

# **Environment Statistics and Environment-Economic -Accounts - 2008**

## **1. Introduction**

This issue of the Economic and Social Indicators present Statistics and Accounts on Environment. Information has been gathered from various institutions and thus some of the data may already appear in other publications.

A set of Environment-Economic-Accounts (EEA) covering Energy Use and Atmospheric Emissions, Water Use and Economy-wide Material Flow accounts, has been compiled using the results of the 2002 Census of Economic Activities and other data sources such as energy and water statistics. This set of accounts is being published for the first time and show the Environment-Economic relationship in terms of both physical and monetary values. The main results are presented in Section 13.

## **2. The Economy and the Environment**

Table 1 shows some main environment indicators over the ten-year period, 1999 - 2008. Table 2 provides some key socio-economic indicators showing the structural changes that have occurred during the same period.

Gross Domestic Product (GDP), which measures the total value of production, increased in nominal terms by about 145%, from Rs 108,076 million in 1999 to Rs 264,854 million in 2008. The share of agriculture in GDP fell from 6.1% in 1999 to 4.3% in 2008, that of manufacturing decreased from 23.9% to 20.1%, while that of financial and business services increases from 8.4% to 10.9%.

During the same period, population of the Republic of Mauritius increased by 7.9% from 1,175,267 to 1,268,565 and population density from 597 to 644 per km<sup>2</sup>.

## **3. Land use, Forestry and Agriculture**

### *3.1 Land use*

Table 3 shows data on land use for 1995 and 2005. During that period, the proportion of land under sugarcane decreased by 6.3%, tea plantations declined by 81.6% and forestry by 17.2%. Land used for other agricultural activities increased by 33.3% while built up areas expanded by 27.7%.

### *3.2 Forestry*

Preservation of forests is vital for the protection of the ecosystem. Table 4 shows the forest area by type of land and category of ownership for the Island of Mauritius. In 2008 the total forest area was 47,159 hectares, of which 22,159 hectares (46.9%) were state-owned and the remaining 25,000 hectares (53.1%) were privately-owned.

### *3.3 Agriculture*

From 2007 to 2008, the effective area under sugarcane has shrunk by 3,023 hectares (-4.4%) from 68,523 hectares to 65,500 hectares. During the same period area under tea

plantation decreased to 701 hectares (-1.1%) from 709 hectares and area under tobacco to 256 hectares (-0.8%) from 258 hectares (Table 5).

### 3.3.1 Fertiliser imports

The total imports of fertilisers for the period 2006 to 2008 are shown in Table 6. Imports for the year 2008 were 46,677 tonnes, an increase of around 3.0% over the 2007 figure of 45,336 tonnes.

## 4. Energy

The production and consumption of energy causes air pollution, and alters the ambient temperature. They are by far the most important contributors of air pollutants through the emission of carbon dioxide and other greenhouse gases.

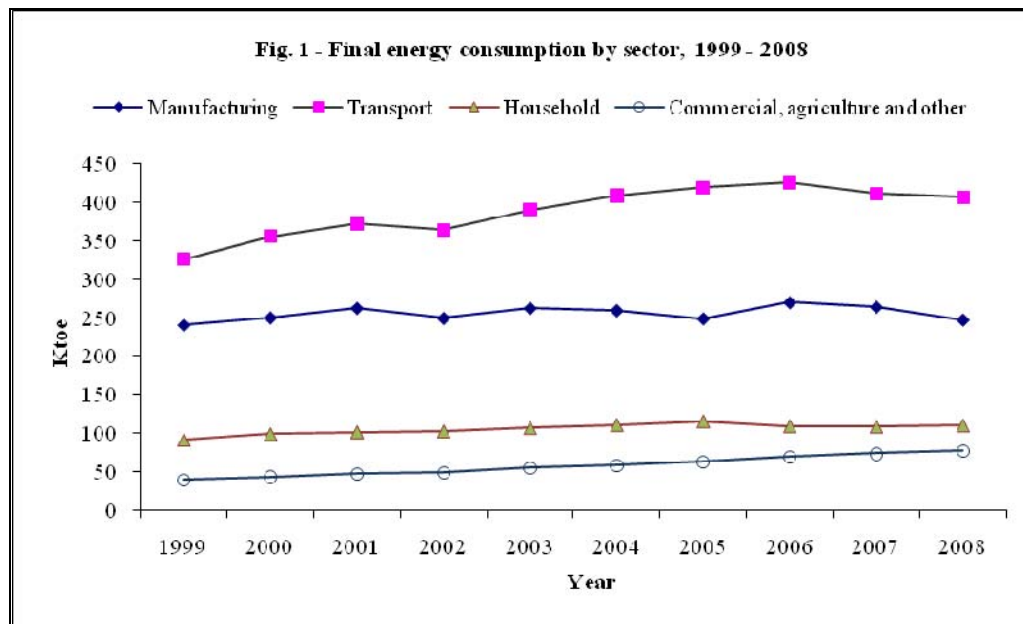
The tonne of oil equivalent (toe or thousand toe - ktoe) has been used to express the energy content of the different fuels in terms of a common accounting unit.

### 4.1 *Primary energy requirements*

The total primary energy requirement of the country increased by 1.6% from 1,382 ktoe in 2007 to 1,404 ktoe in 2008. Around 81% of the total primary energy requirement was met by imported fuels (oil, LPG and coal) and the remaining 19%, obtained from local sources (bagasse, hydro and fuelwood) that are renewables (Table 7).

### 4.2 *Final energy consumption*

Final energy consumption decreased by 1.9% from 857 ktoe in 2007 to 841 ktoe in 2008. The largest consumers were the transport and manufacturing sectors which accounted for 48.3% and 29.4% of the total energy consumption respectively (Table 8).



### *4.3 Fuel Inputs for electricity production*

Different types of fuel are used for electricity production. Coal remained the most important input and its share rose from 48.5% in 2007 to 50.4% in 2008. Bagasse input increased from 23.6% to 27.7%. On the other hand, the contribution of fuel oil fell from 27.3% to 21.4% (Table 10).

## **5. Transport**

### *5.1 Stock of registered motor vehicles*

The number of registered motor vehicles has gone up from 334,145 in 2007 to 351,406 in 2008, up by 5.2%.

The number of vehicles per 1,000 population rose from 272 in 2007 to 285 in 2008, representing an increase of 4.8% (Table 11).

### *5.2 Fuel used for transport*

In 2008, some 407 ktoe of energy were used for transport; diesel oil accounted for 154 ktoe or 37.8%, aviation fuel 137 ktoe or 33.7%, gasoline 110 ktoe or 27.0% and Liquefied Petroleum Gas (LPG), 6 ktoe or 1.5%. From 2007 to 2008 the consumption of diesel oil rose by 0.6% and gasoline by 2.8% while that of aviation fuel fell by 4.9% (Table 12).

## **6. Ambient Air Quality**

The Ministry of Environment and National Development Unit has both stationary and mobile air quality monitoring stations that are operational since 2001.

The main pollutants under investigation are Dust (PM<sub>10</sub>), Dust (PM<sub>2.5</sub>), Black Carbon.

The results for all the pollutants under study at the five monitoring stations in 2008 shows that the levels of ambient pollutants for the 24 hour averages were well below the norms (Standards for air quality). This implies that the overall quality of the ambient air in the monitoring areas is at a good and permissible level (Table 13).

## **7. Greenhouse gas (GHG)**

### *7.1 Total GHG emissions and removals*

Table 14 shows the total emissions and removals of greenhouse gases. Carbon dioxide (CO<sub>2</sub>) remained the main greenhouse gas. The data indicate a rise in net CO<sub>2</sub> emissions from 3,226 thousand tonnes in 2007 to 3,264 thousand tonnes in 2008 (+1.2%). Net emissions take into account the removal of CO<sub>2</sub> by forests which act as 'sinks'.

## 7.2 Greenhouse gas inventory

The national inventory of greenhouse gas (GHG) emissions by source categories for the years 2007 and 2008 is given in Table 16. The main GHG is carbon dioxide (CO<sub>2</sub>). The non-carbon dioxide emissions consist mainly of carbon monoxide and sulphur dioxide.

### 7.2.1 Carbon dioxide (CO<sub>2</sub>) emissions from fuel combustion activities

Carbon dioxide emission resulting from fuel combustion went up from 3,448.2 thousand tonnes in 2007 to 3,485.8 thousand tonnes in 2008 (+1.1%), driven mostly by 13.9% increase of CO<sub>2</sub> emissions from the manufacturing industries (Table 15).

The energy industries remain the main source of CO<sub>2</sub> emission in the atmosphere. They contributed around 58% of the emissions, with 2,032 thousand tonnes in 2008. They were followed by the transport sector which contributed 813 thousand tonnes (23%) of the total emissions and the manufacturing industries with 456 thousand tonnes (13%).

### 7.2.2 Non-CO<sub>2</sub> emissions

Non-CO<sub>2</sub> emissions were minimal and in 2008 they were distributed in thousand tonnes as follows: carbon monoxide 66.6, sulphur dioxide 33.2, non-methane volatile organic compounds (NMVOC) 16.5, oxide of nitrogen 18.1, methane 37.3 and nitrous oxide 1.1 (Table 16).

## **8. Water**

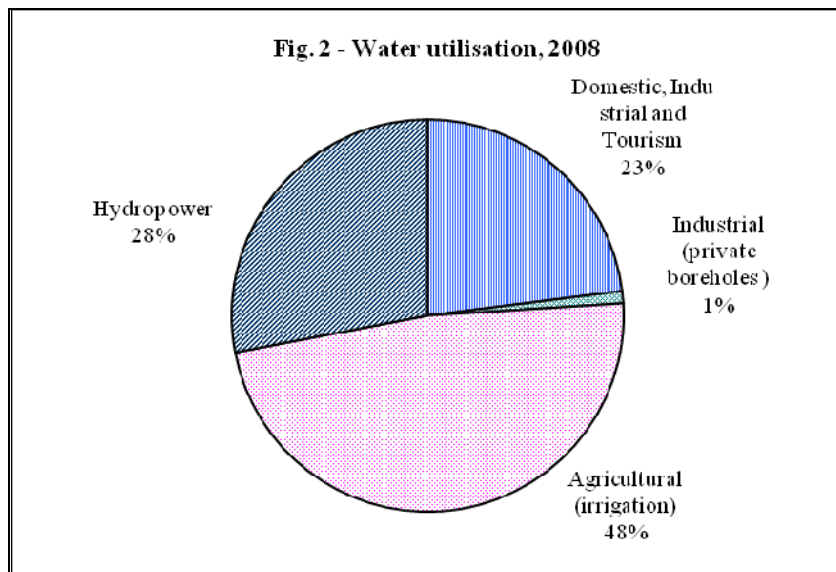
Freshwater resources are of vital environmental and biological importance, since water is a basic support element for human life and ecosystems.

### *8.1 Water balance*

The water balance is based on long term records of annual average rainfall and indicates how fresh water resources are distributed. In 2008, the Island of Mauritius received 4,440 million cubic metres (Mm<sup>3</sup>) of precipitation (rainfall). This was 22% higher than in 2007 when 3,644 Mm<sup>3</sup> were obtained. Surface runoff accounted for 60% of the water balance, while evapotranspiration and ground water recharge accounted for 30% and 10% respectively (Table 18).

### *8.2 Water utilisation*

In 2008 the total water demand was estimated at 1,075 Mm<sup>3</sup>. The agricultural sector accounted for most of the water utilised with 514 Mm<sup>3</sup> or 48%. Utilisation for the other purposes was as follows: hydropower 309 Mm<sup>3</sup> or 28%, domestic, industrial and tourism, 252 Mm<sup>3</sup> or 24% (Table 19 and Fig. 2).



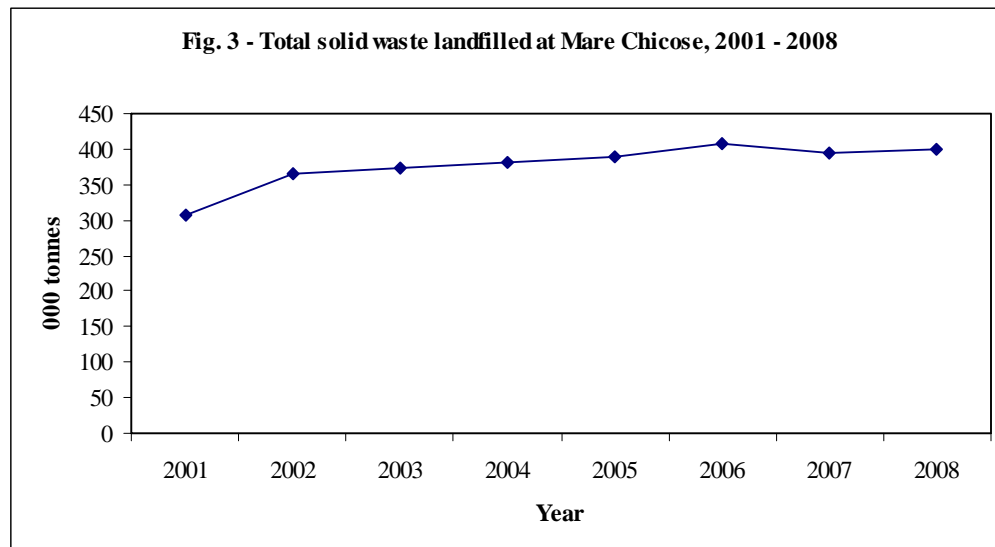
Around 87% of the total water demand was met by surface water and the remaining 13 % by ground water.

## 9. Waste

### 9.1 Waste Disposal

Solid waste has been tracked mainly as domestic, construction and others. In 2008, the total amount of solid waste landfilled at Mare Chicose increased to 400,813 tonnes from 394,118 tonnes in 2007, up by 1.7% (Table 21).

Domestic waste constituted 93% of the total solid waste landfilled in 2008. The trend of the amount of solid wastes landfilled is as shown in figure 3.



## **10. Complaints**

Effective environmental management needs an appropriate coordination and monitoring of environmental problems. The Ministry of Environment and National Development Unit is entrusted to address environmental complaints received from the general public.

Table 22 lists the number of complaints by category received by the Pollution Prevention and Control Division of the Ministry of Environment and National Development Unit from 2006 to 2008. The number of complaints received increased from 568 in 2007 to 596 in 2008 (+4.9%).

## **11. Environmental Impacts Assessment (EIA) and Preliminary Environmental Report (PER) Licences**

The Ministry of Environment and National Development Unit grants EIA and PER licenses to meet environmental requirements. Those undertakings that require such a licence are listed in the First Schedule of the new Environment Protection Act, 2002.

### *11.1 EIA and PER licences*

In 2008, some 44 EIA licences were granted of which 12 (27% ) were issued to land parcelling and 8 (18% ) were provided to coastal hotels and related works (Table 23).

During the same period, 40 PER licences were granted, out of which 16 (40% ) were for industrial development projects.

## **12. Contraventions**

The Police de L'Environnement has been established to act as a watchdog to safeguard the environment. The number of contraventions increased by 5.8% to 8,922 in 2008 from 8,432 in 2007. Most of the contraventions concern illegal littering.

The number of notices to drivers of vehicles emitting black smoke rose to 6,782 in 2008 from 3,796 in 2007, i.e an increase of 78.7%.

## **13. Environment-Economic-Accounts (EEA)**

### **13.1 Use of EEA**

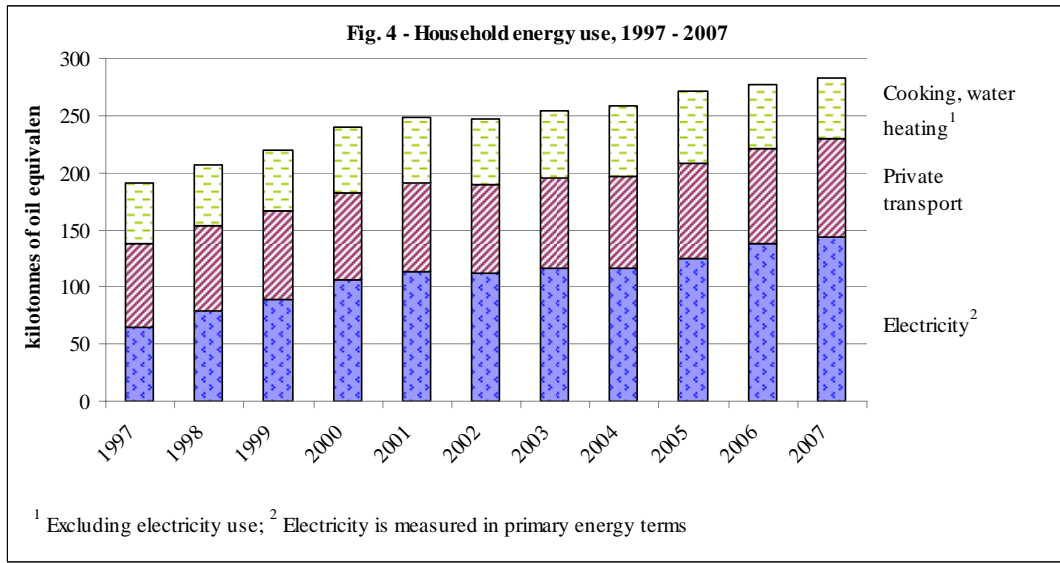
The EEA is a set of statistical accounts that shows the interaction between the economy and the environment. Integrating these two can permit investigation and analysis of sustainability of the different patterns of production and consumption and the economic consequences of maintaining given environmental standards.

The EEA for Mauritius has been compiled for the first time using data from various sources such as energy and water statistics and detailed information from the 2002 Census of Economic Activities (CEA). The accounts cover Energy Use and Atmospheric Emissions, Water Use and Economy-wide Material Flow accounts. The main findings are given below.

## 13.2 Main findings

### 13.2.1 Energy use of households

Energy used by households has increased by 48% from 190.9 ktoe in 1997 to 283.2 ktoe in 2007 (Fig. 4). The main driver of this increase has been the demand for electricity, which is needed to power televisions and other household appliances. Energy use for private cars and non-electric energy for cooking and hot water has remained fairly constant during the period.



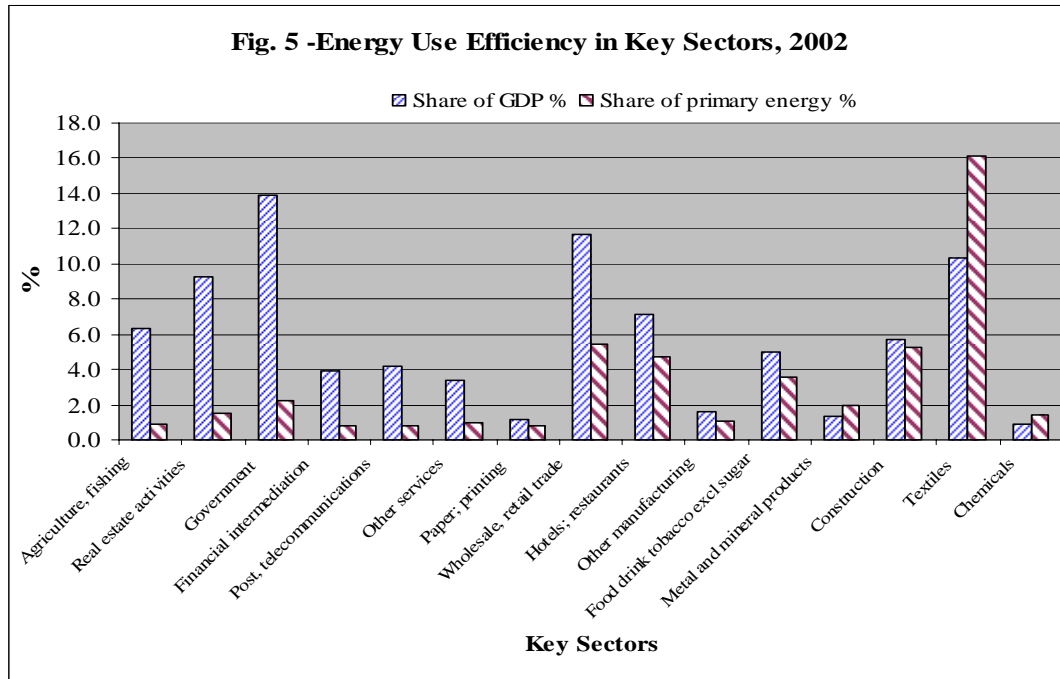
### 13.2.2. Energy policy and energy efficiency

The Energy Policy report sets out ambitious targets for a 70% reduction in greenhouse gas emissions within 50 years, with a 30% reduction in 25 years. As the bulk of greenhouse gas emissions in Mauritius result from energy use, the implication is that significant improvements in energy efficiency will be required from all sectors of the economy.

Relative energy efficiency of the various sectors of the economy is assessed by comparing the amount of energy used with the contribution to GDP. From the EEA, it is noted that over the period 1997 to 2007, the amount of energy consumed by the manufacturing and services sectors has increased at a much faster rate than their contributions to GDP.

Primary energy use by the manufacturing sector, including an allowance for the share of the energy used to produce electricity, has increased by 93% over the period 1997 to 2007, compared with an increase in Gross Value Added of 33%.

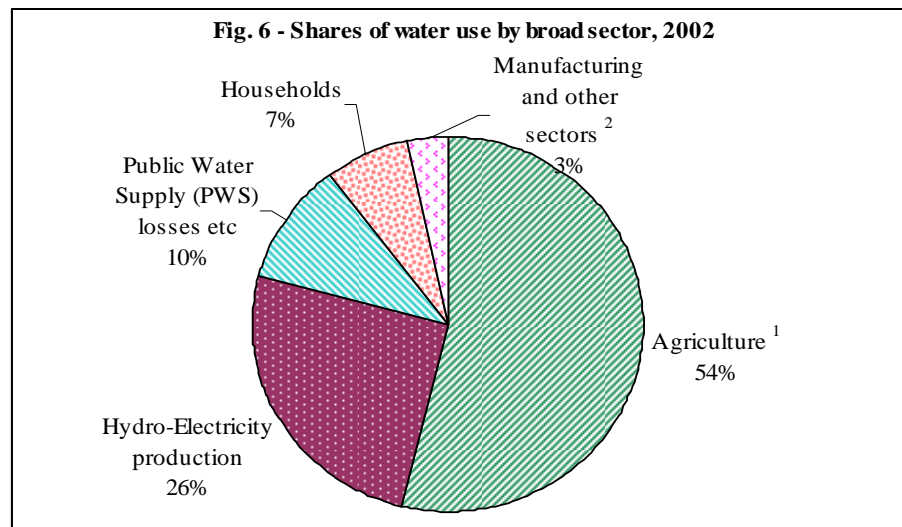
A similar picture emerges for the services sector as well where it is noted that primary energy use has increased almost threefold between 1997 and 2007, compared with an increase of 82% in Gross Value Added (Table 9 and Fig. 5).



The figure above shows the key sectors of the economy, excluding electricity production and public transport, ranked broadly in terms of their primary energy use in 2002 relative to their contribution to GDP. The sectors on the left of the chart are those which accounted for relatively little energy use compared to the Gross Value Added, whereas those to the right are relatively high intensity energy users. Hence agriculture and fishing has a high contribution to GDP relative to its energy use, whereas the chemicals and textile industries are relatively high intensity energy users.

### 13.2.3 Water use Intensity

In 2002, the amount of water abstracted in the Island of Mauritius was 975 million cubic metres, of which just over half was used for agricultural purposes and one quarter was used up in the production of hydro electricity. About 10% was distributed to household users and industries while the remaining 10% was attributed mainly to losses (Fig. 6).



<sup>1</sup> & <sup>2</sup> Inc. direct abstractions and from PWS



The water use account identifies the particular sectors which make use of the water supplied, and relates this use to the level of economic activity undertaken by the sectors. Although overall the use by the manufacturing and commercial sectors is relatively small, resource efficiency in terms of the use of public water supply can still make an important difference to the availability of water to other users and to the continuity of operations during times of water shortages.

An analysis of public water use by sector reveals that, as might be expected, agriculture is a relatively intensive user. Other sectors which are also intensive users are private households with employees, hotels, hospitals, education and the textile and chemicals industries. At the other end of the scale, real estate, post and telecommunications, and refuse disposal are clearly low intensity users (Table 20).

### ***13.2.4 Economy-wide Material flow accounts (MFA)***

The Economy-wide Material Flow Accounts set out the flow of natural materials used or moved by the economic activity of the country. Material flow accounts identify two main types of flows: direct flows are those which are used directly by economic activities within the territory, while indirect flows relate to materials which are moved but not used by the same set of economic activities. Table 25 presents some of the main indicators of MFA for the available years 2005 and 2006.

**Domestic extraction** (DE) of biomass and materials from the Mauritius environment totalled some 10 million tonnes in 2006, which is estimated to be about 5% higher than in 2000. Of the total, 47% is estimated to be sugar cane and 51% is aggregate, with the remainder comprised of salt products and biomass such as food crops, wood and fish.

**Direct Material Consumption** (DMI) consists of domestic extraction plus imports. In 2006 imports were estimated at 4.9 million tonnes (down 1% from 2005). Thus, DMI in 2006 was estimated at 14.9 million tonnes.

**Construction materials** used increased by 6% from 4.8 million tonnes in 2005 to 5.1 million tonnes in 2006.

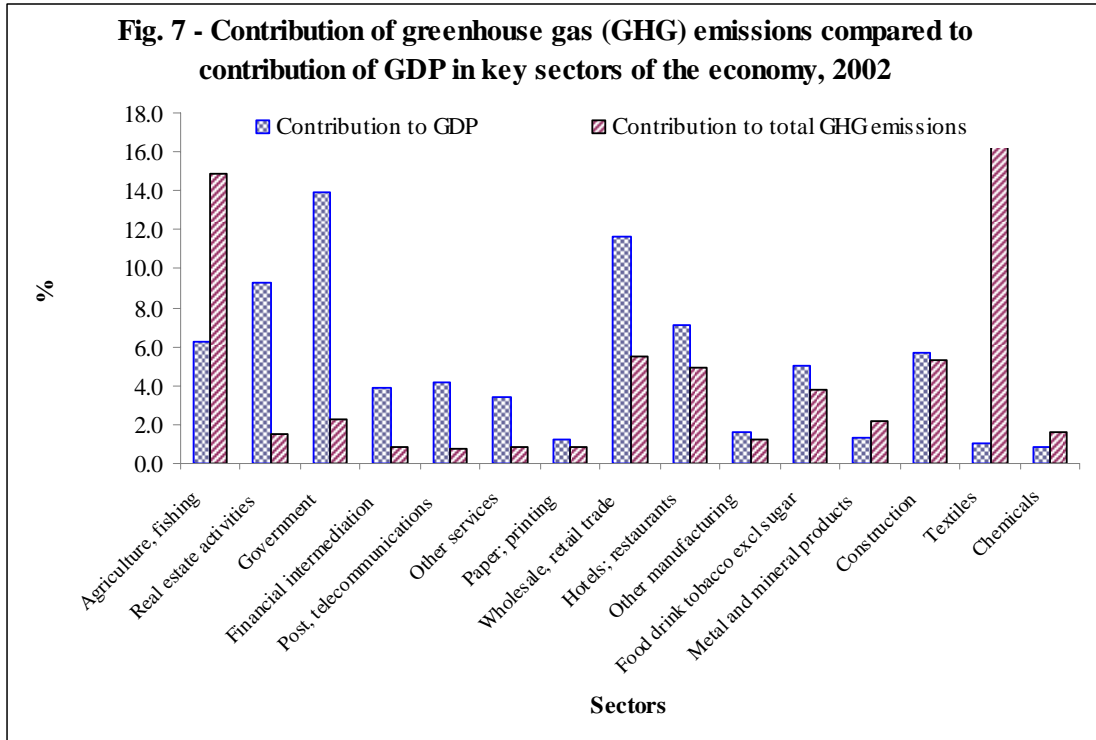
**Domestic Material Consumption** (DMC) is the indicator which is most used by the international community, as it can be most readily compared with GDP. It is defined as DMI less exports. In 2006, exports were estimated at 1.3 million tonnes (up 28% from 2005). Thus DMC was 13.6 million tonnes in 2006, down 2% on the previous year.

The **Physical Balance of Trade** (PTB), that is imports less exports, was 3.6 million tonnes in 2006, down from 3.9 million tonnes in 2005.

### ***13.2.5 Greenhouse Gas emissions Accounts***

The greenhouse gas emissions accounts indicates that 82% of the main **greenhouse gases (GHG)** (carbon dioxide, nitrous oxide and methane) emissions, in terms of 100-year global warming potential, are in the form of carbon dioxide, with nitrous oxide accounting for 11% and methane 7%.

Fig.7 shows GHG emissions of the key sectors compared to their shares in GDP. The **GHG efficiency** which indicates the level of the impact, in terms of the emissions per unit of economic output has been calculated for the main sectors (Table 17). Agriculture is ranked as relatively intensive in terms of environmental impact. The ‘Other services’ sector, which includes the waste and refuse collection sector, is ranked most intensive in terms of greenhouse gas emissions relative to production.



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## Technical notes

### Concepts and definitions

#### Environment

*Environment*: the totality of all the external conditions affecting the life, development and survival of an organism.

*An environmental indicator*: A parameter or a value derived from parameters, that points to, provides information about and/or describes the state of the environment, and has a significance extending beyond that directly associated with any given parametric value.

#### Economy

*Gross Domestic Product (GDP)*: GDP is the aggregate money value of all goods and services produced within a country out of economic activity during a specified period, usually a year, before provision for the consumption of fixed capital.

*Energy intensity*: Energy intensity provides a measure of the efficiency with which energy is being used in production or energy used (tonnes of oil equivalent) per Rs 100,000 GDP (at constant prices)

#### Land use, Agriculture and Forestry

*Land use*: Land use refers to the main activity taking place on an area of land, for example, farming, forestry or housing.

*Built-up areas*: Built-up areas consist of land under houses, industrial zones, quarries or any other facilities, including their auxiliary spaces, deliberately installed so that human activities may be pursued.

*Nutrient*: A nutrient is a substance, element or compound necessary for the growth and development of plants.

#### Energy

*Primary energy requirement*: It is the sum of imported fuels and locally available fuels less re-exports of bunkers and aviation fuel to foreign aircraft after adjusting for stock changes.

*Final energy consumption* is defined as energy consumption by final user – i.e. which is not being used for transformation into other forms of energy.

#### Renewables or Renewable sources of energy

Renewables are natural resources that, after exploitation, can return to their previous stock levels by natural processes of growth or replenishment. Conditionally renewable resources are those whose exploitation eventually reaches a level beyond which regeneration will become impossible. Such is the case with clear-cutting of tropical forests.

## **Greenhouse gas emissions**

*Greenhouse gases (GHG):* GHG are gases occurring naturally and resulting from human activities (production and consumption); that contribute directly or indirectly to global warming. Some main naturally existing GHG are Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O). Other gases such as Carbon Monoxide (CO), Oxides of Nitrogen (NO<sub>x</sub>), Non Methane volatile organic compounds (NMVOC) and Sulphur Dioxide contribute indirectly to global warming. GHG's act much like a glass greenhouse, trapping heat in the lower levels of the atmosphere and reflecting the heat back to the earth's surface, causing it to heat up.

## **Water**

*Water balance:* The water balance is based on long term records of annual average rainfall and indicates how freshwater resources are distributed.

*Precipitation:* Rain falling from the atmosphere and deposited on land or water surfaces.

*Evapotranspiration:* Combined loss of water by evaporation from the soil or surface water and transpiration from plants and animals.

*Surface runoff:* The flow of surface water from rainfall, which flows directly to streams, rivers and lakes. Runoff may cause soil erosion.

*Groundwater recharge:* Process by which water is added from outside to fresh water found beneath the earth surface.

## **Waste**

*Solid waste* includes domestic garbage, industrial and commercial waste, sewage sludge, wastes resulting from agricultural and animal husbandry operations and other connected activities, demolition wastes and mining residues.

*Landfill:* Final placement of waste in or on the land in a controlled or uncontrolled way according to different sanitary, environmental protection and other safety requirements.

## **Environmental impact assessment**

*Environmental impact assessment (EIA):* Analytical process that systematically examines the possible environmental consequences of the implementation of projects, programmes and policies.

## **Preliminary environmental report**

*Preliminary environmental report (PER)* is a short form of EIA and this preliminary analysis is undertaken to identify the impacts associated with the proposed development and the means of mitigation.

**Environment-Economic-Accounts (EEA):** a framework for demonstrating the Environment-Economic relationship in terms of both physical and monetary values.

## **Air Quality**

*Ambient air quality* is the quality of the air that surrounds us and which we breathe.

*Air quality standards*: Levels of air pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

*PM<sub>10</sub>*: Dust or Particulate Matter with a diameter of 10 µg.

## ABBREVIATIONS AND SYMBOLS

### Abbreviations

Rs mn	Rupees million
Rs	Rupees
US\$	US dollar
%	Percentage
f.o.b	free on board
c.i.f	Cost, insurance, freight
000	Thousand
n.e.s	Not elsewhere specified
Mm <sup>3</sup>	Million cubic metres
Gg	Gigagram (thousand tonnes)
ktoe	Thousand tonnes of oil equivalent
Toe	Tonne of oil equivalent
µg/m <sup>3</sup>	Microgramme per cubic metres
ppb	Part per billion
ppm	Part per million
SIFB	Sugar Insurance Fund Board
TSP	Total suspended particles
EIA	Environmental impact assessment
PER	Preliminary environmental report
IUCN	International Union for the Conservation of nature

### Symbols

-	Nil or negligible
...	Not available

### *Conversion factor*

1 square kilometre = 100 hectares

**Table 1 - Main environment indicators, Republic of Mauritius, 1999 and 2008**

Indicator	Units	1999	2008
1. Total land area	000 ha	204.0	204.0
2. Irrigated land	ha	18,876	21,457
3. Total forest area (as a % of total land area)	%	30.6	25.3
4. Land Protected Areas	ha	13,973	14,854
5. Marine Protected Areas (MPA's)	ha	7,190	7,190
6. Threatened plant species (IUCN Red List)	Number	...	88
7. Threatened animal species (IUCN Red List)	Number	...	65
8. Total fish catch	tons	10,586	7,794
9. Mean catch per fisherman day	kg	5.3	5.6
10. Total Carbon dioxide emission	000 tons	...	3,486
11. Per capita carbon dioxide emission	tons	...	...
12. Mean annual rainfall	millimetres	1,102.4	2,381
13. Annual fresh water abstraction	Mm <sup>3</sup>	516	1,075.0
14. Daily per capita domestic water consumption	litres	149	160.1
15. Daily per capita solid waste generated ( <i>estimate</i> )	Kg	0.7	0.9
16. Total electricity generated	GWh	1,555	2,557
17. Per capita primary energy requirement	toe	0.9	1.1
18. Per capita final energy consumption	toe	0.6	0.7
19. Energy intensity	toe per Rs 100,000 GDP	1.6	1.5

**Table 2 - Main socio-economic indicators, Republic of Mauritius, 1999 and 2008**

Indicator	Units	1999	2008 <sup>1</sup>
1. Gross Domestic Product (GDP) at market prices	Rs mn	108,076	264,854
2. Sectoral contribution to GDP			
<i>Agriculture</i>	%	6.1	4.3
<i>Manufacturing</i>	%	23.9	20.1
<i>Construction</i>	%	5.7	6.9
<i>Wholesale and retail trade</i>	%	13.1	12.3
<i>Hotels and restaurants</i>	%	6.9	8.6
<i>Transport and communications</i>	%	12.2	11.2
<i>Financial intermediation and business services</i>	%	8.4	10.9
<i>Other</i>	%	23.7	25.7
3. GDP annual growth rate (basic prices)	%	2.1	5.3
4. Per capita GDP at market prices	Rs	91,945	208,570
5. Per capita GDP in US dollars	US\$	3,656	7,354
6. Investment (GDFCF)	Rs mn	29,457	64,893
7. Exports (f.o.b) (include ship's stores and bunkers)	Rs mn	40,025	68,409
8. Imports (c.i.f)	Rs mn	56,629	132,564
9. Population (mid year)	000	1,175	1,269
10. Population annual growth rate	%	1.1	0.6
11. Population density (per kilometre square)	Number	597	644
12. Total labour force <sup>2</sup>	000	519.5	583.4
13. Total employment <sup>2</sup>	000	480.5	543.0
<i>Agriculture (as a % of total)</i>	%	12.0	8.6
<i>Manufacturing (as a % of total)</i>	%	29.6	22.5
14. Unemployment rate <sup>2</sup>	%	7.7	7.2
15. Inflation rate	%	6.9	9.7
16. Tourist arrivals	000	578.1	930.5

<sup>1</sup> Provisional<sup>2</sup> Labour force, employment and unemployment, 16 years and over.

**Table 3. Land use, Island of Mauritius, 1995 and 2005**

Land Use Distribution	2005 <sup>1</sup>		1995		Change	
	Hectares	%	Hectares	%	Hectares	%
Sugar cane plantations (Source SIFB)	72,000	38.6	76,840	41.2	-4,840	-6.3
Tea plantations (Source Tea Board)	674	0.4	3,660	1.9	-2,986	-81.6
Forests, shrubs and grazing lands	47,200	25.3	57,000	30.6	-9,800	-17.2
Other agricultural activities	8,000	4.3	6,000	3.2	2,000	33.3
Infrastructure	4,500	2.3	4,000	2.1	500	12.5
Inland water resource systems	2,900	1.6	2,600	1.4	300	11.5
Built-up areas	46,500	24.9	36,400	19.5	10,100	27.7
Abandoned cane fields	4,726	2.5	...	...	...	...
<b>Total</b>	<b>186,500</b>	<b>100</b>	<b>186,500</b>	<b>100</b>		

Source: Stocktaking and Stakeholders Consultation Exercise on Climate Change Activities Report, March 2006

<sup>1</sup> Estimate

**Table 4 - Forest area by category, Island of Mauritius, 2008**

Category of Forest	Hectares 2008 <sup>1</sup>
<b>State - owned</b>	<b>22,159</b>
Plantations	11,855
Nature reserves	799
<i>On mainland</i>	200
<i>Islets</i>	599
Reserves	472
National Park <sup>2</sup>	6,574
Islet National Parks	134
Other forest lands	1,419
Pas Geometriques	631
<i>Plantations</i>	222
<i>Leased for grazing and tree planting</i>	230
<i>Unplanted, protective or to be planted</i>	179
<i>Vallee d'Osterlog Endemic Garden</i>	275
<b>Private - owned lands</b>	<b>25,000</b>
Reserves	6,553
<i>Mountain reserves</i>	3,800
<i>River reserves</i>	2,740
<i>Nature Reserves</i>	13
Other <sup>3</sup>	18,447
<b>Total</b>	<b>47,159</b>

Source: Forestry Service, Ministry of Agro Industries and Fisheries.

<sup>1</sup> Provisional

<sup>2</sup> Black River Gorges National Park was proclaimed in 1994 and data on the area enclosed by the boundaries of the park were not available until 1997

<sup>3</sup> includes plantations, forest lands, scrub and grazing lands

**Table 5 - Effective area under cultivation, Island of Mauritius, 2006 - 2008**

<b>Crops</b>	Hectares		
	<b>2006</b>	<b>2007</b>	<b>2008</b>
Sugarcane	70,801	68,523	65,500
Tea	688	709	701
Tobacco	252	258	256

**Table 6 - Imports of fertilizers, Island of Mauritius, 2006 - 2008**

<b>Year</b>	<b>Quantity (tonnes)</b>	<b>Value</b>	
		<b>FOB (Rs mn)</b>	<b>CIF (Rs mn)</b>
2006	55,313	392.9	471.2
2007	45,336	379.9	476.2
2008	46,677	783.7	935.2

FOB: Free on board

CIF: Cost, Insurance, Freight



**Table 7 - Primary energy requirement by energy source, Republic of Mauritius, 2006 - 2008**

ktoe (000 Tonne of oil equivalent)

Energy Source	2006	2007	2008 <sup>3</sup>
<b>Imported</b>	<b>1,120.3</b>	<b>1,136.0</b>	<b>1,140.2</b>
Oil <sup>1</sup>	751.3	712.1	668.4
Liquefied petroleum gas (LPG)	68.0	68.9	67.9
Coal	300.4	355.0	403.9
<b>Local</b>			
<b>Renewables</b>			
Hydro / Wind GWh	6.6	7.2	9.3
Bagasse <sup>2</sup>	240.0	230.5	246.4
Fuel wood <sup>2</sup>	8.0	8.0	7.7
<b>Sub total (renewables)</b>	<b>254.6</b>	<b>245.8</b>	<b>263.5</b>
<b>Total</b>	<b>1,374.2</b>	<b>1,381.8</b>	<b>1,403.7</b>

<sup>1</sup> Includes gasoline, diesel oil, dual purpose kerosene and fuel oil<sup>2</sup> Estimates<sup>3</sup> Provisional

**Table 8 - Final energy consumption by sector, Republic of Mauritius, 2006 - 2008**

ktoe (000 Tonne of oil equivalent)

Sector	2006		2007		2008 <sup>1</sup>	
	Quantity (Ktoe)	%	Quantity (Ktoe)	%	Quantity (Ktoe)	%
Manufacturing	269.9	30.9	264.0	30.8	247.7	29.4
Transport	425.1	48.7	410.9	47.9	406.1	48.3
Household	109.4	12.5	108.8	12.7	110.2	13.1
Commercial	61.1	7.0	65.2	7.6	69.1	8.2
Agriculture	4.9	0.5	4.9	0.6	4.5	0.5
Other (n.e.s & losses)	3.4	0.4	3.6	0.4	3.7	0.4
<b>Total</b>	<b>873.8</b>	<b>100.0</b>	<b>857.4</b>	<b>100.0</b>	<b>841.2</b>	<b>100.0</b>

<sup>1</sup> Provisional

**Table 9 - Resource Efficiency in key sectors, 2002**

Key sectors	Share of GDP %	Share of primary energy %
Agriculture, fishing	6.3	0.9
Real estate activities	9.3	1.5
Government	13.9	2.2
Financial intermediation	3.9	0.8
Post, telecommunications	4.2	0.8
Other services	3.4	1.0
Paper; printing	1.2	0.8
Wholesale, retail trade	11.7	5.4
Hotels; restaurants	7.1	4.7
Other manufacturing	1.6	1.1
Food drink tobacco excl sugar	5.0	3.6
Metal and mineral products	1.3	2.0
Construction	5.7	5.3
Textiles	10.3	16.1
Chemicals	0.9	1.4

**Table 10 - Fuel input for electricity production, Republic of Mauritius , 2006 - 2008**

Fuel	2006		2007		2008 <sup>1</sup>	
	Quantity (Ktoe)	%	Quantity (Ktoe)	%	Quantity (Ktoe)	%
Fuel oil	217.5	32.2	193.8	27.3	160.8	21.4
Diesel oil	2.6	0.4	2.8	0.4	1.6	0.2
Kerosene	1.9	0.3	1.1	0.2	2.2	0.3
Coal	286.9	42.5	342.6	48.5	378.0	50.4
Bagasse	165.9	24.6	166.5	23.6	208.2	27.7
<b>Total</b>	<b>674.8</b>	<b>100.0</b>	<b>706.8</b>	<b>100.0</b>	<b>750.8</b>	<b>100.0</b>

<sup>1</sup> Provisional

**Table 11 - Stock of registered motor vehicles, Island of Mauritius, 2005 - 2008**

Type of vehicle	2005	2006	2007	2008
Cars and Dual Purpose Vehicle (DPV)	126,844	135,132	144,405	155,528
Auto / Motorcycles	133,430	138,174	142,606	147,988
Heavy Motor Car and Bus	3,605	3,730	3,976	4,052
Van and Lorry	36,036	36,794	37,470	38,060
Other vehicles <sup>1</sup>	5,581	5,610	5,688	5,778
<b>Total</b>	<b>305,496</b>	<b>319,440</b>	<b>334,145</b>	<b>351,406</b>
<b>No of vehicles per 1000 population</b>	<b>253</b>	<b>263</b>	<b>272</b>	<b>285</b>

<sup>1</sup> Includes tractor and dumper, prime mover, trailer and road roller

**Table 12 - Fuel used for transport, Republic of Mauritius, 2006 - 2008**

ktoe (000 Tonne of oil equivalent)

Fuel	2006	2007	2008
Gasolene	97	107	110
Liquefied Petroleum Gas (LPG)	7	7	6
Diesel oil	174	153	154
Aviation fuel	147	144	137
<b>Total</b>	<b>425</b>	<b>411</b>	<b>407</b>

**Table 13 - Ambient air quality monitoring by stations, Island of Mauritius, 2008**

Pollutant	Unit	Ambient air quality standard <sup>2</sup>	Monitoring Site											
			La Tour Koenig			La Tour Koenig			Forest Side			Riche - Terre		
			Minimum	Maximum	24 hour Average for the year	Minimum	Maximum	24 hour Average for the year	Minimum	Maximum	24 hour Average for the year	Minimum	Maximum	24 hour Average for the year
			Period											
			May-08			July 2008 - August 2008			Jun-08			Nov-08		
Dust ( PM <sub>10</sub> )	µg/m <sup>3</sup>	100	12.9	18.7	16.1	7.8	22.4	16.0	6.2	28.3	13.4	9.9	11.0	10.6
Dust ( PM <sub>2.5</sub> )	µg/m <sup>3</sup>	N/A <sup>1</sup>	4.3	14.5	8.9	3.0	14.7	7.5	2.8	8.8	4.5	5.7	8.1	7.0
Black Carbon	µg/m <sup>3</sup>	N/A	4.0	5.0	4.5	2.0	4.0	3.0	1.0	3.0	2.0	3.0	6.0	6.0

**Table 13 Con't - Ambient air quality monitoring by the station at Terre - Rouge, Island of Mauritius, December 2008**

Pollutant	Ambient air quality standard <sup>2</sup>	Unit	Minimum	Maximum	24 hour Average for the year
Dust ( PM <sub>10</sub> )	100	µg/m <sup>3</sup>	6.5	14.9	10.9
Dust ( PM <sub>2.5</sub> )	N/A <sup>1</sup>	ppb	3.5	5.2	4.2
Black Carbon	N/A	ppb	1.0	3.0	2.0

Source: Ministry of Environment and National Development Unit.

<sup>1</sup> : P.M 2.5 (24-hour average) not prescribed in Mauritian Ambient Air Quality Standard. However, World Health Organization (WHO) standards recommends a limit of 25 µg/m<sup>3</sup> for parameter PM 2.5

<sup>2</sup>: 24 - hour average

**Table 14 - Total emissions and removals of greenhouse gases and other related gases, Republic of Mauritius, 2006 - 2008**

Gg or thousand tonne

Greenhouse gas	2006	2007	2008 <sup>1</sup>
<b>Emissions</b>			
Carbon Dioxide	3,348.9	3,449.6	3,487.1
Methane	13.0	12.6	37.3
Oxides of Nitrogen	16.6	16.6	18.1
Nitrous Oxide	1.2	1.3	1.1
Carbon Monoxide	64.8	65.4	66.6
NMVOC <sup>2</sup>	17.7	17.1	16.5
Sulphur Dioxide	33.0	35.1	33.2
<b>Removals</b>			
Carbon Dioxide	193.2	224.0	223.0
<b>Net emissions</b>			
Carbon Dioxide	3,155.6	3,225.6	3,264.1

<sup>1</sup> Provisional<sup>2</sup> Non-methane volatile organic compound

**Table 15 - Sectoral carbon dioxide emissions from fuel combustion activities, Republic of Mauritius, 2006 - 2008**

Gg or thousand tonne

Sector	2006		2007		2008 <sup>1</sup>	
	Quantity	%	Quantity	%	Quantity	%
Energy industries (electricity)	1,912.5	55.5	2,067.9	59.3	2,032.0	58.3
Manufacturing industries	404.9	11.7	400.3	11.5	456	13.1
Transport	843.7	24.5	800.1	23.0	813.0	23.3
Residential	136.7	4.0	130.6	3.7	131	3.8
Other <sup>2</sup>	49.0	1.4	49.3	1.4	53.8	1.5
<b>Total</b>	<b>3346.7</b>	<b>97.1</b>	<b>3,448.2</b>	<b>98.9</b>	<b>3,485.8</b>	<b>100.0</b>

<sup>1</sup> Provisional<sup>2</sup> includes Agriculture and Trade

Note: The inventory compilation is under revision.

**Table 16 - National inventory of greenhouse gases by source categories, Republic of Mauritius, 2007 - 2008<sup>1</sup>**

Gg or thousand tonne

Category	Carbon dioxide(CO <sub>2</sub> )				Methane (CH <sub>4</sub> )		Nitrous oxide (N <sub>2</sub> O)		Oxides of nitrogen (NO <sub>x</sub> )		Carbon monoxide (CO)		NMVOC <sup>2</sup>		Sulphur dioxide (SO <sub>2</sub> )	
	Emissions		Removals		2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
	2007	2008	2007	2008												
1. Energy	3,448.1	3,485.8	-	-	0.6	0.5	0.1	0.0	16.6	18.1	65.4	66.6	8.9	8.7	35.1	33.2
Fuel combustion activities																
(a) Energy industries (electricity)	2,067.9	2,032.0	-	-	0.3	0.3	0.1	0.0	7.1	8.6	8.8	8.2	0.5	0.2	26.3	27.0
(b) Manufacturing industries	400.3	456.0	-	-	0.1	0.1	0.0	0.0	1.4	0.1	13.1	14.2	0.2	0.2	6.7	5.2
(c) Transport	800.1	813.0	-	-	0.1	0.1	-	-	7.9	8.0	41.9	43.0	8.0	8.1	1.9	0.9
(d) Other sectors	179.8	184.8	-	-	-	-	-	-	0.2	1.4	1.6	1.2	0.2	0.2	0.1	0.1
2. Industrial processes	1.5	1.3	-	-	-	-	-	-	-	-	-	-	8.2	7.8	-	-
3. Solvent and other product use	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4. Agriculture	-	-	-	-	1.1	1.2	1.2	1.1	-	-	-	-	-	-	-	-
5. Land use change and forestry	-	-	224.0	223.0	-	-	-	-	-	-	-	-	-	-	-	-
6. Waste	-	-	-	-	10.9	35.6	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>3,449.6</b>	<b>3,487.1</b>	<b>224.0</b>	<b>223.0</b>	<b>12.6</b>	<b>37.3</b>	<b>1.3</b>	<b>1.1</b>	<b>16.6</b>	<b>18.1</b>	<b>65.4</b>	<b>66.6</b>	<b>17.1</b>	<b>16.5</b>	<b>35.1</b>	<b>33.2</b>

<sup>1</sup> Provisional

<sup>2</sup> Non - methane volatile organic compound

Note: The inventory compilation is under revision.

**Table 17 - Greenhouse Gas (GHG) Accounts for key sectors, 2002**

Sector	GHG emissions	Gross Value Added (GVA)	GHG Efficiency (GHG/GVA)
	<i>Carbon Dioxide (CO<sub>2</sub>) equivalent Thousand tonnes</i>	<i>Million Rupees</i>	<i>Thousand tonnes CO<sub>2</sub> equivalent per million rupees</i>
Agriculture, fishing	428.1	7909	0.0541
Real estate activities	42.5	11707	0.0036
Government	66.4	17555	0.0038
Financial intermediation	24.9	4907	0.0051
Post, telecommunications	24.2	5235	0.0046
Other services	257.9	4265	0.0605
Paper; printing	24.6	1466	0.0168
Wholesale, retail trade	157.2	14728	0.0107
Hotels; restaurants	139.8	8923	0.0157
Other manufacturing	95.3	2071	0.0169
Food drink tobacco excl sugar	175.3	6296	0.0172
Metal and mineral products	99.1	1700	0.0366
Construction	150.8	7168	0.0210
Textiles	480.8	12935	0.0372
Chemicals	45.8	1159	0.0395
<b>TOTAL</b>	<b>2,212.9</b>	<b>108,023.3</b>	

Note: Total excludes household travel and non-travel data

**Table 18 - Water balance <sup>1</sup>, Island of Mauritius, 2003 - 2008**

Mm<sup>3</sup>

Water balance	2003	2004	2005	2006	2007	2008
Rainfall	4,006	4,233	4,424	3,571	3,644	4,440
<i>Surface runoff</i>	<i>2,403</i>	<i>2,540</i>	<i>2,654</i>	<i>2,143</i>	<i>2,186</i>	<i>2,664</i>
<i>Evapotranspiration</i>	<i>1,202</i>	<i>1,270</i>	<i>1,327</i>	<i>1,071</i>	<i>1,093</i>	<i>1,332</i>
<i>Net recharge to groundwater</i>	<i>401</i>	<i>423</i>	<i>442</i>	<i>357</i>	<i>364</i>	<i>444</i>

Source: Water Resources Unit of the Ministry of Public Utilities.

<sup>1</sup> Estimates

**Table 19 - Water Utilisation, Island of Mauritius, 2008<sup>1</sup>**

Mm<sup>3</sup>

Use	Surface water		Ground water	Total
	River-run offtakes	Storage		
Domestic, Industrial and Tourism	43 <sup>2</sup>	82	120	245
Industrial ( private boreholes )	-	-	7	7
Agricultural (irrigation)	411	95 <sup>3</sup>	8	514
Hydropower	167	142 <sup>4</sup>	-	309
<b>Total</b>	<b>621</b>	<b>319</b>	<b>135</b>	<b>1,075</b>

Source: Water Resources Unit of the Ministry of Public Utilities.

<sup>1</sup> 2008 Estimates

<sup>2</sup> includes 19 Mm<sup>3</sup> for Reduit hydropower station

<sup>3</sup> includes 28 Mm<sup>3</sup> for Tamarind Falls & Magenta hydropower station

<sup>4</sup> includes 13 Mm<sup>3</sup> used twice for Le Val & Ferney hydropower stations and 16Mm<sup>3</sup> for Tamarind Falls & Magenta



**Table 20 - Water use account,2002**

Sector	Direct abstractions (withdrawals)	Public Water Supply	Total use	Gross Value Added	Water efficiency Gross Value Added/water use
	Thousand m <sup>3</sup>	Thousand m <sup>3</sup>	Thousand m <sup>3</sup>	Rupees Million	
Agriculture, forestry and fishing	514000	10133	524133	7909	0
Mining and Quarrying		5	5	81	15
Food, drink beverages and tobacco manufacturing	10000	1817	11817	7566	1
Manufacture of Textiles, wearing apparels, leathers, bags, etc		6402	6402	12935	2
Manufacture of Wood and products of Wood		40	40	142	4
Manufacture of Paper and Paper products		56	56	316	6
Publishing, Printing and Reproduction of recorded media		93	93	1150	12
Manufacture of chemicals and chemical products, rubber and plastics		424	424	1546	4
Manufacture of other Non-Metallic Mineral products		522	522	1012	2
Manufacturing of Basic Metals and metal products		165	165	1220	7
Manufacture of Machinery and Equipment n.e.c		15	15	268	18
Other manufacturing		336	336	2071	6
Production, collection and distribution of electricity	249000	45	249045	3012	0
Collection, purification and distribution of water	101235		101235	634	0
Construction		435	435	7168	16
Wholesale and retail trade and repairs		1858	1858	14728	8
Hotels and restuarants		4084	4084	8923	2
Transport and communications		664	664	16944	26
Financial Intermediation, insurance, pension and real estate		504	504	16614	33
Public administration and defence; compulsory social security		283	283	8140	29
Education		2117	2117	5603	3
Health and social work		2147	2147	3812	2
Refuse disposal, cleaning services etc		6	6	636	103
Sewerage		17	17		0
Recreational, cultural sporting activities and other services		979	979	3629	4
Households		67618	67618		

Note: shaded cells indicate no direct abstractions

**Table 21 - Solid waste landfilled at Mare Chicose by source of waste materia  
Island of Mauritius, 2006 - 2008**

Tonnes			
<b>Waste material</b>	<b>2006</b>	<b>2007</b>	<b>2008<sup>1</sup></b>
Domestic	387,751	365,824	373,860
Construction	1,109	502	2,065
Other <sup>2</sup>	18,180	27,792	24,888
<b>Total</b>	<b>407,040</b>	<b>394,118</b>	<b>400,813</b>

Source: Ministry of Local Government

<sup>1</sup> Provisional

<sup>2</sup> Includes mainly industrial waste.

Note: Up to 2006, the period covered was October the previous year to September the current year

**Table 22 - Number of complaints received at the Pollution Prevention and Control Division  
and Police De L' Environnement by category, Island of Mauritius, 2006 - 2008**

<b>Category</b>	<b>2006</b>	<b>2007</b>	<b>2008<sup>1</sup></b>
Noise	178	135	157
Solid waste	137	88	49
Air pollution	61	62	57
Waste water	92	76	84
Animal husbandry	-	-	-
Odour	121	88	102
Other	224	119	147
<b>Total</b>	<b>813</b>	<b>568</b>	<b>596</b>

Source: Department of Environment of the Ministry of Environment and National Development Unit

<sup>1</sup> Provisional

**Table 23 - Number of EIA and PER licences granted by type of project, Island of Mauritius, 2005 - 2008**

Project	EIA				PER <sup>2</sup>	
	2005	2006	2007	2008	2007	2008 <sup>1</sup>
Land parcelling (morcellement)	19	9	3	12	5	-
Poultry rearing	-	-	18	-	19	10
Industrial development	5	4	11	-	28	16
Coastal hotels & related works	10	20	-	8	23	-
Livestock rearing	-	-	10	-	-	-
Housing	7	13	-	-	4	-
Stone crushing plants	3	1	-	-	-	-
Development in port area	1	1	-	-	-	-
Service ("filling") station	-	-	-	-	-	-
Other	10	7	13	24	17	14
<b>Total</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>44</b>	<b>96</b>	<b>40</b>

Source: Department of Environment of the Ministry of Environment and National Development Unit

<sup>1</sup> Provisional

<sup>2</sup> PER licence was issued as from September 2002.

**Table 24 - Contraventions and notices established by Police De L'Environnement, Island of Mauritius, 2005 - 2008**

Type of contravention	2005	2006	2007	2008
Illegal littering	3,624	9,427	8,119	8,246
Illegal dumping	14	32	16	51
Noise	30	0	12	91
Smoking in prohibited area	38	63	75	8
Waste carriers offences	18	21	0	8
Setting fire within 50 metres from building/plantatic	4	3	0	9
Obstruction	10	1	0	11
Road Traffic Offences	193	372	133	328
Trading without licence	56	47	47	80
Allowing animal to stray	10	0	0	0
Disturbance	1	1	0	0
Others	15	46	30	90
<b>Total</b>	<b>4,013</b>	<b>10,013</b>	<b>8,432</b>	<b>8,922</b>
No. of notices issued to drivers of vehicles emitting black smoke	<b>5,156</b>	<b>6,236</b>	<b>3,796</b>	<b>6,782</b>

Source: Ministry of Environment and National Development Unit

**Table 25 - Main material flows account indicators, 2005 -2006***Million tonnes*

Indicators	2005	2006
Domestic extraction (materials from local sources)	9.9	10.0
Materials Imported	4.9	4.9
Direct Material Input - DMI (Domestic extraction plus Imports)	14.8	14.9
Materials Exported	1.0	1.3
Domestic Material Consumption - DMC (DMI minus exports)	13.8	13.6
Physical Balance of Trade - PBT (Exports minus imports)	3.9	3.6
Construction industry material use and Gross Value Added (GVA)		
Construction GVA ( <i>Rupees million</i> )	5,264.7	5,538.4
Construction use of materials	4.8	5.1

Note: Materials include agricultural products such as sugar cane and animal products (meat etc), forestry products such as wood and raw materials used in manufacturing and services sectors.