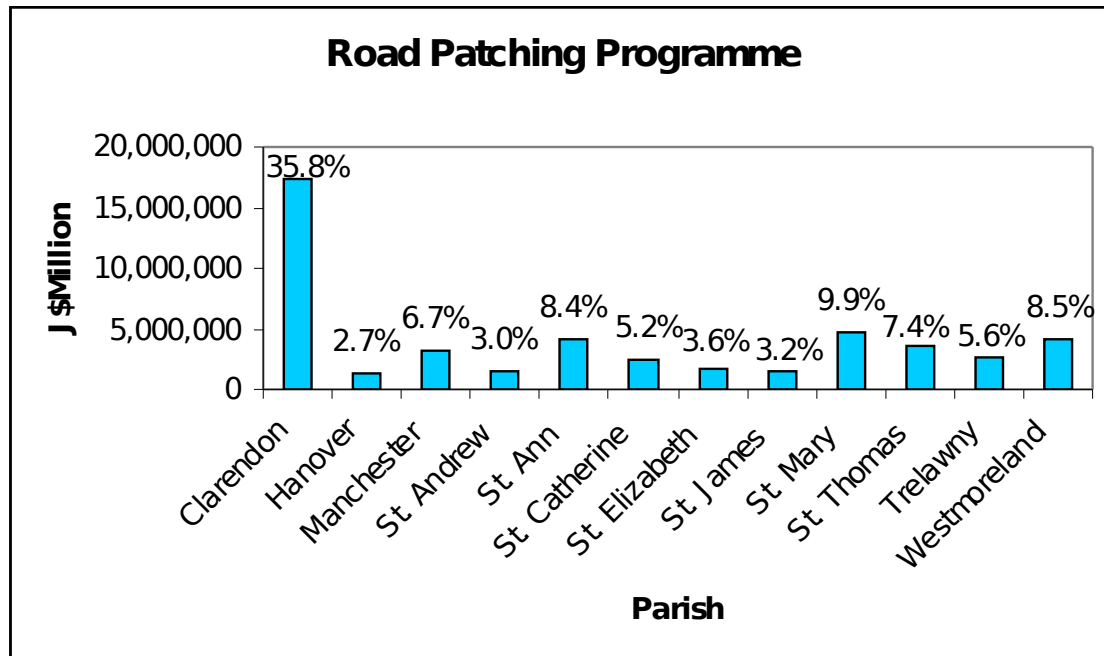
3.1.1 Non-Deferred Financing Road Rehabilitation Programmes

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There are rehabilitation programmes that are not carried out under deferred financing but take place through funding from bilateral and multilateral institutions such as Kuwait Fund for Arab & Economic Development (KFAED), Saudi Fund for Development (SFD) the Caribbean Development Bank and others. Details on some of the road programmes that these institutions have been involved in are provided in Table 5, Appendix 1.

The Development Bank of Jamaica financed a Road Patching Programme costing a total of J\$48,451,550. This programme took place between January and March 2001 in twelve parishes.

Figure 3



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Figure 3 reveals that 35.8% of the expenditure was spent on roads in Clarendon. This significantly exceeds the amount spent in the other parishes. The cost of patching in the other parishes was below 10% with St. Mary – 9.9% and Hanover - 2.7%. Overall, there is variation in the costs of patching between parishes. This could possibly indicate the severity of road conditions in each parish.

3.1.2 Highways and Bypasses

Highways and Bypasses relieve traffic congestion in major towns and assist in improving the quality of transportation services. Since independence, Jamaica's road network has expanded with the construction of highways and bypasses. Table 1 below provides a short list of some of these roads with the sources of funding for those that were identified.

Table 1

Name	Parish	Source of Funding
Spanish Town Bypass	St. Catherine	World Bank
St. Ann's Bay Bypass	St. Ann	World Bank
Old Harbour Bypass	St. Catherine	KFAED
		Government of Jamaica
		Organisation of Petroleum Exporting Countries
Melrose Hill Bypass	Manchester	Alcan Ministry of Transport & Works
North Coast Highway: Negril-Montego Bay	Westmoreland – St. James	Japan Bank for International Cooperation
Montego Bay - Ocho Rios	St. James – St. Ann	IADB CDB
Ocho Rios - Port Antonio	St. Ann - Portland	European Union

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As can be observed, the international agencies have been playing a role not only in rehabilitation works discussed in the previous section but also in construction of road infrastructure.

3.2 Case Study: Highway 2000 Road Project

Highway 2000, a millennium milestone for the government, is an on-going road project which when complete will link Kingston to two major tourist areas, Montego Bay and Ocho Rios through various parishes.²³ However, a new route²⁴ was proposed for the Bushy Park to Ocho Rios leg. This leg if approved will take a Linstead/Bogwalk route to Ocho Rios. The National Road Operating and Constructing

²³ St. Catherine, Manchester, St. Elizabeth, Westmoreland, Hanover and St. Ann. See Map 2 in Appendix 2.

²⁴ See Map 3 in Appendix 2.

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Company²⁵ reported that this new route could result in savings of about US\$200 million. This figure represents an approximate 56.5% decrease from the original cost of US\$460 million.²⁶ The Daily Gleaner of March 16, 2007 reports that entrepreneurs along the Bogwalk to Linstead corridor opposed the proposed adjustment to Segment 2a of the highway. They claim that it will ruin business opportunities.

The first phase of the project “is the largest of its kind in the English-speaking Caribbean” and when the project is complete, will be the largest infrastructure project in Jamaica’s history.²⁷ This tolled highway is expected to be a multi-lane (four to six lanes) motorway providing social and economic benefits to the country. Some of these benefits include: a reduction of time spent traveling which is expected to help increase productivity for business people and allow the non-business group to save leisure time; a reduction in vehicle operating costs due to lower use arising from a smoother road surface; to serve as a catalyst for economic activity,²⁸ making growth of economic activity possible between Kingston and the main tourist areas as well as other areas of the island with the potential for development. The highway is also expected to open the ‘centre’ and ‘south’ of the country to additional economic benefits including tourism, agriculture

²⁵ This company has the oversight responsibility for the project.

²⁶ Jamaica Observer (2007). *Highway 2000 change saving US\$200m*, March 14, retrieved from www.jamaicaobserver.com.

²⁷ Daily Gleaner (2002). *Highway 2000 Economic Impact*, Highway 2000 Supplement, April 24.

²⁸ Dessau-Soprin International (2000). *Highway 2000 Project Preliminary Design Phase: Economic & Cost Benefit Analysis*, p. 25-39.

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and information technology; and provide improved access to tourist areas.²⁹

3.2.1 The Highway³⁰

The construction of the highway got underway in July 2002. The highway is expected to be a 233km motorway with four sections: Kingston – Bushy Park (34km), Bushy Park – Mandeville (51km), Mandeville – Montego Bay (85km) and Old Harbour – Ocho Rios (63km). The construction of these four sections will be done in two phases with each phase having further divisions.

- Phase 1a: Kingston – Bushy Park
- Phase 1b: Bushy Park - Mandeville
- Phase 2a: Mandeville – Montego Bay
- Phase 2b: Old Harbour – Ocho Rios

Phase 1 runs from Kingston to Williamsfield in Mandeville. This phase includes the construction of a six-lane tolled bridge across the Portmore Causeway and improvement work on the Dyke Road. Phase 2 continues from Williamsfield to Montego Bay and from Bushy Park to Ocho Rios. This network will connect Kingston to Ocho Rios and Montego Bay.

²⁹ Jamaica Gleaner (2002), *ibid*.

³⁰ Dessau-Soprin International, *op. cit.*, p. 10.

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3.2.2 Cost

The cost-benefit analysis carried out by Dessau-Soprin International from Canada provided the following construction and maintenance costs.

Table 2

Section	Costs		
	Construction	Maintenance	
Phase 1	US\$	US\$	
Kingston - Bushy Park } Bushy Park - Mandeville }	\$235,000,000	\$2,750,000	\$237,750,000
Phase 2			
Mandeville - Montego Bay } Old-Harbour - Ocho Rios }	\$523,000,000	\$6,120,000	\$529,120,000
Total	\$758,000,000	\$8,870,000	\$766,870,000

Source: Dessau-Soprin

However, recent reports revealed that the overall estimated cost of the highway is now US\$850 million (represents ~10% increase over the estimated cost)³¹ with Phase 1 costing US\$390 million (represents ~39% increase over the estimated cost).³²

3.2.3 Financing Arrangement

The first phase of Highway 2000 is being undertaken through a public-private partnership arrangement between the Government of Jamaica (represented by the National Road Operating and Constructing Company Limited) and the French Company, Bouygues Travaux Publics (BTP). This partnership utilizes the Build-Operate-Transfer arrangement in which BTP will design, finance, build,

³¹ National Road Operating and Constructing Company

³² Toll Road News (2005). *Jamaica's H-2000 traffic "encouraging,"* January 9, retrieved from http://tollroadsnews.info/artman/publish/article_758.shtml

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operate and then transfer the highway to the government at the end of the concession period (35 years) at no cost.

The government and the developer (BTP) are jointly financing the construction of the highway. For Phase 1, BTP is responsible for securing 72.5% (US\$283 million) and the government 27.5% (\$US107 million). The government will acquire funds for the project through infrastructure bonds and other debts while the developer will secure funding through shareholder's equity (US\$41 million) and commercial loans (US\$242 million).³³

Since Phase 1 is presently the focus, details on the financing arrangement for Phase 2 are not yet available. To date, a significant portion of Phase 1a is complete.³⁴

3.2.4 Funds Secured

Already, the developer successfully settled a US\$130 million loan for Phase 1a of the project through RBTT, Trinidad. This loan which is provided by means of a bond will be repaid through toll collection.³⁵

NROCC on behalf of the government also provided funding for Phase 1a. It raised US\$75 million from an American Bank to fund "land acquisitions and relocations." The government, through NROCC has also loaned the developer, US\$72 million for Phase 1a of the project. A US\$260 million loan agreement was signed with Petro Caribe,

³³ National Road Operating and Constructing Company

³⁴ Kingston to Sandy Bay leg, the Portmore Causeway and the Dyke Road.

³⁵ Jamaica Gleaner (2004). *Financing Secured for Highway 2000*, May 4, retrieved from www.jamaica-gleaner.com.

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Venezuela in July 2006. This loan will be used to repay the debt acquired for the highway thus far.³⁶

The revenue already generated is being used for operation and maintenance costs which are estimated to be approximately 20% of the revenue. A considerable share of the 80% repays RBTT loans while what is left is used to repay subordinated loans.³⁷

The Kingston to Ocho Rios route is estimated to cost J\$13.2 billion and should be completed in 3 years. For this route, the developer has a deadline of June 2007 to secure funding.³⁸

4. Jamaica and Barbados - A Comparison

Two important features that differentiate Jamaica and Barbados are the physical sizes and topographies of both countries. Barbados is a flat island with a total surface area of 431sq. km and a total road network of 1600 km or 994 miles. On the other hand, Jamaica is distinguished by mountains and scattered hills. It is approximately 25^{1/2} times larger than Barbados with surface area totaling 10,991 sq. km and a total road network of 20,996 km (15,386 km (~73%) paved roadways and 5,610 km unpaved roadways (~27%).³⁹ Apparently, the physical sizes of the countries influence their road network.

³⁶ Jamaica Gleaner (2006). *Ocho Rios leg of Highway 2000 priced at US\$200m ... But to build now, gov't has to vary contract*, retrieved from www.jamaica-gleaner.com.

³⁷ Ibid.

³⁸ Ibid.

³⁹ The World Fact Book, updated March 15, 2007.

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The governments of both countries have made use of multilateral and bilateral funding to finance road projects. These road projects consist of construction and maintenance or rehabilitation. More specifically, the Government of Barbados (GOB) has primarily made use of financial resources from multilateral agencies such as the International Bank for Reconstruction and Development (World Bank), the Caribbean Development Bank and the Inter-American Development Bank for road projects. The Government of Jamaica (GOJ) has accessed funding not only from multilateral but also from bilateral agencies.

Some projects that these institutions have financed in Barbados are provided in Tables 6 and 7, Appendix 3 while those for Jamaica can be found in Table 5, Appendix 1. In the case of Barbados, Table 6 presents information on the project and cost for certain years and Table 7 provides a breakdown of the domestic and external monetary components of the more recent projects. It is uncertain how the domestic funds are sourced but it can be assumed that they either come from budgetary resources, sourced from local banks or through the use of private sector construction companies.

There has been significant private sector involvement in the road projects of both countries. In Barbados, the main construction companies have acquired new equipments and secured funds on their own to develop the road system. This action reduces the pressure on

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the governments' budgetary resources.⁴⁰ In Jamaica, private sector involvement takes place mainly by way of the deferred financing arrangements (DFAs) discussed in Section 3. As was previously mentioned, construction companies are contracted to carry out road projects on behalf of the government. These contractors, like those in Barbados, are usually responsible for sourcing funds to finance the projects.

Another aspect of private sector involvement in both countries has been the use of the Public-Private Partnership scheme. In Barbados, the upgrading of the Adams-Barrow-Cummings (ABC) Highway to a four lane highway including the construction of flyovers and underpasses is taking place under a Build-Own-Lease-Transfer (BOLT) contract. This is an on-going project that is estimated to cost Bds\$120 million. In Jamaica, Highway 2000 (Section 3.2) is currently taking place under a Build-Operate-Transfer (BOT) contract.

From the foregoing discussion, it appears that Jamaica and Barbados use the same sources to fund road projects. In the literature review (Section 2), the schemes used to finance road projects in other countries can be scrutinized for use in Jamaica and Barbados.

⁴⁰Barbados Labour Party (2006), *Towards a Better Road Network*, retrieved from www.labourparty.wordpress.com

5. Conclusion

The government has sought alternative schemes of financing road infrastructure projects due to limited budgetary resources and the financial needs of sectors such as health and education. Even though the scope of the project was limited to a discussion of road improvement programmes and highways and bypasses, the analysis revealed that official development assistance has played an important role in the development of the road network. That is, the government utilized financial resources from multilateral and bilateral institutions. A deferred financing facility has been put in place and public-private partnership schemes are now being used.

Although resources from these new schemes have assisted the government in providing road infrastructure for the country, implications for the stock of debt do arise. Funds borrowed for road projects are actually off-budget at the time when they are borrowed but eventually when the debt has to be serviced they appear as part of the budget.

With the deferred financing scheme, private contractors are paid when the projects are completed. This appears on the budget when the debt is being paid. In the 2002 budget debate, the Minister of Finance stated, "in four years, Jamaica has disbursed \$8 billion through deferred financing, \$5 billion of which has been included in the debt stock." There is no doubt that this scheme has caused the

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public to be concerned about the indebtedness for future citizens.⁴¹ Ministry Paper No. 20 reported that at “March 31, 2004, the debt stock has increased by about \$3,803mn as a result of deferred financing related obligations and a total amount of \$1,577.87mn had been paid out in principal and \$1,100.46mn in interest.”

The most recent case, Highway 2000 has raised concerns among Jamaicans. According to Chaplin (2006), Jamaicans will eventually be responsible for the servicing of the money borrowed by Trans Jamaican Highways Limited, the local company established by BTP. Additionally, BTP was given a 35 year license to charge tolls to the users of the highway. The high toll being charged has caused complaints particularly from Portmore residents. The government says that Bouygues need not only to recover its costs but also to make a return on its investment spent on Phase 1 which includes Portmore. According to Chaplin, if Trans Jamaican Highways Limited is not in a position to pay back the commercial loans received, they can end the concession and leave taxpayers to service all the debts acquired.⁴²

The rise in the stock of debt due to these schemes should raise concerns regarding whether the government will be able to sustain its debt. The Human Development Approach to debt sustainability

⁴¹ For more details, check <http://www.jamaica-gleaner.com/pages/budget/story3.html>

⁴² Chaplin, Ken (2006, August 22). “Dark side of Highway 2000 and its tolls,” *The Jamaica Observer*, retrieved March 6, 2007, from <http://www.jamaicaobserver.com>.

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defines debt as sustainable if “governments have the ability to continually service debt without an unrealistically large future correction to the balance of income and expenditure.” Thus, if the debt stock grows very fast, the government might not be in a position to service the debt if growth in the economy does not go along with the growth in debt.

6. Limitations and the Way Forward

The primary objective of this paper was to identify the schemes used to finance road projects while concurrently highlighting the new schemes which have been adopted. The initial focus was on the construction and rehabilitation/improvement of the main road network of the country. However, as mentioned in the introduction, this focus was narrowed due to time and data availability constraints. As a result, the period since post-independence could not be fully covered.

The new focus featured selected highways and bypasses and rehabilitation/improvement road projects for any given year that these roads were constructed, rehabilitated or improved. It was expected

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that more information would have been gathered on highways and bypasses in particular. If the information was available it would have shown the amount that each source of financing has provided for the bypasses and highways. This would have demonstrated the full extent to which these sources have been involved in aiding road development in Jamaica since 1962. As a result, this limited the complete picture regarding the role of multilateral and bilateral institutions in financing road infrastructure. On the other hand, the paper did a better coverage on the non-traditional schemes - deferred financing and public-private partnership schemes.

There were tremendous difficulties in gathering sufficient information for Barbados. The main obstacle was the unavailability of suitable information personnel at the time when the information was requested. However, a satisfactory comparison was made using the information that was sourced.

Further improvements can be made to this study if information becomes available on highways and bypasses. If more information becomes available, the list of road projects can be expanded to include secondary roads so as not to underestimate the extent to which bilateral and multilateral institutions and other sources have financed road infrastructure. Additional research can be undertaken on road rehabilitation/improvement projects. This is important in considering private contractors' involvement in road infrastructure.

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Finally, the implications that these sources of financing have on the stock of debt can be further discussed if the terms and conditions of these financing schemes are examined.

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Appendix 1

Table 3

Road Projects Under Deferred Financing		
Date	Projects	Loan Amount(J \$)
1-Apr-99	Pamphret to Morant Bay & Yallahs Fording	212,078,457.85
Jun-99	Widening of Hope Road	351,722,158.25
Apr-00	Negril to Savanna-la-mar & Cement Co. to Harbour View Roundabout	230,561,531.15
1-May-01	Trafalgar/Old Harbour/ Mt. Rosser	269,865,485.06
1-Sep-01	HUB Chin's Construction	100,853,074.14
1-Sep-01	HUB - SG Simpson	98,018,698.57
1-Nov-01	Washington Blvd/ Mandela Highway	306,636,861.60
1-Dec-01	North Coast Highway - M&M Jamaica	197,462,769.69
25-Jan-02	North Coast Highway - Surrey Paving & Aggregate	298,598,619.86
2-Feb-02	North Coast Highway - Ashtrom Group	115,916,581.68
17-May-02	NJ DP(North Coast Highway) - Investment Masters Limited - Lagan Holdings	137,433,290.66
2-Jun-02	NCB - Traffic Management & North Coast Highway- Pavement & Structures, Ashtrom Group, M&M Jamaica	1,161,382,775.12
2-Jun-02	NJ DP(North Coast Highway) - Investment Masters Limited - Tankweld, Mogul	137,755,369.31
	Total	3,618,285,672.94

Source: Ministry of Finance, April 13, 2004

Table 4

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Contractors					
Surrey, Paving & Structures			Pavement & Structures		
Parish	Total Length	Final Cost (J \$B)	Parish	Total Length	Final Cost (J \$B)
Clarendon	81.23	416243.3418	Portland	34.02	481147.2521
Hanover	81.55	285414.6618	St. Ann	-	11633.33325
Manchester	75.25	331063.6114	St. Catherine	4.2	23212.5516
St. Andrew	54.16	279328.1151	St. Mary	-	51526.07769
St. Ann	65.82	522892.1312			
St. Catherine	63.15	269674.1417	Total	38.22	567,519.21
St. Elizabeth	80.16	427816.5955			
St. James	55.9	307113.7006			
St. Mary	146.58	806165.8513			
St. Thomas	110.93	648036.3398			
Trelawny	82.9	224058.1637			
Westmoreland	80.7	495142.6425			
Total	978.33	5,012,949.30			

Source: NARIP Deferred Financing Phase 2 Final Report

Table 5

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Road Rehabilitation Programmes by Institution					
Caribbean Development Bank			Inter-American Development Bank		
Project	Year of Loan/Grant	Amt(US\$M)	Project	Year of Loan/Grant	Amt(US\$M)
Road Reconstruction	1971	1.1	Improvement Secondary Rural Road	1973	21
Road Improvement Project: First Loan	1983	2	Construction of Two Lane Road	1973	2.82
Road Improvement Project: Second Loan	1989	2.7	Rural Roads Development Programme	1985	14
Flood Rehabilitation Project	1993	4.7	Rural Roads Improvement Project II	1989	89.6*
Road Rehabilitation & Institutional Strengthening Programme	1998		Rural Roads Improvement Project III	1990	30
Emergency Works & Rehabilitation of Flood Damage Programme	2002	35.6	Institutional Strengthening Road Concession Programme	1999	0.85
			Parish Infrastructure Development Programme: incl. Parochial Road Rehabilitation	2000	
			National Road Services Improvement Programme	2001	24.5
Saudi Fund for Development			International Bank for Reconstruction and Development		
Road Improvement & Maintenance Programme III			Road Improvement & Maintenance Project	1973	9.3
Urban Roads Improvement Project	1984		Road Improvement & Maintenance Project	1983	15
			Road Infrastructure Planning & Maintenance Project	1990	32.9
Kuwait Fund for Arab & Economic Development			Canada		
Road Rehabilitation & Maintenance Project	2000	13	Construction of Roads	1984	0.119
Road Rehabilitation & Maintenance Programme	2001	12.9			
United States Agency for international Development			European Union		
Rural Roads Flood Rehabilitation	1986		Road Rehabilitation & Institutional Strengthening Programme	1999	252.2

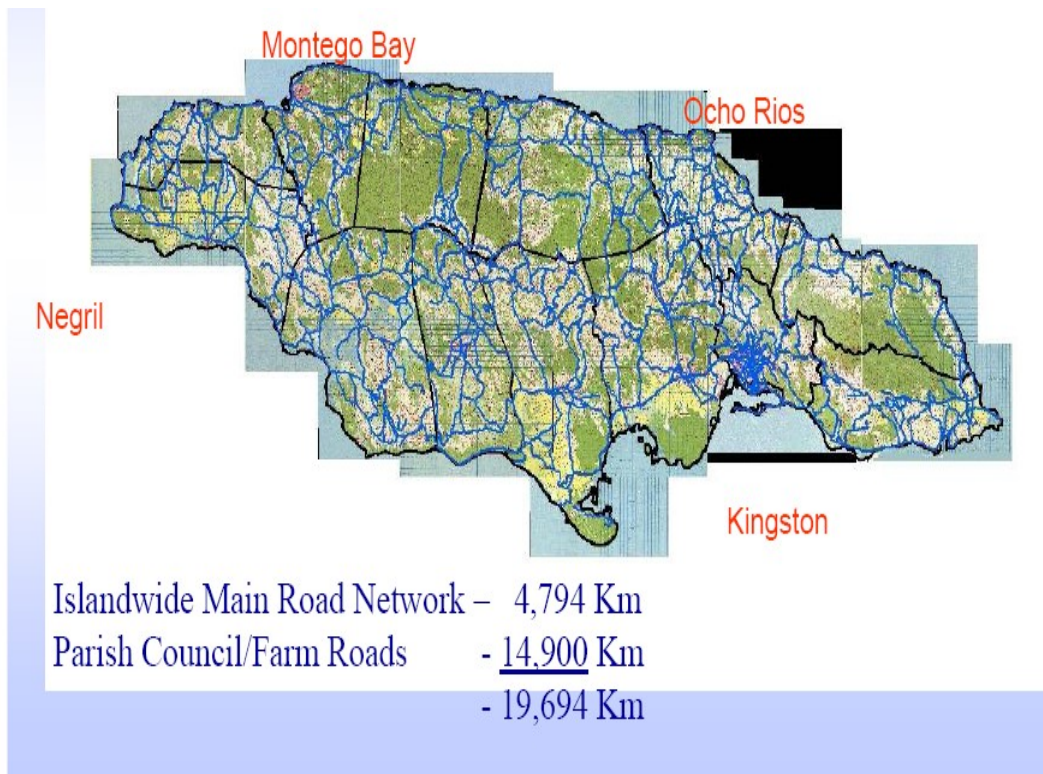
Sources: Economic & Social Survey of Jamaica, IADB Project Database, World Bank Project Database

*Part was used for Hospital Reconstruction

Appendix 2

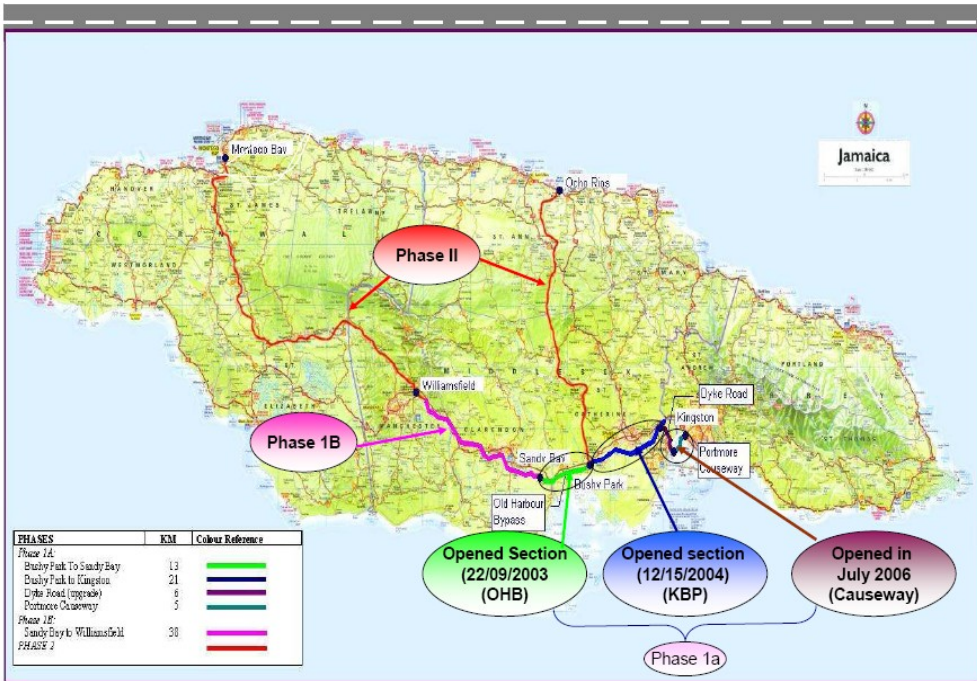
Figure 4

Jamaica's Road Network



Source: National Road Operating and Constructing Company

Figure 5 **Map Highway 2000 Route**



Source: National Road Operating & Construction Company

Figure 6 **Map of Highway 2000 Proposed New Route**



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This map shows the new route for the Bushy Park to Ocho Rios leg which intersects with the Linstead Bypass and Golden Grove Main Road.

Appendix 3

Table 6

International Bank for Reconstruction & Development		
Project	Year of Loan	US\$M
Road Maintenance and Rehabilitation Project	1984	11
Road Maintenance and Rehabilitation Project	1992	21.2
Inter-American Development Bank		
Spring Garden/Saint Barnabas Roads	1979	8.13
Access Roads for Industrial Zones	1981	0.78
West Coast Airport Access Road	1984	44.5
Bridgetown Bypass Roads Improvement Project	1990	0.028
Bridgetown Bypass	1991	0.15
Bridgetown's Road & Safety Improvement	1993	26.5

Source: World Bank Project Database

Table 7 - **BD\$**

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Year	Road Projects	Agency	Total	Domestic	Foreign
2001-2002	Bridgetown By-Pass Roads	IADB	19,178,835	5,753,651	13,425,185
	Residential Roads		1,459,679	1,459,679	-
	Road Rehabilitation II	IBRD	13,988,622	13,988,622	-
	Road Rehabilitation Special Project		4,839,161	4,839,161	-
2002-2003	Bridgetown By-Pass Roads	IADB	19,390,495	5,817,148	13,573,346
	Residential Roads		680,594	680,594	-
	Road Rehabilitation II/ Overlay Package B	IBRD	12,836,912	12,836,912	-
	Road Rehabilitation Special Project		5,356,428	5,356,428	-
2003-2004	Bridgetown By-Pass Roads	IABD	18,733,066	8,429,880	10,303,186
	Road Rehabilitation II/Overlay Package B	IBRD	9,634,662	9,367,219	267,444
	Road Rehabilitation Special Project		2,120,422	2,120,422	-

Source: Public Sector Investment Programme, Ministry of Finance, Barbados