Chapter 15
The Potential for Using Renewable Sources of Energy in Mauritius

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Abstract Whilst the rich nations of the world experience different crises, vulnerable countries like Mauritius can only be spectators and watch the negative impacts of climate change on their already fragile economies. The current energy crisis is one example: the price of fossil fuel is going up constantly and the situation is only getting worse thanks to unrest in supplier countries as well as the ever-present threat from Somalian pirates in the Indian Ocean. The effects of CO_2 emissions from fossil fuels on climate, and the effects of pollution on air quality and health, should not be ignored. The only way forward to face the problems mentioned is to become self-dependent in energy through using clean and renewable resources, preferably available locally. The habits of the population need to change and there is a need for better awareness on the proper use of energy. This paper aims to highlight the potential of locally available sources of renewable energy such as solar, wind, and others, for domestic or other uses. The country is already making full use of its bagasse and hydro resources for energy, while there is a potential to further exploit solar and wind for generation of power. The use of other sources, such as geothermal and piezoelectric generators may also be considered in the medium and long term. It is expected that the investment cost of the required facilities will become more affordable in the future.

Keywords Clean and renewable energy · Energy self-dependency

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Short Introduction

This paper discusses the potential for using renewable sources of energy in Mauritius (country that imports its energy) and as the world is facing with the energy crisis in great extent, Mauritius becomes more vulnerable. For that reason, country as Mauritius has to think about becoming more self-dependent in energy by using clean and renewable resources. For that reason, this paper aims to highlight the potential of locally available sources of renewable energy such as solar, wind, and others, for domestic or other uses.

Introduction

The Republic of Mauritius exports mainly to European countries. The current recession faced by all countries, including those in Europe, has already started to affect the Mauritian economy. The signs are that the economic situation will be getting worse in 2012, and Mauritius is doing its best to mitigate the impact of the world economic slowdown. The Mauritian textile, sugar and tourist sectors have all been continuously re-adjusting their respective strategies as well as carrying out reforms to be able to survive. So far the country has done well, but the further challenges ahead will require still more creativity and reforms.

As well as reforming the existing economic pillars, diversification of the Mauritian economy has always been an important issue on the Mauritian economic agenda, and the country is looking for investment in new sectors. The recent budget speech put a lot of emphasis on facilitating SMEs, among other things. These are encouraged to develop their marketing strategies, as government declares itself ready to help them in that endeavour.

Energy is a very important factor that always comes into the equation when considering the and economic development of any nation. With the continuous increase of activities in the country, the demand for energy is also increasing. The energy generated in Mauritius has increased from 2015.9 GWh in 2005 to reach 2668.7 GWh in 2010 (CSO 2010). According to Elahee (2011), the expected demand in 2015 will be around 3340.0 GWh.

Dependence on fossil fuels may make countries like Mauritius increasingly vulnerable. The world is expecting to face further increases in oil price due to the instability in some of the OPEC countries, coupled with the recent US and EU sanctions against Iran. The constant threat from Somalian pirates in the Indian Ocean may make the problem worse for Mauritius. The world has a limited reserve of oil, and it is therefore very unlikely that the price of oil will go down unless an alternative and cheap source of energy is found. Pollution due to the use of fossil fuels, and its impact on the quality of air and health, should not be ignored. Furthermore, the tsunami in Japan in 2011 has shown that nuclear energy might not the ideal alternative to fossil fuels.

To sustain its economic growth Mauritius should be able to meet its increasing energy demand as well as face the current world economic crisis. Therefore, Mauritius is facing a real challenge, and there is a need to become more creative and to tap further the locally existing sources of energy. Like many tropical countries, Mauritius has a substantial potential to tap renewable energy (RE) sources that are abundantly available. This paper highlights the present status of the use of RE in Mauritius and discusses the potential of tapping new resources for the future.

Use of Renewable Energy in Mauritius

Mauritius is not new to the use of RE: the country has been using renewable energy since 1903 in the form of hydro-power (Sahai 2004). Mauritius is even considered to be a leader in the field of RE (UNDP 2011). The increase in energy demand soon after the Second World War encouraged the local authorities to consider sugar cane bagasse as a source of energy. Thus, the St Antoine Sugar Factory was the first to export its surplus electricity, made from bagasse, to the grid in 1957 (Deepchand 2001).

The 'Maurice Ile Durable' (MID—Mauritius Sustainable Island) project was launched in 2007 by the Prime Minister of Mauritius with a view to decreasing the island's dependency on fossil fuels and encouraging the use of renewable energy sources locally available. The project also targets improving the efficiency of the energy sector. Projects encouraging for example the use of solar water heaters and energy-efficient lighting have already been launched.

In 2010, the country produced 24.3 % of its energy requirements from available renewable energy and is aiming to increase this value to around 35 % by 2025. Table 15.1 shows the evolution of the use of renewable energy since 2008 and the target set for the future up to 2025. The goals mentioned were set out in the 'Long-Term Energy Strategy' plan in 2009 as a '*roadmap to address the energy and environmental challenges lying ahead*' (Republic of Mauritius 2009).

Hydro-Power

Hydro-power is one of the cleanest ways of generating power (Dincer 2000; International Hydropower Association 2003) and provides 20 % of the world's energy generation (Yüksel 2008). Although the initial investment is considerable, hydro-power has several advantages, such as low operating and maintenance costs, long life and the fact that it produces no waste (International Hydropower Association 2003). Mauritius is already making full use of this resource: there are eight hydroelectric stations that can generate around 100 GWh yearly, representing

Table 15.1 Actual and targeted power generation by source

Source of energy	Actual						Projection		
	2008 (CSO 2009)		2009 (CSO 2010)		2010 (CSO 2010)		2015	2020	2025
	GWh	%	GWh	%	GWh	%	%		
Renewable									
Bagasse	486.4	19.0	485.0	18.8	550.4	20.5	13	14	17
Hydro	108.0	4.2	122.4	4.7	100.7	3.7	3	3	2
Waste to energy	–	–	–	–	–	–	5	4	4
Wind	0.4	0.0	1.5	0.1	2.5	0.1	2	6	8
Solar PV	–	–	–	–	–	–	1	1	2
Geothermal	–	–	–	–	–	–	0	0	2
Sub-total	**594.8**	**23.3**		**23.6**		**24.3**	**24**	**28**	**35**
Non-renewable									
Fuel oil	833.7	32.6	953.3	37.0	995.5	37.0	31	28	25
Coal	1,128.7	44.1	1,015.3	39.4	1,039.5	38.7	45	44	40
Sub-total	**1962.4**	**76.7**		**76.4**		**75.7**	**76**	**72**	**65**
Total		**100.0**		**100.0**		**100.0**	**100.0**	**100.0**	**100.0**

slightly less than 4 % of its consumption (Central Electricity Board 2009; CSO 2010; Republic of Mauritius 2009).

According to the Long Term Strategy Plan (Republic of Mauritius 2009), there exists the possibility to generate 2GWh/year of power on La Nicolière Feeder Canal at Trente Chutes, using the facilities available at the Midlands Dam. The government's strategy is to encourage investment with the setting up of mini and micro hydro plants around the island, wherever the potential exists. The power output, however, depends heavily on the weather and it can fluctuate between 5 GWh per month in a dry season to 20 GWh per month in a wet one. Since 2011, Mauritius has been facing a period of drought and has had to cope with the shortage of power from hydroelectric stations by using coal and/or fuel oil.

Sugar Cane as a Source of Energy

Sugar cane is a very good source of green and renewable energy (Mauritius Sugar Producers Association 2011). During harvesting the sugar cane is separated from its top and straw, while bagasse and molasses remain following the industrial processing of the sugar cane. The tops are generally used as cattle feed but have the potential for being used as a source of raw material for paper (Deepchand 1987). According to Chung Tze Cheong et al. (2011), about 40 % of the island's surface area is used for agricultural purposes, while 90 % of that area is under sugar cane production (Ramjeawon 2008). In 2010, an area of 58,755 hectares of sugar cane plantation yielded 4,365,852 t of sugar cane (Central Statistics Office 2011).

Bagasse

Bagasse is the fibrous biomass remaining after sugarcane has been processed to extract sugar. Typically sugar mills generate about 30 % by mass of bagasse expressed on total amount of cane crushed (Deepchand 2005; Lee and Mariatti 2008). Bagasse is burnt to produce steam and electricity (cogeneration) for the needs of industry, and the excess electricity is usually sold to the wider consumer electricity grid (Contreras et al. 2009; Jaguaribe et al. 1992). The cost of collection of bagasse is insignificant, as it is produced and used on-site with very little storage time (Atchison 1957; Cao et al. 2006; Lynch and Goss 1932). The net calorific value of bagasse is about 8000 kJ/kg at a moisture content of 48 %. In 2010, 1,406,371 t of bagasse was used to generate 550.4 GWh of power.

Together with ACP countries, Mauritius is playing an active role in research and development to produce new varieties of sugar cane with a higher percentage of biomass. In 2007, the MSIRI developed a new variety of sugar cane that can yield 15–25 % more fibres. New high-pressure boilers have already been proven to use bagasse more efficiently (Republic of Mauritius 2009), and this experience could benefit the country.

Ethanol from Molasses

After extracting sugar from the cane juice, molasses is obtained and can be distilled into ethanol. The latter has been used as a replacement for gasoline in Brazil since 1975 (Walter and Cortez 1999), and is gaining more popularity. According to the MSPA, Mauritius can produce an average of 35,000 t of ethanol from the 150,000 t of molasses that are obtained annually (Mauritius Sugar Producers Association 2011). In the near future, the Omnicane Ethanol Holding Limited is expected to sell 15 million litres of anhydrous ethanol that would be blended with gasoline and sold as E10 fuel locally (Omnicane 2011). The country is encouraging the use of biofuels and plans to mix 25 million litres of ethanol with gasoline in the medium term.

Solar Energy

Solar energy is free, clean, inexhaustible, and available almost everywhere on our planet. Solar energy is mostly used in two forms: thermal and photovoltaic. Solar water heaters are designed to tap the heating effect of solar radiation. They are the most widespread solar energy conversion device (Budihardjo and Morrison 2009) and also the most economical alternative renewable energy systems (Mekhilefa et al. 2011). The photovoltaic (PV) devices convert sunlight directly to electricity. These devices require little maintenance and have a life of 20–30 years with low running and maintenance costs (Singh and Singh 2010). A typical solar water

Table 15.2 Number of hours of bright sunlight received in Mauritius (Mauritius Meteorological Services 2011)

Region in Mauritius	Hours of sunlight/day	
	Summer	Winter
High grounds	6.0	5.0
Coastal regions	7.5 to over 8.0	7.5

heater can provide about 75 % of the domestic needs for hot water and may cut the monthly energy bill by at least 20 % (Houri 2006).

Like most tropical islands, Mauritius is blessed with abundant sunshine and benefits from more than 2900 h of sunlight per year. The northern and south-western parts of Mauritius receive a solar radiation of 6 kWh/m^2/day (Mauritius Meteorological Services 2011). Table 15.2 summarises the average amount of bright sunshine received on the island.

Despite the abundance of sunlight in Mauritius, the amount of electricity harnessed from solar power generated is still very insignificant. Therefore there is huge potential for using solar energy in Mauritius.

Use of Solar Water Heaters

Solar water heating is the most common form of conversion of solar energy in Mauritius. To encourage the use of solar water heaters, the Development Bank of Mauritius has been providing a concessionary rate of interest on loans for their purchase since 1992. However, until 2008, only 25,000 households out of 330,000 were using solar water heaters. In 2009, the loan facility was replaced by an outright grant of Rs. 10,000 for the purchase of solar water heaters. 29,000 households have benefitted from the scheme, and the number of solar waters heaters in use on the island is expected to have reached more than 50,000—no survey has confirmed this value yet, however. Given the success of the grant, the government has proposed an improved scheme that would be implemented in 2012 (Government of Mauritius 2011). Undoubtedly, the number of solar heaters will continue to increase in the country.

Use of PV

Unlike the solar water heaters, the initial high cost of installing PV panels has been quite prohibitive, which explains why PV has not gained much popularity as a source of renewable electricity.

To encourage the use of PV as well as wind and hydro sources of electricity, the Small Scale Distributed Generation (SSDG) project was launched in December 2010. This project is limited to a capacity of 2 MW over the island from 200 'Small Independent Power Producers' (SIPP). The Central Electricity Board

Table 15.3 Feed-in-tariff for SIPP (Central Electricity Board 2010)

Feed-in tariff for 15 years	Source of electricity		
	Wind	Hydro	PV
	Mauritian rupees (Rs) per kWh		
Micro (up to 2.5 kW)	20	15	25
Mini (2.5+ to 10 kW)	15	15	20
Moyen (10+ to 50 kW)	10	10	15

(CEB—the public utility company responsible for the generation, transmission, distribution and sale of electricity in Mauritius) will pay the latter a 'Feed-in-Tariff' per kWh of electricity exported to the national grid. The Feed-in Tariff, valid for 15 years, is shown in Table 15.3. Currently, households drawing their electricity from the national grid pay the CEB Rs. 3.16–8.77 per kWh consumed, depending on the total amount of electricity consumed.

If the SIPP's annual production/consumption ratio is greater than 3, the Feed-in-Tariff is decreased by 15 %.

It is expected that the project will be a boost for eventual SIPPs and that the power generated using solar PV will constitute 2 % or more of the country's energy demand in 2025. On the other hand, the future of PV would seem to be very bright if the following points are considered:

- New technologies with solar tracking systems allow for improved energy capture as well as improved photovoltaic energy output for cloudy conditions (Kelly and Gibson 2009, 2011);
- The availability of integrated photovoltaic and thermal solar systems—a device that generates electricity and heats water simultaneously, resulting in improved efficiency (Kumar and Rosen 2011);
- PV technology is becoming more economical and more efficient (Clark 2011).

Wind Energy

Wind energy is another clean source of energy that is compatible with the environment and will never run out (Ilkılıç et al. 2011). Interest in wind energy started to grow in 1973 after the first world oil crisis (Michalak and Zimny 2011). The world wind energy capacity has increased from 6.1 GW in 1996 to 159.2 GW in 2009, representing an average annual growth rate of 30 % (Schaefer et al. 2012). The rapid growth since 1995 has led to improved efficiency and reduced cost of wind turbines, making wind energy increasingly competitive (Dincer 2011). To find the potential of wind energy in a country, a survey was carried out for the EU based on wind speeds of over 5 m/s at a height of 10 m (Meyer 1999).

A study carried out by the United Nations Development Programme (UNDP) in the mid 1980s found that Mauritius has an annual average wind speed of 8.1 m/s at 30 m above ground level in some, and therefore can be considered for harnessing wind energy. Wind turbines were installed in the late 1980s; however, they were destroyed by cyclones and the project was then neglected.

The following wind farm projects are now being considered (Central Electricity Board 2009):

- Omnicane would install a 22 MW wind farm at Britannia (Omnicane 2011);
- An 18 MW project would be installed by Aerowatt (Mauritius) in the village of Plaine des Roches; Another project in Curepipe Point on a 'Build Operate Own' model is taking shape, which would generate a power of 20–40 MW;
- The CEB has already carried out a feasibility study to install a wind farm with the potential of 5 GW. It is currently seeking funding for the project.

These interests clearly show that there is potential for tapping wind energy in Mauritius, and these opportunities should not be missed—provided that due consideration is given to the environment.

Waste to Energy Project

Foolmauna et al. reported that in 2010, an amount of 427,680 t of waste was sent to landfills in Mauritius, representing about 1 kg of waste per individual per day. While this figure is set to continue to increase, only 9 % of that amount is recycled (Mohee et al. 2010).

One way of reducing the volume of waste to be land-filled is by incineration (Tchobanoglous et al. 1993). If done properly, the process may be used to generate electricity. It is true that the issue of incinerating waste is still a matter of debate because of concerns over its impact on the environment, as well as on the health of the people living in the vicinity of the incineration site; however, new technologies are making the process more and more acceptable (Morselli et al. 2008). The EU has laid down strict guidelines (Saner et al. 2011) for waste incineration; such should be rigorously enforced in any country where waste is incinerated so as to ensure the well-being of its citizens.

Waste decomposition in the absence of air generates considerable amounts of methane gas that is liberated into the air. This gas can be used as a source of energy. Since October 2011, Sotravic, a Mauritian company, has been producing about 2 MW of renewable energy from landfill gas. The company is expecting to increase its energy generation to 3 MW (Sotravic 2012).

The 'Waste-to-Energy' project by the Gamma Coventa company is currently on hold because of protests from the general public. If given the go-ahead, the project is expected to produce 20 MW of energy by combusting solid municipal waste (Central Electricity Board 2009).

Other Energy Sources in Mauritius

The above-mentioned sources of energy would undoubtedly generate a significant amount of renewable energy. However, with increasing demand for electricity, the country needs to tap all the possible resources with a view to becoming totally dependent on its own sources of energy. In this context, another two sources of energy may be considered in Mauritius in the future: geothermal energy and electricity from the movement of vehicles on the Mauritian motorway.

Geothermal Energy

The core of our planet is very hot and at a temperature of around 5000 °C. The heat intensity decreases as we move from the core to the surface. The thermal energy, which can be used for heating or production of electricity, is referred to as geothermal energy (Fridleifsson 2001). In 2010, the world's installed capacity for power generation from geothermal sources stood at 10,000 MW; about 70,000 GWh was produced (International Geothermal Association 2010).

Mauritius, being a volcanic island, may have sources of geothermal energy. According to the Mauritius Research Council, a preliminary study has shown that it is possible to tap geothermal energy in Mauritius. Experts now have to establish the areas where the thermal energy may be tapped (Laurent 2012; Lexpress 2010; Lxrichter 2010). Therefore additional work is needed to determine the feasibility of tapping this source of energy in Mauritius.

Piezoelectric Generators

Piezoelectricity is the ability of a material to produce electric power when a mechanical stress is applied to it (Piezoelectric materials 2007). Tests are being currently carried out in Israel on a roadway that had been embedded with piezoelectric generators (Arjun et al. 2011). It is expected to generate up 400 kW over a stretch of one kilometre (Hanlon 2008).

The technology, developed by Innowattech (2011), should be able to produce 200 kWh, while a four-lane highway would produce about 1 MWh of electricity per kilometre, enough to provide power to 2500 households in Israel (Alternative Energy 2009).

This interesting technology might be of interest to Mauritius, as the country is developing its road infrastructure. However, the feedback from the Israeli experience would indicate whether it is worth conducting any feasibility study for the island.

Conclusion

This paper has highlighted the potential for using RE in Mauritius. While the cost of RE hardware is quite significant, it is falling as more and more efficient technologies enter the market. There will therefore be a lot of opportunities in the future for making the country increasingly reliable on RE sources. Using less fossil fuel means higher savings on foreign currency as well as less air pollution. Mauritius may dream of becoming a 'green destination' for tourists, with a healthier population. It would be interesting to evaluate the savings due to the latter.

Wave energy and energy from animal waste, such as chicken waste, have not been considered in this article, although it is believed there is considerable potential in these areas too. There is an additional opportunity for generating electricity from the sun at hotels that are situated in coastal areas, where more sunlight is usually available.

There is also the opportunity of job creation: SMEs should be encouraged to design, mount and maintain installations such as solar panels, wind turbines and mini and micro hydro plants. With 330,000 households in Mauritius, one can easily imagine the potential for setting up SMEs and creating jobs in the field of energy.

Energy saving should become a habit. Every little gesture counts.

References

Alternative Energy (2009) Produce electricity while you drive. http://www.alternative-energy-news.info/produce-electricity-while-you-drive. Available Feb 2012

Arjun AM, Sampath A, Thiyagarajan S, Arvind V (2011) A novel approach to recycle energy using Piezoelectric Crystals. Int J Environ Sci Devel 2(6):488–492

Atchison JE (1957) Rapid continuous methods for depithing and pulping bagasse, Paper Trade J pp 36–42

Budihardjo I, Morrison GL (2009) Performance of water-in-glass evacuated tube solar water heaters. Sol Energy 83(1):49–56

Cao Y, Shibata S, Fokumoto I (2006) Mechanical properties of biodegradable composites reinforced with bagasse fibre before and after alkali treatments. Compos A Appl Sci Manuf 37:423–429

Central Electricity Board (2009) CEB annual report 2009, Mauritius. http://ceb.intnet.mu/. Available Dec 2011

Central Electricity Board (2010) Tariffs, Mauritius. http://ceb.intnet.mu/. Available Dec 2011

Central Statistical Office (2009) Energy and water statistics 2009, Republic of Mauritius, pp 13 http://www.gov.mu/portal/goc/cso/ei833/energy.pdf. Available Dec 2011

Central Statistics Office (2011) Agricultural and Fish Production—Year 2010. http://www.gov.mu/portal/site/cso. Available Dec 2011

Chung Tze Cheong M, Ramasamy S, Adelaide S (2011) The 2010 land use map of Mauritius, Reduit: Mauritius sugar industry research institute

Clark D (2011) Price of solar panels to drop to $1 by 2013, The guardian. http://www.guardian.co.uk/environment/2011/jun/20/solar-panel-price. Available Dec 2011

Contreras AM, Rosa E, Van Langenhove MPH, Dewulf J (2009) Comparative life cycle assessment of four alternatives for using by-products of cane sugar production. J Cleaner Prod 17:772–779
CSO (2010) Energy and water statistics, Central statistical office, Republic of Mauritius. pp 13 http://www.gov.mu/portal/goc/cso/ei900/energy.pdf. Available Dec 2011
Deepchand K (1987) Sugar cane tops and leaves as a raw material for pulp and paper. Biol Wastes 19:69–73
Deepchand K (2001) Bagasse-based cogeneration in Mauritius—a model for eastern and Southern Africa, African initiative on Energy, Environment and sustainable development. www.afrepren.org/Pubs/Occasional_Papers/pdfs. Available Dec 2011
Deepchand K (2005) Bagasse energy cogeneration in Mauritius. In: Parliamentarian forum on energy legislation and sustainable development, Cape Town, South Africa
Dincer I (2000) Renewable energy and sustainable development: a crucial review. Renew Sustain Energy Rev 4(2):157–175
Dincer F (2011) The analysis on wind energy electricity generation status, potential and policies in the world. Renew Sustain Energy Rev 15(9):5135–5142
Elahee E (2011) The challenges and potential options to meet the peak electricity demand in Mauritius. J Energy Southern Afr 22(3):8–15
Fridleifsson IB (2001) Geothermal energy for the benefit of the people. Renew Sustain Energy Rev 5(3):299–312
Government of Mauritius (2011) Budget speech 2012, Ministry of finance and economic development. www.gov.mu/portal/goc/mof/BudgetSpeech.pdf. Available Dec 2011
Hanlon M (2008) Piezoelectric road harvests traffic energy to generate electricity. http://www.gizmag.com/piezoelectric-road-harvests-traffic-energy-to-generate-electricity/10568/. Available Feb 2012
Houri A (2006) Solar water heating in Lebanon: current status and future prospects. Renew Energy 31(5):663–675
Ilkılıç C, Aydın H, Behçet R (2011) The current status of wind energy in Turkey and in the world. Energy Policy 39(2):961–967
Innowattech (2011) Energy harvesting systems. http://www.innowattech.co.il/. Available Feb 2012
International Geothermal Association (2010) Installed generating capacity, Interactive web database. http://www.geothermal-energy.org/. Available Dec 2011
International Hydropower Association (2003) The role of hydropower in sustainable development, IHA white paper, pp 1–140
Jaguaribe EF, Andrade JP, Lobo PC (1992) Sugar-cane: a versatile renewable energy source, Paper 223, In: 21st ASES annual conference, Cocoa beach, FL, USA, June 13–18
Kelly NA, Gibson TL (2009) Improved photovoltaic energy output for cloudy conditions with a solar tracking system. Sol Energy 83(11):2092–2102
Kelly NA, Gibson TL (2011) Increasing the solar photovoltaic energy capture on sunny and cloudy days. Sol Energy 85(1):111–125
Kumar R, Rosen MA (2011) A critical review of photovoltaic–thermal solar collectors for air heating. Appl Energy 88(11):3603–3614
Laurent T (2012) Arjoon Sudhoo : L'énergie géothermique révolutionnera à jamais la vie des Mauriciens, lexpress online. http://www.lexpress.mu/news/730-interview-arjoon-sudhoo-l-energie-geothermique-revolutionnera-a-jamais-la-vie-des-mauriciens.html. Available Dec 2011
Lee SC, Mariatti M (2008) The effect of bagasse fibres obtained (from rind and pith component) on the properties of unsaturated polyester composites. Mater Lett 62:2253–2256
Lexpress (2010), "A la recherche de l'énergie géothermale, 2010", lexpress online. http://www.lexpress.mu/services/epaper-117180-b-a-la-recherche-de-l-energie-geothermale-b.html. Available Dec 2011
Lxrichter (2010) Mauritius looking into possible geothermal power development. http://thinkgeoenergy.com/archives/3987. Available Dec 2011
Lynch DFJ, Goss MJ (1932) Bagasse cellulose. Ind Eng Chem 24(11):1249–1254

Mauritius Meteorological Services (2011) Climate of Mauritius. http://metservice.intnet.mu/?cat=43. Available Dec 2011

Mauritius Sugar Producers Association (2011) Multifunctional role of sugar cane, MSPA. http://www.mspa.mu/. Available Dec 2011

Mekhilefa S, Saidurb R, Safari A (2011) A review on solar energy use in industries. Renew Sustain Energy Rev 15(4):1777–1790

Meyer G (1999) Wind energy—the facts, European commission, DG energy, vol 1

Michalak P, Zimny J (2011) Wind energy development in the world, Europe and Poland from 1995 to 2009; current status and future perspectives. Renew Sustain Energy Rev 15(5):2330–2341

Mohee R, Karagiannidis A, Themelis N Kontogianni ST (2010) The mounting problems with managing wastes in rapidly developing islands: the Mauritius case. In: Third international symposium on energy from biomass and waste, International waste working group, Venice, Italy, 8–11 Nov 2010

Morselli L, De Robertis C, Luzi J, Passarini F, Vassura I (2008) Environmental impacts of waste incineration in a regional system (Emilia Romagna, Italy) evaluated from a life cycle perspective. J Hazard Mater 159(2–3):505–511

Omnicane (2011) Ethanol distillery, Integrating Energies. http://www.omnicane.com/index.php?tid=70&lang=1. Available Dec 2011

Piezoelectric materials (2007) Introduction: the piezoelectric effect. http://www.piezomaterials.com. Available Feb 2012

Ramjeawon T (2008) Life cycle assessment of electricity generation from bagasse in Mauritius. J Cleaner Prod 16:1727–1734

Republic of Mauritius (2009) Long-term energy strategy—2009–2025. http://www.gov.mu/portal/goc/mpu/file/finalLTES.pdf. Available Dec 2011

Sahai IM (2004) Power plans in Mauritius, International water power and dam construction. http://www.waterpowermagazine.com/story.asp?storyCode=2024269. Available Dec 2011

Saner D, Blumer YB, Lang DJ, Koehler A (2011) Scenarios for the implementation of EU waste legislation at national level and their consequences for emissions from municipal waste incineration. Resour Conserv Recycl 57:67–77

Schaefer MS, Lloyd B Stephenson JR (2012) The suitability of a feed-in tariff for wind energy in New Zealand—A study based on stakeholders' perspectives, Energy policy, In Press, Corrected proof

Singh PP, Singh S (2010) Realistic generation cost of solar photovoltaic electricity. Renew Energy 35(3):563–569

Sotravic (2012) Power generation (gas to energy). http://www.sotravic.net/power-generation.html. Available Dec 2011

Tchobanoglous G, Theisen H Vigil S (1993), Integrated solid waste management-engineering principles and management issues, McGraw-Hill, Inc

UNDP (2011) Removal of barriers to solar PV power generation in Mauritius, Rodrigues and the Outer Islands, United nations development programme. http://www.gov.mu/portal/goc/mpu/file/proj-doc.pdf. Available Dec 2011

Walter A, Cortez LAB (1999) An historical overview of the Brazilian bioethanol program. Stockholm Environ Inst/Newsletter Energy Programme 11:2–4

UNDP (2010) Removal of Barriers to solar PV power generation in Mauritius, Rodrigues and the outer islands, United nations development programme, Republic of Mauritius, UNDP-GEF Full Size Project (FSP), Available at: http://www.gov.mu/portal/goc/mpu/file/proj-doc.pdf

Yüksel I (2008) Hydropower in Turkey for a clean and sustainable energy future. Renew Sustain Energy Rev 12(6):1622–1640