

Toward Sustainable Climate Change Adaptation Planning and Implementation for Low Carbon Cities in Small Island States of the Caribbean: Resolving the Dilemma through a People-centred Integrated Planning Process and Institutional Framework

(The St.Lucia Case)



Chapter 1: Background and Summary

The continued concern for environmental destruction and the wanton depletion of natural resources and the ozone layer and resultant global warming have heightened the deleterious consequences of climatic change and sea level rise, particularly for low-lying countries and small island states. It has also heightened the call for sustainable development and sustainable land use planning, supported by appropriate institutional and legislative framework. In addition to this, countries must now also work towards ensuring policies and action strategies for maintaining low carbon cities aimed at reducing Carbon Dioxide emissions and promoting sustainable livable cities for all households.

This paper does not seek to reiterate the findings on climate change and the state of affairs of current regional and international actions relating to climate change adaptation and mitigation measures current dialogue regarding financial resources and investment flows in support of policies and strategies to implement them at this time. Information in this regard is well presented in the literature coming out of the many international and regional conferences and workshops and the work of the Inter-governmental Panel on Climate Change.

Rather, this paper seeks to present the state of affairs of the small island state of St Lucia in the Eastern Caribbean, as it seeks to meet its obligations coming out of protocol agreements on United Nations Convention on Climate Change .The issue of low carbon cities and low carbon living would seem insignificant for small country as St Lucia which can not claim to have cities by international standards for definition of cities, due to its small size geographically and its small population, comprising only 235 sq, km and a population of 160,000. Its population is found largely in urban low-lying coastal communities are well defined and surrounded by a

mountainous interior that starts to rise from the narrow coastal fringes. There is one main city, the capital, Castries, two towns, Soufriere and Vieux Fort and (Ref Figure 1). These settlements are very vulnerable to hurricane and storm surges and they are also centres concentrating capital resources in road infrastructure and commercial and housing development. The tourism and fishing industry are a prominent economic activity for these communities. Developmental resources are limited and to plan for low carbon adaptation has heightened the need to prudent in the use of limited resources.

This paper focuses on Small Island State of St Lucia in the Eastern Caribbean and posits that the top-down planning tradition will not ensure the resolution of these issues and the realization of the objective of climate change adaptation planning, designing and implementing measures for low carbon cities and low carbon living.

However, there seems to be a constant dilemma for existing planning systems, in deriving a consensus regarding the socially acceptable minimum planning interventions for mainstream planning activities, due to the varying and competing national interests, preferences of private individuals and private enterprises, over the so called "public interest" with respect to resource use and allocation, for financial and material prosperity and social wellbeing. Now, the country faces the new challenge of planning for climate change adaptation with no change in the investment resource base.

This paper found that in the case of St Lucia, the difficulty of planning for and implementing climate change adaptation measures for sustainable development is the direct consequence of the following issues:-

- 1) The lack of an institutional and regulatory framework for sustainable land use planning and sustainable land management in which climate change adaptation planning can be mainstreamed.
- 2) The lack of implementation of proposed policy measures for climate change adaptation consequent on limited and diminishing financial resources for investment within the public sector.
- 3) A lack of political will to establish the required administrative/institutional and legislative framework for implementing the sustainable development agenda, which includes promoting the planning and design of low carbon buildings and cities (or urban centres).
- 4) The lack of real engagement of the private business, NGO, CBO and civil society sectors in meaningful participation in climate change adaptation planning and implementation, to raise the levels of awareness and to harness available resources in these sectors that could complement those available from public sector sources.
- 5) The difficulty of balancing the need for emphasizing growth vs. environmental and resource conservation and preservation, given resource constraints and competing interest for limited developmental resources.
- 6) Reconciling resource sustainability (conservation) with growth and development especially in the energy, construction and transportation sectors.
- 7) Identifying sustainable socially acceptable and ethical planning interventions
- 8) Managing competing interests and conflicts over resource use in order to plan and implement planning and urban design strategies that promote low carbon emissions and energy efficient urban building, settlements and transport systems while supporting social justice, equity and social wellbeing of communities and households.
- 9) An apparent low level of local observations and understandings of climate change impacts on households, urban and rural communities, sustainable livelihoods and the physical environments;

- 10) A lack of appreciation and understanding in some instances of ways in which local communities and specifically households are adapting to or dealing with climate change and strategies and practices developed to fight climate change.

From the empirical research findings, a recommendation is made for the establishment of an integrated multi-stakeholder and multi-sectoral institutional and legislative framework for climate change adaptation planning and implementation which seeks to mainstream adaptation interventions into the planning and national budgetary processes and therefore promotes the importance of community participation that could ensure the implementation of community adaptation and mitigation measures for decreasing vulnerabilities, promoting sustainable livelihoods and low carbon environments. It has the ability for facilitating the inclusion of people-centred prioritized recommendations that would be socially acceptable, affordable adaptation responses at all level, i.e. National, community and household. It therefore anticipates that the architects of these desired planning interventions would take ownership for ensuring implementation of the

Measures. Such approach to climate adaptation planning and implementation would allow for the identification of available resources of collaborating entities toward the implementation of intervention measures.

It calls for a change in the process of planning, to be one that is integrative and participatory, involving all competing stakeholder groups working within an institutional and legislative framework that promotes the harnessing of development resources through a collaborative partnership in planning and development among the public, private and civil society sectors; promotes participatory planning and participatory democracy; community governance and the management of community assets.

In so doing it will provide a framework for ensuring sustainable land use planning for low carbon cities and other living environments as it mainstreams climate adaptation planning, implementation and monitoring within the St. Lucian context.

Chapter 2: The Study Context

St. Lucia is located at 14^o north latitude and 61^o west longitude. It is situated just south of the mid-point of the Antillean Archipelago of the Eastern Caribbean. The island is approximately 32 km south of Martinique, and 40 km north of St. Vincent. Surface area is 616 km², with maximum length and width of 43 and 23 km respectively. It has a mean annual temperature of 21 to 27 °C which drops with increasing elevation and has little seasonal or diurnal variation. The highest point on the island (950 m) is normally about 18 °C (St. Lucia Environmental Profile, 1991). The rainfall pattern shows both topographic and seasonal variations. The highest average annual rainfall of approximately 4000 mm falls on the mountainous south-central part of the Island, and the lowest rainfall of about 1124 mm occurs at the lower coastal regions, indicating its orographic origin. Mid-December to May is the period of lowest rainfall and June to December, rainfall is significantly higher. However this there has been changes in this occurrence over the last few years in that the Mid December to May period is experiencing higher than normal rainfall amounts.

The island of Saint Lucia is monolithic, comprising one (1) main island with only a few near shore satellite islets. Being a volcanic isle with a mountainous interior, the country's population and most of its economic activities are huddled along a narrow coastal strip, located on an equally narrow continental shelf.

St Lucia as a small island developing state (SIDS) has been vocal and active in international fora on sustainable development issues and development agenda for the SIDS groupings, given its vulnerabilities, heightened by its location in the tropical hurricane belt, its location on the edge of a marine seduction zone that describes the Lesser Antilles Archipelago, a volcanic island chain also known as the Leeward and Windward Islands of the Caribbean Basin. This island chain, because of its geotechnical characteristics, is also vulnerable to threats from earthquakes and volcanic eruptions.

The island of St Lucia has limited natural resources, fragile ecosystems and is deeply conscious of the need to conserve and to some extent preserve these limited natural resources, while ensuring economic development and sustainable livelihoods of its citizens. This delicate balancing act is a major challenge for the custodians of the natural resource base as they seek to ensure sustainable development through sustainable land use and land management actions. For the environmental custodians and resource planners, the island is viewed as on large integrated ecosystem from “ridge to reef”, in which deleterious actions on land will have consequences for marine ecosystems. In this context, prudent use and management of the island natural resources base is extremely important.

St Lucia human settlements development is largely coastal and along road networks in a ribbon type development. All its urban communities are largely coastal and very vulnerable to hurricanes and storm surges. The countries development has been largely dictated by its topographic characteristics in that the predominant mountainous central forest reserve marks its watershed and protects its water supply system. This reserve also dictates the location of human settlements and agricultural development.

The issues of coastal zone planning and management are critical for this island state as every human activity that occurs inland has an impact on the coastal zones.

Chapter 3: Research objectives, Focus, Methodology and limitations

3.1 Research objectives

The objectives of this paper is to identify the issues relating to climate change adaptation planning and implementation and to proposed recommendation for improving efficiencies and mainstreaming the climate change adaptation planning into mainstream planning framework for ensuring sustainable low carbon livelihoods/living and urban environments.

3.2 Research Focus

This research was designed to focus on the architectural, engineering and planning design sectors, the construction (raw materials quarrying and house building sub sectors), transport (particularly public transportation) and the energy sectors, since these are the sectors most likely to have greater impacts on climate change within the urban context and on low carbon living in particular, given their effect on greenhouse gas emissions. Semi structured interviews and focus group discussions were the main instruments for information gathering with the following target groups.

3.3 Limitations

Given the limitation in time and resources, this researcher had to be selective in the extent of the field related aspect of the research and as such had to restrict the sample size of the groups to be interviewed. It is hoped that the research can be expanded at a later date to cover a larger target population in the identified sectors

For the purpose of this paper, interviews were also conducted with the target groups and representatives of key public sector agencies charged with the responsibility for climate change adaptation and mitigation education, planning and implementation activities within sectoral agencies, communities, households and civil society in general. These agencies/departments are the Physical Planning, Architectural and sustainable development and Environment Departments of the Ministry of Physical Development, The Ministry of Communications, Works, Transport and Public Utilities and the National Emergency Management Office.

3.4 Research Methodology and Target Groups

3.4.1 Methodology

The research employed the following methods:- desk top and online documentary review; semi-structured interviews with the companies, regulators and other agencies; and a questionnaire survey and focus group discussions with a sample mix of small, medium and large business partners and home owners and households from the case study sectors.

3.4.2 The Target Groups

The following groups were identified:-

- Five (5) construction companies (Quarries and road contractors)-
- Five (5) Home contractors
- Ten (10); formal sector home owners –random selection,
- Ten (10) households in informal settlements
- Ten (10) Transportation Sector-tour and car rental companies-10
- Ten (10) Transportation Sector- Representatives of the public transport sector
- Two (2) Representatives of the Motor Vehicle dealerships
- The Chamber of Commerce and Industry

Chapter 4: Climate Change and St Lucia

The following tables show the projected increase in temperature and rainfall for small islands regions including the Caribbean. Rising temperatures and increased precipitation will increase the vulnerability of coastal settlements and so small island states such as St Lucia must plan to adapt and or mitigate the real and potential impacts on livelihoods through a focus on reduction in GHGs and promoting a culture of low carbon environment and living for sustainable livelihoods and social wellbeing.

Table 1: Projected increases in air temperature (0C) by region, relative to the 1961-1990 periods

| Region | 2010-2039 | 2040-2069 | 2070-2099 |
|------------------|--------------|--------------|--------------|
| Mediterranean | 0.60 to 2.19 | 0.81 to 3.85 | 1.20 to 7.07 |
| Caribbean | 0.48 to 1.06 | 0.79 to 2.45 | 0.94 to 4.18 |
| Indian Ocean | 0.51 to 0.98 | 0.84 to 2.48 | 1.05 to 3.77 |
| Northern Pacific | 0.49 to 1.13 | 0.81 to 2.48 | 1.00 to 4.17 |
| Southern Pacific | 0,45 to 0.82 | 0.80 to 1.79 | 0.99 to 3.11 |

Source: Mimura, N. et al., 2007: Small islands. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*

Table 2: Projected changes in precipitation (%) by region, relative to the 1961-1990 period

| Region | 2010-2039 | 2040-2069 | 2070-2099 |
|------------------|----------------|----------------|----------------|
| Mediterranean | -35.6 to +55.1 | -52.6 to +38.3 | -61.- to +6.2 |
| Caribbean | -14.2 to +13/7 | -36.3 to +34.2 | -49.3 to +28.9 |
| Indian Ocean | -5.4 to +6.0 | -6.9 to +12.4 | -9.8 to +14.7 |
| Northern Pacific | -6.3 to +9.1 | -19.2 to +21.3 | -2.7 to +25.8 |
| Southern Pacific | -3.9 to +3.4 | -8.23 to +6.7 | -14.0 to +14.6 |

Source: Mimura, N. et al., 2007: Small islands. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*

4.1 Results of Greenhouse Gas (GHG) Emissions Inventory for St.Lucia (1994-2000)

The report on GHG emissions inventory (Marbeck Resource Consultants, (2008), *National Inventory of Greenhouse Gases for St Lucia*-) **revealed** that activities such as harvesting of timber and land clearing increase emission of CO₂ to the atmosphere and decrease photosynthesis. Consequently, anthropogenic effects of managed forests and changes in land-use designation is important. In the assessment of CO₂ emissions on the environment, the data shows that although the Land Use Change and Forestry sector is still a net source of CO₂ emissions, the level of emissions has significantly decreased by almost 75% between 1994 and 2000. This has been due largely to a decrease in the rate of deforestation. This, according to the Forestry Department is the consequent of its public education and sensitization programmes, the vigilance in forest management and the reduction in charcoal production. The report indicated that the annual average rate of deforestation in 1994 was 500 ha per year. Estimates for the period 1994 and 2000 indicated that the rate of deforestation fell to approximately 21 Gg of CO₂ in 2000 compared to 85 Gg in 1994. The report indicated that non-CO₂ emissions from the Land-Use Change and Forestry Sector are small.

It was also reported that only the energy and land-use change and forestry sector contributed to CO₂ emissions or removals. While CO₂ emissions in the energy sector have increased, a slower rate of deforestation and natural regeneration of biomass in managed forests has led to net sink emissions in the land-use change and forestry sector in 2000. Overall, net emissions of CO₂ have declined from 1994 to 2000 by approximately 10%... Gas/ Diesel Oil and Gasoline consumption accounted for 59.5% and 34.6% respectively. This is due largely to the increase in motor vehicle ownership. Statistics from the Transport department confirms the increasing trend in motor vehicle registration since 1998 which will continue to have an impact on CO₂ emissions (ref. Annex 1).

Chapter 5: Existing Adaptive Capacity of St Lucia as a Small Island State

Adaptation options and priorities for small islands states vary and are largely reactive and appear to be linked to the socio-economic sectors. It has been shown that some countries are focusing on adaptation in agriculture and human health while others focus on sectors of transport, waste management and power generation.

For St Lucia, the findings show that it has the technical capability to ensure climate change adaptation in relation to available trained human resources within the government ministries responsible for development planning, implementation monitoring and enforcement as well as the coordination of intervention activities.. What it lacks is, 1) The technical capacity to coordinate and implement relevant programmes of action among departments charged with the mandate for physical planning and sustainable development and by extension climate change

adaptation planning and implementation.2) the information on the adaptive capacity of the private and civil society sectors with whom the public sector requires to partner in ensuring and promoting climate change adaptation planning, implementation and monitoring. 3) An effective institutional and regulatory framework to ensure inter-sectoral and inter-governmental, institutional collaboration and coordination, in mainstreaming climate change adaptation planning and implementation.4) the financial resources to effect the necessary actions on any sustainable level.

There is a Ministry of Physical Development within which is situated the Physical Planning (PPD) with the mandate for Physical Planning and Development Enforcement and a Sustainable Development and Environment Department (SDED) with a mandate to ensure sustainable development and environmental integrity. However, these departments are somewhat ineffectual given the reasons outlined above. The SDED has undergone a strategic review exercise that recommends its restructuring and enhancement of its mandate to fully coordinate the implementation of the sustainable development mandate of St Lucia, through capacity augmentation and the establishment of a Ministry of the Environment. This exercise is still a work in progress. The SDED is recognized as critical, yet its work has not become a mainstream activity in strategic and sectoral planning and while it seeks sectoral collaboration in implementing its work programme, such collaboration is not mandated and is left largely to the will of collaborating entities. The SDED has remained committed, but its activities have not yet had the desired and sustained impact on the society.

5.1 The Critical Need for Mainstreaming Climate Change Adaptation Planning and Implementation Processes

It is recognized by the PPD and SDED of the Ministry of Physical Development that the adaptation actions for ensuring low carbon cities and by extension low carbon living, should be mainstreamed as part of an integrated framework for the implementation of sustainable development policies and strategies. It is envisaged that in ensuring that communities, households and business enterprises adapt appropriate climate change measures in the interest of sustainable livelihoods and sustainable development, will be a challenge for policy makers and planner, given the variability of competing interests and development priorities that these groups represent. Yet, there is a need to adapt these measures, not only for the sustainability of the individual but the shared common future on which every individual depends.

The question then becomes that of how to ensure that individuals act responsibly in the interest of the many, while securing their own livelihood. What is clear is that it cannot be left to the individual to plan and implement climate change adaptation measures, since there appears to be no urgency unless the household experiences a shocking event such as the destruction brought on by a hurricane. For some, these measures are costly and are low on the list of priority expenditure given limited financial resources.

According to Moser and Satterthwaite (October, 2008), few governments in low and middle income countries have the institution, infrastructure, services and regulations to ensure good governance for adaptation. This present paper posits that despite the limited knowledge, governing institutions must engage all stakeholders in collaborative responses at household, community and national levels in climate change adaptation planning and policy development action plans, based on a shared common vision of a sustainable future.

From existing planning practice in the Caribbean region, climate change adaptations and mitigation planning has not been seen as a priority action to be placed as a main stream planning endeavor. This appears to be due largely to the fact that research and data analysis of

the impact of climate change on urban areas in this region are limited. Research information available appears to give limited consideration the understanding of the characteristics of the adaptive capacity and capability of households, community and national states to the stabilization and reduction in green house gas emission due to the inability to be predictive as a consequence of the limitation in available assessment tools.

If adaptation means the ability to introduce measures to sustain livelihoods, how can population with limited resources and limited fixed assets respond in a meaningful and sustainable manner without the appropriate support structures to involve them in decision making such that their abilities, needs and priorities can be accounted for?

5.2 Constraints Confronting the Urban Poor in Informal Settlements

The urban poor with limited incomes and substandard housing, infrastructure and services have to live with a multiplicity of risks of natural hazards and to deal with their consequences while confronting social, economic and political constraints.

The physical capital owned by the urban poor is limited in quality, value and standard, largely due to limited financial resources as incomes are limited and savings are low to non-existent since the propensity to save for investment is often lacking, Further these households generally lack the collateral to access available credit. The insecurity of land tenure, coupled with the location on lands which are unstable and prone to natural hazards, increases the vulnerability of the urban poor in informal settlements and constrains their adaptive capacity. In these contexts the urban poor lacks the ability to incorporate adaptive and mitigation measures to enhance resilience, yet this population is most at risk from the effects of climate change as it threatens life, property environment quality and economic prosperity. In the St Lucian context many live in informal settlements on the coastal zones of coastal settlements.

The critical question is how the urban poor can adapt the appropriate measures to reduce the effects of climate change on the limited, substandard low value assets they may own as housing or have access to improved standards of housing, given limited incomes to undertake the designs improvements. This is a great challenge under normal conditions, even without the threat of the adverse impacts of climate change. How can they move from a position of vulnerability to one of adaptation when they own limited and substandard assets and lack the means of accessing resources to improve their social, economic and environmental sustainability? This is one of the challenging questions facing policy makers and planners in finding a sustainable and socially acceptable response to the housing question of the urban poor. The other challenge is how to ensure sustainable livelihoods of the urban poor as part of the intervention response? Clearly, the response must be holistic in its impact, taking count of the household's ability to manage and maintain its affairs in its improved circumstances.

Adaptation responses therefore need to focus on social, economic as well as physical development improvement planning. Unfortunately, the dilemma is that even without the real and potential threat to livelihoods from climate change, governments have not under normal conditions, intervened effectively in ensuring urban and rural sustainable livelihoods and environmental development of the urban poor in informal, substandard and vulnerable urban settlements. This inability is blamed on the lack of developmental resources, lack of political will and reduction in advocacy and urban social movement for social change that characterized urban development of the 1980's and early 1990 in many developing countries, particularly in Latin America and the Caribbean. The first step in planning for climate change adaptation and meeting the needs of the target population is the identification of the ability to adapt.

5.3. Critical Issues to be addressed-The need for the Resource Assessment and Adaptive Capacity and Capability among Target Groups in St Lucia

Adaptive capacity is variable among target groups and such variability range from excellent capacity to adapt to limited or no capacity to adapt, consequent on the limitation in available financial resource capacity to effect adaptation changes to new and or the existing standards or quality of services and infrastructure, to accommodate the desired changes.

In addition, in terms of the development and trading enterprises, the capacity to adapt will depend on level of operational efficiencies of production and exchange systems to respond to changes brought on by climate changes. In normal conditions it is difficult to adopt measures to mitigate possible adverse consequences of market failure and unforeseen external shocks brought on by economic recessions and globalization and liberalization of trade. Now they are confronted as well with the impact of climate change on their business operations.

It is recognized therefore that “ *the capacity to adapt is dynamic and is influenced by economic and natural resources, social networks, entitlements, institutions and governance, human resources and technology*” (Gupta, S, et. Al, 2007)

5.4 Commitment of Governments and International Finance and Development Institutions

Government and international funding and development institutions must play the facilitating role in promoting and supporting adaptation responses at household, community and business enterprise levels through policies, incentives, regulations, improvements in standards, taxes, education, research and development that emphasizes alternative technologies and practices. This means, establishing the appropriate policies and integrative institutional and regulatory framework to engage the social development partners of the private and voluntary sectors in partnership with the public sector in climate adaptation planning and implementation. This framework should also allow for the forging of agreements and memoranda of understanding for resource sharing, in pursuit of the common sustainable development objective.

Chapter 6. The Current State of Affairs in Climate Change Adaptation and Mitigation Planning and Implementation in S Lucia

6.1 Some Current Climate Adaptation Strategies and Actions.

The government has introduced the following measures:

1. Smart building design for low carbon living and building through demonstration project and the leadership role of the public sector.
2. Preparation of a Draft Sustainable Energy Plan and Action Strategy
3. Established incentives policy to encourage the importation of solar energy equipment,
4. Granted land to the lone electricity services provider, The St Lucia Electricity Services, for the establishment of a Wind Energy Farm as a pilot project to reduce its dependency on fossil fuel.
5. Grant free energy saving light bulbs and established 1st June 2009 as the date for restricting the importation of incandescent light bulbs.
6. Promotion of rainwater harvesting-through pilot projects.
7. The training of refrigeration technicians to understand the impact of CFCs and to dispose of them safely in their business operations.
8. The implementation of a Photovoltaic Pilot project at these locations:

- **PV plant for central Castries Craft Market.** The capacity of the PV plant should be about 4 (four) kWp.
- **PV demonstration plant for National Trust on Pigeon Island.** The capacity of the PV plant should be about 12 (twelve) kWp.
- **PV demonstration plant for Vieux Fort-** To is located at The Comprehensive Secondary School- Campus B in the northern part of Vieux Fort. The capacity of the PV plant is estimated to be about 4 (four) kWp
- Established incentives to promote the use of sustainable energy technologies.

6.2 Climate Change Adaptation Awareness

Despite the measures, this present research has discovered that many ordinary people; between 60% and 80% of the target groups surveyed do not know the meaning or impact of the following terms as the following terms in relation to the climate change phenomenon as they are often used in advertisements aimed at increasing public awareness. These are, “*Climate change*”, “*greenhouse*”, “*greenhouse gases*”, “*global warming*”, and “*chlorofluorocarbons (CFCs)*”. They are however aware that 1) the rainy season is occurring much earlier in the year and that over the last two years the season starts in December and lasts up until the hurricane season in June.2) The dry season is warmer than usual and that in 2006-2008 the season was longer, causing low agricultural production. These changes, to the ordinary persons interviewed, have caused changes in seasonal agricultural tree crop production and the increased cost of these products in such as avocado, mangoes, breadfruit and “golden apples” as well as other agricultural produces. They also claim that the dry seasons are hotter and that in recent years there has been severe hurricanes. Many also recount the devastating impact of Tropical Storm “Debbie” in 1994.

Apart from these obvious changes, there is also limited knowledge of the extent to which climate change is impacting livelihoods in the developmental sectors such as agriculture, water, tourism and construction. There is also a lack of awareness regarding the impact of climate change on health and social wellbeing and the importance of sustainable low carbon living and environment on health and social wellbeing.

6.3 Reasons for Lack of Effectiveness and Performance-Public Sector Views

The main reasons given for this apparent lack of effort and performance gleaned from discussion with key public sector agencies such as the Sustainable Development and Environment, Agriculture, Fisheries and Forestry, Physical Planning Department and the National Emergency Management Office, is the absence of an adequate level of technical capacity and the inadequacy of the current internal institutional framework procedures and systems within agencies for managing resources use and development, to implement and promote climate change adaptation responses. There is also the absence of formalized integrated institutional framework of cooperation and collaboration between public sector development agencies responsible for natural resources use, allocation and management for development coupled with inadequate level of engagement of the private sector, NGOs, CBOS and other civil society groups in the climate adaptation planning and implementation process. In addition there are inadequate financial resources within the public sector to implement the action strategies.

There appears to be an absence of strong political will to make the necessary decisions to give the necessary directives and actions for mainstreaming climate change adaptation and mitigation in the national planning process.

6.4 Findings from Discussions and Interviews

6.4.1 Climate Change Adaptation and the House Building and Home Ownership Sector

a) Informal settlements-illegal land tenure and Asset valuation and adaptative capacities and responses

It was the general view among those interviewed that climate change is not immediate even while they expressed concerns about the increase in intensity of rainfall occurrence and hurricanes and the lengthening of the rainy season. Adaptation measures are not really a serious need at this time. More than 80% of households interviewed in one informal settlement, indicated that they were not really aware of what to do and that even if they could improve their housing they did not have money for those improvements to make their homes safer. Further they were reluctant to improve their housing to make them stronger as they did not own the land and for some 50% as renters, did not want to put money into the house they live in to make them safer. Respondents felt that government should make their community safer from flooding and hurricane impacts by working with land owners in getting them to improve the drains and roads. All respondents felt that government should acquire the land, improve the community infrastructure and sell them the lot on which they live. Many feel that that's when they would be in a position to improve their house. The renters interviewed felt that they did not own the house they were living in so they would not spend money to improve these homes. Their wish was for government to build houses for them and to make the community safer from flooding.

b) Formal settlements-Asset valuation, adaptative capacities and responses

The situation was different for households living in formal housing communities. All households interviewed felt that it was important to build homes to be safer and that the insurance companies would not insure unless the building was design for hurricane winds with the passing of the 2007 earthquake some people claimed that they now know that they have to plan for earthquakes. The general feeling among this group was that adaptation measures are costly and that government needed to do more to help home owners. There was also an awareness among these respondents that climate could become a significant issue for households given limited available funds to adapt housing to withstand severe climate change.

Both groups of respondents felt that government was not doing enough to help home owners to improve their housing and that banks were unwilling to lend money for improving timber houses because home owners cannot get insurance coverage for such homes. Some home owners complained that they were not given any of the free energy saving light bulbs to replace the incandescent ones in the bulb replacement project and that the energy saving bulbs is expensive. They felt that government should move to reduce the price of energy saving bulbs and increase the cost of the incandescent bulbs if they want the people to adapt energy efficient bulbs. They also felt that the cost of solar water heater systems could be reduced. Both groups felt that government was not doing enough to educate people about the effects of climate change.

6.4.2 Business Sector Awareness of the Impact of climate change In St Lucia

a) Climate Change and the Business Community-General Observations

The business community is also becoming increasingly aware of the threat posed by climate change and the need to incorporate adaptive measures aimed at mitigating its effects on business. But there is also recognition that climate change could also mean opportunities for business adaptation to take advantage of new marketing opportunities and product development ideas.

The business community sees opportunities to introduce energy efficient products but the cost of these are prohibitive at this time and so they would like Government to provide a more conducive environment through appropriate tax concessions and import duty concessions, on equipment and products that increase energy efficiencies and promote low carbon living that will redound to the benefit of end users.

The focus here was on the transport and construction sectors. Discussions with representatives of these sectors revealed that in St Lucia, the technical and financial resources required to reduce greenhouse gas emissions are limited or lacking both for the public and private sectors. The larger and more established enterprises are aware of the importance of planning for climate change adaptation but show a preference for expenditure which will serve to grow and increase the competitiveness of the business as a first priority on available investment funds. (St Lucia Chamber of Commerce)

For the Car Rental Sector, the view was that there was a lack of political will to provide the enabling environment to implement climate adaptation measures particularly as it relates to the importation of more fuel efficient vehicles. This sector however, recognizes that such vehicles would be costly and government would need to put proper systems in place to reduce the cost of such vehicles to consumers. This sector is not prepared to vehicular types at this time, given the economic recession facing the country and the need to adopt measures to sustain business activities in the sector, which largely depends on the tourism sector for its client base. However, this research has been informed by both the Chamber and the Car Rental Sector that the apparent lack of political will to support the importation of energy efficient vehicles, may relate more to the lack of financial resources for the capital outlay required for adaptation responses, given the decline in performance of public revenue streams over the last few years. There would be a need to get financial assistance from the international community. The public transport sector representatives felt that Government should seek to partner with the National Council on Public Transport to bring in larger and more fuel efficient buses as a pilot project, to ply certain designated routes. The grouping recognized that the fleet of minibuses consumed large amounts of fuel due to the hilly terrain of the island which has served to increase operating costs in face of rising fuel prices over the last year.

Meanwhile, at the international level the debate is ensuing as to how many the developed countries need to allocate in finance and investments to implement climate change adaptation and mitigation measures since climate change consequences have been largely due to the activities of the industrial and developed countries. Funds from these sources are also limited. For small island developing states such as St Lucia, the identification of financial resources for the development and implementation of adaptive measures and strategies is one of the gravest challenges facing policy makers.

Transport sector operatives such as the vehicle dealership companies and representatives of public transport operators contend that they cannot introduce energy efficient transportation types because of the high cost of these new technology vehicles and as such Government as enablers should provide the appropriate incentives regime to encourage the move toward fuel efficient vehicles. (Morris et al, (2008). **Report on the Public Transportation Review Study, St Lucia**), This sector is prepared to work with Government to move towards a more efficient transportation system if the framework is identified for this. For the Car Dealerships, it is imperative that government restricts the importation of used and reconditioned vehicles as they contribute to the high levels of carbon emissions. Discussions with the administrative representatives of the Transport and Physical Planning Departments indicated that it is time that

haulage truck and cargo vehicles be given an alternative routing option based on the establishment of a ferry and barge service between the northern and southern business and industrial development centres of the islands. This they felt would reduce the city' traffic congestion and high vehicle operating costs.

6.4.3 Climate Change and the Construction Sector

The following issues were gleaned from focus group discussions with the special Construction Sector Task Force established by the Office of the Prime Minister in March 2009, to review the sector's operation and make recommendations for the implementation of policies and incentives for growing this sector and for it to make a greater contribution to national development and economic resilience:-

- The need for new planning and building design standards to improve energy efficiencies in building of all types as part of climate adaptation planning.
- All new buildings should incorporate rain water harvesting and solar heating equipment and that these should be imported duty free to reduce the purchase price to end users.
- That building approval cost should be linked to smart design for low carbon living.
- The new standards should be regulated and enforced.
- Those duty free concessions should be considered for real estate housing developers and materials suppliers, to import energy efficient building components.
- A more collaborative and participatory planning system in which people's concerns and ideas can be supported.
- That there should be better public education and awareness programmes around smart, low carbon building designs.

These proposals have been endorsed in discussions by the representatives of the Physical Planning and Architectural Department of the Ministry of Physical Development.

Chapter 7: Recommendations from Key Public Sector Departments for Sustainable Planning for Climate Change Adaptation and Implementation.

1. Encourage Satellite centres/ clusters close to many cities to reduce the cost of infrastructure and services of ribbon development
2. Establish urban fringe green belt or buffer zones for urban communities and promote the greening of residential lots through the planning and building approval processes.
3. Encourage with appropriate incentives relating to the reduction in planning approval fees for smart or sustainable building design standards that will facilitate sustainable low carbon living environment and promote health and social well being of households and communities.
4. Establish satellite public transport terminals and complementary park and ride schemes to reduce traffic congestion in the city.
5. Greening of city and other urban settlements through the promotion and implementation of new green passive and active recreational areas with the city.
6. Encourage energy efficiency design and building components that require heating and cooling focusing on solar heating and ventilation from the natural wind flow.
7. Facilitate the introduction of energy and fuel efficient transport systems as a pilot project through a public/private sector partnership initiative involving the public transport system.
8. Increased capacity to monitor and forecast climate change

9. Improve the collaboration and coordination mechanisms to plan and implement adaptation response in a multi-stakeholder; multi-sectoral and integrated institutional framework, for a efficient use of resources
10. Adapt a participatory institutional framework to also incorporate regulatory mechanisms to ensure stakeholder collaboration in the planning and implementation of adaptation measures.
11. Establish a conducive financing framework as a policy priority that increase local commercial back financing for adaptation measures requested by individuals and businesses.
12. Establish a monitoring and evaluation mechanism to document the impact of adaptation responses on households and communities social well being, physical protection and sustainable livelihoods.
13. Establish a monitoring and evaluation mechanism to document the reduction in urban emissions at the household and community levels, identify best practices in households and commercial
14. Work with insurance companies to upgrade risk assessment methodologies such as identifying potential new liabilities from carbon emission or using environmental due diligence screening of a company.
15. The Government should consider a strategic shift from coastal development to inland development.
16. The Government should consider a long term program of relocating existing public properties from the vulnerable coast to inland sites [e.g. Anse la Raye Primary School and the Village Council from the waterfront to Au Tabour]
17. The Government should create a standing Climate Adaptation and Mitigation Budget Head for all its Departments and Statutory Authorities. Such a budget line will allow Government to take measures to reduce the impacts of Climate Change. Many of those impacts if left to manifest can create disasters.
18. All of Government construction projects [roads to hospitals] should have a mitigative aspect to facilitate the “hardening” of Government property to the impacts of Climate Change.

Chapter 8. The Proposed Integrated Institutional Framework for Climate Change Adaptation Planning Implementation, Monitoring and Evaluation for Low Carbon City, Low Carbon Living and Sustainable Development.

8.1 The New Framework (Ref. Annex1)

This paper calls for the development and implementation of participatory and integrated approach that aims to democratize research, planning, and decision-making in climate change adaptation and mitigation planning and implementation. This approach provides a framework to answer the challenges of promoting sustainable development within small island states of effectively and efficiently managing economic and social development while not compromising the quality of life of future generation. It therefore seeks ways of finding a balance between resource conservancy and the prudent use of resources for promoting development and social change. At the centre of this approach is the need to find at least the socially acceptable minimum interventions in the best interest of the community which can be derived through conflict resolution of the various competing interests and agendas over scarce developmental resources use.

This approach seeks to involve community participation in a collaborative, multi-sectoral, multi-stakeholder process of goal setting, information-gathering, analysis and decision-making, plan preparation, programme implementation, monitoring and evaluation. The goal is to build

awareness, capacities and capabilities among stakeholder groups at the household, community and national levels, to take responsibility for climate change adaptation and mitigation planning and practices that will ensure sustainable livelihoods and social and economic resilience. The approach recognizes the importance of this people-centred collaboration regarding the mobilization of available community resources (including monetary) from all sectors toward climate change adaptation and mitigation responses, given limited public sector resources. It builds on the traditional community self-help and self reliance approach, even while recognizing that external financial support will be necessary to augment resource capacity.

8.2 Assumptions and Objectives

8.2.1 Assumptions

This approach is based on the following assumptions:

1. It assumes that decisions about the promotion and management of economic growth, development, social change and future development are very complex and are entrenched in the dynamics of the social, cultural, economic, political, and environmental systems of the society.
2. It also assumes that communities comprise a variety of conflicting and competing interest groups and agendas, that express varying values, perceptions and preferences and their relative power affects developmental decisions. It is imperative that they be involved in deciding on and prioritizing intervention measures in the best interest public interest in support of their common future.

8.2.2 Objectives

1. To produce a practical framework and tools for enhancing the capacity of households, communities and business agencies to adapt to climatic change.
2. To place households, communities and business agencies climate change adaptation concerns and priorities at the centre of planning analysis and intervention, given their importance in economic development and resilience, especially now and for the foreseeable future.
3. To identify, develop and implement affordable and easy-to-apply decision-support adaptation tools and for households, communities and business agencies businesses to enable them to adapt their assets and livelihood operations to withstand climate change phenomena. This may relate to energy efficient production systems, low carbon emission, low dust emission systems, smart buildings and infrastructure and services

Conclusion

It is hoped that this framework could be of use in providing an alternative to resolving the issue of climate change adaptation planning and implementation in context similar to that of St Lucia or that it can spur further dialogue among development planners.

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Annex 1

Institutional Framework for Integrated Community Planning & Implementation-A people-centred Approach to National Development Planning for Climate Change Adaptation

Figure 1 : Stages In The Integrated Community Climate Change Adaptation Planning Process For Plan/Project Preparation And Implementation

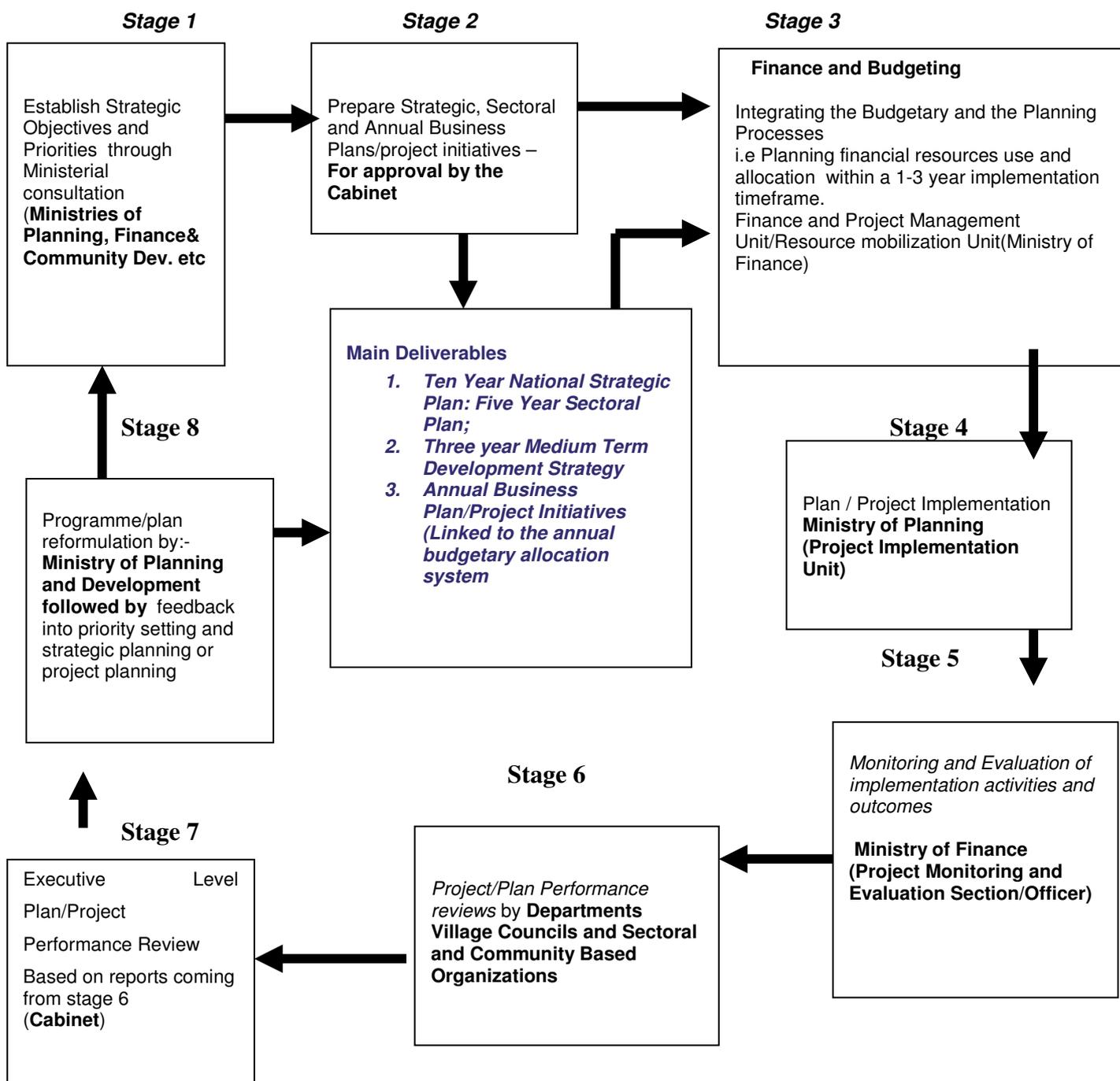


Figure 2 : Levels Of Decision –Making And Responsibility For Planning And Development Within The Integrated Planning And Implementation Framework For Climate Change Adaptation

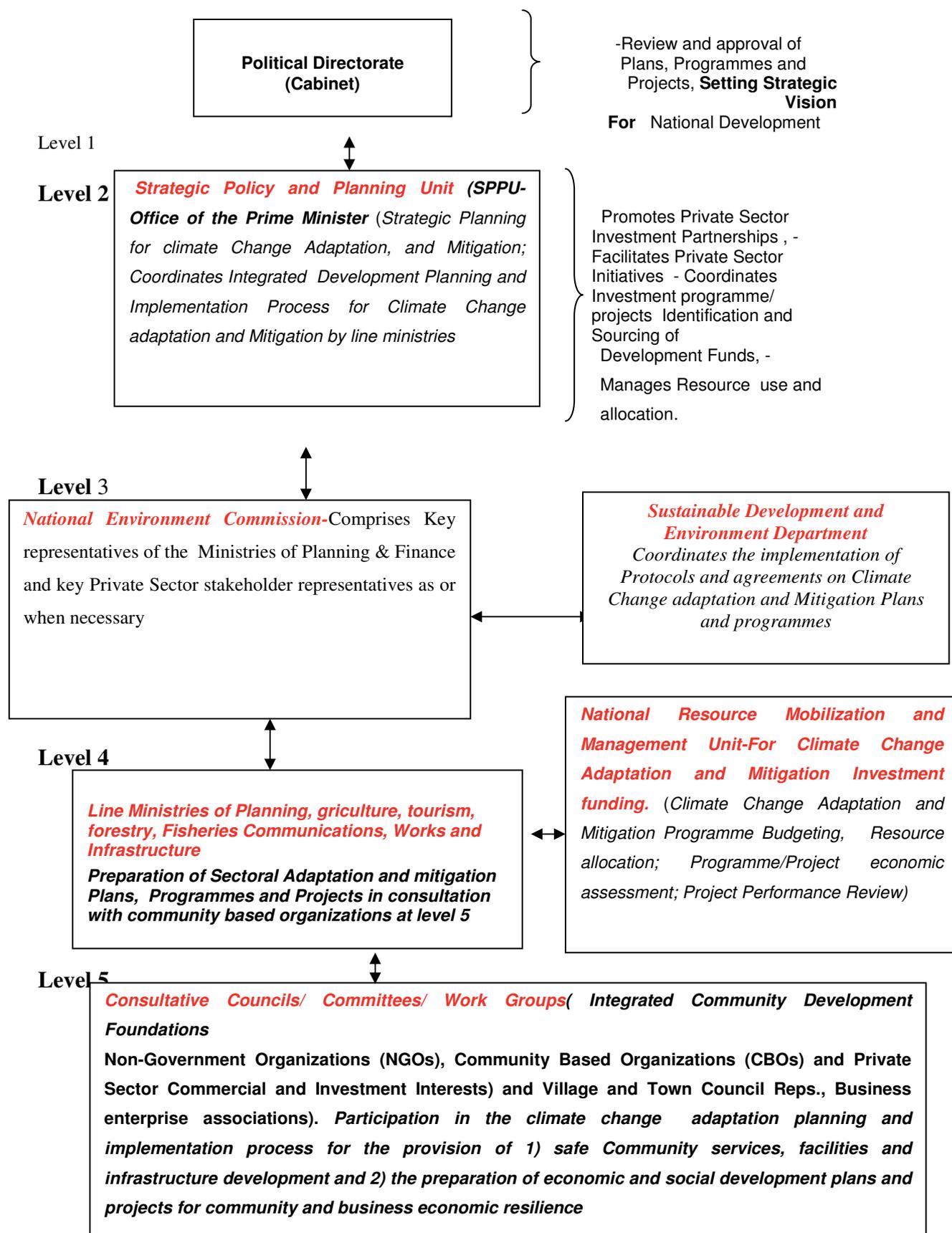
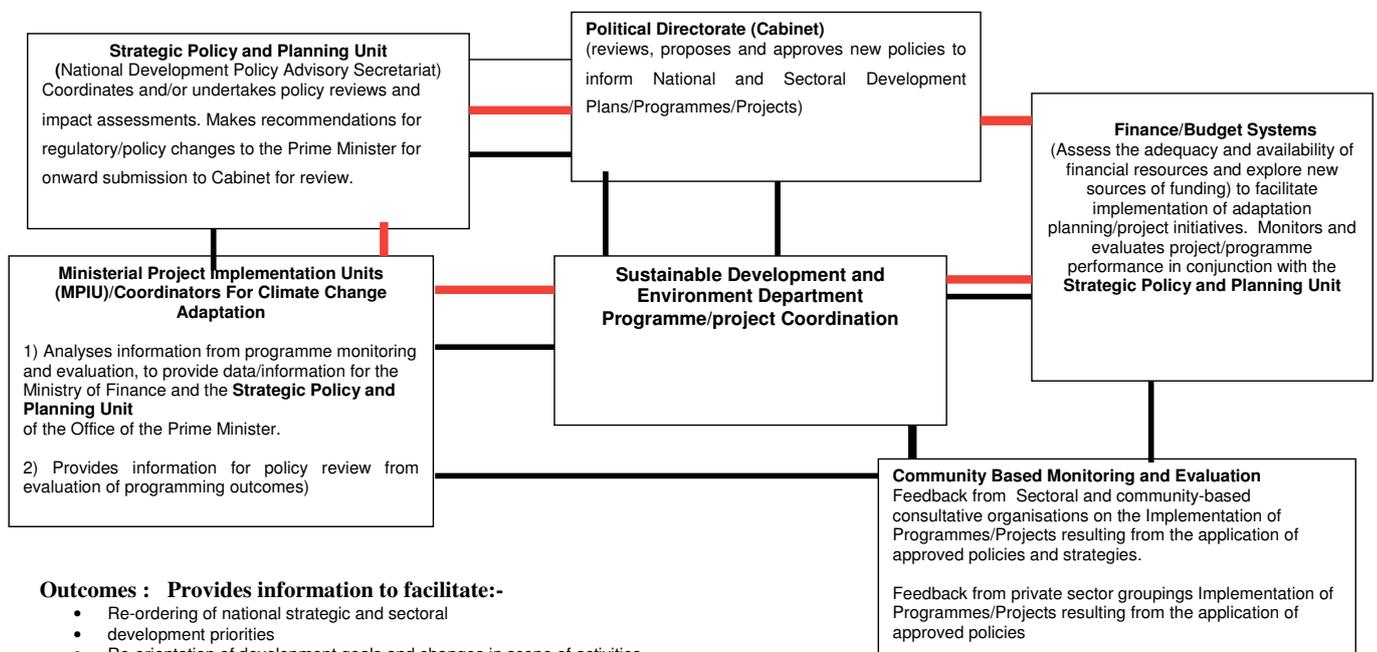


Figure: 3 Integrated Policy, Planning & Implementation Framework for Climate Change Adaptation: A Participatory and Sustainable Development Approach in Promoting Low Carbon Cities in St. Lucia
A Framework for Monitoring And Reviewing The Implementation Of Climate Adaptation Policies/Projects and Programmes



Outcomes : Provides information to facilitate:-

- Re-ordering of national strategic and sectoral development priorities
- Re-orientation of development goals and changes in scope of activities
- Establishment of new performance indicators
- Recommendations for policy changes and establishment of new policies to be communicated to the Political Directorate for review
- Identification of best and worst practices to inform future policy formulation for national strategic policy and programme interventions