Chapter 6

The Political Economy of Transitioning to a Green Economy in Mauritius

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6.1 Introduction

Sustainable development is now firmly established as the dominant development paradigm around the world. The growing general scientific consensus on the effects of heavy industrialisation and economic growth on global warming, in particular, is reinforcing the notion that 'business as usual' is no longer sustainable. Climate models predict changes in sea levels and severity of storms, and the patterns of rainfall, among others. Such changes will have greater impact on developing countries, and more particularly on small island developing states (SIDS), because of their inherent vulnerability. There is also the realisation that sustainable development is not just an environmental issue: the dire economic, developmental and societal consequences of issues like climate change and environmental degradation puts the economic planners and financial managers at the centre of the debate. As a consequence, low-carbon growth as an alternative to 'business as usual' is fast becoming the preferred model for major economies in both developed and developing countries. Its relevance lies in the fact that one of the objectives of low-carbon growth of the green economy is to manage risks posed by global warming and climate change, and to take advantage of the opportunities that they offer in terms of new technology development and greater efficiency in industrial processes. It has now been clearly demonstrated that sustainable development makes economic sense, as more jobs are created and the externalities that traditional models of development generate are limited. Furthermore, it helps create new and decent jobs in new sectors.

The green economy was also given significant impetus through its identification as one of two key themes for the Rio+20 UN Conference on Sustainable Development in June 2012. Governments around the world acknowledge that building green economies and green growth in the context of sustainable development can provide resilience to external shocks, reduce environmental risks, and protect and enhance the natural resource base of the economy, particularly in the context of small states. However, the current international discourse on green growth and the green economy has paid insufficient attention to the challenges of small states. Yet, several small states have begun conceptualising their pathways to a green economy, with different conceptualisations and approaches emerging. This chapter reviews the practical policy processes implemented in Mauritius to promote a green economy, and examines some of the benefits and challenges thereof.

6.2 Mauritius: human and natural capital

The small state of Mauritius is located in the south-west region of the Indian Ocean at a latitude of about 20° south of the Equator and a longitude of about 60° east of Greenwich (Figure 6.1). It consists of the main island of Mauritius and its dependencies, Rodrigues (560 km east-north-east), Agalega (930 km to the north), St Brandon (400 km to the north) and Tromelin (480 km to the north-west and jointly administered by France). Mauritius covers a total land area of 720 square miles, and is almost entirely of volcanic origin, except for stretches of beaches, coral reefs and small patches of alluvium at the mouths of rivers. Pear-shaped, mountainous with its highest peak standing at 2,711 feet above sea level, Mauritius emerged from the ocean floor some 5 million years ago. Volcanic activity over thousands of years has given rise to varied types of soil. The varied relief has resulted in several distinct climatic regimes, with the prevailing south-east trade winds depositing moisture in the form of rainfall over the central and highest part of the island. A significant feature of Mauritian climatology, however, is the occurrence of tropical cyclones during the summer months.

The isolation and remoteness of the island, the fact that it was never a part of an older land mass, its distinct microclimates and the recent permanent settlement by humans mean that a unique flora and fauna have developed. Almost 300 endemic species have been identified, of which the most famous was the Dodo, a large flightless bird now extinct. Permanent human settlement started in the fifteenth century and, ever since, the environment has come under severe threat as its few precious resources (such as ebony) have been exploited indiscriminately.

The 2011 Population Census put the Mauritian population at 1.3 million, with a low annual growth of 0.4 per cent over the past ten years. Coupled with an increased average life span, the shape of population pyramid now shows a narrowing at the base

Figure 6.1 Mauritius in the Indian Ocean

Source: http://mauritiusattractions.com/mauritius-location-map-i-66.html (accessed 18 February 2014).

and widening at the middle and at the top. Thirteen per cent of the population was aged above 60 years in 2011 compared with 9 per cent in 2000, while the child population aged under 15 years declined from 25 per cent to 20 per cent over the same period. The population density of Mauritius is 604 persons per square kilometre, which ranks the country the sixth most densely populated in the world. The population density in towns (3,000 persons per square kilometre), however, is 7.5 times the density in villages (400 persons per square kilometre) (Statistics Mauritius, 2011).

In terms of education, the level has improved in the past decade but remains quite modest in general. Thirty-one per cent of persons aged 16 and over have completed secondary schooling, up from 21 per cent in 2000, and 4.9 per cent have a tertiary qualification compared with 2.3 per cent ten years ago.

6.3 Development trends

Owing to the inherent constraints of economies of small states, and in particular SIDS, and a lack of natural resources,[1] Mauritius has had to adopt an outward-looking strategy and to constantly innovate to stay afloat. Its economy is, thus, very much export-oriented, with sugar and textiles constituting the main exports, particularly to the USA and the EU. The growth strategies put in place by successive governments since independence in 1968 have proved to be fairly successful. In fact, Mauritius has developed from a low-income, agricultural-based economy to a middle-income diversified economy with growing industrial, financial and tourist sectors. For most of that period, annual growth has been in the order of 5–6 per cent. This has resulted in more equitable income distribution, increased life expectancy, lowered infant mortality and a much-improved infrastructure across the nation.

Essentially a mono-crop economy based on sugar since the first French permanent settlements, an export-oriented industrialisation process started in the early 1970s. The establishment of the Export Processing Zone scheme was designed to encourage the setting up of labour-intensive, export-oriented manufacturing enterprises to address the growing problem of unemployment prevailing at that time. Such a strategy was made possible by preferential access to the European markets under the Lomé Convention that Mauritius was benefitting from, and by inflows of foreign investment from Hong Kong, France, the UK and Germany. Along the way, the package of investment incentives for manufacturing and support services sectors were enhanced and extended to promote technology-driven and higher value-added activities.

Once the manufacturing sector was firmly established, attention became focused on developing the tourism sector as a significant economic pillar, with its great potential to increase foreign exchange earnings in the country and generate meaningful employment. A range of investment incentives were provided to boost the development of the tourism sector in terms of fiscal incentives and financial support for hotel development and management services. By the early 1990s, the Mauritian economy was therefore powered by three main economic sectors, namely sugar, textile products and tourism, and dependency on agriculture reduced. To allow the economy to embark on higher levels of development, however, new areas

of growth had to be explored, while continuing to consolidate and modernise the traditional economic sectors. The services sector, in particular financial services, thus became another major area for further economic development, with particular focus on banking and insurance. The Banking Act was amended in 1988 to enable offshore banking to be carried out, followed by the establishment of a stock exchange in 1989, through the enactment of the Stock Exchange Act 1988. The domestic financial sector was liberalised in 1991, with the abolition of exchange control in 1994. Such measures helped reorient macroeconomic policy, while creating a financially sound and efficient domestic financial system. Through comprehensive legislation, various fiscal incentives were put in place to attract international investors to take advantage of the offshore facilities in Mauritius. Trade-related activities were likewise given a boost with the establishment of a Freeport in 1992, designed to position the island as a financial, business and trading hub in the Indian Ocean region.

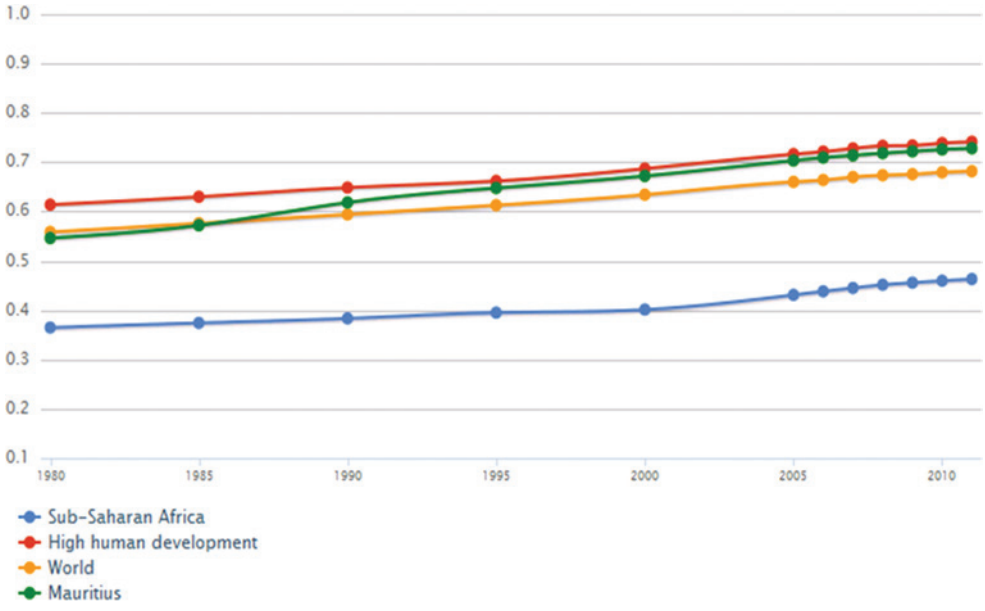
The sound economic policies put in place since independence by succeeding governments have resulted in a diversified economy in which sugar cane, which formed the basis of the island's mono-crop economy, now accounts for only 15 per cent of export earnings. The textile and apparel industry is now strong, boosted by the African Growth and Opportunity Act (AGOA), while Mauritius' thriving financial services sector has been able to attract 32,000 offshore entities that mainly service India. Prudent banking policies have no doubt helped mitigate some of the worst negative effects of the 2008–09 global financial crises, but some of the effects are being felt. Growth is continually being revised downwards. Tourist arrivals, for example, decreased by about 0.5 per cent while revenues also fell by 0.4 per cent in 2012.

Mauritius, nevertheless, has had a long history of successfully adjusting to changing circumstances and creating opportunities out of constraints. Its remarkable economic success over the years is widely recognised as one of the fastest growing in sub-Saharan Africa, so much so that the World Bank now classifies Mauritius as an upper-middle-income economy. In fact, Mauritius has continued to improve its Human Development Index (HDI), which in 2013 reached 0.737 (world ranking: 80) compared with 0.546 in 1980 and 0.672 in 2000 (data published by UNDP) (see Figure 6.2).

Unfortunately the rapid pace of development has had some dire consequences on the country's natural resource base which, in a small-state context, is very limited. The challenge of meeting human demands within the global ecological limits has been illustrated by mapping the HDI and ecological footprint in Figure 6.3. The figure shows that Mauritius (represented by a star) has a relatively bigger ecological footprint than countries with a similar HDI. In fact, in 2007 (Carbon Footprint Network 2010), with an HDI of 0.714, Mauritius had a total ecological footprint of 4.2 global hectares per person.

The increasing land area being built upon is also cause for concern. Latest available data on land use show that 25 per cent of the land area (46,500 hectares) comprises built-up areas. Sugar cane plantations occupied 39 per cent (72,000 hectares) of the total land area of the Island of Mauritius in 2005, while forest, scrub and grazing

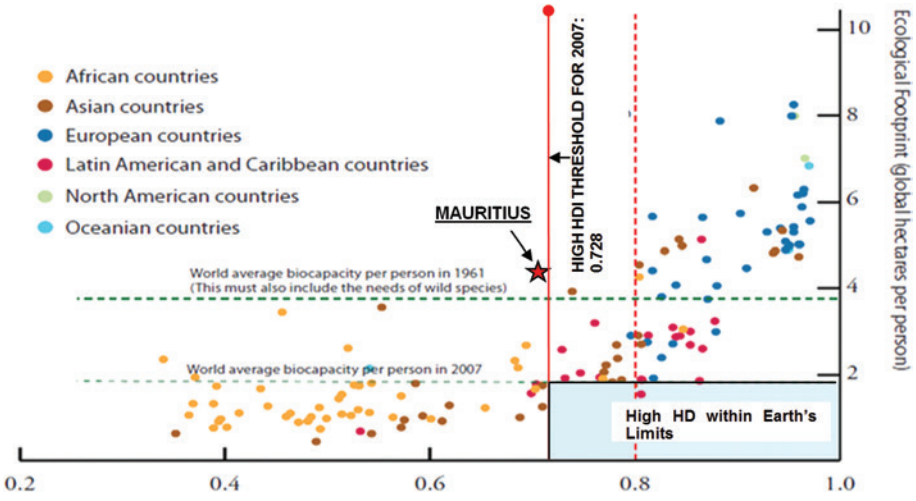
Figure 6.2 Human Development Index: trends 1980 to 2010



Source: Data available at http://hdr.undp.org/en/data (accessed August 2012).

land occupied 25 per cent (47,200 hectares). From 2010 to 2011, the effective area under sugar cane and tea cultivation decreased by 3.8 per cent (from 62,100 to 59,724 hectares) and 6.7 per cent (from 698 to 651 hectares) respectively, while that under tobacco cultivation increased by 4.2 per cent from 213 to 222 hectares. During the period 1995–2005, the land occupied by sugar cane, tea plantations and forestry decreased, mainly due to the increase in built-up areas. Forest areas, which are vital

Figure 6.3 Human Development Index and ecological footprint



for the protection of the ecosystem, have been declining: from 47,159 hectares in 2010 to 47,140 hectares in 2011.

For future sustainability, Mauritius should strive towards the bottom right hand corner of Figure 6.3. The achievement of a high development index has been at the expense of its natural resource base. Now the country will have to drastically reduce its carbon footprint to ensure that it preserves its best agricultural lands (to ensure food security) and the regenerative capacity of its natural ecosystems. To be able to achieve this, a green economy development path is essential to ensure that more is achieved with less.

6.4 Green economy: the view from stakeholders and business leaders

The stakeholders interviewed for this study provided valuable insights into their specific interests in relation to global and national efforts to deal with sustainable development, as well as the government's attempts to steer the country towards a green economy path. Overall, the respondents:

- considered sustainable development a major challenge the country has to face;
- were well aware that the development path followed so far has had significant impacts on the environment and quality of life in general;
- overwhelmingly welcomed government initiatives to address the issues;
- were not very aware of the implications of a green economy;
- agreed that at present there is not much demand for, nor supply of, green products and services;
- cautioned against any haste in implementing green economic models; at least they considered public participation in any decision relating to shifts in development paradigms to be essential;
- hoped that there would be a level playing field and that the green economy would not used to deny access of local exports to overseas markets;
- agreed that initial investment costs in clean technology would be higher, but generally agreed that operating and maintenance costs could offset those extra costs; and
- felt that the local capacity to supply green goods may be hampered by lack of skills, and factors such as refusal by insurance companies to insure installations like wind turbines/farms.

Such reactions are not surprising given that there is no international or national consensus on the meaning of a 'green economy'. The concept is still considered far too fuzzy for any meaningful implementation. For the purposes of this study, UNEP's working definition of a green economy will be retained: 'A system of economic activities related to the production, distribution and consumption of goods

and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks and ecological scarcities' (UNEP 2011). Some stakeholders argued that this is nothing new and that the principles of sustainable development as defined at the UN Conference on Sustainable Development held in Rio de Janeiro, Brazil, in 1992, laid the basis for green growth.

6.5 The national response to the sustainable development challenge

The economic transformation of Mauritius since independence is nothing short of a miracle. However, the overemphasis on financial and economic viability of investments has had dire consequences for the natural resource base. Economic growth translates, and increased economic activities in turn generate social and environmental costs and benefits. While economic growth has resulted in more equitable income distribution, a better quality of life, higher life expectancy and vastly improved infrastructure, the costs to the environment cannot be underestimated. The 'pollute now, clean later' principle underlying the neoclassical growth model has resulted in loss of agricultural land, increasing levels of pollution of freshwater resources and the coastal zone, loss of biodiversity, uncontrolled speculation on land (thus pricing a large number of families out of the land market) and declining quality of air. These problems have been exacerbated by emerging global issues like climate change, the effects of which are already being felt by way of decreasing mean annual rainfall and reduced freshwater supplies.

It has to be recognised, however, that the government has been conscious of the need to balance economic objectives with social and environmental imperatives. There have been numerous achievements in terms of awareness creation, capacity building, reinforcement of legislative and regulatory frameworks, and integration of environmental concerns into national economic development strategies. Despite all these efforts, environmental degradation and social problems have continued to worsen. With global and national resources fast depleting, there is a need to improve efficiency of production systems, use less energy and natural resources and produce more. A green economic development strategy is being promoted as the way forward. The challenge is to devise a transition strategy that improves the lives of all citizens by providing them with essential energy and other services that do not disrupt the climate system, degrade the environment or create conflict over resources, while producing enough wealth to continue investing in improved infrastructure and job creation.

6.5.1 The MID policy and action plan

The transition strategy was announced by the Government of Mauritius in 2008. It was articulated around a long-term vision for the sustainable development called the Maurice Ile Durable (MID)[2] – Sustainable Mauritius – project. The strategy was meant to depart from the fragmented and sectoral approach adopted so far, while at the same time dealing with sustainable development. It aims to bring together the different development strategies and work towards a common goal, by transforming

the behaviour of the population and the way they do business, work and live. Since then the vision, which is to make Mauritius a model of sustainability particularly for small states, has been driving a number of policies and initiatives aimed at sustainable development. Located within the Prime Minister's Office, the MID Commission has conducted a number of stakeholder consultations. It was agreed that the National MID Strategy would frame sustainable development and green economic growth in the context of five 'Es': **e**nergy, **e**nvironment, **e**quity, **e**mployment and **e**ducation. In April 2011, the Ministry of Environment and Sustainable Development (MOESD) produced the MID Green Paper, which constituted the foundation of the MID policy development process and a milestone for stimulating discussion on the MID concept in the public arena.

Following the publication of the Green Paper, extensive consultations were held to further refine the MID concept in line with the agreed policy formation process, which required it to be highly participative. Consultation has brought benefits of local and regional knowledge, experience and expertise, has raised awareness and gathered support for the process. It is hoped that the extensive public participation will eventually help the adoption and implementation of MID policy measures. The MID concept has now entered into a new phase with the launch (in June 2013) of a National Policy and Action Plan for Maurice Ile Durable, to provide for clear guiding principles and mechanisms aimed at achieving sustainability. A firm of consultants was given the task of preparing the 10-year MID Policy and Strategy, setting realistic and costed activities and projects; undertaking a review of the institutional and legislative framework for sustainable development; and developing indicators to monitor and make recommendations for the implementation of the MID Policy, Strategy and Action Plan.

The policy and strategy are intended to reflect:

- the current situation in Mauritius, including the institutional framework, progress in implementing MID, and the political and regulatory context;
- the MID vision for each of the five 'Es' (**e**nergy, **e**nvironment, **e**quity, **e**mployment and **e**ducation);
- the outputs of the MID consultations and working groups, including those recommendations from the working groups that may be considered as proposed policies;
- previous work on the current project, including meetings with ministries and other stakeholders, and attendance at stakeholder workshops; and
- the practicability of policy proposals, so that policies are workable and appropriate for the current situation of the Republic of Mauritius.

6.5.2 Sustaining green Mauritius

To sustain the MID vision and send the proper signal to the population in general, and the business community in particular, the December 2009 Budget Speech

was entitled 'Shaping Recovery, Consolidating Social Progress, Sustaining Green Mauritius' and it resolved to:

- accelerate the pace of progress on the road to a Sustainable Island (MID);
- focus on high-tech, low-carbon, renewable energy and green quality living; and
- entwine its agenda for investment in public infrastructure, so that such investment enriches the country's environment.

A number of measures, with significant innovative and transforming potential, were also announced. Among these were:

- a massive 15 billion Mauritian rupees (MRs/MUR) investment in road infrastructure that would add 360 km of roads to the network, while upgrading and widening sizeable sections of the existing network;
- 10.6 billion MUR for a new airport terminal;
- 2.9 billion MUR for a new runway and new taxiway;
- 3.5 billion MUR for the strengthening and expansion of the container terminal at the seaport;
- 2 billion MUR to raise power generating capacity;
- development of a framework to support science, technology and innovation (STI), and establishment of a fund to finance market-oriented research projects and support creativity;
- promotion of use of solar water heaters;
- installation of wind turbines on a pilot basis;
- a landfill gas-to-energy project;
- composting of municipal waste;
- development of a National Grid Code that will allow the purchase of electricity from small independent power producers;
- adoption of an Energy Efficiency Bill;
- a subsidy of 32 million MUR to replace incandescent lamps with 2 million energy saving lamps;
- setting up of an Energy Efficiency Management Office;
- investment in research and development (R&D) in green buildings; and
- 10 billion MUR investment in the water sector.

6.5.3 The Maurice Ile Durable (MID) Fund

Conscious that the MID Policy and Action Plan formulation would be a lengthy process, and in line with the budget provisions, in 2008 the government set up a

fund called the MID Fund administered by an inter-ministerial committee. As a specialised fund provided for by the Finance and Audit Act, it aimed at financing projects, schemes or programmes:

- for the conservation of local natural resources with a view to achieving sustainable development;
- for mitigation against, adaptation to and increase in resilience to climate change;
- for the promotion of sustainable consumption and production, including efficient use of resources, cleaner production, sustainable public service practices and an increase in the use of sustainable products;
- to explore and harness potential sources of renewable energy and to reduce dependency on imported fossil fuels;
- to foster research, development and innovation with a view to promoting sustainable development;
- for the promotion of energy conservation and energy efficiency;
- to encourage the production of energy from renewable energy sources on a small scale by any individual, household, business or group and for the sale of any surplus to the national grid;
- for sustainable transportation which promotes environment-friendly and low emitting, fuel-efficient motor vehicles, including buses under the Bus Modernisation Programme;
- to encourage and promote sustainable waste management through waste reduction, reuse and recycling;
- to educate people and raise awareness on sustainable development;
- to encourage efficient and responsible use of water resources; and
- programmes which are incidental to or conducive to the attainment of any of the above objectives.

A selection of projects that the MID Fund has financed, or plans to finance, are set out in Table 6.1.

6.5.4 The blue economy

As part of its continued economic diversification programme, and in line with its MID Vision and green economic development drive, the Government of Mauritius decided to give fresh impetus to its Land-Based Oceanic Project, which was launched in 2006. It was felt that such an industry could well grow into one of the major pillars of the Mauritian economy. This was largely a result of the global efforts to regulate the Exclusive Economic Zone (EEZ) and exploitation of the seabed in international waters, and the realisation that the EEZ of Mauritius was 1,000 times the size of its land area. In fact, the EEZ covers an area of 2.3 million km^2, which includes the 396,000 km^2 of continental shelf extension that it co-manages with Seychelles.

Table 6.1 Activities financed under MID Fund (MIDF)

SN	Items	Sponsor	Funding	Status	Outcomes/Benefits
1.	Solar Water Heater Phase 2 Scheme	MIDF Initiative	Project value: MRs250 m[a] Rs 19 m disbursed	Being implemented. As at date, some 13,000 applications processed.	Some 24,000 households will have reduced gas and electricity charges at end of project. Benefits environment and resource use.
2.	BEC School Photo Voltaic Project	Catholic Education Board (BEC) Initiative	Project value: MRs 17.5 m No disbursement yet	Being implemented. 42 schools (primary, secondary and technical) will be fitted with photo voltaic system.	Savings on electricity, notably on weekends and school holidays, sold to CEB. BEC commits not to seek grants from government for electricity bills after Year 8 following PV system installation.
3.	Ministry of Education School Photo Voltaic (PV) Project	MIDF/Ministry of Education (MoE) Initiative	Project value: MRs15 m No disbursement yet	Being implemented. 10 primary and secondary schools involved.	Reduced electricity charges for the schools. Based on this pilot project, MoE proposes to extend to other government schools.
4.	Poster and PowerPoint Presentation Competition, PV System in School	MIDF Initiative	Project value: MRs176,000 No disbursement yet	Being implemented. All secondary schools involved.	Will arouse interest and enthusiasm of students in participating in design of information on PV systems targeted at school population and school communities.

(*continued*)

Table 6.1 Activities financed under MID Fund (MIDF) (continued)

SN	Items	Sponsor	Funding	Status	Outcomes/Benefits
5.	National Empowerment Foundation Housing Units to be fitted with Solar Water Heater (SWHs)	National Empowerment Foundation Initiative	Project value: MRs590,000 No disbursement yet	Approved for implementation. 59 National Empowerment Foundation houses being built at Gros Cailloux to be fitted with SWHs.	The households will benefit from reduced gas and electricity expenses. Specifically targeted at low-income group.
6.	Training SWH Technicians	MIDF/Mauritius Institute for Training and Development (MITD) Initiative	No MIDF funding	Being implemented. Joint MIDF/MITD initiative for training in: (i) manufacture, (ii) installation of solar water heaters. Self funded by trainees.	Country and workers benefit from improved skills. Will generate SWH manufacturing potentials. Households benefit from enhanced installations and maintenance practices.
7.	Household Composting Scheme	MIDF Initiative	Project value: MRs10 m No disbursement yet	Being implemented. To mobilise and encourage household composting. Approved household composter from local manufacturer to form part of a subsidised grant scheme. Concurrently, NGOs will undertake public education awareness programmes and workshops on composting.	Will lead to reduced household waste and hence multiplier effect on waste management at country level. Households will thus apply organic compost, leading to reduced chemical fertiliser use.
8.	Household Rain Water Harvesting Scheme	MIDF Initiative	Project value: MRs16 m No disbursement yet	Approved for implementation. Scheme to be run similar to Household Composting Scheme. Project under preparation.	More optimum use of natural resources. Reduced pressure on Central Water Authority and water management.

Note: [a] m, million; Rs, Mauritian Rupees; exchange rate, 30 rupees to the US$ (approximation based on average rates for 2012–2013).

At present there is no clear-cut strategy regarding the land-based oceanic industry, but the results of surveys carried out by Texaco (USA) in 1974, by a Canadian firm in 1997 (for oil) and by India (bathymetry and polymetallic nodules in 1987) have rekindled interest in the vast potential that this newly discovered 'blue economy' option could represent for Mauritius.

The following potential growth poles of the 'blue' economy have been identified:[3]

- *Energy production*: from waves and by exploiting the cold water circulating at a depth of 1,000 metres between Mauritius and Hawaii (the Conveyor Belt).
- *Algae production*: algae production has been carried out by the Mauritius Research Council in conjunction with the Ministry of Fisheries on an experimental basis and its potential recognised. The global algae industry is valued at US$6 billion and services the pharmaceutical, food and agricultural sectors.
- *Water supply*: Mauritius is a water-stressed country and seawater can be desalinated to make up for the freshwater deficit that the country experiences occasionally.
- *Fossil fuels:* surveys carried out in the 1970s confirmed the presence of oil deposits in the EEZ, but more in-depth explorations are needed to determine whether they are economically viable deposits.
- *Bottled water:* the bottled water industry is fast growing, with around 90 billion litres are sold annually around the world. Mauritius has known reserves of deep sea mineral water, which is in high demand.
- *Thalassotherapy*: this can add to the multitude of services that the tourism industry already offers.
- *Polymetallic nodules*: surveys have confirmed significant deposits of polymetallic nodules in and around the EEZ. These nodules are rich in manganese, copper, nickel and cobalt.
- *Air conditioning*: seawater air conditioning can be a cost-effective way to provide air conditioning to the hotel industry in particular. So far, experiments have not been encouraging, but there is still much hope in its potential.

6.5.5 Energy

As in any country, energy is critical to the continued development of Mauritius. Despite numerous well-intentioned policy announcements, fossil fuel remains the dominant source of primary energy used to generate electricity in the country. In 2010, coal was the primary energy source in Mauritius (28.9 per cent), while diesel accounted for 14.9 per cent of energy and fuel oil 16.2 per cent. The share of bagasse (the residual pulp from sugar cane processing and renewable) has now dwindled to 15.7 per cent. This is inconsistent with low-carbon growth, which has been identified as a key component of the green economy concept, but economic realities are such that fossil fuels continue to play a significant role in energy production. The marginal cost of a unit of electricity (kWh) produced from coal is MRs2.30 compared with

MRs 5.30 from heavy fuel (Kasenally 2012). In comparison, energy produced from wind costs about MRs7 per kWh.

Fossil fuels thus constitute the primary fuel source for the transportation and manufacturing sectors. Energy, hence fossil fuels, is also the primary source of CO_2 emissions, accounting for around 60 per cent of emissions (3,639 tonnes in 2010). Dependency on imported fossil fuels was 83.1 per cent in 2010, and it is hoped that such dependency will be significantly reduced. For now, it seems that future economic growth is very much based on a steady and increased supply of cheap oil. Since 2004, oil prices have regularly risen, reaching US$40 per barrel in May 2004, US$147 in August 2008, and then collapsing to US$30 in late 2008 and again increasing to reach an average for 2012 (from January to June) of US$106 (Institute of Environmental and Legal Studies 2012) It has been noted that, surprisingly enough, this sharp increase in oil prices has had little visible effect on the economy to date, and no one seems to know how high oil prices can climb before impacts are noticeable. Because this state of affairs is not sustainable, energy supply and demand management are at the heart of the MID concept and are key motivators for change. The current energy challenge in Mauritius is to provide reliable, affordable energy while shifting energy supply towards more localised renewable sources.

The present energy policies intend to address both supply and demand requirements through:

- further diversifying energy supplies;
- improving the efficiency of energy use;
- addressing environmental and climate changes; and
- modernising the country's energy infrastructure.

The government adopted a Long Term Energy Strategy (2009–2025) in 2008. The strategy aims to:

- reduce the country's vulnerability to imported fossil fuels and their volatile prices;
- promote economic growth and job creation;
- democratise energy supply, with a more transparent and fair regulatory environment;
- secure affordable energy to consumers;
- ensure the financial sustainability of the electricity utility; and
- promote long-term sustainable development in line with the concept of 'Maurice Ile Durable'.

As part of the Long-Term Energy Strategy, a Grid Code for connecting electricity produced by small independent power producers (producing less than 50 kW to the grid of the Central Electricity Board [CEB]) has been developed and implemented. The code contains feed-in tariffs for electricity sold, so as to encourage small power producers to produce electricity from renewable energy sources for their own

consumption and to sell any excess to the CEB. It also constitutes a large incentive to the market, as suppliers have been complaining about the costs of energy produced by wind and sun, which are so high that they discourage potential buyers. The strategy also provides for a significant increase in the share of renewable sources from 17.5 per cent to 35 per cent, introduction of energy efficiency measures (like energy labelling), modification of building codes to reduce energy consumption, and regular energy audits in industry.

6.5.6 Sustainable consumption and production

Independent of the MID Policy and Action Plan formulation, government the developed a National Programme on Sustainable Consumption and Production (SCP) as a ten-year framework programme on sustainable consumption and production patterns, with support from the UN and other agencies ('the SCP Programme'). The SCP Programme comprised a National Programme for Sustainable Consumption and Production for Mauritius; the implementation of instruments for sustainable consumption and awareness-raising programmes/campaigns on SCP (in areas such as water conservation, energy efficiency, waste minimisation and recycling); and policies and/or infrastructure to support citizens' choices for responsible consumption of products and services (including consumer information tools). Overall, the SCP Programme is a mix of 44 capacity-building, educational surveys, standards development and research components to be implemented by various ministries and organisations. Of particular interest is the fact that the SCP laid emphasis on sustainable public procurement, with a view to:

- Promote good practice internationally through capacity building and the promotion of the use of sustainability criteria in public tender documents.
- Engage public authorities and businesses in emerging and developing economies to curb polluting emissions, and face the international environmental challenges such as climate change, chemicals, hazardous waste etc. At the same time, it will increase the competitiveness of these businesses in international markets, where issues such as climate change and resource depletion are already addressed in public procurement policies (Japan, EU, USA, Canada).
- Provide expert assistance for governments wishing to develop an SCP policy; to raise awareness of all stakeholders in the procurement process (e.g. government purchasers, policy-makers) and convince them of the need to serve as a role model by buying goods and services needed for their day-to-day activities in a sustainable way; by taking into account economic, social and environmental aspects; and to raise interest in sustainability issues through concrete actions.
- Address the increasing gap in safety, resource efficiency and environmental standards between products sold on European and on developing world markets. Sustainable public procurement has to be seen as a tool to boost internal markets for sustainable products and services, so as to avoid the increasing demand from Europe or other more environmentally conscious markets creating a sort of market niche for export of 'greener goods' to developed countries.

The green economy means producing more with less, and SCP aims to promote an energy- and resource-efficient economy by changing production and consumption habits. The SCP Programme, if properly implemented, will help maximise businesses' potential to transform environmental challenges into economic opportunities and provide a better deal for consumers. The challenge is to improve the overall environmental performance of products throughout their lifecycle, to boost the demand for better products and production technologies, and to help consumers in making informed choices.

6.5.7 Financing green growth

Mauritius has been recognised as a pioneer in the use of green taxes (Parry 2011) for addressing externalities generated by economic activities, like poor air quality, road congestion and greenhouse gas emissions. The country has introduced a form of carbon taxation, while motor fuel taxes are substantial; the vehicle ownership taxation system has been revamped to encourage use of lower-capacity engines; the use of plastic bags has been discouraged through tax policy; and road pricing mechanisms are being explored as a way to deal with traffic congestion.

At present, 29.4 per cent of the cost of a litre of unleaded fuel is made up of the following taxes, levies and contributions:

- excise duty;
- Maurice Ile Durable Levy;
- contribution to Road Development Authority;
- contribution to Rodrigues Transportation and Storage; and
- contribution to subsidies on liquefied petroleum gas, rice and flour.

The MID Levy is in fact a tax on fossil fuels established in 2008, and the aim was to use the proceeds to finance clean energy projects. From 2011 the levy was raised to MRs0.30 per kilogram of coal, per kilogram of LPG and per litre for petroleum products. The levy helped raise MRs239 million in 2008 (0.5 per cent of total tax revenue), and it is estimated that MRs577 million was collected in 2011.

Additionally, an Environmental Protection Fee (EPF) helped bring in MRs159 million in 2008, the year in which it was promulgated. The objective of the EPF is to raise funds for the promotion of local environmental initiatives aimed at preventing and reducing pollution. The revenue collected is being credited to the government's Consolidated Fund.

The base for application of the EPF has been extended, through the above new regulations made under the Environmental Protection Act, to include inter alia mobile phones (MRs50 per unit), batteries for vehicles (MRs50 per unit) and pneumatic tyres (MRs50 per unit), and is applicable to:

- hotels, guesthouses and tourist residences, irrespective of the number of rooms;
- stone-crushing plants and manufacture or processing of aggregates, concrete blocks, pre-cast units;

- importers of mobile phones;
- importers of batteries for motor vehicles; and
- importers of pneumatic tyres for all vehicles.

What has been noted, however, is that not all monies collected go towards the promotion of green growth *per se*. For 2012, for example, only MRs318 million has been allocated to MID-related projects, the rest lost in the national coffers (the Consolidated Fund).

6.6 Challenges facing green economy

6.6.1 Availability of green products locally

The range of goods that are certified green, sustainable or energy efficient is shown in Appendix 6.1 (for locally produced) and Appendix 6.2 (for imports). The range and number of suppliers continues to increase. The presence of such goods in the media, billboards and exhibitions cannot go unnoticed. There is the risk of 'greenwashing' products as a commercial strategy, so that these lists merely reflect what is being advertised. A fairly exhaustive listing from local business directories shows that the actual number of companies offering sustainable products and services could be around 150.

In general, businesses argue that there is either not much demand for such products from consumers or the higher costs involved will render them vulnerable to competition. Government policy is also partly responsible for lack of interest: the import of R22-based[4] air conditioning (A/C) units is a case in point. Developing countries are under no obligation to ban the import of such units, and their import is tolerated despite strong national commitment to sustainable development. Those companies willing to import more efficient appliances will be at a disadvantage vis-à-vis less scrupulous competitors. Many sustainable products are also being developed and sold at no extra cost: household detergents and paints are examples.

The few companies who have ventured into green products have done so either at the instigation of their overseas customers, or because of the personal convictions of the owners and top management. Export-oriented businesses have to ensure that their products meet stringent environmental standards in order to be able to enter some markets (like the EU). They are therefore compelled to use products that are certified and produced according to acceptable standards. There is also a breed of business leaders who are convinced that sustainable production is the way forward, and they have voluntarily set high standards for their products. In the case of one paint manufacturer, for example, the standards even exceed those set by the EU. In fact, the EU 2010 Volatile Organic Compound (VOC) limit is 30 g/litre, but the paints produced by the company have a lower content of VOCs.

6.6.2 The cost factor

Costs of green products are generally higher by about 15 per cent on average, but in some cases it can reach 90 per cent. Forest Stewardship Council (FSC)-certified paper

is 10–15 per cent higher in cost, while A/C units using eco-friendly refrigerants and energy efficiency rating labels are 20–40 per cent more expensive. Degradable plastic is 15 per cent higher in cost. Prices increase three-fold for solar A/C units. The 'greener' paints are, on the other hand, at par in terms of cost with 'normal' paints. There is a feeling that once the market becomes more competitive, prices will go down, as has been the case in other parts of the world. In the construction industry, the recent timid experience with green buildings has shown that simple design changes and soft technology can achieve good results without additional costs to the builder. Gold star-rated building (the highest rating a green building can get according to US Green Building Council), however, can increase building costs by about 6 per cent according to estimates by a Leadership in Energy and Environmental Design (LEED) consultant. The only major building claiming to be fully 'green' in design (BREEAM certified) has been completed recently, but the author understands that unit cost was four times higher (particularly for energy-saving devices) than normal construction. The country of origin can also influence the cost; for example, paper sourced from South Africa is 15–20 per cent more expensive than from Indonesia, and it becomes 30–50 per cent more expensive if imported from Europe. However, these costs do not take into account whole-life cost savings. In fact, the premium that green products carry can be effectively offset if whole-life costing is taken into consideration, given lower operating and disposal costs. The Central Electricity Board carried out evaluations based on lifecycle assessment and costing (LCA), and has now started purchasing some equipment like printers that conform to sustainability criteria despite higher initial costs.

6.6.3 Availability of sustainable goods and services in the international market

In terms of ability and capacity to supply the goods and services required to sustain green growth, the suppliers do not foresee any major problem. Many manufacturing concerns are licensed to produce goods by international leaders who have invested significantly in the development of green products. Ecolab, for example, is a world leader in the provision of cleaning, food safety and health protection products and services, and has licensing agreements with a local manufacturer. Most production units have spare productive capacity (one paint manufacturer can treble its production, for example, as it is currently operating a single, eight-hour shift), hence any increase in demand can be satisfied almost immediately.

When certain goods are not available through local production, they can be easily imported given the extremely business-friendly environment in Mauritius. Mauritius is 17th in World Bank's Ease of Doing Business rankings (up from 49th four years ago). It also ranks high on the Mo Ibrahim Index of African Governance, the World Competitiveness Report and the Africa Competitiveness Report. Efforts are continuing to modernise the investment climate and the licensing system. The objective is not only to attract foreign investment, but also to promote local entrepreneurship. Furthermore, Mauritius operates a relatively streamlined trade regime, and a number of customs tariff reform measures introduced in recent years have rationalised the tariff structure making

import of most goods easy. The solar water heater programme initiated in 2008 by government illustrates well how quickly a demand gap can be filled. In less than one year, 29,000 solar water heaters were sold and the number of importers jumped to 45 across the island.

Barring cost, the availability of green products and technologies on the world market is not construed as a problem. In fact, the global market for green products and services is growing. Environmental and socioeconomic factors are changing the competitive landscape for corporations. Sustainable product and service design is becoming a new point of leverage for brands wishing to retain their competitive advantage in the coming years. In this regard, some enterprises, policy-makers and civil society players have already started to understand green products and services as a framework for driving growth, increasing shareholder value, heightening stakeholder satisfaction and protecting and enhancing environmental and socioeconomic standards. Initially, there were fears that sustainability requirements would backfire and discourage a transition to innovative and green products because of cost implications. Experience from the European market has demonstrated that sustainability objectives can in fact drive innovation and lower costs significantly enough to compete successfully with traditional goods. Since the European Ecolabel was established in 1992, the number of companies receiving the label has increased year after year. Furthermore, green product networks (GPNs) are being established in many parts of the world (e.g. Japan, Korea) and these are actively promoting and cataloguing sustainable goods. Mauritius can, therefore, broaden its local supply chain in green goods.

6.6.4 Ability to deliver to an international market

There is strong evidence that a green economy can provide a much-needed competitive edge to exports, particularly within the region. In fact, green products such as paint, chemicals and degradable plastic are in steady demand and are being exported in increasing quantities. Some companies are already present in the East African Region. Regional integration is a core objective of the government's strategy and a number of developments augur well for greater integration with countries forming part of the Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and the Indian Ocean Commission (IOC). Trade with COMESA, for example, is growing and it ranks eighth for Mauritian exports. It has great potential with a population of 430 million, and as a block imports US$152 billion worth of goods while exporting US$157 billion. The export of high-end sustainable products can only benefit from such integration, as demand grows with the development of tourism and agricultural products, among others. Special sugars, which are Fairtrade-certified, are selling at a premium in Europe, and the export of organic foods may also get a boost with the large-scale production of organic fertilisers through composting. Mauritius is already well established as an export-led economy, and the private sector, with the support of government agencies like Enterprise Mauritius, can quickly seize the opportunities likely to be generated by the demand for sustainable products.

6.6.5 Instruments and tools to certify and verify sustainability of products

Implementing a green economic model implies the ability to develop sustainability standards and specifications. These can, however, be costly, even for EU countries, as experience has shown. Hence, there is a tendency to rely on established eco-labels during the transition phase. These eco-labels help define specifications for a wide range of products and services. To obtain a label, a product must meet certain criteria, which are rigorously assessed. Labelling is, therefore, an increasingly popular mechanism for differentiating products on the basis of their production or origin characteristics. Consumers make choices on the basis of these labels, and many are willing to pay a price premium in order to benefit from the higher specifications of the product. The presence of a very small number of labelled products in Mauritius is quite obvious. It must be pointed out that certain products have, for many years, been required to obtain the MAURICERT certification from the Mauritius Standards Bureau (MSB). However, these labels are single-issue certifications, meant to ensure compliance with specific technical standards (plastic pipes, paints etc.). Sustainability labels (whether single- or multi-issue) are new to the market, but are becoming more visible alongside traditional products.

Labelled products are, on the whole, more expensive than 'normal' ones. Air conditioning units, for example, running on R-410A gas[5] are 15–20 per cent more expensive than conventional models. Some certifications do not have any impact on the selling price though. Management system certifications, for example, do not carry additional costs, because the system becomes more efficient and some even have cost-saving measures.

6.6.6 Conformity assessment infrastructure

For a successful green economy, there is a need to put in place a proper conformity assessment infrastructure. In Mauritius, a fairly modern conformity assessment infrastructure: MAURITAS for accreditation, Mauritius Standards Bureau for standards and metrology, and quality assurance by bodies in both the public and private sectors are all well established.

MAURITAS

The Mauritius Accreditation Service (MAURITAS) was established under the Mauritius Accreditation Service Act 1998 to provide a national unified service for the accreditation of testing and calibration laboratories, certification and inspection bodies. At present, it operates two accreditation programmes, namely laboratory accreditation and certification body accreditation against the international standard ISO/IEC 17025. It also accredits certification bodies against the international standard ISO/IEC 17021 'Conformity assessment – Requirements for bodies providing audit and Certification of management systems'. The certification body accreditation programme currently covers: quality management system; environmental management system; hazard analysis; and critical control point system. The laboratory accreditation

programme covers numerous fields, such as acoustical, biological, chemical, electrical, occupational, food and environmental, and standards for construction materials. It has so far accredited eight laboratories, including two for the Mauritius Standards Bureau (MSB), and the Mauritius Sugar Industry Research Institute. In total there are 60 laboratories in Mauritius, and MAURITAS plans to accredit at least 45 of these. Its work is, however, hampered by lack of funding.

Mauritius Standards Bureau

The Mauritius Standards Bureau was established in 1975, and is now governed by the Mauritius Standards Bureau Act 1993, giving it greater flexibility and autonomy. It is housed in a modern, purpose-built headquarters with state-of-art laboratories and equipment. MSB is expected to help turn Mauritius into a quality manufacturing and service centre and focuses on metrology, standards, testing and quality assurance (MSTQ). Its role is to formulate national standards and technical codes of practice, operate a certification of marking scheme for products and processes (MAURICERT) and a national quality system certification scheme for the registration of firms according to ISO 9000, and a national food safety management system certification scheme for the food sector. In terms of standards, the MSB has set up nine MSB standards committees, namely building and construction; chemicals; electrical engineering; food and agriculture; mechanical engineering; metrology; information technology; quality management systems; and textiles, paper and footwear. Its certification marking scheme (MAURICERT) covers certification of products and processes. It also operates the national quality system certification scheme (ISO 9000 Registration) and a national standard for assessment of an organisation's food safety management system, using as a basis the World Health Organization/Food and Agriculture Organization (WHO/FAO) *Codex Alimentarius* HACCP principles and other recognised standards and guidelines. Of note is the capability of MSB to carry out extensive tests, relating to a large variety of products.

However, the most important initiative coming from the MSB is the proposed development of a Mauritian eco-label, called 'Environment Friendly Label (EFL)'. The aim of the label is to provide the general public with information on the environmental impact of consumer goods and services. This label takes into account the main environmental impact of products and services to be certified, and is compatible with internal market principles. It will be established on the basis of scientific information and through stakeholder consultation. Assessment of products will be based not only on CO_2 footprint, but also on environmental and quality criteria.

It should be noted that the MSB, like MAURITAS, suffers from lack of funding in some areas, despite its impressive capabilities in assessing sustainability criteria. In particular, stakeholders indicated that energy efficiency testing, overhaul of laboratory equipment and training of MSB personnel needs to be assured, with greater funding commitments.

Independent certification bodies

AJA Registrars, SGS (Société Générale de Surveillance) and Bureau Veritas are all internationally recognised companies providing industry with independent

inspection, verification, testing and certification services; they have offices in Mauritius and these services are delivered at the local level. They operate across a diverse range of industrial and commercial sectors, and rely on an international network of offices and laboratories to undertake testing and certification for public and customised schemes. SGS is the local representative of Blue Sign (textile) and ECOCERT labels. It is also the only laboratory in Mauritius accredited by the EU to certify seafood processes. Bureau Veritas also specialises in the field of social responsibility (QHSE-SR).

6.6.7 Role of small and medium-sized enterprises

A green economic model should also provide opportunities to small and medium-sized enterprises (SMEs), which constitute a significant source of employment. They are fortunately also being encouraged to adopt cleaner and environment-friendly technologies. Through the 2008/2009 Budget, the Mauritian government set up the Manufacturing Adjustment and SME Development Fund (MASMED) to sharpen the competitiveness of domestic-oriented industry and SMEs adversely affected by the reduction in import tariffs. Under the MASMED, the Small Enterprise and Handicraft Development Authority (SEHDA) is implementing a Technology Diffusion Scheme. This scheme provides support in the form of 75 per cent cost sharing grants up to a limit of 500,000 Mauritian rupees to support SMEs in the acquisition of environmentally-friendly technologies for improving productivity, quality and processes. Beneficiary SMEs are mainly from the garment manufacturing, jewellery, agri-processing and printing sectors.

6.6.8 The private sector's role in the green economy

The private sector is positioning itself to face the sustainable development challenge, and perceives the huge public investments in construction as an opportunity to introduce green concepts. Apart from significant investments in renewable energy (from sugarcane by-products), there are a few other individual initiatives that could help in transforming consumption patterns. A major wind farm project in the south, in line with the government's vision to reduce reliance on fossil fuels and improve energy efficiency in buildings, is being actively pursued. This is a result of a partnership between Omnicane, a leading sugar producer, and Aerowatts Mauritius Ltd. The project involves the erection of 22 wind turbines, capable of producing 1 MW of electricity each. Eco-building conferences, co-hosted by associations of architects or engineers and event management companies, are now a regular feature. These conferences are intended to inspire and motivate change within the sector and educate professionals about the 'practices, trends, policies and technologies that can and should be used as eco-building interventions'. They also have the opportunity of reviewing some of the world's most celebrated eco-building projects. It is estimated that buildings and the manufacturing of building materials accounts for 50 per cent of all energy consumed worldwide. Buildings also consume 40 per cent of all potable water, and building waste accounts for 40 per cent of waste on landfill sites. Hence, with better design and specifications, buildings can yield huge gains in terms of sustainability.

While awareness of sustainable development issues is high among businesses and organisations, few seek environmental management system (EMS; ISO 14001 series or equivalent) certification. Certification for quality is considered more important and more relevant for business development than EMS. Furthermore, EMS is much more expensive to develop and monitor. In 2008, 266 companies had been ISO 9001 certified (quality standard) compared with 13 for ISO 14000. Three of the companies with an EMS are from the same group (Food and Allied Industries Ltd). Three are in the hospitality sector, two each in textiles, IT and food, and one each in electronics, sugar, plastic manufacture and cement. It is worth noting that none in the construction industry has opted for certification, despite the fact that large high-risk/high-spend projects are involved.

Solid Waste Recycling Co. (SWRC) is a good example, which demonstrates the ability of the private sector to initiate and implement sustainable projects, even in the absence of government support. Situated in La Chaumière, the station treats about 100,000 tons of waste annually to produce about 30,000 tons of compost, using a process developed in India by Excel Industries (India) Ltd. Using Bioculum micro-organisms, the composting process is environmentally-friendly, generating no methane or other pollutants. Furthermore, 400 tons of waste will not have to be transferred daily to the Mare Chicose Landfill site, thereby saving on transport and fuel costs. The compost produced, rich in organic matter and ideal for organic farming, will be sold to farmers in 5-, 25- and 50-kg bags at a price that is estimated to be roughly 30 per cent of that of chemical fertilisers. Overall, the production of compost will be an effective way of dealing with the solid-waste problem, and at the same time offering opportunities for organic farming to develop.

6.6.9 Awards to encourage carbon footprint reduction

The Mauritius Export Association (MEXA) has developed an innovative way to encourage its members to reduce their carbon footprint. Founded in 1976, MEXA is the sole private association in Mauritius representing export companies, and its membership reflects a full representation of the export sector in terms of products, companies and total exports. As it aims to promote and defend the interests of the export community of Mauritius at the national, regional and international levels, it promotes the greening of its members' production and marketing systems. For the past two years, MEXA has organised a 'Blue Carbon Award' designed to recognise the effort and commitment of organisations that have used carbon footprint monitoring to reduce costs and increase efficiencies. Participants are encouraged to provide an accurate footprint measurement, including all required emission sources, demonstrate an absolute reduction of the footprint or equivalent efficiency improvement, and demonstrate good carbon management and standards. In the 2012 edition, the award recognised one company that has achieved zero-carbon status. That company, AKHANN Ltd., is a privately held, Mauritius-based website development company, committed to building state-of-the-art web applications for its customers. It has judiciously located itself close to its employees to reduce travel time, incorporated energy-efficient measures and has undertaken tree plantation to offset any carbon emissions it emits.

6.7 Conclusion

Mauritius has made tremendous progress since becoming an independent sovereign country in 1968. It has reached upper-middle-income country status and has developed a mature and diversified economy. However, such success has been achieved at the expense of the country's natural resource base and environment in general. Many issues have reached a critical stage, and these have been exacerbated by emerging global problems like climate change. Its development still relies on imported fossil fuels and its land resources are fast disappearing under concrete.

Conscious of the vulnerabilities inherent to a small state, the government has taken steps to ensure that development achieved so far remains sustainable. It has made significant progress in establishing and strengthening the institutional framework necessary for achieving sustainable development. Since 2008, it has taken a fresh look at its development paradigm and has resolved to embrace a 'green growth' strategy in order to achieve more with less. It launched a MID initiative, revamped legislation pertaining to energy efficiency and the construction industry, and introduced a series of pioneering green taxes to address externalities generated by economic activities.

However, even with these efforts, thus far there appears to be limited impact in terms of behavioural change or the way business is conducted, despite the fact that green taxes are bringing in substantial revenues to government. Electricity generation is relying more heavily on coal, while the share of bagasse (a locally available renewable energy source) is dwindling. Car ownership is on the rise, as is travel to work time.

There are a number of explanations to explain this state of affairs:

- First and foremost is the fact that sustainable development and green growth are still viewed as 'environmental' issues and not developmental ones. These functions are located within the Ministry of Environment and Sustainable Development. In 2008, the government did recognise the need to put sustainable development at the centre of the development agenda, and thus placed the head of the MID initiative at the Prime Minister's Office – with a view to leveraging the necessary support from all ministries.
- The second reason for the slow pace of progress is that the Ministry of Finance does not appear to be thoroughly involved in, or convinced by, the green growth strategy. Despite being recognised as a pioneer in terms of green tax introduction as far back as 2008, its participation in the national effort to forge a sustainable development agenda is fairly meek. The revenues accruing from green taxes are welcome, but are not fully and fairly allocated to initiatives and projects that are designed to promote green growth. In fact, the Ministry of Finance has its own 'Economic and Social Transformation Programme'. There is potential for overlap between the MID and the Economic and Social Transformation Programme.
- The third important factor is lack of capacity. The MID commission based at the Prime Minister's Office is small, while the Ministry of Environment is inadequately staffed. Going forward, it will be important for the government to ensure that

there is a sufficiently resourced and enabled champion to drive green growth at the government level in a meaningful way. Theoretically, there is a wide range of legislation and initiatives meant to drive the MID engine, but unfortunately these are fragmented, lack coherence and suffer from poor co-ordination. Going forward, there needs to be a centralised authority that can pull all these together into a coherent framework that can serve as a guide to decision-making and green growth strategy formulation.

The private sector, on the other hand, has been fairly opportunistic. It has embraced the MID initiative for various reasons: it's good to be green, it saves money and it sells products; the export markets love it. Yet for whatever reason they choose to adopt a green stance, it is gratifying to note that a number of private initiatives have been implemented, with or without government support. MEXA, the apex organisation regrouping export-oriented businesses, runs an award competition designed to reward those companies that account for their carbon emissions and make an effort to reduce them. Textile industries have shifted to solar energy and are saving on fuel costs. Likewise, a private medical clinic in the north of the island has installed photovoltaic panels on its roof and plans to soon be self-sufficient in its energy requirements.

Mauritius has thus accumulated rich experience in its quest for sustainable development. New avenues, like the vast EEZ, augur well for the future of the island, and the private sector has shown that 'going green' makes economic sense. What the country now needs is total commitment at the highest levels, handing over the mandate of sustainable development to the Ministry of Finance, and ensuring that the proper resource endowments are in place and located most appropriately.

Notes

1 The realisation that Mauritius has an Exclusive Economic Zone which is 1,000 times its land size has led to recognition that the country does have a potentially large endowment of marine-based natural resources (see section 6.5.5 Energy).
2 More information on the MID initiative is available on its website: www.gov.mu/portal/sites/mid/aboutMID.htm (accessed 18 February 2014).
3 Based on an article that appeared in Business Magazine, Issue No. 1044, 22–28 August 2012, Port Louis.
4 R-22 or HCFC-22 is a common refrigerant that is currently being phased out worldwide due to its high potential to exacerbate ozone-depletion and its role in global warming.
5 R-410A is a new generation refrigerant used in air conditioning systems. It contains only fluorine and does not contribute to ozone depletion, while contributing to higher system efficiencies.

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Appendix 6.1 Locally manufactured green products

Name of firm and address	Products		Remarks
Power Plastic, Solitude (LE)	1.1.1.1.1.1.1	Boards, bins, egg trays	Uses recycled paper and plastics, mixed with wood and plastics.
Plaspak, Quatre Bornes (LE)	1.1.1.1.2	Biodegradable plastic	
Etchelle Papers Ltd (SME)	1.1.1.1.2.1.1	Recycled paper products	This facility opened in 2010, with an investment of MUR 70 million. Having difficulties finding a market.
Luo Fu De Enterprises, La Tour Koenig (LE)	1.1.1.1.2.1.2	Paper napkins, toilet paper	Opened in 2010. Recycles 3600 tons of paper annually.
Conserverie Sarjua Plaine Lauzun (S)	1.1.1.1.2.1.3	Organic food products	Food from organically grown vegetables and fruits; exports to Europe as well. Procures from individual farmers, who claim revenue is 20 per cent higher from such farming.
Soap and Allied Industries Ltd, Trianon (LE)	1.1.1.1.2.1.4	Washing powder	Phosphate-free products, with reduced packaging.
Ecology Bags Ltd, Sebastopol (SME)	1.1.1.1.2.1.5	Craft paper bags	Since the ban imposed on plastic bags, Ecology Bags' business has picked up. Sells 3 million bags to KFC chain, for example. Made from recycled paper.
Eco-Deck, Plaine Magnien (SME)	1.1.1.1.2.1.6	Outdoor furniture, railings, decking, screening, shingles, fencing etc.	These products are manufactured from rice husks and recycled plastic, and looks and feels like wood.
Omicane and Alcodis, St Aubin(S)	1.1.1.1.2.1.7	Ethanol	Proposes to produce 10 million litres for local use and 15 million litres for export; use of ethanol in E10 formulated fuel has been positive, but government's go-ahead not acquired.
Belle Vue, Deep River Beau Champ and FUEL Sugar Estates (LE)	1.1.1.1.2.1.8	Special sugars	Sugar cane growers grouped in co-operatives, product Fairtrade certified and sells overseas with a premium.

(*continued*)

Appendix 6.1 Locally manufactured green products (continued)

Name of firm and address	Products		Remarks
SOFAP, Coromandel (LE)	1.1.1.1.2.1.9	Range of paints	ISO-14001 certified company, produces wide range of paints with low VOC and low odour.
Mauvillac Group, Pailles (LE)	1.1.1.1.2.1.10	Range of paints	Produces under own label 'Go-Green', low VOC and low-odour paints.
Polytol Paints, Riche Terre (LE)	1.1.1.1.2.1.11	Emulsion, VIP satin, antifungal, and polytop paints	MS3-certified products, with low VOC.
Samlo Steel, Midlands (LE)	1.1.1.1.2.1.12	Iron and steel bars	Produced from scrap metal at its smelting plant.
Solid Waste Recycling Co. Ltd, La Chaumiere (SME)	1.1.1.1.2.1.13	Organic fertiliser	Organic waste is composted. Plant opened in 2010.
Green Ltd. (SME)	1.1.1.1.2.1.14	Recycling of e-waste & industrial waste	ISO 9001-certified, serves hotels, supermarkets, industries etc.
Food and Allied Industries Ltd. (LE)	1.1.1.1.2.1.15	Milk products, flour & hospitality	All three constituent companies are ISO 14001 certified.
Ecofuel Ltd. (SME)	1.1.1.1.2.1.16	Collection of used engine and cooking oils	Produces biodiesel.
AlphaCleaning Ltd. (S)	1.1.1.1.2.1.17	Cleaning services, building maintenance, pest management	ISO 9000 certified, can provide eco-friendly services.

Appendix 6.2 Imported green products

Name of firm	Products	Remarks
Touchwood, Quatre Bornes	Wood flooring, Wood products	Products are from FSC-certified wood. Non-toxic treatment of wood, does not contain copper, chromium or arsenic (Green Guard process).
Li Tung Sang, Port Louis	Wood products	Sourced from FSC-certified forests.
BASF/Mauvilla, Pailles	Construction chemicals	
ECOSIS Ltd., Quatre Bornes	Green roof systems; Natural swimming pools	These pools, designed by BioNOVA, have two parts: the swimming area, and the natural filtration area planted with nature and marsh plants.
Rey & Lenferna, Port Louis	Solar water heaters, heat pumps	Heat pumps designed to be more energy efficient.
Green Zone, Curepipe Solar Light Manser Saxon, Riche Terre Rey & Lenferna, Port Louis AC/DC, Curepipe	PV modules, solar street lights, renewable energy systems	Many other companies are also adding renewable energy systems in their range of products.
LKLK Electrical	Lighting control	Energy saving system.
Espace Maison	Nano-technologically treated sanitary ware	Uses less cleaning products.
Ventilo Energy, Curepipe Cyber-Rite Energy, Calebasses AC/DC, Curepipe Sotratech, Beau Bassin	Wind energy systems	Sotratech's wind turbine differs from the others in terms of design: it is laid out on a horizontal axis.
Durable Solar Industries Mtius	Solar cooker	Sold at 16500 MUR, payback is expected in five years if used everyday.
Tornado, Riche Terre ClimaPro, Phoenix	Air conditioning units	Refrigerant used is R-410A, though partial phase-out of R-22 refrigerant does not begin until 2013, with complete ban in 2040. These units are 15 per cent more expensive than R-22 units.

(*continued*)

Appendix 6.2 Imported green products (continued)

Name of firm	Products		Remarks
Secure Works, Pailles	Solar air conditioners		
361, Port Louis Home2Office	White goods with energy rating labels		An A+ rating allows 25 per cent energy consumption. Other energy efficiency rating labels also on market.
BASF represented by Mauvillac, Pailles	Solar heat management		Improved solar reflection, solar controlled polymer glazing (allowing cooler interiors), pigments for plastic and coatings, light stabilisers, etc., available from this ISO certified company.
Toyota Mauritius	Hybrid electric car		Prius III
ABC Mauritius	Electric car		Company has launched its Leading Environmentally Friendly Affordable Family (LEAF) model. Car manufactured by Nissan. but far too expensive for average buyer
Axios Health Shop	1.1.1.1.2.1.18	Organic foods (flour, pasta, cooking oil, dried fruits, biscuits, wine, powdered milk (soja) and cereals	Started operations in 2003, now has four outlets. However, clientele is mainly South Africans now residing in Mauritius and European tourists.
Ramtoola Papers, Port Louis MWT Paper Processing Ltd.	1.1.1.1.2.1.19	Paper products	Sourced from ISO 14001 and FSC certified companies.