



The University of the West Indies

Organization of
American States

**PROFESSIONAL DEVELOPMENT PROGRAMME:
COASTAL INFRASTRUCTURE DESIGN, CONSTRUCTION AND
MAINTENANCE**

**A COURSE IN
COASTAL ZONE/ISLAND SYSTEMS MANAGEMENT**

**CHAPTER 10
ENVIRONMENTAL IMPACT ASSESSMENT**

By JUDITH GOBIN, PhD

Part-time Lecturer, Faculty of Engineering
University of the West Indies
St. Augustine Campus
Trinidad, West Indies

Organized by Department of Civil Engineering, The University of the West Indies, in conjunction with Old Dominion University, Norfolk, VA, USA and Coastal Engineering Research Centre, US Army, Corps of Engineers, Vicksburg, MS, USA.

Antigua, West Indies, June 18-22, 2001

1.0 ENVIRONMENTAL IMPACT ASSESSMENT

1.1 Introduction and Definitions

The Rio Declaration on Environment and Development has guided the framework for Environmental Impact Assessments (EIAs) in developing countries by proclaiming its use as a national instrument. An EIA is a formal study process used to predict the environmental consequences of a proposed major development project. It is a planning tool used to analyse and evaluate the environmental impacts of proposed projects and activities. EIAs aim to ensure that potential problems of projects are foreseen and addressed at an early stage in the planning and design.

In order to achieve its aims, the assessment findings should be communicated to all the various groups who will make decisions about the proposed project: *the project developers and their investors as well as regulators, planners and politicians*. The Environmental Impact Statement (or report of the EIA) is prepared at the end of the EIA and submitted to the authorising agency as part of the “permit application for the project”.

On reading the report, project planners and engineers can assist in shaping the project so that its benefits can be achieved and sustained without causing inadvertent problems.

There are a host of definitions which one may encounter in EIA literature (handout). This is reproduced from the UNEP EIA Training Resource Manual.

1.2 The need for protection of Coastal Waters and Marine Resources

The marine coastal areas of our islands are important in that they support ecosystems that are of direct importance to the island's economic resources. The resource value of reefs e.g. Buccoo Reef (Tobago), Palaster Reef National Park (Antigua and Barbuda) and marine areas eg. Salt Fish Tail National Park (Antigua and Barbuda) and Maria

Islands Nature Reserve have been recognised by the relevant governments and are protected areas. The maintenance of such resources is essential to the tourist industry.

Coastal and marine areas also play a large role in the economics of the islands, since they support coastal stocks of fish and crustaceans that in some islands have sustained artisanal, semi-industrial and industrial exploitation. For example, industrial and semi-industrial shrimp trawlers operate off the north, south and west coasts of Trinidad and an industrial longlining fleet (mainly foreign-owned) exploits the tuna and swordfish resources of the east coast. Coastal and marine pollution from industrial wastes (e.g. in Trinidad), sewage (e.g. St.Kitts/Nevis, Barbados, Trinidad) threaten these resources.

Marine turtles, which form part of many of our island's natural resources, are highly threatened species. For example, *Eretmochelys imbricata* (the hawksbill turtle) is listed as "endangered species" in Antigua and Barbuda, St. Lucia, St. Vincent and Trinidad and Tobago (Wilson 1987). The leatherback turtle (*Dermochelys coriacea*) is completely protected in Trinidad under the Conservation of Wildlife Act (amended 1963) and by the Protection of Turtles and Turtle eggs Regulation (1975).

Coastal wetlands and/or swamps are an integral part of the natural environment on the islands where they are found e.g. Trinidad and Tobago, Grenada, Barbados. From these areas, a wide range of exploitable resources is derived e.g. timber, charcoal, tannins, honey, medicinal plants and fish. Wetlands and swamps also act as nurseries providing habitat for juveniles and maintaining biotic and nutrient linkages with coral reefs e.g. between the Bon Accord Lagoon and Buccoo Reef (Tobago). They are considered as "reservoirs of tropical biodiversity which provide a mix of scenery, interesting plant and animal life and provides both pleasurable and intellectual stimulation to visitors" in the National Policy on Wetland Conservation Report for Trinidad and Tobago (1998).

Marine and coastal habitats and their ecosystems suffer considerable perturbation due to coastal development, land based pollution and development activities (construction and

quarrying) and agricultural activities. The major threats to management of these systems are :

- Land based and maritime pollution- for example, agricultural and industrial pollution have contributed to changes in species compositions and abundance in coastal areas
- Development and coastal structures-these result in changes in the coastlines such as reclamation which lead to fragmentation of major ecosystems e.g. where there is conversion of natural areas into agricultural and housing areas. Dredging of harbour and waterfront development (egg at Port of Spain, Trinidad) and housing often leads to degradation of the coastal environment.
- Degradation of the environment due to poverty and squatting-by the removal of vegetation etc.

The need for EIAs has been well established as a good tool to be employed in order to protect and conserve our islands 'natural resources from the various aspects of degradation as highlighted above.

An EIA is an important activity that is devoted to achieving the objectives of sustainable development or "development which satisfies the necessities of the present without limiting the capacity to satisfy the necessities of the future generations"(Rio Declaration).

1.3 The EIA process

There are numerous EIA guidelines that are provided by borrowing countries/organisations etc. These have a broad consistency and similarity in the principles and the guidelines are intended to serve the EIA activity.

The procedures of the EIA process presented here are adapted from the UNEP report (Environmental Impact Assessment , Basic procedures for developing countries, 1988).

Screening and preliminary assessment

This first stage will separate types of projects that need further clearance, from those which are not likely to cause serious environmental problems. This separation can be achieved by considering criteria such as size or location of project, comparing proposals (projects requiring EIAs and those which do not) and predicting general impacts. If the project is not automatically cleared, the developer may be asked to undertake a preliminary assessment. Some research and expert advice will be required at this stage to *identify key impacts, predict and describe extent of impacts, and evaluate their importance to decision-makers*. This may be used as an early warning signal of questions such as suitability of location for project and serious environmental issues which may arise.

If a full EIA is required by the competent Authority in the country, they will also formulate the technical guidelines or Terms of Reference (TORs).

In Trinidad and Tobago, the Town and Country Planning Division (TCPD) issues an almost standard list of TORs, tailored to the individual needs of the project. It is felt that these are sometimes unnecessarily detailed. Based on the TORs for the project, the Project Developer will commission an EIA team co-ordinator to lead an EIA team to carry out the EIA. The following is an example of the stages as outlined in the UNEP report (1988).

Scoping and screening

This scoping exercise is to ensure that all important issues are considered e.g. discussions with project developers, decision makers, regulatory authority, scientific institutions, local community groups etc. The EIA team will select the main impacts for the focus of the EIA. The project is at this stage, screened for possible environmental impacts; since at this early phase it is least costly to expand, reject or substantially modify the proposal. Also, the impacts which are considered to be “not environmentally significant” may be dropped at this stage.

The screening process may assign the project to a category based on the nature, magnitude and sensitivity of the environmental issues, as follows:

High Impact- A full environmental review is required

Moderate Impact- Some or partial environmental review required

Low Impact – no environmental review required

The EIA study can be reviewed in the context of providing answers to the following 5 questions (UNEP 1988):

1. What will happen as a result of the project? (Identification of impacts)
2. What will be the extent of the changes? (Predictions)
3. Do the changes matter? (Evaluation)
4. What can be done about them? (Mitigation)
5. How can decision-makers be informed of what needs to be done? (Documentation/Communication)

Identification of Impacts or What will happen as a result of the project?

The scoping exercise would have already focused on some of the more important answers to this question. In this phase, impacts are identified, measured and evaluated. There are a variety of methods which can be used to achieve this, depending on the type of project e.g. interactive matrices, checklists etc. Such measurements and evaluations of impacts is often done where each is given a “score”. This is calculated taking into account magnitude, significance and benefits of the impact (both positive and negative).

Socio-economic impacts associated with the environmental impacts are included here. Failure to address socio-economic issues can result in costly and delaying impacts or non-compliance with government policy and law: thus making the project vulnerable to interventions and possible impediments.

Predictions or What will be the extent of the changes?

Impact predictions will involve some measure of probability. In this respect, the study team should also indicate the degree of uncertainty, as far as possible. Scientific predictions should be based on each impact and its specific cause and effects. The predictions should draw on the available information- physical, biological, socio-economic and socio-cultural. In quantifying impacts there are a range of methods which can be employed e.g. mathematical models and formulae, map overlays, digital computer maps etc. The degree of sophistication of the methods employed should be kept relative to the scope of the EIA. Socio-cultural impacts should be integrated wherever possible because of the importance of “how the community feels or will be affected”.

Evaluation or Do the changes matter?

Evaluation of the predictions are necessary in order to ascertain how significant they are. The judgment of significance may be based on one or more of the following: laws, regulations or accepted standards; consultation with relevant decision-makers, consistency with government policy and acceptance to the local communities and the public.

Mitigation or What can be done about them?

A range of measures can be recommended for prevention or reduction of adverse impacts of a project. These include- design alterations, site changes, routes etc; pollution controls e.g. waste treatment, monitoring; compensation for damaged resources, concessions on other issues etc.

Mitigation costs should be quantified in order to inform the decision-making process. These may be presented using techniques such as cost/benefit analyses or simple matrices showing mitigation options and the cost attached to each “adverse environmental parameter”.

Monitoring and Management

These are based on the mitigation recommendations and are sometimes included as part of the EIA or separately as Environmental Management Plans (EMPs). EMPs are very important in contributing to the success or failure of the sustainability of a project. They are *designed to mitigate negative impacts of developments and includes monitoring-which measures compliance to established requirements*. The EMP aims to achieve the following main objectives:

- i. To specify the procedures and methods of the plan
- ii. To specify the institutional arrangements required to implement the environmental impact mitigation / enhancement measures, and
- iii. The EMP should also include a monitoring program, for selected environmental parameters, to assess the success of the mitigating/enhancement measures, as well as their timely execution
- iv To provide an implementation schedule for the plan

There are two types of monitoring which may be required:

compliance monitoring : - to ensure that conditions stipulated in the development approval are met, and

impact monitoring:- to determine the impacts of a development on the environment and to determine whether EIA predictions were correct

Documentation/Communication or How can decision-makers be informed of what needs to be done?

This is the last and very important step in the process. In documentation, the original needs of the EIA must be kept in the fore. That is, the EIA report must provide the key decision-makers (already identified as part of the process) with the “perceived questions” as well as “the straightforward answers”. Successful EIA reports are those which establish this (question and answer) at the start and show how the research was focused in this direction.

Stakeholder involvement is included under this communication. This involvement is a very important component of successful EIA procedure; many projects have suffered because of the absence of this. Stakeholders may include local people and communities, project beneficiaries, national and local government agencies responsible for preservation of natural resources and non-governmental organizations (NGOs) active in the local area.

The three main types of involvement in EIAs by stakeholders are:

information dissemination- information is provided by proponents of a development; the information flow is one-way,

consultations- involves information exchange between proponents and stakeholders in a two-way process, and

participation- this implies active involvement of both parties in the discussions, decisions and related implementation. EIAs are more effective if stakeholder involvement occurs as early as at the stage of identifying the project concept.

The **EIA report** will typically contain the following:

An Executive summary

A description of the proposed project

A description of the major environmental and natural resource issues in the area proposed

The project's impacts on these, how they were identified and how predictions were made

Discussion of mitigation options

Limitations of the EIA and information

A summary of the EIA for the general public

The Environmental Impact Assessment (EIA) is a tool for predicting the likely environmental impacts of a project. The EIA should identify ways to reduce unacceptable impacts and to shape the project so that it suits the local environment. The EIA report should clearly present these predictions and options to decision-makers.

1.4 Resources needed for an EIA

EIAs are now a “global tool” in the bid to guide sustainable economic growth. In order to achieve it’s objectives, certain minimum requirements are necessary in order to shape major projects. These include:- qualified staff, technical guidelines, baseline environmental information, analytical capabilities, administrative resources and institutional arrangements. Two other crucial elements are money and time. Although EIAs generally account for less than 1% of the total project cost, many developers and officials consider them overpriced. This is a relatively small price to pay in order to get good quality information which could prevent costly problems and prevent serious environmental damage. *The EIA investment is a good investment for the future, not only for the developer but for the country’s economy as well.*

2.0 SOME TYPES OF EIAs

A *Desktop EIA* attempts to organise and simplify available information on potential effects of a project. It usually involves expert opinion and value judgments rather than factual information. Some are based on “numerical approaches” by “weighing” alternatives against others. They generally show interactions between the project and the environment and identifies issues which should be studied in more detail before decisions are made. There are no set time or space boundaries and no monitoring is projected. They generally tend to focus on “direct environmental effects” and ignore others.

A *Baseline EIA* characterises the pre-impacted environment- based on a series of measurements pre-project. Considered with all other available information re-project area or other similar projects. The changes as a result of the project are established under the following:

- i. changes which will affect the health and safety of humans,
- ii. measurement of potential changes which may directly affect important commercial species or indirectly affect their habitats
- iii. rare or endangered species – potential effects on them must be examined.

In baseline EIAs, mitigation measures are recommended together with monitoring suggestions (for period following startup of the project).

The following is an example of how research should shape the EIA to inform decision-makers:-

E.g. The EIA matrix suggests that a population of sea turtles on the east coast of Trinidad could be affected by oil exploration activities and oil spillage.

The following activities should therefore be considered/undertaken:

- i. The boundaries of study should be extended to include the specific beaches on which the turtles lay their eggs.
- ii. Oil slick trajectories (based on wind and ocean currents) could be used to determine probability of oil reaching the beaches of concern: - high, moderate, low probability.
- iii. Published scientific literature must be reviewed to determine what is known about the egg laying habitats of the sea turtles; e.g. time of year, length of stay on beach, population of turtles, concentration of activities etc.
- iv. Some additional sampling should be carried out if required to answer 3.

Mitigation recommendations may suggest a reduction or shut down in production facilities during the most sensitive period of the turtle's activities.

3.0 ENVIRONMENTAL IMPACT ASSESSMENTS IN CARIBBEAN COUNTRIES

The criteria, procedures and background legislation for carrying out EIAs within the Caribbean islands varies. The Table (handout- is reproduced from a paper by Toppin-Allahar (2000) shows a Comparative Analysis of existing EIA Legislation including some aspects of the process in the Commonwealth Caribbean. The EIA process as required by law for Jamaica, Belize, Guyana and Trinidad and Tobago are clearly presented.

The similarities, differences and “status of EIA legislation in these countries are identified”. Based on the various scenarios in these and the other countries, Toppin-Allahar (2000) reports that “it does not appear that the countries in the region are learning from each other’s experience or that a model Commonwealth Caribbean EIA process is emerging”.

3.1 Case Studies

Two coastal case studies are presented here in order to examine the EIA process and to attempt to evaluate the success of the projects.

1. Case Study in a Small Island Developing State (SIDS)

The South-East Peninsula Development Project on St. Kitts-Nevis

(A case study in sustainable Development).

This review is summarized from the comprehensive report by David A. Simmons and Janice A. Cumberbatch, which was published by the Caribbean Conservation Association in November 1993.

****This case study is solely intended for use as an example of the above discussed principles and is based purely on information gleaned from this report and subsequently, only up to the time of this report.***

Introduction

The south-east peninsula which is noted for its scenic landscape, beautiful beaches and wildlife was chosen as the area for tourism development by the Government of St. Kitts-Nevis in 1982. Conditions there were good for developing the yachting segment of tourism by construction of a marina, for scuba diving etc. The scenic beauty of the area was an added attraction for cruise ships and passengers. Land use capability of the area

was assessed using different development scenarios. Conclusions were made that the Peninsula was best suited for tourism development since “ the high cost of land, rugged terrain, poor soil and the scarcity of water in the area precluded land-intensive development options such as farming or forestry” (IRF 1986 (b)). Benefits expected were additional investor interest and improved foreign exchange earnings.

The Environmental Impact Assessment (EIA)

The EIA report was prepared (by Island Resources Foundation, IRF) and included the following areas:

Environmental Issues (baseline information):

There were critical habitats in need of protection in addition to endangered wildlife species (green hawksbill and leatherback turtles nest on the beaches). Brown pelicans, terns and the frigate bird also nest here. There were coral reefs, salt ponds, sea grass beds, mangroves and wetlands in the area. These valuable areas are crucial to marine species (spawning grounds) supporting the lucrative fishery for St. Kitts and Nevis.

Identification of impacts/ Predictions and Evaluation

Negative impacts of road (and hotel) construction and hotel operations were categorized under both biological and physical effects:

Biological - destruction of vegetation and beaches, increased noise, loss of wildlife, reef resources loss, over-fishing, increased litter etc.

and

Physical - erosion/sedimentation problems, domestic discharge pollution, agro-chemical pollution, increased carrying load, increased pressure on services and utilities. It is expected that these would also trigger a host of negative socio-economic and cultural factors.

Socio-environmental impacts, for example would be negative on fishing, if coastal and marine water quality was affected. There will be problems associated with the stock of skilled labour such as - labour pool reduction, services would be reduced in efficiency, in-migration may become necessary. Overall, the deployment of capital, labour and low-income traditional pursuits to higher-wage hotels and service related industries will occur. Real estate inflation will result in alienating lower-income groups. There will be loss of linkages between the tourism and domestic small-scale food service operators, through packaged tours and overseas suppliers. There will be urban congestion and infrastructure breakdowns.

Positive Impacts – There was anticipated, an improved quality of life and recreation e.g. hiking, nature observation, beaches etc...(although access to these beaches and other facilities may become a problem, since they would now be privately owned developments). Combined with this, it was expected that there would be increased employment, economic benefits to islands' economy, investments etc.

Mitigation/Documentation/Communication including Recommendations

The EIA report suggested that through Policy, the Government should “conserve through effective management, those selected areas for wildlife protection, recreation and other appropriate uses; while carefully exploiting the tourism potential”

“recognize that the *institutional and administrative capabilities* would be the most critical factor in enforcing the policy”

“enact an Environmental Act and other legislation- in order to enforce and establish environmental protection and standards with national environmental goals”

“Create and fund a new professional level post of “Environmental Planner”

“Develop application and environmental impact assessment reviews; develop conformance inspections, etc. for government and private sector development projects”.

Further, the Land Management Plan recommended the:

“creation of a south-east Peninsula Development Board”

“creation of an Environmental Management Unit (to design, implement, co-ordinate, manage and monitor a comprehensive environmental protection program for the State) and

“creation of an inter-departmental Technical Review Council”

The EIA team also proposed a National Environmental Education Program designed to “alter attitudes and perceptions” about the environment. This would be co-ordinated from within St. Kitts by a core team.

Conclusion

A tremendous effort was made to ensure the project’s foundation was cast in the mould of the principles of sustainable development. The EIA team recognized the importance of the development and its tremendous potential which was summarized in such words “we do not foresee unreasonable degradation of the living and non-living resources of the South-east Peninsula Development. In fact, we view the project as a vehicle by which the government of St. Kitts-Nevis could substantially improve its capacity to address both peninsula and country-wide environmental and resource management issues”.

Evaluating the success of the EIA

The success relied however on the government’s commitment, which was initially positive and swift:

The South East Peninsula Development Conservation Act 1986 was established. This covered the institutional and administrative mechanisms for development and managing the natural history and historic resources of the area.

The south-east Peninsula Development Board was established with an advisory function.

Land Use Management Plan and Development guidelines was drafted and enforced.

The National Conservation and Environmental Protection Act 1987 was drafted.

Present status of south-east Peninsula Development Project

Despite the above, success of the EIA process is determined by the degree to which the pieces of legislation are *fully implemented; the facilitation of policy regarding implementation; monitoring and enforcement- towards environmental management and long term sustainable development.*

In this respect, very little has changed institutionally here with respect to development, planning and management.

The Board is not a wide cross section of persons as originally intended and there are questions of the inability of members to deal with technical issues. The Board has to market as well as enforce regulations; this is a burden which may also create conflicts of interest. The Technical Review Council was not implemented, so the review process has not been formalized, and there is no inter-ministerial co-operation. Arrangements are generally ad hoc. The South-East Peninsula Secretariat which replaced the EMU is understaffed and not sufficiently qualified to operate as originally considered. There is a relatively inactive Conservation Commission. Some very important environmental management issues have not been introduced and some projects have already been approved.

General Comments

The failure to adhere to the proposals for ensuring success of the project weakened the process of sustainable development tremendously in the above case study. The new systems which should have been put in place were not facilitated and the project appears to have stagnated.

2. Case Study - Point Lisas Industrial Estate, Trinidad and Tobago

Introduction

Point Lisas Industrial Estate is a successful world class industrial complex with a multi-purpose harbour located on the west coast of Trinidad. Point Lisas Port Development Corporation Limited (PLIPDECO) is the landlord of this approximately 1000 hectare estate and are also owners and managers of the general cargo facilities. There are presently 90 tenants on the estate with products ranging from ammonia, methanol, steel to breakfast cereals, cheese and service industries. The major industries presently are:

1. Ammonia – the total annual production capacity of the four (4) plants on the estate is now approximately 3.8 million tonnes. This places Trinidad and Tobago as one of the top 3 exporters of ammonia worldwide.
2. Methanol – the total annual production is 2.2 million metric tonnes. This makes Trinidad and Tobago the largest producer and exporter of methanol worldwide.
3. Steel- there are 2 steel plants, Caribbean Ispat and Cliffs and Associates

Environmental issues

The Point Lisas coastal area of the Gulf of Paria is of economic importance as the location of a major port and trans-shipment medium for all industrial products leaving the Point Lisas Industrial Estate. The marine area is presently the receiving waters for a variety of effluents which may be potentially contaminating, including elevated levels of petroleum hydrocarbons (Agard *et al.*, 1988). The Gulf of Paria supports a thriving fishery (including shrimpery) Overall, the Gulf of Paria supports a relatively rich diversity of macrofaunal communities (van Andel and Postma, 1954; Alkins and Kenny, 1980; IMA, 1981, and Gobin, 1988) and is a very important fishery area for many commercial fish, crustaceans and shellfish. The Point Lisas coastal area is the receiving waters for a variety of effluents from the industrial plants which may be potentially contaminating (Gobin 1988, various IMA publications). In addition, discharges of

domestic and agricultural wastes enter major drainage systems (from within and outside of the estate) eventually reaching the sea.

EIA requirements

Before a plant is sited on the Point Lisas Industrial Estate (PLIE) all relevant information in terms of plant operations, processes, effluents etc. must be supplied to the Environmental Unit at Point Lisas Industrial Port Development Company (PLIPDECO). *An EIA which includes all impacts and mitigation measures is required for all new plants intending to enter the PLIE.* The Environmental Unit at PLIPDECO is responsible for setting out the TORs for the EIA which are based on World Bank or other industry guidelines.

The EIA, which must include a risk assessment component must however still be approved by the Town and Country Planning Division (TCPD), before construction commences.

Once, the plant is successful, performance standard schedules (on how the plant should operate) are incorporated into the lease agreement with the new tenant on the estate. The schedule also sets out the monitoring required by tenants to conduct test sampling (and frequency) in order to measure compliance with effluent provisions as in the lease. Although the lease agreements with tenants is used to ensure compliance, for the most part tenants voluntarily conform to agreed performance standards (PLIPDECO News 2000). There is a Safety and Environmental Management Committee (established by PLIPDECO) comprising all tenants on the estate to ensure effective communication on relevant issues.

This “cumulative EIA system” where an EIA is done for each plant appears to be very successful. In essence, effective environmental management by the landlord, PLIPDECO

is being achieved especially since there is effective yearly monitoring of plant and process systems by the Environmental Unit.

3.2 General Comments

The EIA process is already seen to be too costly by many developers and they are often unwilling to fund collection of a lot of baseline data (especially in the marine and coastal areas). The Review and Decision process is often criticized in many of the SIDS. The EIA preparers often find the various ministries and government agencies representatives' lack the relevant training in the special areas covered in the EIA. On the other hand, the standard of EIA reporting is under scrutiny, e.g. the TCPD in Trinidad and Tobago has suggested the standard of some EIA reports in Trinidad has not been up to the quality expected. The TCPD has suggested that the EIA preparers do not spend enough time and effort on the EIS. On the other side of the argument, the EIA teams feel that the TCPD requires too much unnecessary details and they question the competence of reviewers who may not be competent in those specific fields.

As in most other Caribbean islands, political leaders and governments exert tremendous control over many development projects. For example in Jamaica and Belize, developers can appeal to the Minister when the NRCA (Natural Resources Conservation Authority) or DOE (Department of the Environment) respectively, refuse to "give the permission to proceed" (after EIA evaluation). This sometimes results in decisions which are perceived as "politically motivated". Further, the "authoritative discretion" conferred upon some of these authorities (e.g. EPA, Environmental Protection Agency, Guyana; EMA, Environmental Management Authority, Trinidad and Tobago and NRCA) is an issue which continues to plague Caribbean countries. In many cases, the "discretion" appears to be exercised in such a way as to favour development over environmental concerns, without just considerations.

Notwithstanding the “apparent transparency” in terms of EIA requirements by PLIPDECO, the Company’s process has not been without problems. For example, with the controversial Desalination plant (presently under construction) on the estate; public comments suggested that an EIA was done “after planning approval had already been granted”.

In Trinidad and Tobago, there is presently this tendency to grant “outline planning permission” before submission of an EIS. Arguably, this undermines the value of the EIA process to a certain degree. Toppin-Allahar (2000) suggests that this is one of the main SIDS problems associated with *adopting EIA requirements under existing planning legislation without enacting EIA regulations*.

Where successful EIAs have been carried out, countries have benefited since such projects were *designed to suit the local environment*. They were also more likely to be completed on time and *within it’s budget* and were in a position to more than likely *avoid major difficulties* along the way. A project that *yields its benefits without causing serious environmental problems* is more likely to bring *credit and recognition* to its proponents not only nationally but on the international market where the green agenda is now critical. Projects that *conserve the natural resources* upon which they rely, will continue to be *sustained* by the environment for years to come and will bring rewards not only to the developers but to our islands’ economies.

REFERENCES

Agard, J.B.R., Boodoosingh, M. and Gobin, J. (1988). Petroleum Residues in Surficial Sediments from the Gulf of Paria, Trinidad. *Mar. Poll. Bull.* Vol. 19. No. 5. pp. 231-233.

Alkins, M. E. and Kenny, J.S (1980). A baseline survey of Scotland Bay, Chaguaramas. Publication of the IMA. Occasional Papers. 68pp.

Environmental Impact Assessment , Basic procedures for developing countries, 1988. A UNEP report.

Gobin, J. (1988). The polychaete macrofauna near a large Industrial Complex of Point Lisas, Gulf of Paria, Trinidad. M.Phil Thesis. University of the West Indies, St. Augustine.

Island Resources Foundation (IRF), Land Use Management Plan for the South-East peninsula, St. Kitts, West Indies. Prepared for the Government of St. Kitts and Nevis by the URF, US. Virgin Islands, 1986 (b).

PLIPDECO News 2000, <http://www.plipdeco.com>

Simmons, D.A and Cumberbatch, J.A. The South-east Development Project on St. Kitts-Nevis. A case study in sustainable development. 1993 Published by the Caribbean Conservation Association.

Toppin-Allahar, C. A Comparative Analysis of Environmental Impact Assessment Law and Planning in the Commonwealth Caribbean. A paper presented at the Trinidad and Tobago Society of Planners, 25th Anniversary and UWI Graduate Planning and Development Programme's 5th Conference: "Thirty Years of Planning in Trinidad and Tobago" 9th October, 2000.

van Andel, T. and Postma, H. (1954). Recent sediments of the Gulf of Paria Report of the Orinoco Shelf Expedition, Vol1. North Holland Publishing Company, Amsterdam, 245pp.