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The urbanisation of Caribbean coastlines: a case study of the Trinidad West Coast

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Abstract:

Urbanisation is a global phenomenon that is of concern in many parts of the world. As a physical development process, it is closely associated with many aspects of land management including the manner in which humans choose to derive benefit from the use of property. The potentially negative environmental impacts of urbanisation and the current appreciation of threats such as those posed by Climate Change, add to the growing need to understand the urbanisation process in a variety of scenarios including its occurrence at the coastlines of Small Island Developing States (SIDS).

The Caribbean Islands are SIDS that offer scenarios where the urbanisation of the coastline appears increasingly tied to national economic independence, economic prosperity and the lifestyle expectations of their populations. This paper specifically examines urbanisation associated with physical development of the west coast of one Caribbean island: Trinidad, over the past four decades years. The examination identifies the role of semi-formal development systems in an environment in which sustainability issues are weakly expressed and regulatory mechanisms are still in an emergent phase. While the urbanisation scenario on the Trinidad West Coast continues to include risks of coastal pollution, socio-economic displacement, habitat loss and increased vulnerability to natural disasters, the resulting urban coastal form is surprisingly not entirely undesirable.

This paper seeks to justify further research on Caribbean urban space: its extent, the challenges posed by it, its potential for creating spaces for built assets and by extension, economic and environmental investment associated with it.

Keywords:

Urban coastlines, SIDS, Trinidad and Tobago, urbanisation.

1 Introduction

Urbanisation has been identified as a phenomenon that functions as a critical factor in many planning and development issues at global and national levels. It is equally important in Small Island Developing States (SIDS). In addressing the opening session of the International Meeting to review the implementation of Action for the Sustainable Development of Small Island States in Mauritius in January 2005, Dr. Tibaijuka, the then UN Under-Secretary General of UN-HABITAT, outlined four (4) key challenges that faced SIDS: (i) the alarming rate of urbanisation, in particular its expression along coastlines (ii) the high vulnerability of national and local infrastructure to natural disasters (iii) the management of water and sanitation and (iv) the demands that increasing urbanisation makes on urban governance. These issues are all intimately connected with many aspects of land management including the manner in which humans derive benefit from the use of property. As challenges, they collectively conspire to provide SIDS with a range of potential problems and issues that must be addressed by economies that appear to have little choice but to grow if they are to meet the livelihood demands of their populations. The Caribbean Island States have, since their political independence over the past few decades, been actively pursuing physical development as part of larger economic strategies and as a result have had to contend in a real way, with many challenges including those posed by Climate Change and urbanization as articulated by the UN Under-Secretary General.

This paper presents a brief examination of the development dilemma associated with the arguable success of the urbanisation of the west coast of Trinidad (Republic of Trinidad and Tobago): that coastline is one that over the past four decades experienced high levels of physical development that are expressed as predominantly industrial and residential development. As a case study, the Trinidad West Coast urbanisation scenario offers special interest since it occurs within a regulatory structure that is (a) not fully developed and (b) is resource-constrained: both descriptors are common features of SIDS.

2 Land use on the Trinidad West Coast

2.1 The physical setting

The study area, the Trinidad West Coast is situated on the island of Trinidad (*10.5° North Latitude, 61.5° West Longitude*) at the southeastern extreme of the Caribbean chain of islands. The study area lies on the eastern limit is the Gulf of Paria, a relatively shallow, semi-enclosed sea with a coastal environment that is dominated by sheltered physical oceanographic conditions. North East Trade Winds and North Atlantic oceanographic conditions dominate the physical oceanographic arrangements on the island's eastern and northern coastlines. In general physical development on Trinidad is therefore concentrated on the West Coast, mainly because of the availability of relatively flat lands and low energy coastal oceanographic conditions. Historically, port and harbour activities in Trinidad have taken advantage of the supportive conditions on the West Coast. Present physical development activities on this coastline include land reclamation, marine dredging, offshore disposal, coastal protection works and the construction of a wide range of coastal (including offshore) structures.

2.2 Physical development

Trinidad has a population of 1.2 million persons on the 5100km² of island. The form and rate of physical development is driven largely by the Island State's changing economic conditions. In particular, accelerated exploitation of the State's energy (oil and gas) reserves after the 1960s drove physical development both as a means of providing supportive infrastructure and as a product of economic wealth (Central Bank of Trinidad and Tobago, 2007). Using GDP per capita figures with output per capita in construction for the period 1975 to 2000, Lewis (2004) associates the increase in levels of overall construction activity in Trinidad and Tobago with positive national economic growth. One visible indication of the increase in industrial and commercial port activity along the Trinidad West Coast is provided by changes in the numbers of ports. Between 1970 and 2006, the numbers of active ports along the West Coast almost doubled from eight (8) to fifteen (15). Significant areas of coastal lands that were previously in agricultural production were changed to industrial use while vessel traffic in the Gulf of Paria increased to high levels. Present day physical development activity extends over the entire 144 km length of the Trinidad West Coast.

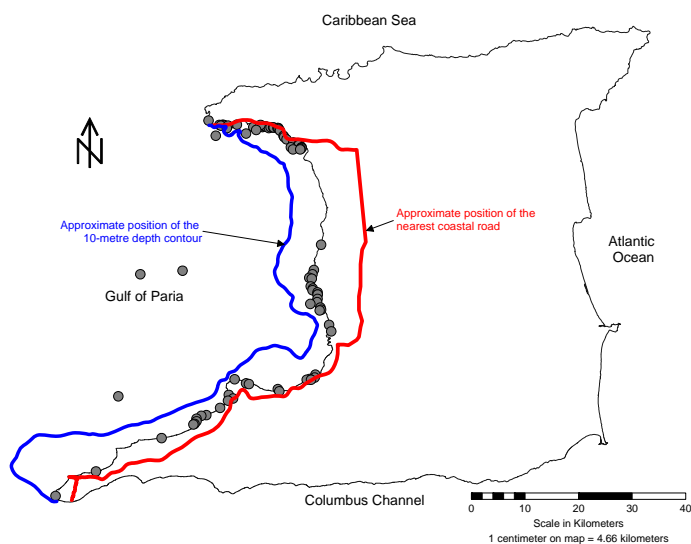
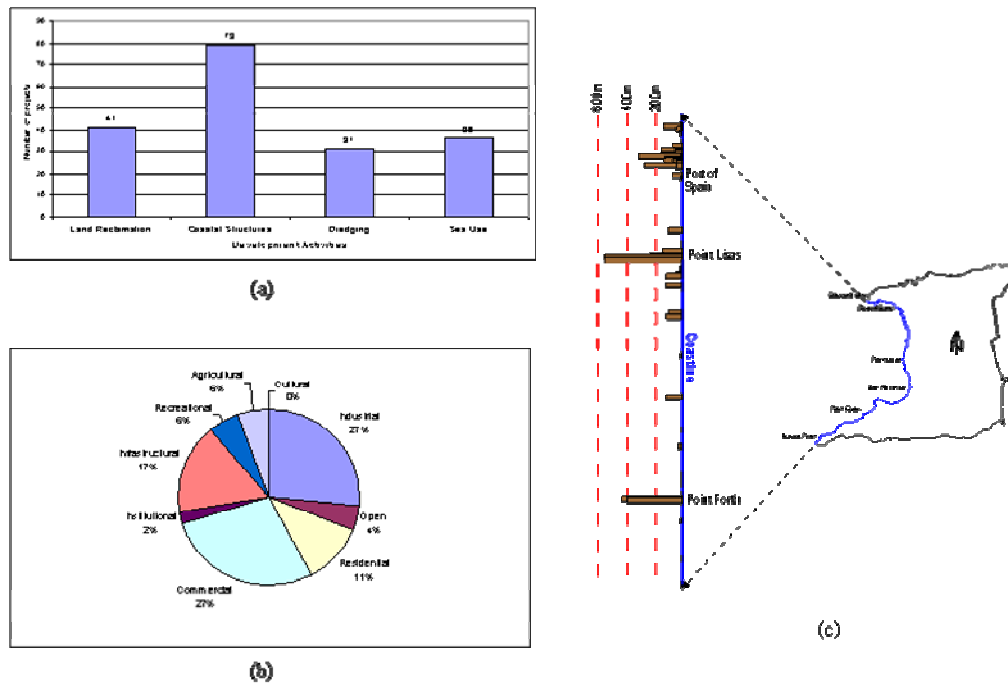


Figure 1: The spatial spread of development projects that were considered between 1970 and 2007 for the Trinidad West Coast

Physical development is widespread and varied. Neale (2009) captures many of the important features of land use of the Trinidad West Coast by classifying data on all projects that were considered for that coastline between 1970 and 2007. Some of these features are listed below.

- i. Coastal development projects are located in all parts of the Trinidad West Coast with higher concentrations in the north and central parts of the coastline (See Figure 1).
- ii. Collectively, commercial, industrial, and infrastructural development projects represent about 75% of the total number of projects (See Figure 2b).
- iii. The number of coastal development projects per decade increased by more than 500% since the 1970s.
- iv. There is a location bias in land use activity. In particular, industrial development tends to be located in the central parts of the coastline.

- v. Parts of the near shore marine areas of the Gulf of Paria are included in the development space. In 48% of the projects land reclamation is a feature; in 36% of the projects marine dredging is a feature and in 42% of the projects there is use of the coastal sea. These statistics suggest that developers are able to negotiate use marine space in support of coastal activity. This feature is further evident in the widespread use of land reclamation as a physical development technique (See Figure 2c)



Classification of development project activity of the Trinidad West coast (a) distribution of Development activity, (b) land use classification and (c) the extent of land reclamation schemes

Figure 2: Classification of development projects (1970 - 2007) on the Trinidad West Coast

2.3 Environmental issues

Even with high levels of physical development suggested above, the impact of physical activity on the Trinidad West Coast is not well-researched and/or documented, however limited research suggests the following five (5) key environmental features for the coastal area.

1. There are significant increases in marine pollution levels particularly the levels hydrocarbons and heavy metal concentrations from both land and marine-based sources. There are few beaches with acceptable levels of bathing water quality and a growing perception of worsening conditions.
2. There are significant changes in nearshore coastal circulation and sediment transport mechanisms that increase the incidence of erosion and/or accretion at coastal sites.

Significant parts of the coastline are now protected by engineered coastal defence structures that require costly maintenance.

3. There are significant increases in marine traffic through nearby coastal waters that have associated with them increased risk levels for collisions and spills.
4. There is an un-quantified level of socio-economic displacement of traditional marine users as well as traditional farmers. Industrialised areas and their respective buffer zones in both marine and terrestrial areas have displaced fishing, agriculture and even small coastal communities.
5. There is loss or change of vistas as a result of coastal development projects. These losses have arguably re-engineered the 'island-feel' away from open Caribbean coastlines towards more generic industrialised spaces.

3 The regulatory environment

Alarming, thirty-five (35%) of the completed projects in the on the Trinidad West Coast over the past 37 years were commenced without regulatory authorisation. This single statistic raises several questions regarding the regulatory environment in which coastal development occurs. Strictly speaking, the regulation of physical development projects in Trinidad and Tobago is managed through the issuance of permits, certificates and approvals by regulatory agencies at three (3) levels: (i) at the level of the utility companies, (ii) at the level of the municipality and (iii) at the level of the State. Several laws, regulations, guidelines and policies support a formal system of permits and clearances. The formal regulatory structure includes the need for leases and licenses, development planning approvals and Certificates of Environmental Clearance (CEC).

Despite its clarity, there is a strong perception that the approval system is fraught with unnecessary administrative delays. Developers often cite the long length of time needed to process CEC applications as a difficulty in the regulatory control system. The statutory processing time for CECs, when they include environmental impact assessments, can be a maximum of one hundred and forty-nine (149) working days. This includes one hundred and twenty-one (121) days for application processing time and twenty-eight (28) days for the applicant to conduct public consultations on the draft EIA Terms of Reference (ToR). The regulatory agency's response to complaints is that delays in the decision making on CEC applications are usually related to the need to clarify information submitted by the applicant at different stages of the review process. They argue that these timeframes are consistent with those in many other jurisdictions around the world.

The physical development scenario is not assisted by any formal system of coastal management within the study area (Mc Shine 1995, Mycoo 2002). There is, consequently, no local attempt to distinguish between a coastal zone and a coastal planning area. There are, however, several institutional arrangements that with varying efficiency provide for the management of coastal areas. These institutional arrangements include the State's espousal of international agreements and conventions, agency and inter-agency co-operation and the support of Non-Governmental Organisations (NGOs). These arrangements are however plagued by inherent institutional weaknesses, inflexibility, the lack of political will and a general inability to respond to quickly changing demands (Tompkins, et al 2002).

Neale (2009) attributes the high percentage of unauthorised development to a positive feedback development loop in which informal development activity is encouraged by the

precedent of adjacent development. That is, developers of all types are encouraged to build without regulatory approval if their neighbour has been able to successfully build without regulatory approval. Interestingly the statistic holds for both non-State and State projects. It can be argued therefore that the State is a willing party to such a development form since it also engages in unauthorised development.

The scenario begs questions of the existing regulatory framework and its ability and willingness to adequately manage physical development. Several areas of resource constraints are evident. These include the lack of clear development strategies, personnel shortages and data collection and analysis systems. Further, the physical planning legal framework may be in need to revision and the regulatory environmental management system is relatively new (established in 2001) and continues to obey a learning curve.

The overall development scenario is one of urbanisation of the Trinidad West Coast that includes semi-formal systems and is accompanied by impacts of the type that are well-recognised in the wider literature on urbanisation in coastal areas in many parts of the world.

4 The development success

The Trinidad West Coast scenario is a critical part of the economic development strategy of the State. It represents investment by the State in its abundant hydrocarbon-based energy reserves, in city space and in national infrastructure. These investments include the construction of industrial ports and down-steam energy industries, the construction and of transportation networks and physical improvements to waterfront space its two coastally located cities. A significant portion of the State's investments therefore sits on or across the coastline.

Between 1997 and 2007 real annual GDP growth hovered at about 10% with unemployment remaining consistently below 7% (Central Bank of Trinidad and Tobago, 2008). Much of this economic success is attributed to the development of the energy-based sector including the earnings of several energy-based activities located along the Trinidad West Coast. Even in the face of global economic slowdowns in the last quarter or 2008 and local concerns over rising inflation, the Trinidad and Tobago economy has continued to be robust and resilient.

Over the past 15 years, real estate in Trinidad and Tobago enjoyed persistently rising prices and only since the middle of 2008 has there been any noticeable slowing or price decline. Coastal land, particularly properties along the northwestern parts of the West Coast where there is a high demand for coastal residences, enjoy a premium position. In both Port of Spain and San Fernando: the only two cities of the State, the physical development of waterfront space is either in construction or planned for a wide range of mixed uses.



Figure 3: Photograph of upper income residential development at the north western parts of the Trinidad West coast

As in many developing countries, informal residential development is evident in some parts of the coastline adjacent to the city spaces. These residents are invariably part of the urban poor who live in squatter type settlements on valuable State lands. In these communities, the challenges of urban crime and other social issues frustrate development efforts and fuel varied perceptions by stakeholders about the distribution of national wealth.

In general, the Trinidad West Coast represents a largely economic success based on State or State-encouraged investment. Its continued urbanization and the development of the coastal urban form over the past decades are in many ways deliberate and directly associated with the State's economic strategy.

5 The development dilemma

It is the economic success and challenges of urbanisation that form the basis for an unresolved development dilemma for many who are stakeholders at the Trinidad West Coast coastline: *'What is the best use of the Trinidad West Coast: continued physical development, conservation or some formal (or informal) concoction of both?'* Such a primary question is one that some have argued, ought to drive urban governance issues in the Twin Island State. It has instead remained outside of mainstream discussion in the face of continued economic prosperity. At the project level however, the current environmental permitting process is hinged on participation that is expected to address stakeholder concerns. In general the present lack of current national and local area frameworks (plans, policies and standards) make the usefulness of such stakeholder contributions limited and biased towards only issues of employment rather than a broader range of social, environmental and economic concerns.

6 Strategic development planning

After many decades of largely unmanaged physical development, the State has started to recognise the need for published strategies, development plans and policies at both the national and local levels that ought to emerge from a broad consultation process. There are currently efforts at devising such local area plans, not just for the Trinidad West Coast but also for all parts of the twin-island State. Further there are efforts at revising the currently out-dated national physical development plan. If such plans are to be meaningful and useful,

they will need to recognise several constraints and opportunities that have not traditionally been part of the State's development planning scenario. Five (5) critical aspects are:

- i. The devolution of power to local government agencies
- ii. The development of land use strategies that consider the potential impact of climate change to coastal and national infrastructure
- iii. The derivation of regularisation schemes and strategies that attend to current unauthorised physical development projects
- iv. The development of strategies that consider potential long and short term economic changes at global level that may directly impact national and local development schemes.
- v. The creation of as clear as possible, a vision of the desired form and standards for national development.

While such issues are not new to the planning process, they are not easily managed in planning environments such as Trinidad and Tobago where reliable data and research is not available, resources are limited and political expediency appears to be given preference over good sense.

7 Conclusions

In summary the Trinidad West Coast presents a development scenario that through informal design includes urbanisation and its impacts. These are closely related to both the input and output sides of the State's economic strategy. Issues of urbanisation, environmental change/loss and urban governance are easily in evidence. The scenario enjoys arguable economic success at the expense of several social, socio-economic and environmental factors. Not unexpectedly, the weak or emerging regulatory structure and supportive economic conditions has over the past three or four decades, encouraged informal or unauthorised development that has itself added to overall development success. At the time of writing, socio-economic and environmental loss is beginning to weigh on urban governance: a burden that the wider literature suggests can best be lightened through improved land management at both local and national level.

Data on physical development activity on The Trinidad West Coast if well documented and researched, promises to provide useful lessons in urbanisation in coastal scenarios in SIDS since the scenario continues to respond and evolve to global issues. This aspect of the physical development scenario offers potential to property researchers as a contribution to urban coastal development in SIDS.

9 Acknowledgements

The data used in this paper to describe the Trinidad West Coast was collected by the author as part of research work in support of a PhD thesis on coastal development in Trinidad. This work was completed under the supervision of Dr. Asad Mohammed of the Urban Planning and Design Programme at the St. Augustine Campus of the University of the West Indies. I acknowledge Dr Mohammed's role in this respect.

This paper is part of an initial effort by RICS Caribbean to begin participating in regional development through research contributions by its members on land and property. While this

paper is specific to one Caribbean island, the broader research effort is significantly wider and buried within the larger aim of encouraging intra-regional research and co-operation as well as providing a vehicle for deepening RICS Caribbean as a regional institution. The author currently leads that regional initiative while practicing as a Chartered land professional in Trinidad and Tobago.

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