

THE CARIBBEAN REGIONAL INFRASTRUCTURE STUDY

By G.S. Kochhar,* W.H.E. Sulte** & T. Boopsingh***

ABSTRACT

Infrastructure development is a well-established pre-condition to economic development. Consistent with this premise, the Caribbean Regional Infrastructure Study Project (CRISP) was commissioned by the Inter-American Development Bank (IDB) and the Caribbean Development Bank (CDB). The Project is being executed by the Engineering Institute, Faculty of Engineering, The University of the West Indies (UWI) at St. Augustine, in association with a group of consultants from The School of Urban Planning, McGill University, Montreal, Canada. The study covers the Commonwealth Caribbean States and Suriname with the submission of 10 individual country reports, together with a regional report presenting an overview of the issues and problems as well as proposed solutions.

The areas covered were power, water, some aspects of transport (seaports, airports, roads and bridges), and waste, and their infrastructural status and needs. The study includes a review of all available documented work from previous studies and reports, as well as current data and their subsequent analysis. The latter was supported by visits from the consultant teams to the different territories and interviews with persons who were directly involved in the infrastructure systems.

The Terms of Reference defined the objectives as "to provide a clear picture of infrastructure in the Caribbean, to identify basic and strategic requirements, and to provide recommendations to decision-makers on how best to achieve those requirements". This comprehensive assessment of the region's infrastructure, therefore, aimed at producing the following:-

a) *a brief profile of the current status of certain infrastructure and services;*

b) *a description of what specifically is needed in terms of current and immediate future demands; and*

c) *a description of the opportunities and challenges for regional and country development.*

The specific focus of the study is therefore, to make recommendations inter alia in respect of improving the infrastructure, including in particular, the provision of funding, as well as the role for the private sector in meeting the region's infrastructure needs. A priority listing with the identification of strategic projects is the projected end-point so as to catalyse development in the region.

1.0 INTRODUCTION

The Caribbean Regional Infrastructure Study, as it was initially conceived was intended to undertake a comprehensive assessment of the region's infrastructure which was to include some aspects of transport, power, telecommunications, water, sanitation and waste management services. The initial scope of the project identified the following countries for study:-

Caricom territories: Jamaica, The Bahamas, Antigua, Saint Lucia, Grenada, St. Vincent, Trinidad and Tobago, Guyana, Belize, Barbados, St. Kitts, Dominica and Montserrat, together with three non-Caricom Territories: Haiti, The Dominican Republic and Suriname.

It was decided early in the project formulation period to omit telecommunication from the list of infrastructure sectors and later on, Haiti and the Dominican Republic were removed from the list of countries in the study. The scope was therefore reduced to ten (10) individual country reports and a final

* Dean of the Faculty of Engineering and Senior Lecturer, Dept. of Mechanical Engineering, The University of the West Indies (UWI)

** Senior Lecturer, Dept. of Civil Engineering, UWI

*** Senior Lecturer, Dept. of Chemical Engineering, UWI

overview or regional report. Jamaica, Trinidad and Tobago, and Barbados were to represent the larger more industrialised archipelagic Caricom territories, Guyana and Belize, the continental Caricom territories, while Suriname was selected as the representative continental non-Caricom territory. Representing the smaller Caricom territories were the island states of Dominica, Saint Lucia, St. Kitts and The Bahamas.

The organic link between a country's development and the state of its infrastructure systems has been well-established in several studies conducted within the developed industrialised countries as well as in several developing countries. The assumption underlying this study is that the Caribbean region is hardly likely to prove the exception. If, therefore, infrastructure development and maintenance are necessary preconditions for economic development within the region, then the first task within the context of the project must be to identify and evaluate the existing stock of infrastructure systems. An analysis of the economic options, based on regional resources and capacity will suggest a range in the continuum of economic alternatives within the framework of a regional development strategy that will determine the most appropriate direction and the required extent of infrastructure investment. The Caribbean Regional Infrastructure Study was aimed at informing this process.

2.0 OBJECTIVES OF THE STUDY

The objective of the study was to generate a clear and accurate picture of the present status of the various infrastructure systems in each of the listed territories. It was then to identify the basic and the strategic infrastructure requirements needed for igniting the various national economies. The intention was that a full grasp of these factors will aid decision-makers from both the private and the public sector as to how best they may proceed in providing the region with the critically needed infrastructure in an effort to catalyse and sustain regional development.

The comprehensive assessment of the region's infrastructure was to be undertaken through the following three activities:-

a) A profile of the current status of certain of the infrastructure systems and the institutional framework through which they are provided.

- b) A description of the projected specific needs in terms of upgrading as well as new facilities.
- c) A description of the possible opportunities for sector development.

The four sectors identified for study were as follows:-

1) Transport

- Roads and bridges.
- Airports, airfields (runway, apron, terminal and cargo facilities).
- Seaports (harbours, cargo handling, terminal, cruise ship facilities, container handling and storage).

2) Electrical Power (generation, transmission and distribution).

3) Water (sources, storage, transmission and distribution), wastewater and sanitary waste systems (collection, treatment and disposal).

4) Waste Management Systems

- Solid waste (collection, recycling, treatment disposal).
- Hazardous and toxic waste (sources, collection, treatment, recycling and disposal).

3.0 METHODOLOGY

The general methodology used can be described under the following headings for each of the four infrastructure elements:-

1) Data Collection

Sources:

- (i) Library and institutional reports. Independent commissioned consultant reports of the CDB, IDB, regional government studies (and internal reports).
- (ii) Field or country visits. A separate questionnaire was to be sent to the appropriate agencies ahead of field

visits in the case of each infrastructure subsector. The visits focused on interviews to obtain first-hand information, to fill gaps or to verify and consult with source documents.

- (iii) Independent verification of questionnaire data and interviews, by field observation by team consultant(s) to establish the status of the infrastructure and the issues, challenges and opportunities.
- 2) Data analysis and forecasting of future demand.
- 3) Developing conclusions and preparing final recommendations after consultation with the Advisory Board (to be set up by the Client Bank).
- 4) Preparation of the regional report and final submission of all reports.

The task facing the consultants was seen as consisting of the following:-

- a) Literature collection and analysis, preparation and service of the questionnaire. The next stage involved identification of personnel within agencies to be contacted for general discussion and those to be invited to fill out the questionnaire within each of the ten (10) territories.
- b) Brief visits to collect data, hold interviews and verify information.
- c) The study and analysis of the data, the preparation of the country reports and finally, the preparation of a regional report.

4.0 THE PREPARATION OF THE REPORTS

Consistent with the premise that infrastructure development is a well-established pre-condition to economic development, the individual country reports were to be carried out against a background of a full and complete recognition of the economic condition

and status of each individual country. A separate team prepared the economic review for each country report, while each infrastructure sector was assessed by a team of engineering specialists in the particular area. The impact of each subsector on the present economic activities had to be integrated while basic economic data had to be collected, analysed and presented. It was necessary to establish the macro-economic trends and to make projections over the short and medium term. Broad public policy and investment patterns were identified and studied in some detail.

Each sector study dealt with data evaluation of the present status of the sector inventory, including description, condition and capacity, in the context of the level of present demand. The agenda for study included demand forecasting and scenario projections, together with present demand analysis and recommendations. Each sector included case studies which reflected either successful or unsuccessful experimentation with the provision of new or added infrastructure or with operating existing infrastructure systems.

Each sector was approached first with a description of the inventory of infrastructure stock followed by a presentation of the basic operating regime and the organisational structure and the legislative and the administrative framework within which the sector is served. The identification of financial elements involving funding allocations from the central government, revenue streams and a brief projection of other options for generation of new or increased revenue streams were all explored. The demand analysis for the sector was then developed. Each sector presentation concluded with short, medium and long-term recommendations for generating revenue streams and moving towards possible self-sufficiency in the shortest possible time. This is then summarised with recommendations in the form of an immediate action plan.

5.0 PURPOSE OF THE STUDY - WHO WILL BENEFIT

It is obvious that the IDB and the CDB would have seen the study as providing invaluable data on the present status of the infrastructure within the region and from the projections, the critical areas for potential investment over the short, medium and long-term

would be identified. The study would therefore be able, not only to identify potential investment opportunities in each sector and in each territory but would be able to produce an approximate priority listing within each sector, within each Caribbean state and within the region as a whole. This data and analysis would inevitably guide the financial institutions in developing and managing their investment programmes for the region.

The data and analysis was intended for the regional governments since they had initially requested support for the development of their infrastructure systems and the study was therefore intended to assist them in their planning at the level of the individual state. Two other potential beneficiaries must also be recognised.

Firstly, regional and international investors can be made aware of the areas which offer greatest return on investment.

Secondly, Caricom would derive immense benefit from the study since it would then be able to better understand and meet the region's needs by way of regional initiatives, as distinct from the individual initiatives at the level of each state.

The study aims not only at identifying areas of need and hence potential investment opportunities, but seeks to identify the quantum of investment which the region must look for over the short and long term. The development of these more global figures would also assist in generating a proposed schedule of investment and hence a projection as to when and to what extent the investments will promote the economic status of the individual states and the region as a whole. The study must, however, be viewed against the background of the prevailing international realities in respect of the availability of capital, the role of the state and more specifically the need for funding in providing infrastructure development. The current thrust recognises that privatisation/divestment of the state sector may be crucial to the provision of additional and/or higher quality infrastructure and utility services.

It has been traditionally accepted that the services associated with infrastructure development are considered to be in the nature of a public good because of externalities associated with their provision. Investments required for infrastructure projects have tended to be large and not readily justifiable to the public, keen on seeing immediate visible returns on investment and creating a significant change in

employment. It is for these reasons, among others, that the public sector has traditionally provided these services. The provision of infrastructure and utilities has thus been the responsibility of the public sector here in the Caribbean and generally in most countries, including both developing and developed countries. This is carried out through the central government by way of the various ministries, through the local government bodies and through quasi state institutions, such as statutory authorities or state-owned companies.

The debate as to whether the state should continue to discharge this function or whether it may be better carried out by the private sector has led to experimentations within both the developed and the developing countries. Some of these have seen the state retaining ownership and control but employing many of the operating approaches normally associated with the private sector such as charging user-fees which are aimed at making each sector self-financing and at times, a profit-making centre. In other cases, there is a new partnership between the private and the public sector in operating the joint venture in one of the several business structures outlined earlier on. In other cases, the state has completely handed over the operation (lease and concessions) and may have given up the ownership (complete privatisation) to the private sector. The study was expected to identify where some of these experiments can be introduced and which one may be most appropriate in each given structure.

The study was expected to indicate or highlight those opportunities for greater private sector involvement through the full range of mechanisms being advocated. It was expected to present opportunities for private sector investment, ownership and management. The full suite of options raised, included the following:-

1) Divestment

- 100% ownership to the private sector.
- Majority shares held by the state.
- Minority shares held by the state.
- Other joint ventures involving the state and the private sector.

2) Unbundling

- Sale to the private sector, fully or partially, of some parts of the unbundled companies.

- 3) Management Contracts
- 4) Leasing
- 5) Concessionaires
- 6) Development Contracts
 - Build, Own, Operate, Transfer (BOOT).
 - Build, Own, Operate (BOO).

The study also sought to identify opportunities to increase revenue streams and improve income generation, so as to make each sub-sector self-sufficient as an ultimate goal. This can be subdivided into the following:-

- (a) Improve efficiency within existing revenue streams.
- (b) Create new revenue streams.
- (c) Reduce expenditure and cost associated with existing operations.

It must also be recognised that the definition of the role of the state in the provision of infrastructure services in developing countries must also consider in parallel, the question of institutional (organisational) reform, de-bureaucratisation and efficiency (productivity) within existing or reformed public sector structures now responsible for infrastructure services.

To date, the country reports for Trinidad and Tobago, Jamaica, Barbados and Guyana have been completed. The first meeting between Client (IDB and CDB), Consultant (The Engineering Institute, UWI and the team from McGill's School of Urban Planning) and the Advisory Board established by the IDB/CDB, comprised of experienced regional representatives from both the public and private sectors from different territories within the region, was held on November 10th and 11th, 1995.

6.0 CONCLUSIONS

The Caribbean Regional Infrastructure Study is not a detailed sector study but a macro-level study of some of the key infrastructure sectors of the different Commonwealth Caribbean states. While several sector-studies have been carried out in the different states,

some of this work needs to be revisited, primarily because of the very dynamic nature of the region and particularly because of the continuing impact of natural disasters in the region. The present study highlights the regional infrastructure development, issues and challenges, and seeks the identification of unique national and common regional problems. In the final regional report, regional solutions will be presented to deal with some of the important regional problems.

The central issues and challenges have been identified as:-

- a) Generally, the present status of the region's infrastructure system and stock were generally found to be in a poor-to-fair condition. Because of the critical relationships between the infrastructure system and economic and social development, the region must re-focus on this issue.
- b) Critical to the development of the region's infrastructure systems is the issue of the regulatory and legislative environment.
- c) The productivity and efficiency in the operation of the institutional mechanisms servicing the infrastructure must urgently be addressed.
- d) Funding of infrastructure development in the region poses several challenges to the region. The new models of private sector participation, including *inter alia*, management contracts, concessions, leasing, joint venture partnerships and the public sale of shares have all to be considered if further infrastructure development is to be urgently addressed. The role of foreign direct investment and private capital in general, in infrastructure development needs to be also considered.
- e) The assessment of the environmental impact of infrastructure projects is another key issue.

- f) The impact of natural disasters of the infrastructure systems is important, especially of their impact on agriculture, tourism and the development of an industrial base.
- g) Insurance coverage of the utilities and the infrastructure systems is therefore another key issue.

The study must be seen as a focused review of the infrastructure systems within the region by a team of regional and foreign consultants. It is a view of the south from the south, augmented by an objectivity of consultants from outside the region - the one contributing an intimacy and familiarity, while the other brings objectivity and perspective.■