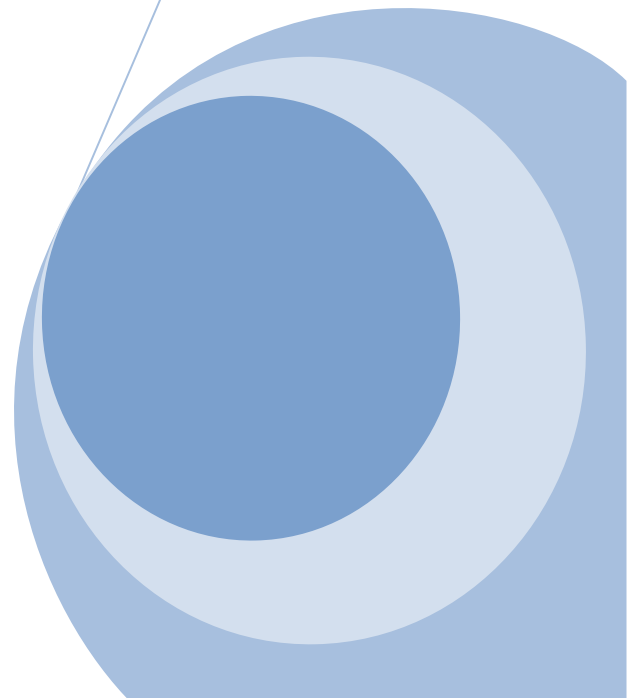
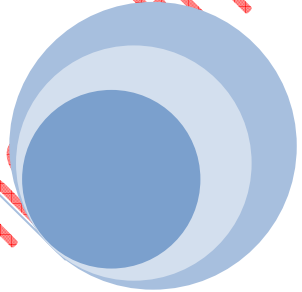
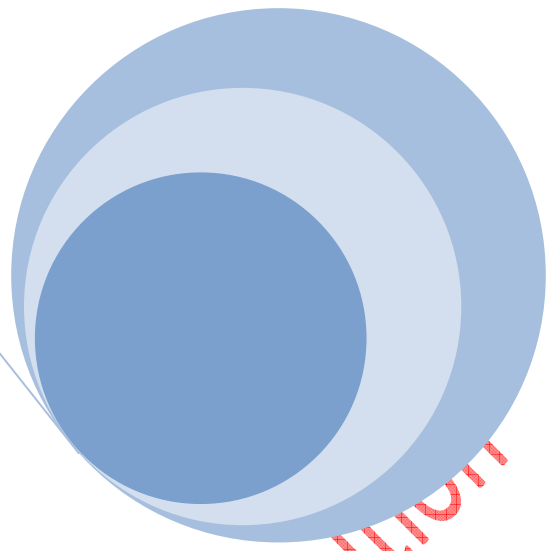


Local Trend Analysis ---
GHG Emissions---

NRFE draft Working Paper 11/11

Draft not for citation or distribution



1.0 Current status

Along with rapidly growing economic and energy consumption, GHGs emissions have increased steadily over the past decade. The relationship between CO₂ emissions and economic growth, the carbon dioxide emissions associated with burning of fossil fuels are on the rise and virtually about 85% of the total carbon dioxide emissions occur from electricity production and transportation (B.Seetannah, V.Sannasse, 2010). In Mauritius some of the main GHGs responsible for the effect of global warming are carbon dioxide, methane, and nitrous oxide. However, the Central Statistic Office (CSO) report found that 82% of the main gases emissions are accounted by carbon dioxide. This paper thus attempts to trend the carbon dioxide emissions profile in Mauritius using time series data from 1960 to 2010. In 2010, the emissions of CO₂ have reached about 3581 Gg. During the same period, energy industries emit the maximum amount of CO₂ with 60% of the total CO₂ emission. The entire GHGs emission is from fossil fuel sources. As shown in figure 1, the least CO₂ emission was produced by the residential sector (4%) and others (1%) for the same period.

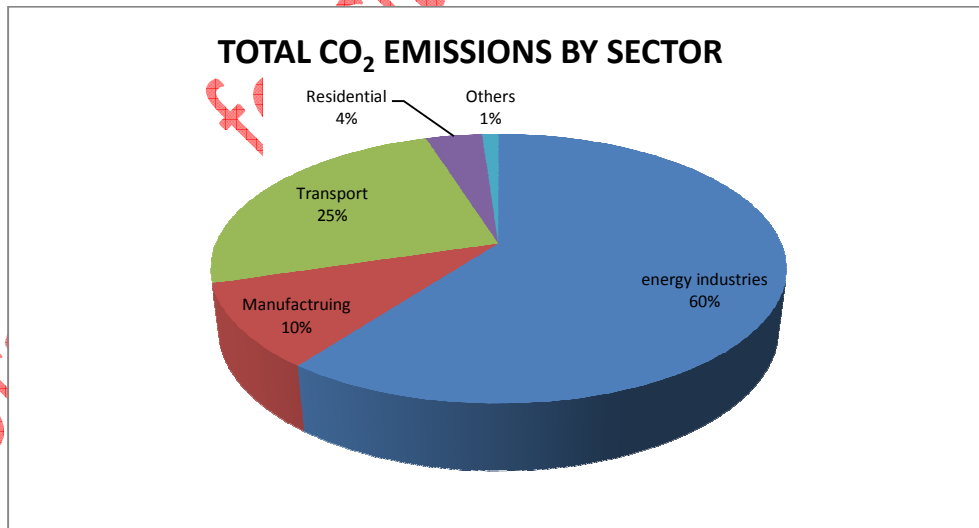


Figure 1: CO₂ Emissions by Sector for the year 2010 (CSO, 2010)

2.0 GHGs trends up to 2010

As shown in figure 2, Mauritius has experienced an overall increase in carbon dioxide emission during the past 50 years. The quantity of CO₂ has increased from 179.5Kt in 1960 to 3581Kt in 2010. This could be the result in an increased use of fossil fuels in various sectors in Mauritius. However, it was also observed that in 1988, 1994 and 2009 the level of CO₂ was relatively low. In 2008 and 2009, due to the financial crisis import of fossil fuels was decreased and subsequently less CO₂ was emitted in 2009 with a percentage decreased of 3.4%. The figure below also shows the removal carbon dioxide emission from 2000 to 2010. The data indicate an increase in CO₂ removal from 229.2 Kt in 2002 to 293 Kt in 2010.

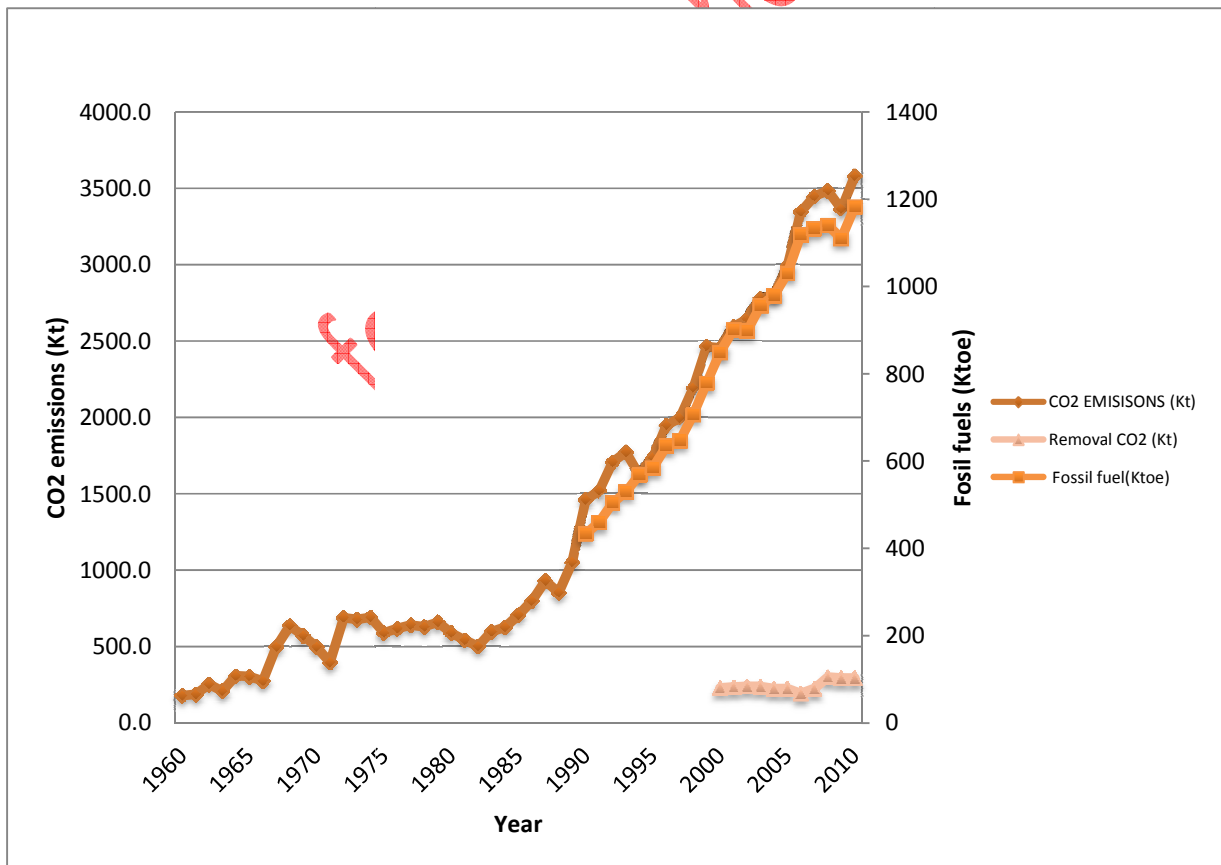


Figure 2: CO₂ Emission from fuel combustion activities for the year 1960-2010

(Source: www.worldbank.org)

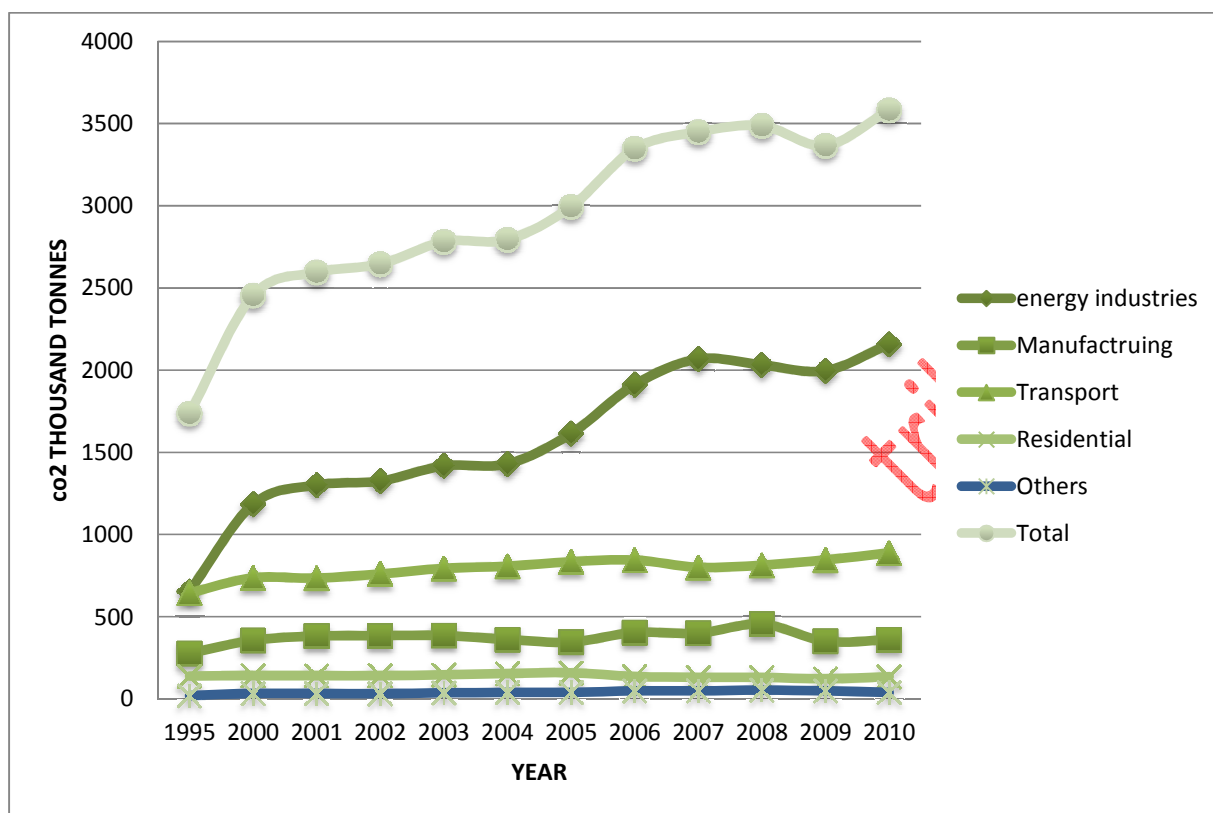


Figure 3: Sectoral CO₂ Emission from fuel combustion activities for the year 1995-2010

As shown in Figure 3, the energy industry remains the main anthropogenic source of CO₂ emission for the past 10 years. In 2010, the energy industry emitted about 2158.3 Gg of CO₂ followed by transport and manufacturing sectors with 887 thousand tonne and 360.4 thousand tonne of CO₂ respectively. The trend is expected to continue, given that energy, manufacturing and transport will continue to rely on fossil fuels for the next 20 years (Ministry of Renewable Energy & Public Utilities, 2009).

3.0 Outlook

From the National Long Term Perspective Study, the emission of CO₂ is forecasted to reach about 6125 Gg of CO₂ in 2020(fig 4) (Gordon.A et al, 1998). This rise in CO₂ level will be driven mostly by the huge consumption of fossil fuels to sustain the expected high growth rates in emerging sectors.

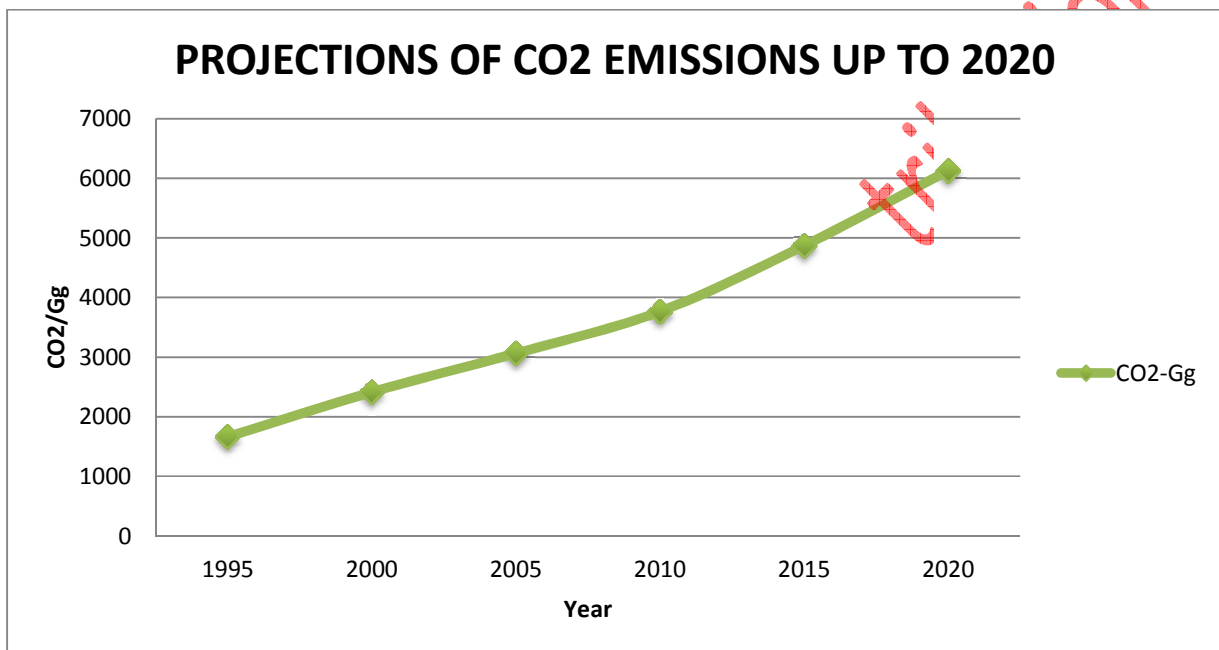


Figure 4: Projection on CO₂ emissions for years 1995-2020 (Gordon et al, 1998)

5.0 Implemented Programmes

According to the government the following projects are expected.

- CEB has phased out less efficient generating units and is planning to invest massively in renewable energy sources namely: wind and solar.
- Setting up of a 20-30 MW wind Farm at Curepipe point, 18 MW wind farm at Plaines de Roches and finally a wind farm of four wind turbines of 200-300 KW each at Bigara.

- CEB is also launching the small scale distributed generation (SSDG) scheme whereby residential, commercial and industrial consumers will have the opportunity to produce their own electricity using three renewable technologies namely: solar PV, wind turbine and Micro hydro turbine.
- Setting up of a micro hydro plant at Midlands Dam with a capacity of 1 GWh.
- Setting up of a hydropower unit at Trente Chutes along the La Nicoliere Feeder Canal. The hydro will produce around 2GWh energy per year allowing for a saving of 6 million rupees per year on fossil fuels and reducing the CO₂ emissions by 2300 metric tonnes annually.
- A 2 MW landfill gas-to-energy unit at Mare Chicose by Sotravic/Bilfinger to generate some 110 GWh.
- Free distribution of Compact Fluorescent Lamps (CFLs) in remote areas. Till now 300,000 household have replaced 1 million conventional light bulbs with compact fluorescent lamps (CFL) and it is estimated that energy demand will decrease by 12 million KWh per year and CO₂ emission by 26,000 metric tonnes.

4.0 Implication

Mauritius is already experiencing major effects of climate change such as rise in sea level, frequent natural and environmental disasters (MMS, 2010). In this context, the adaptation to adverse impacts of climate change and sea-level rise remains a major priority for small island developing States. Hence, the government has come up with a series of programmes to reduce its carbon dioxide level in the next 20 years.

- According to integrated electricity plan 2003-2011, CEB will promote more expensive sources of renewable energy namely; fuel cells, wind, solar and wave or tidal.
- Fully implement the United Nations Framework Convention on Climate Change and further promote international cooperation on climate change;

- Mauritius is a non-annex country under the Kyoto protocol. Hence, a reduction in CO₂ emission can enable Mauritius to gain carbon credit through the clean development mechanism (CDM).
- The government will enhance traffic management to minimize the emission of GHGs.
- Promote energy efficiency and the use of renewable energy as a matter of priority, as well as advanced and cleaner fossil fuel technologies, inter alia, through public and/or private partnerships.
- Implement the Buenos Aires programme of work on adaptation and response measures, in particular those elements that are relevant to small island developing States;
- Build and enhance scientific and technological capabilities through continuing support to the Intergovernmental Panel on Climate Change for the exchange of scientific information and data.
- Enhance the implementation of national, regional and international strategies to monitor the Earth's atmosphere, including as appropriate, strategies for integrated observations, inter alia, with the cooperation of relevant international organizations; and work with Small Island developing States to strengthen their involvement in monitoring and observing systems and enhance their access to and use of information.
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5.0 Indicators

1. The implementation of the MID programme for making Mauritius a sustainable island: decreasing its fossil fuels consumption through increased utilization of renewable energy sources.
2. Excise taxes on motor fuels (gasoline and diesel oil) with approximately 0.3cents per litre.
3. Hybrid cars, lower taxation.

6.0 Drivers and Inhibitors

➤ Drivers

GHGs emissions will be driven mostly by fossil fuels consumption to maintain the economic growth in emerging sectors.

➤ Inhibitors

1. Given the causal relationship between economic growth, energy consumption and GHG emissions, policies implemented to cuts GHG emission will lead to lower rates of economic growth.
2. Projects identified for mitigation options are:
 - Promote renewable energy sources e.g (solar, wind , biomass, etc)
 - Fuel switching and mass transit transport
 - Increase efficiency of energy use in the manufacturing process

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