

## ***FOREWORD***

Welcome to our first issue of the pocketbook of Environment Statistics. It is hoped that this publication will no doubt satisfy the alarming need for data in the environment field. It is intended to provide an accessible, pocket-sized reference which will be particularly useful for Ministers and officials across Government, for students and for members of the public in general.

An endeavour has been made to cover the maximum number of environmental indicators. The key indicators presented are supplemented by graphical illustrations and a short write up, to guide the users through the different environmental topics.

The data series provided in this publication focuses on providing trends over time so that users can compare environmental performances against quantified targets and commitments set at the national and international level. The data mainly refers to the Island of Mauritius unless otherwise stated.

The materials provided in this pocketbook have been drawn from published statistics, mainly from the Digest of Environment Statistics, prepared by the Statistics Unit of the Department of Environment and released by the Central Statistics Office. Some other institutions have also supplied data and all of their contributions are herewith duly acknowledged.

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## Overview

This pocketbook has been prepared with a view to providing data and information on environmental issues and thus assist the policy makers who can target and measure policy goals. Therefore these data could be used both for environmental planning and management for Sustainable Development (SD) as well as for linking the environment with other issues such as the economy.

There are various sectors of the economic, social and demographic fronts that need to identify key trends and changes that are affecting the environment.

The following table highlights the key socio-economic indicators of Mauritius. It shows the structural changes that have occurred during the last decade. It can be noted that, from 1995 to 2004, the Gross Domestic Product (GDP), which measures the total value of production in money terms, has increased from Rs 70,283 to Rs 174,468, or by about 148%. The share of agriculture in the economy has dropped to 6.2%. It can also be seen that there are new emerging sectors such as the financial services and tourism.

During the same period, 1995 to 2004 the population has increased by 10.9%, from 1,112,400 to 1,233,400.

### Main socio-economic indicators, 1995 and 2004

Indicator	Units	1995	2004 <sup>1</sup>
1. Gross Domestic Product (GDP) at market prices	Rs mn	70,283	174,468
2. Sectoral contribution to GDP			
<i>Agriculture</i>	%	10.3	6.2
<i>Manufacturing</i>	%	22.9	21.0
<i>Construction</i>	%	6.4	5.8
<i>Wholesale and retail trade</i>	%	12.7	11.0
<i>Hotels and restaurants</i>	%	4.6	7.5
<i>Transport and communications</i>	%	11.4	13.1
<i>Financial intermediation and business services</i>	%	15.4	19.3
<i>Other</i>	%	16.3	16.1
3. GDP annual growth rate (basic prices)	%	5.5	4.1
4. Per capita GDP at market prices	Rs	62,606	141,422
5. Per capita GDP in US dollars	US\$	3,517	5,096
6. Investment (GDFCF)	Rs mn	16,499	37,729
7. Exports (f.o.b) (include ship's stores and bunkers)	Rs mn	27,326	55,223
8. Imports (c.i.f)	Rs mn	34,363	76,577
9. Population (mid year)	000	1,112.4	1,233.4
10. Population annual growth rate	%	1.2	0.8
11. Population density (per kilometre square)	Number	554	607
12. Total labour force <sup>2</sup>	000	484.8	549.6
13. Total employment <sup>2</sup>	000	460.5	504.5
<i>Agriculture (as a % of total)</i>	%	14.7	9.7
<i>Manufacturing (as a % of total)</i>	%	29.5	24.6
14. Unemployment rate <sup>2</sup>	%	5.1	8.5
15. Inflation rate	%	6.0	4.7
16. Tourist arrivals	000	422.4	718.9

<sup>1</sup> Provisional

<sup>2</sup> Year 1995 estimates were based on data from various sources and refer to population aged 12 years and over.

As from 2004, the Continuous Multi Purpose Household Survey is used to measure labour force, employment and unemployment and the estimates refer to population aged 15 years and over.

Environment and economy are inextricably linked. Understanding the links between the two helps to identify the enabling factors which underlie environmental degradation, and provide a framework for policy development for the environment. The table below shows the main environment indicators that can be used concurrently with the socio-economic data to identify trends and links.

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**Main environment indicators, 1995 and 2004**

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<b>Indicator</b>	<b>Units</b>	<b>1995</b>	<b>2004<sup>1</sup></b>
1. Total land area	000 ha	186.5	186.5
2. Irrigated land	ha	17,306.0	21,417.0
3. Forest area (as a % of total land area)	%	30.6	23.8
4. Land protected areas	ha	11,125.0	13,926.0
5. Marine protected areas	000 ha	7,190.0	7,216.0
6. Threatened plant species (IUCN Red List)	Number	...	87
7. Threatened animal species (IUCN Red List)	Number	...	60
8. Total fish catch	tons	16,029.0	9,431.0
9. Mean catch per fisherman day	kg	4.8	4.2
10. Total Carbon dioxide emission	000 tons	1,738.4	2,795.7
11. Per capita carbon dioxide emission	Tons	1.6	2.3
12. Mean annual rainfall	millimetres	1,514.4	2,271.4
13. Annual fresh water abstraction	Mm <sup>3</sup>	650.0	662.0
14. Daily per capita domestic water consumption	litres	154.8	160.0
15. Daily per capita solid waste generated ( <i>estimate</i> )	Kg	0.6	0.9
16. Total electricity generated	GWh	1,165.5	2,165.0
17. Per capita primary energy requirement	toe	0.8	1.0
18. Per capita final energy consumption	toe	0.6	0.7
19. Energy intensity	toe per Rs 100,000 GDP	1.8	1.6

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<sup>1</sup> Provisional

## Explanatory Notes

### Introduction

The statistics presented in this report are divided into six main information categories corresponding to the following components of the natural environment: Flora, Fauna, Atmosphere, Water, Land, and Human Settlements.

Due to its interdisciplinary nature, Environment Statistics have data sources that are dispersed and a variety of methods are applied in their collection and compilation. The systematic development and organisation of a complex field such as the environment statistics has necessitated the formulation of various frameworks and models. While the United Nation (UN) has prepared and adopted the Framework for the Development of Environment Statistics (FDES), the Organisation for Economic Co operation and Development (OECD) has developed and used the Pressure-State-Response (P-S-R) model.

For the purpose of this publication, both these models can be used to fit the data provided. An overview of the two models has been presented below.

#### 1. The FDES model

Components of the environment	Information categories			
	Social and economic activities, natural events	Environmental impacts of activities/ events	Responses to environmental impacts	Stocks, inventories and background conditions
1. Flora	<i>e.g Forest area,</i>	<i>e.g Agricultural lands,</i>	<i>e.g Protected areas</i>	<i>e.g Populations,</i>
2. Fauna	<i>Fish catch,</i>	<i>Air quality,</i>	<i>EIA and PER</i>	<i>Climate,</i>
3. Atmosphere	<i>Temperature,</i>	<i>Water quality,</i>	<i>Air quality monitoring</i>	<i>Water balance,</i>
4. Water	<i>Water abstraction,</i>	<i>Solid wastes generation</i>		<i>Land availability</i>
5. Land	<i>Land use,</i>			
6. Human Settlements	<i>Energy consumption</i>			

#### 2. The P-S-R model

	Pressure	State	Response
1. Flora	Indicators used to monitor the causes of environmental problems	Indicators used to monitor the conditions, practices and activities related to known environmental problems	Indicators used to monitor the measures and responses of society, such as sectoral regulations to the impacts on the environment
2. Fauna			
3. Atmosphere			
4. Water			
5. Land			
6. Human Settlements			





## **Definitions**

### **Flora**

Flora: A general term for all forms of plant life characteristic of a region, period or special environment.

Protected Area: Legally established land or water area under either public or private ownership that is regulated and managed to achieve specific conservation objectives.

Wetland: Area of low-lying land where the water table is at or near the surface most of the time. Wetlands include swamps, bogs, fens, marshes and estuaries.

### **Fauna**

Fauna: A general term for all forms of animal life characteristic of a region, period or special environment.

Marine park: Permanent marine reservation for the conservation of species. It constitutes an extension, to the undersea world, of the concept of the terrestrial national park.

### **Atmosphere**

Greenhouse gases (GHG): These gases occur naturally and result from human activities (production and consumption) that contribute directly or indirectly to global warming. Some main 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. GHGs 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.

Ozone depletion: Destruction of ozone in the stratosphere, where it shields the earth from harmful ultraviolet radiation.

Chlorofluorocarbons: Inert, non-toxic and easily liquefied chemicals used in refrigeration, air-conditioning, packing and insulation, or as solvents and aerosol propellants.

## **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, lakes and sea. Runoff may cause soil erosion.

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

**Ecosystem:** The interacting system of a biological community and its non living surroundings.

**Temperature:** This is a measurement of the intensity (not amount) of heat stored in a volume of water. It affects the solubility of many chemical compounds and can therefore influence the effect of pollutants on aquatic life.

**pH Value :** Measure of the acidity or alkalinity of a liquid. A pH value in the range of 0 to 7 indicates acidity, a pH value in the range of 7 to 14 indicates alkalinity, and a pH value of 7 signifies neutrality.

**Dissolved Oxygen (DO):** This is a measure of the amount of oxygen dissolved in water. DO is essential to the respiratory metabolism of most aquatic organisms. It affects the solubility and availability of nutrients.

**Conductivity:** This is the measurement of the ability of water to conduct an electric current. It can indicate saline intrusion or other sources of pollution.

**Total Dissolved Solids (TDS):** This is a measure of the amount of dissolved material in the water. High concentrations of TDS limit the suitability of water as a drinking source and irrigation supply.

**Turbidity:** This is a measurement of the suspended particulate matter in a water body, which interferes with the passage of a beam of light through the water. High levels of turbidity increase the total available surface area of solids in suspension upon which bacteria can grow. High turbidity reduces light penetration.

**Chemical Oxygen Demand (COD):** This is a measure of the oxygen required to oxidize all compounds in water. It represents the amount of organic matter in the media.

**Fluoride:** Fluoride may be present as the result of the natural decomposition of rocks.

**Chloride:** Chloride appears in the highest concentrations in natural fresh water systems. It is important in terms of metabolic processes. High Chloride levels can make freshwater unpalatable and unsuitable for various uses including agriculture.

**Sulphate:** Sulphate usually occurs in natural waters. High concentrations of sulphate can have a laxative effect on human beings.

**Nitrate:** This is a measure of the most oxidised and stable form of nitrogen in a water body. It is used by plants as a nutrient to stimulate growth. Excessive amount of nitrate can lead to eutrophication.

Eutrophication is the slow process during which a lake or estuary evolves into a bog or marsh and eventually disappears.

**Phosphate:** Phosphorus in the form of phosphate commonly occurs in all natural waters. It is a nutrient and is used by plants to stimulate growth. High concentrations of phosphate can cause eutrophication.

**Pesticide:** a product or substance used in the control of pests which may affect public health or attack resources of use to man.

**Waste water:** Used water typically discharged into the sewage system. It contains matter and bacteria in solution or suspension.

## **Land**

**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.

**Solid waste:** These are useless, and sometimes hazardous, materials with low liquid content. Solid waste includes domestic garbage, industrial and commercial waste, sewage sludge, wastes resulting from agricultural and animal husbandry operations and other connected activities and demolition wastes.

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

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

### **Human settlements**

Human settlements: Integrative concept that comprises (a) physical components of shelter and infrastructure and (b) services to which the physical elements provide support, that is, community services such as education, health, culture, welfare, recreation and nutrition.

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.

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.

Energy intensity: Energy intensity provides a measure of the efficiency with which energy is being used in production.

## ABBREVIATIONS AND SYMBOLS

### Abbreviations

Rs mn	Rupees million	Toe	Tonne of oil equivalent
Rs	Rupees	<sup>0</sup> C	Degrees celcius
US\$	US dollar	mg/l	Milligram per litre
LPG	Liquefied petroleum gas	mS/cm	Millisiemens per centimetre
%	Percentage	g/l	Gram per litre
f.o.b	free on board	NTU	Nephelometric Turbidity Unit
c.i.f	Cost, insurance, freight	µg/m <sup>3</sup>	Microgram per cubic metres
000	Thousand	ppb	Part per billion
n.e.s	Not elsewhere specified	ppm	Part per million
Mm <sup>3</sup>	Million cubic metres	PM 10	Dust or Particulate Matter with a diameter less than 10 micrometer
Gg	Gigagram (thousand tonne)	TSP	Total suspended particles
ktoe	Thousand tonne of oil equivalent	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

**Forest area by category, 1990 - 2004**

Category	Hectares			
	1990	1995	2000	2004 <sup>1</sup>
<b>State - owned</b>	<b>22,183</b>	<b>22,519</b>	<b>22,089</b>	<b>22,066</b>
Plantations	12,280	12,557	12,359	12,288
Nature reserves	4,585	4,585	799	799
<i>on mainland</i>	4,018	4,018	200	200
<i>islets</i>	567	567	599	599
National Park <sup>2</sup>	-	-	6,574	6,574
Unplatable, protective or to be planted	4,666	4,725	1,705	1,770
Pas Geometriques	652	652	652	635
<i>Plantations</i>	211	209	224	226
<i>Leased for grazing and tree planting</i>	230	230	230	230
<i>Unplanted, protective or to be planted</i>	211	213	198	179
<b>Privately - owned lands</b>	<b>34,540</b>	<b>34,540</b>	<b>34,540</b>	<b>25,000</b>
Reserves	6,540	6,540	6,553	6,553
<i>Mountain reserves</i>	3,800	3,800	3,800	3,800
<i>River reserves</i>	2,740	2,740	2,740	2,740
<i>Nature reserves</i>	-	-	13	13
Other <sup>3</sup>	28,000	28,000	27,987	18,447
<b>Total</b>	<b>56,723</b>	<b>57,059</b>	<b>56,629</b>	<b>47,066</b>

The forest land of the Island of Mauritius is broadly subdivided into its various components as shown where 47% were state-owned and 53% were privately owned. The total forest area has been decreasing gradually and a fresh estimate made by the Forestry Service in 2004 revealed that there were only around 47,000 hectares.

Source : Forestry Service, Ministry of Agro Industry 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. Estimate worked out in 2004.

## Native forest, 1773 - 1997



1773 (82.5%)



1835 (50.7%)



1872 (22.9%)



1935 (5.7%)

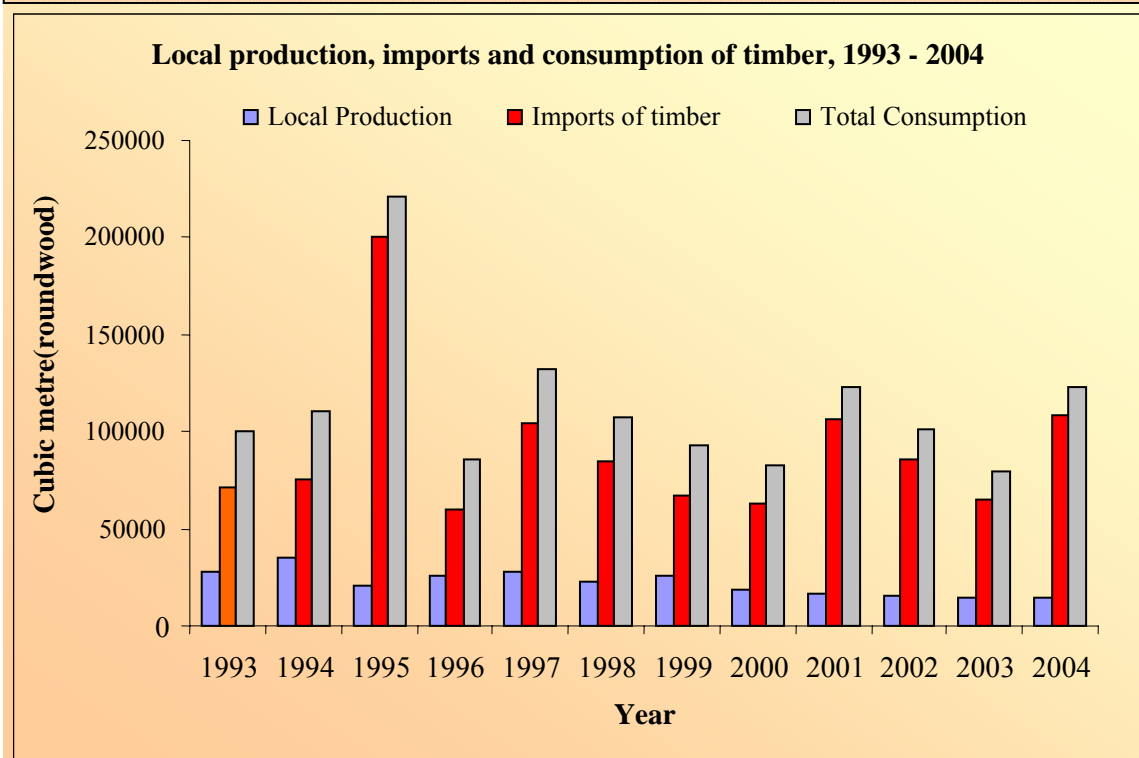


1997 (<2%)

The figures above demonstrate to what extent our native forests have been declining since 1773. The latest estimate as at 1997 shows that less than 2% of our native forests are left. Most of them are concentrated within the Black River Gorges National Park, some on mountain tops and some in the privately owned reserves. From 1935 to 1997 a reduction of about 4% has been noted. This could have evidently been caused by the rapid industrialization of Mauritius.

Source: Mauritian Wildlife foundation

**Local production, imports and consumption of timber, poles and fuelwood, 1993 - 2004**



	cubic metre ( roundwood)			
	1993	1995	2000	2004
<b>Local Production</b>	<b>28395</b>	<b>20,207</b>	<b>18,977</b>	<b>13,973</b>
Timber	8217	5,595	5,402	5,057
Poles	5402	4,623	3,404	3,111
Fuelwood	14776	9,989	10,171	5,805
<b>Imports of timber<sup>1</sup></b>	<b>71406</b>	<b>200,877</b>	<b>63,407</b>	<b>108,677</b>
<b>Total Consumption<sup>2</sup></b>	<b>99801</b>	<b>221,084</b>	<b>82,384</b>	<b>122,650</b>

Total consumption of timber has been increasing slightly over the past years. Most of our demands are met from imports (88.6%) as our local timber production is decreasing.

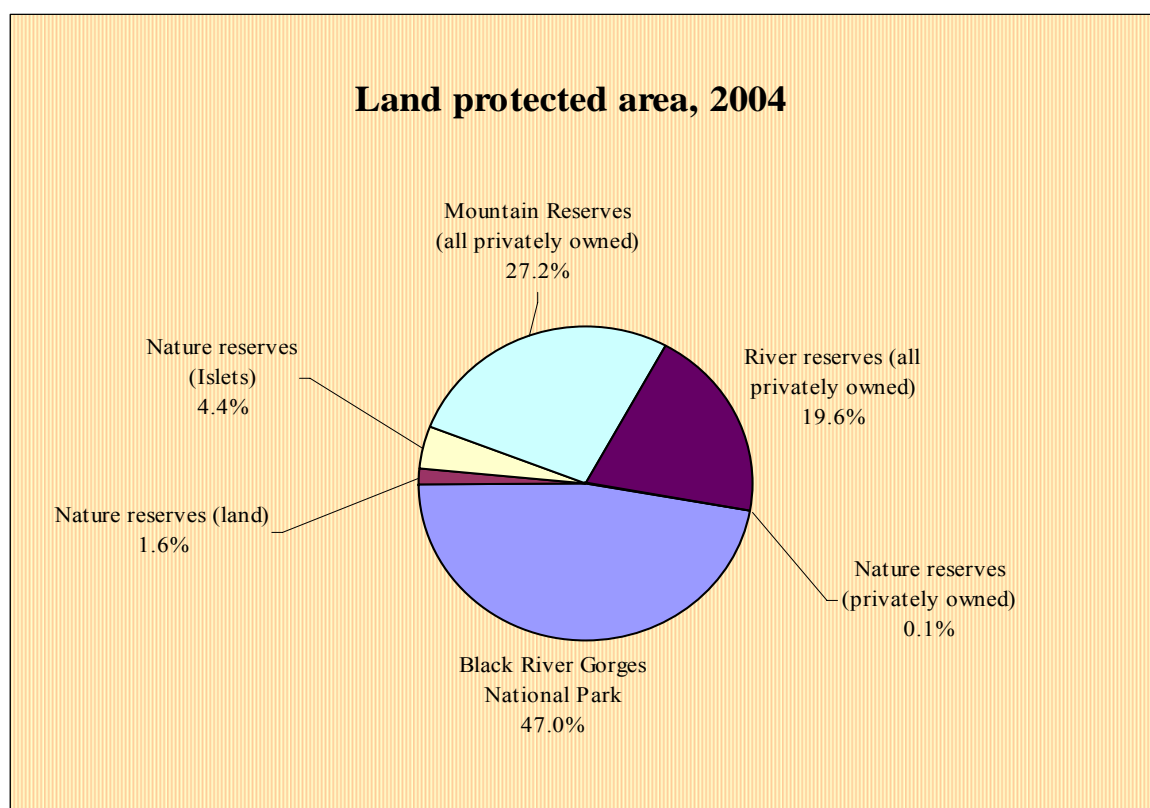
Source: Forestry Service, Ministry of Agro Industry and fisheries

<sup>1</sup> Roundwood equivalent

<sup>2</sup> Excludes plywood, paper and other wood products



## List of land protected areas, Republic of Mauritius, 2004

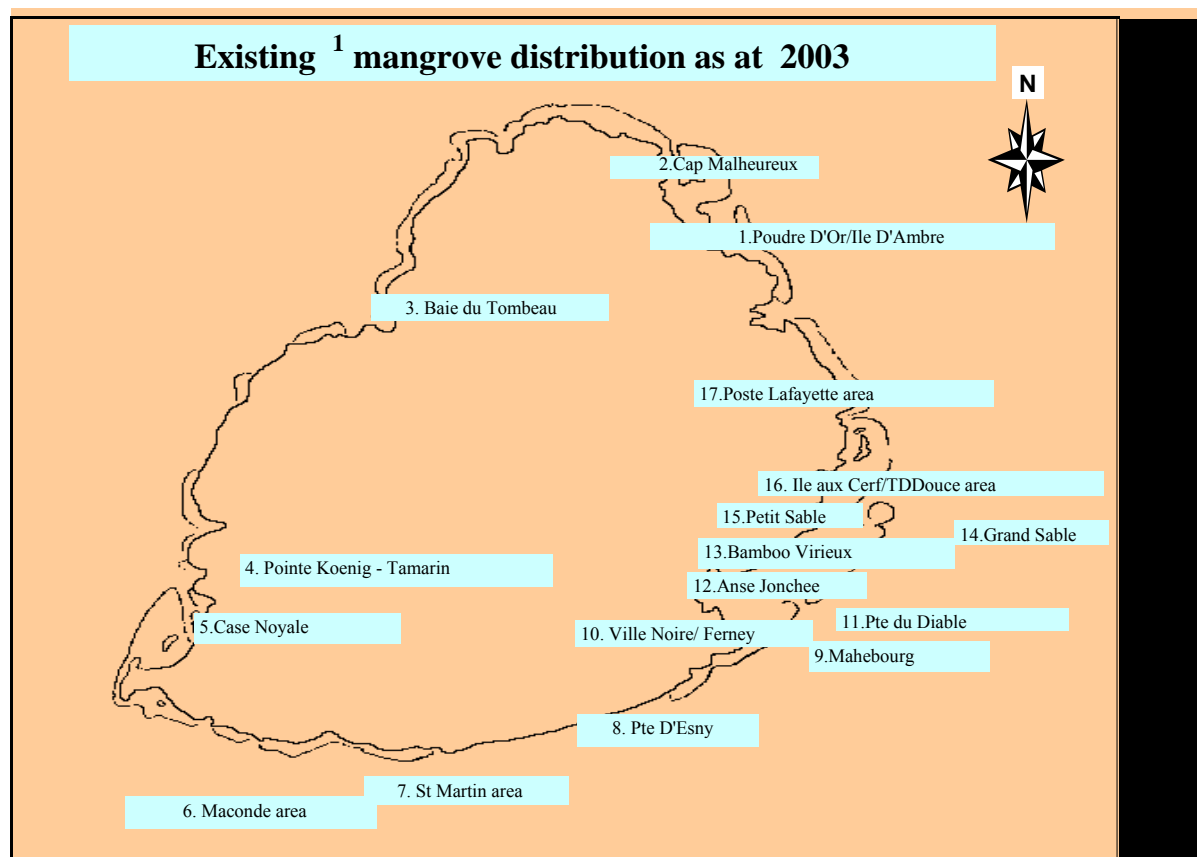


<b>Land protected areas</b>	Hectares <b>Area</b>
Black River Gorges National Park	6,574
Nature reserves (land)	225
Nature reserves (Islets)	621
Mountain Reserves (all privately owned)	3,800
River reserves (all privately owned)	2,740
Nature reserves (privately owned)	13
<b>Total</b>	<b>13,973</b>

Most of the land protected areas are found at the Black River Gorges National Park, 6,574 hectares or 47%. In 2004, the privately owned Mountain reserves and River reserves accounted for 27% and 19.6% respectively. Thus around 7.5% of the total land area of Mauritius is protected.

Source : Forestry Service, Ministry of Agro Industry and Fisheries

## Existing <sup>1</sup> mangroves distribution as at 2003

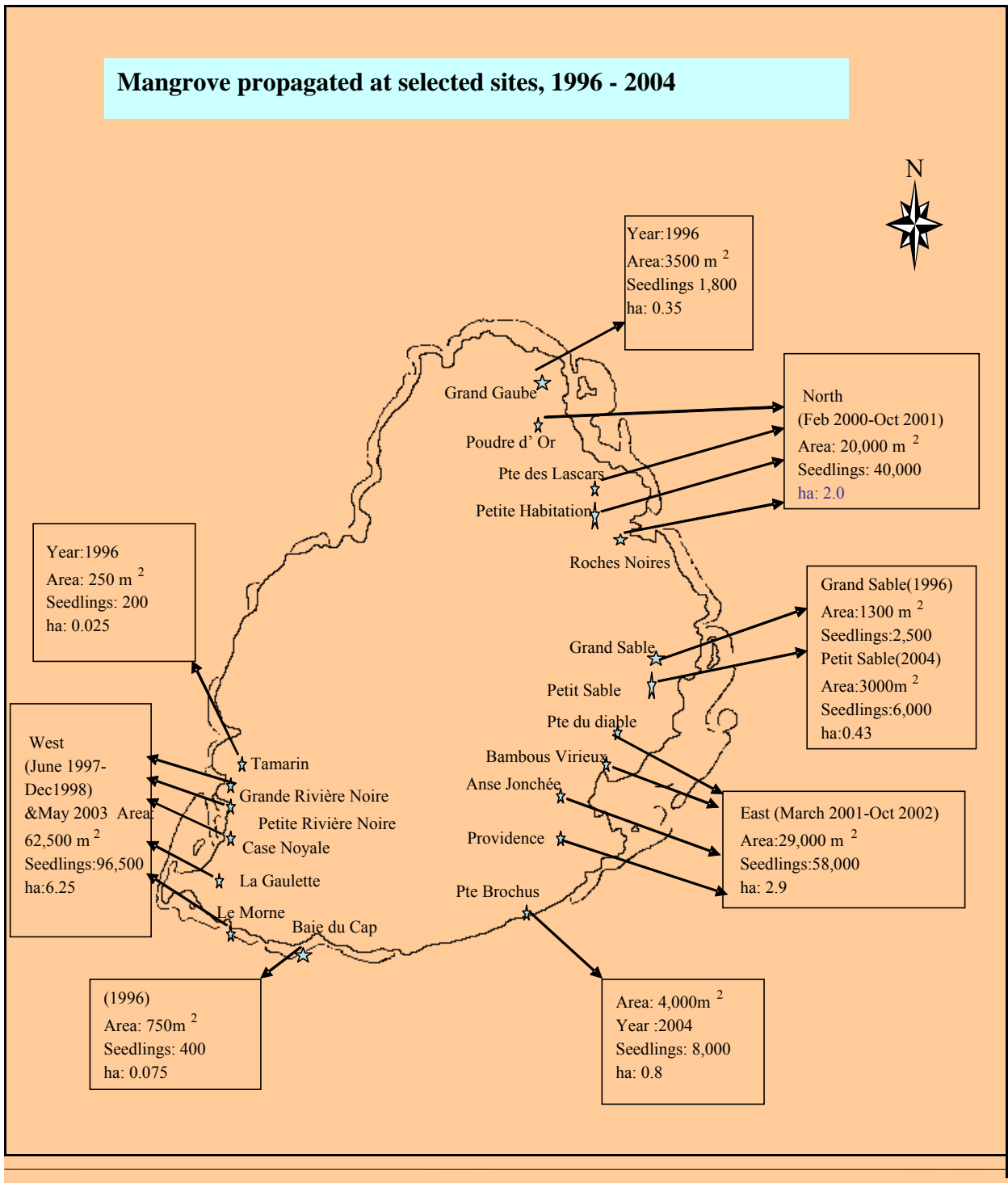


Region	Site	Area ( Km <sup>2</sup> )
North	1. P'Oudre D'Or/Ile D'Ambre	31.7
	2. Cap Malheureux	5.0
	3. Baie du Tombeau	0.2
West	4. Pointe Koenig - Tamarin	5.0
	5. Case Noyale	2.6
South	6. Maconde area	1.2
	7. St Martin area	1.2
	8. Pte D'Esny	2.0
	9. Mahebourg barachois	5.4
East	10. Ville Noire/ Ferney	10.0
	11. Pointe du Diable	1.6
	12. Anse Jonchee	1.2
	13. Bambous Virieux	1.4
	14. Grand Sable	3.7
	15. Petit Sable	6.8
	16. Ile aux Cerf/Trou D'Eau Douce	10.0
	17. Poste Lafayette	5.0
<b>Total</b>		<b>94.0</b>

Source : Albion Fisheries Research Centre, Ministry of Agro-industry & Fisheries

<sup>1</sup> Excluding those propagated by AFRC

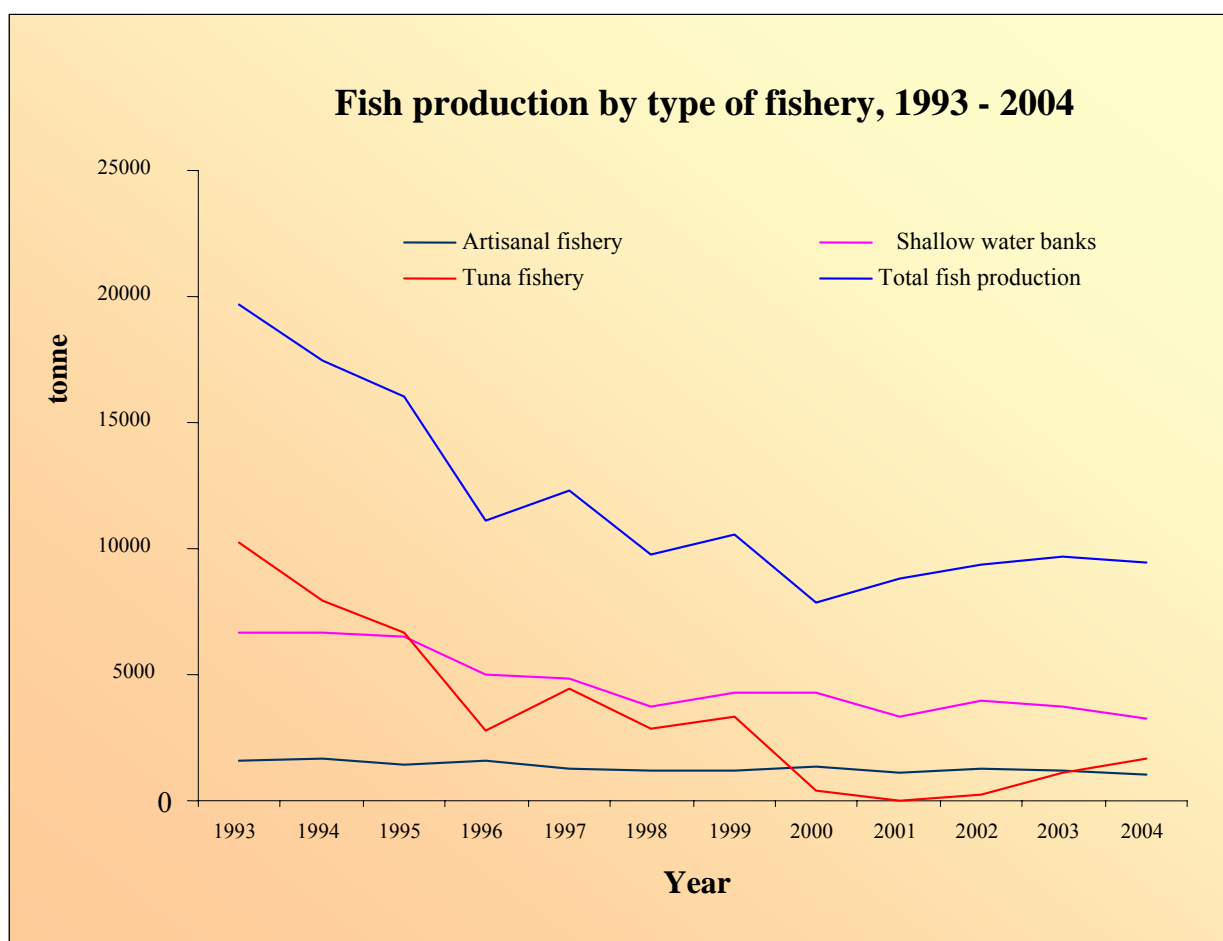
Mangrove propagated at selected sites, 1996 - 2004



Intact typical mangroves act as nurseries for fish, natural pollution filters and coastal defenses. Existing mangroves areas amounted to some 94.0 hectares as at 2003. The Albion Fisheries Research Centre has propagated a further 12.5 hectares around the island from 1996 to 2004. Thus, total area under mangroves amounted to around 106.5 hectares.

Source: Albion Fisheries Research Centre, Ministry of Agro-Industry & Fisheries

**Fish production by type of fishery (in fresh – weight equivalent), 1993 - 2004**



	1993	1995	2000	2004
Fish production	19,690	16,029	7,875	9,431
Mean catch per fisherman-day	5.3	4.8	6.1	4.2

Total fish production has been decreasing over the years from 19,690 tonnes in 1993 to 9,431 tonnes in 2004 though a slight recovery was observed since 2000. The most significant drop in production has been for tuna fishing which eventually picked up slightly in 2002.

The mean catch per fisherman-day also followed a steady decline and stood at 4.2 kg in 2004.

Source: Albion Fisheries Research Centre, Ministry of Agro Industry and fisheries

Percentage of substrate cover at various monitoring stations, 2003 – 2004

Site		Year	Coral	Algae	Abiotic <sup>1</sup>	Other <sup>2</sup>
<b>Baie du Tombeau</b>	Back reef	2003	55	9	35	1
		2004	58	7	35	n.o
<b>Le Goulet</b>	Fore reef	2003	62	6	32	n.o
		2004	74	2	21	3
	Fore reef	2003	35	3	58	4
		2004	23	1	72	4
<b>Ile aux Benitiers</b>	Back reef	2003	49	26	23	2
		2004	22	13	65	n.o
	Shore reef	2003	24	4	72	n.o
		2004	18	8	74	n.o
<b>Bel Ombre</b>	Back reef	2003	44	35	20	1
		2004	51	28	30	1
	Shore reef	2003	64	5	31	n.o
		2004	52	8	40	n.o
<b>Bambous Virieux</b>	Back reef	2003	61	9	30	n.o
		2004	56	10	34	n.o
	Shore reef	2003	33	35	32	n.o
		2004	35	40	25	n.o
<b>Trou d'eau Douce</b>	Back reef	2003	45	23	31	1
		2004	34	27	36	n.o
	Shore reef	2003	70	0	30	n.o
		2004	60	2	38	n.o
<b>Anse La Raie</b>	Back reef	2003	67	24	9	n.o
		2004	59	27	14	n.o
	Shore reef	2003	77	16	7	n.o
		2004	71	13	6	n.o
	Fore reef	2003	36	5	58	1
		2004	33	5	60	2
<b>Trou Aux Biches</b>	Back reef	2003	37	7	56	n.o
		2004	37	7	56	n.o
	Fore reef	2003	15	n.o	85	n.o
		2004	15	1	84	n.o
<b>Pointe Aux Sables</b>	Back reef	2003	32	1	65	2
		2004	39	6	53	2
	Fore reef	2003	30	n.o	67	3
		2004	30	4	64	2
<b>Albion</b>	Back reef	2003	54	6	40	n.o
		2004	22	36	42	n.o
<b>Poudre D'Or Site I</b>	Back reef	2003	58	18	24	n.o
		2004	57	30	13	n.o
<b>Poudre D'Or Site II</b>	Back reef	2003	56	1	41	2
		2004	30	12	58	n.o

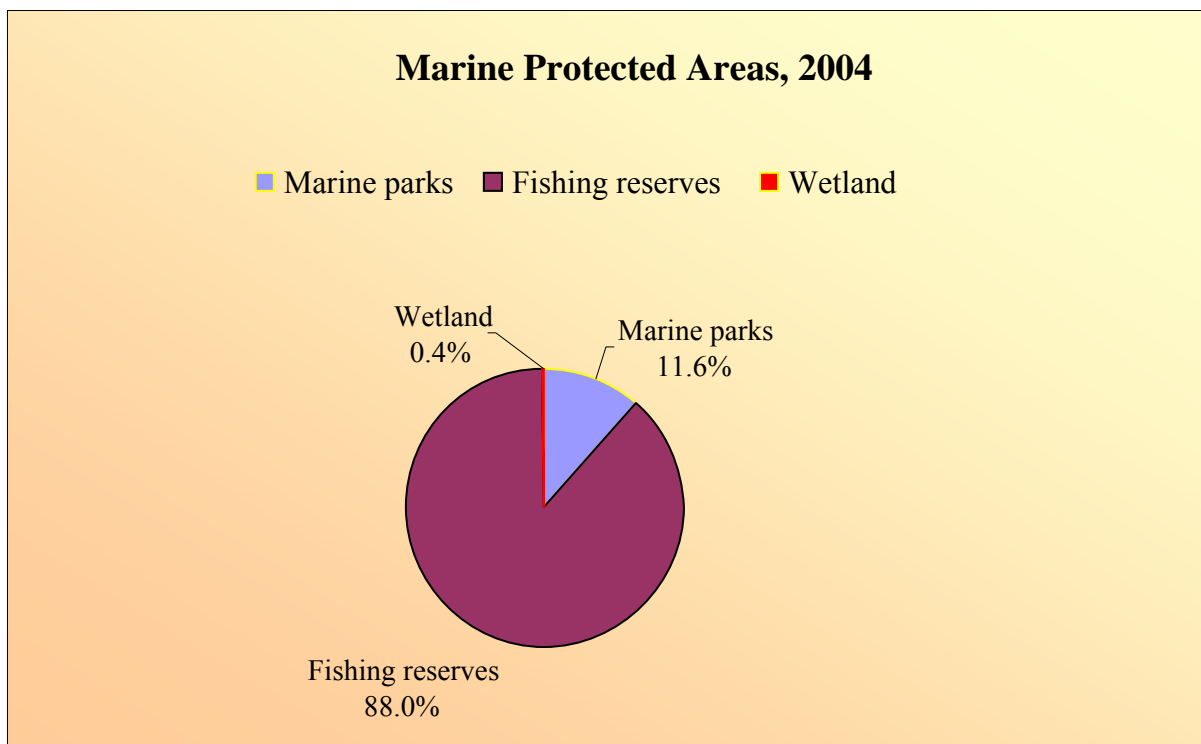
The coral reef ecosystem is very important for our coastal zone. The higher percentage of substrate level reflects the good health of the seabed. Corals varied from a low of 15% (at Trou aux Biches) to a maximum of 77% (Anse la Raie). Algae from “not observed” (e.g Trou aux Biches) to 40% (Bambous Virieux) and Abiotic from 6% (Anse la Raie) to 85% (Trou aux Biches).

Source: Albion Fisheries Research Centre, Ministry of Agro Industry and fisheries

<sup>1</sup> Rocks, sand, dead corals etc

<sup>2</sup> Sponges, crown of thorns (starfish), sea urchins etc

## List of Marine Protected Areas, 2004

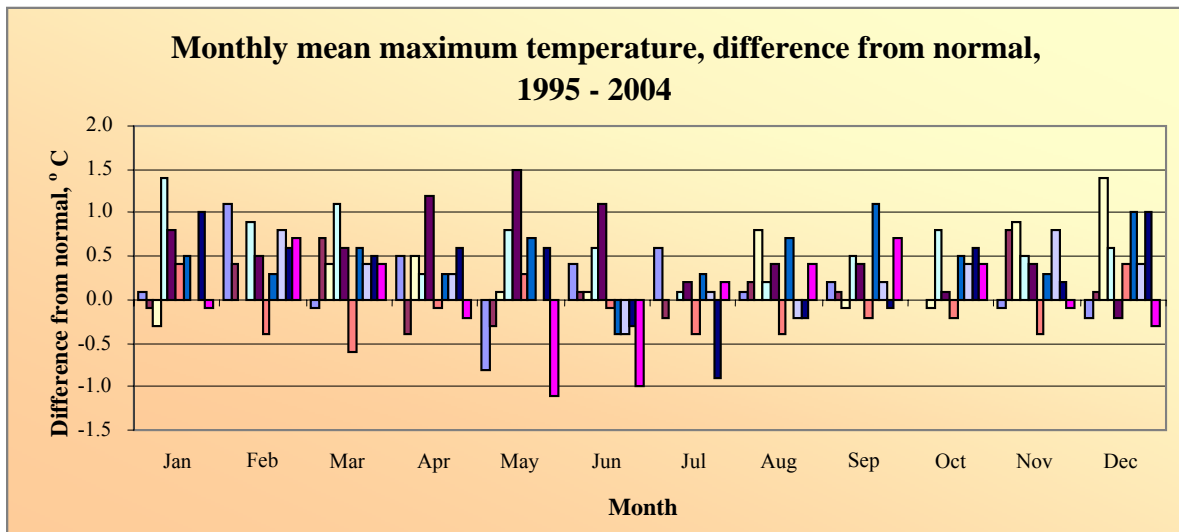


<b>Marine protected areas</b>	Hectares
<b>Marine parks</b>	<b>838</b>
Blue bay	353
Balaclava	485
<b>Fishing reserves</b>	<b>6,352</b>
Port Louis	331
Poudre d'Or	2,542
Poste La Fayette	280
Trou d'Eau Douce	574
Grand Port zone A	1,716
Grand Port zone B	112
Black River	797
<b>Wetland</b>	<b>26</b>
Rivulet Terre Rouge Estuary bird Sanctuary	26

Marine Protected Areas (MPA's) are promulgated according to Acts of Law. The majority of the MPA's, 6,352 hectares, are fishing reserves. The Marine Parks, namely the Blue Bay Marine Park and the Balaclava Marine Park, constituted of 838 hectares or 12% of the total MPA's. The wetland at Rivulet Terre Rouge Estuary Bird Sanctuary though of only 26 hectares is a Ramsar site and is a very important habitat for migrating birds.

Source: Albion Fisheries Research centre, Ministry of Fisheries

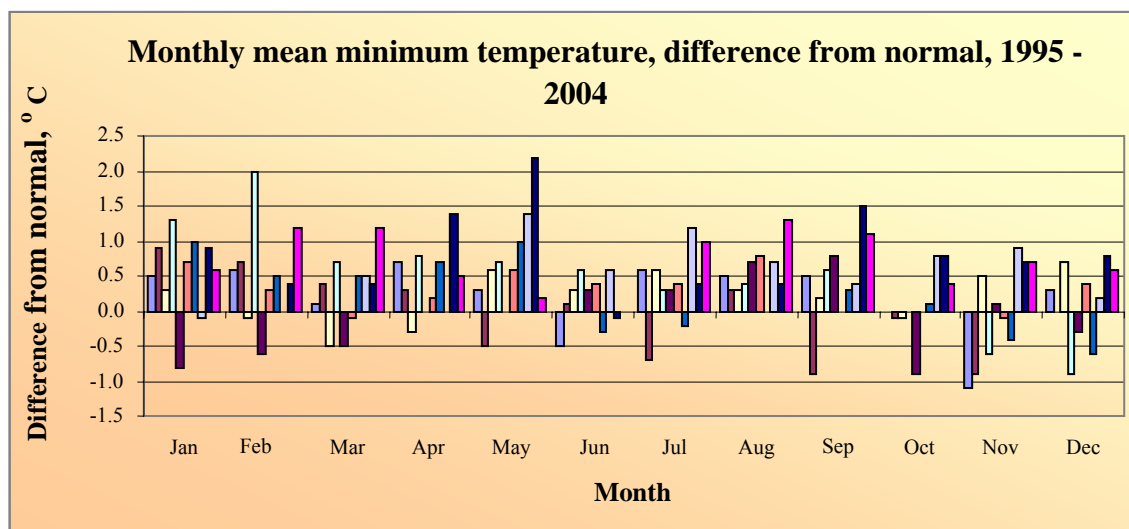
Monthly mean maximum temperature, 1993 – 2004



		Degrees Celcius (° c)			
MONTH		1993	1995	2000	2004
JAN	Mean	30.6	29.4	29.6	29.5
	<i>Difference from Normal</i>	1.4	0.1	0.4	-0.1
FEB	Mean	30.1	30.5	28.9	30.2
	<i>Difference from Normal</i>	0.8	1.1	-0.4	0.7
MAR	Mean	28.7	29.0	28.5	29.6
	<i>Difference from Normal</i>	-0.3	-0.1	-0.6	0.4
APR	Mean	28.2	28.6	28.1	28.1
	<i>Difference from Normal</i>	0.0	0.5	-0.1	-0.2
MAY	Mean	27.9	25.8	26.9	25.8
	<i>Difference from Normal</i>	1.3	-0.8	0.3	-1.1
JUN	Mean	25.3	25.4	24.9	24.2
	<i>Difference from Normal</i>	0.2	0.4	-0.1	-1.0
JUL	Mean	23.5	24.7	23.7	24.5
	<i>Difference from Normal</i>	-0.7	0.6	-0.4	0.2
AUG	Mean	24.0	24.1	23.6	24.8
	<i>Difference from Normal</i>	-0.1	0.1	-0.4	0.4
SEP	Mean	24.3	25.2	24.8	25.8
	<i>Difference from Normal</i>	-0.7	0.2	-0.2	0.7
OCT	Mean	25.7	26.2	25.9	26.8
	<i>Difference from Normal</i>	-0.5	0.0	-0.2	0.4
NOV	Mean	27.4	27.7	27.3	27.9
	<i>Difference from Normal</i>	-0.3	-0.1	-0.4	-0.1
DEC	Mean	28.9	28.6	29.2	28.7
	<i>Difference from Normal</i>	0.1	-0.2	0.4	-0.3

The graph shows that the mean maximum temperature for the last decade have witnessed various above normal (long term mean) means taken on a monthly basis. For the year 2004, the mean maximum temperature for the whole island varied with a low of around of 24.2 °C in winter (June) to around 30.6 °C in summer (Jan).

### Mean monthly minimum temperature, 1993 - 2004

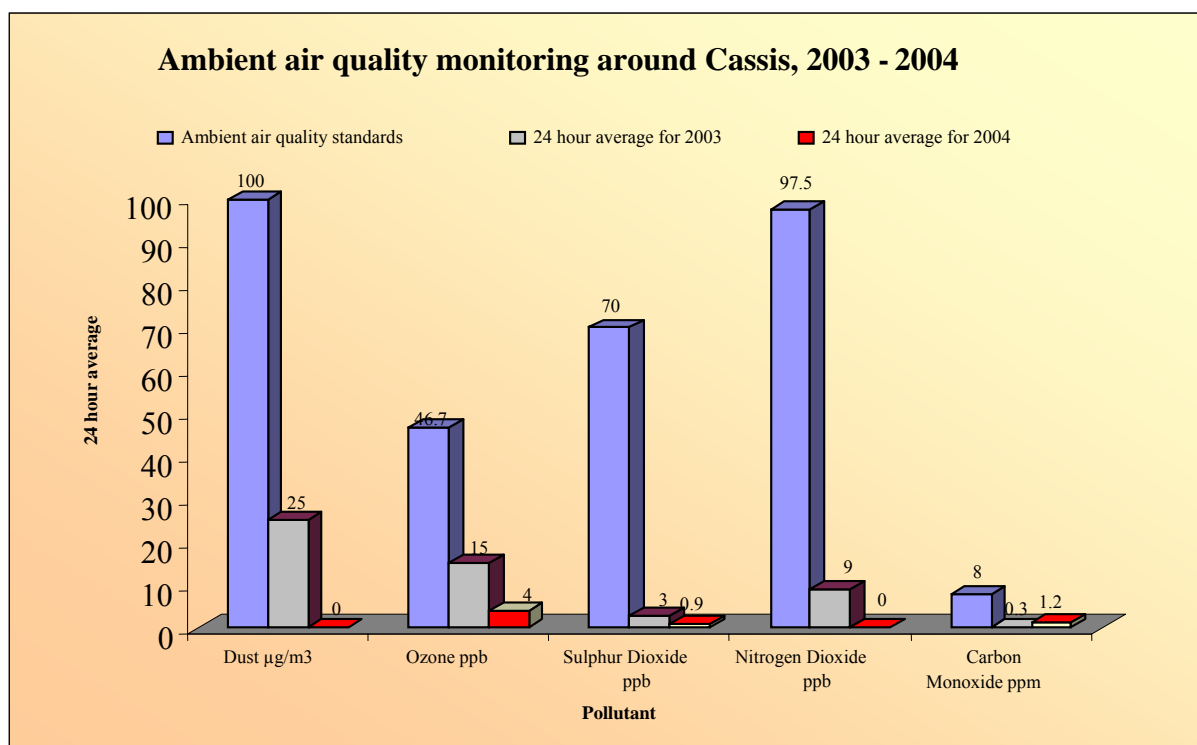


		Degrees Celcius (° C)			
<b>MONTH</b>		<b>1993</b>	<b>1995</b>	<b>2000</b>	<b>2004</b>
<b>JAN</b>	Mean	22.1	22.3	22.5	22.5
	<i>Difference from Normal</i>	0.3	0.5	0.7	0.6
<b>FEB</b>	Mean	22.5	22.7	22.4	23.4
	<i>Difference from Normal</i>	0.5	0.6	0.3	1.2
<b>MAR</b>	Mean	21.9	22.0	21.9	23.1
	<i>Difference from Normal</i>	0.1	0.1	-0.1	1.2
<b>APR</b>	Mean	21.4	21.5	21.0	21.5
	<i>Difference from Normal</i>	0.6	0.7	0.2	0.5
<b>MAY</b>	Mean	20.1	19.1	19.5	19.2
	<i>Difference from Normal</i>	1.3	0.3	0.6	0.2
<b>JUN</b>	Mean	17.5	16.8	17.7	17.4
	<i>Difference from Normal</i>	0.3	-0.5	0.4	0.0
<b>JUL</b>	Mean	16.4	17.3	17.1	17.7
	<i>Difference from Normal</i>	-0.3	0.6	0.4	1.0
<b>AUG</b>	Mean	16.3	16.9	17.2	17.9
	<i>Difference from Normal</i>	-0.1	0.5	0.8	1.3
<b>SEP</b>	Mean	16.3	17.3	16.8	18.0
	<i>Difference from Normal</i>	-0.5	0.5	0.0	1.1
<b>OCT</b>	Mean	17.3	17.9	17.9	18.4
	<i>Difference from Normal</i>	-0.6	0.0	0.0	0.4
<b>NOV</b>	Mean	18.5	18.3	19.3	20.1
	<i>Difference from Normal</i>	-0.9	-1.1	-0.1	0.7
<b>DEC</b>	Mean	20.8	21.3	21.3	21.5
	<i>Difference from Normal</i>	-0.1	0.3	0.4	0.6

For the period given above, the mean minimum temperature for the whole island varied with a lowest value of around 16.3 °C in winter (Aug-Sept) of 1993 to around 23.4 °C in summer (Feb) of 2004.

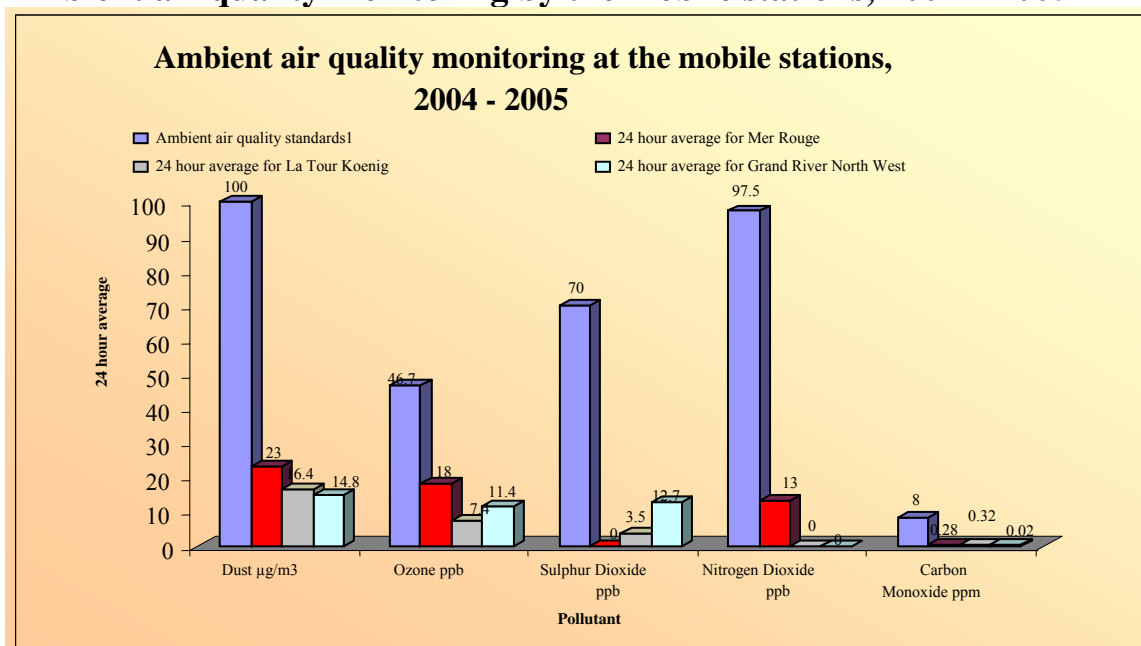


## Ambient air quality monitoring at Medco Cassis, 2003- 2004



Pollutant	Unit	Minimum		Maximum		24 hour Average for the year		Ambient air quality standard <sup>2</sup>
		2003	2004 <sup>1</sup>	2003	2004 <sup>1</sup>	2003	2004 <sup>1</sup>	
Dust ( PM <sub>10</sub> )	µg/m <sup>3</sup>	10.0	...	119.2	...	25.0	...	100.0
Ozone ( O <sub>3</sub> )	ppb	0.0	0.0	26.0	24.0	15.0	4.0	46.7
Sulphur dioxide ( SO <sub>2</sub> )	ppb	0.0	0.0	7.0	4.0	3.0	0.9	70.0
Nitrogen dioxide ( NO <sub>2</sub> )	ppb	0.0	...	27.0	...	9.0	...	97.5
Carbon monoxide ( CO )	ppm	0.0	1.0	8.4	1.6	0.3	1.2	8.0
Total suspended particles ( TSP )	µg/m <sup>3</sup>	29.6	...	107.5	...	56.4	...	150.0
Lead	µg/m <sup>3</sup>	0.0	...	0.0	...	0.0	...	1.5

## Ambient air quality monitoring by the mobile stations, 2004 – 2005



Pollutant	Unit	Mer Rouge			La Tour Koenig			Grand River North West			Ambient air quality standard <sup>2</sup>
		Mini-mum	Maxi-mum	24 hour Average for the year	Mini-mum	Maxi-mum	24 hour Average for the year	Mini-mum	Maxi-mum	24 hour Average for the year	
		2005	2005	2005	2004/2005	2004/2005	2004/2005	2004	2004	2004	
Dust ( PM <sub>10</sub> )	µg/m <sup>3</sup>	19	29	23	8.8	27.1	16.4	8.2	33.8	14.8	100.0
Ozone ( O <sub>3</sub> )	ppb	8	24	18	3.2	14.2	7.4	2.6	22.0	11.4	46.7
Sulphur dioxide ( SO <sub>2</sub> )	ppb	...	...	...	0.0	16.7	3.5	1.4	34.9	12.7	70.0
Nitrogen dioxide ( NO <sub>2</sub> )	ppb	11	17	13	...	...	...	...	...	...	97.5
Carbon monoxide ( CO )	ppm	0.15	0.55	0.28	0.1	0.5	0.3	0.0	0.3	0.02	8.0

The Ministry of Environment is carrying out ambient air quality monitoring since April 2001 using two ambient air quality monitoring stations (one fixed at Cassis and one mobile). The main pollutants under investigation are dust (PM 10), ozone, sulphur dioxide, nitrogen dioxide, carbon dioxide, carbon monoxide, total suspended particles and lead. The results for all pollutants under study showed that the levels of ambient pollutants for the 24 hour averages

Source: Ministry of Environment and National Development Unit.

1 : Estimate

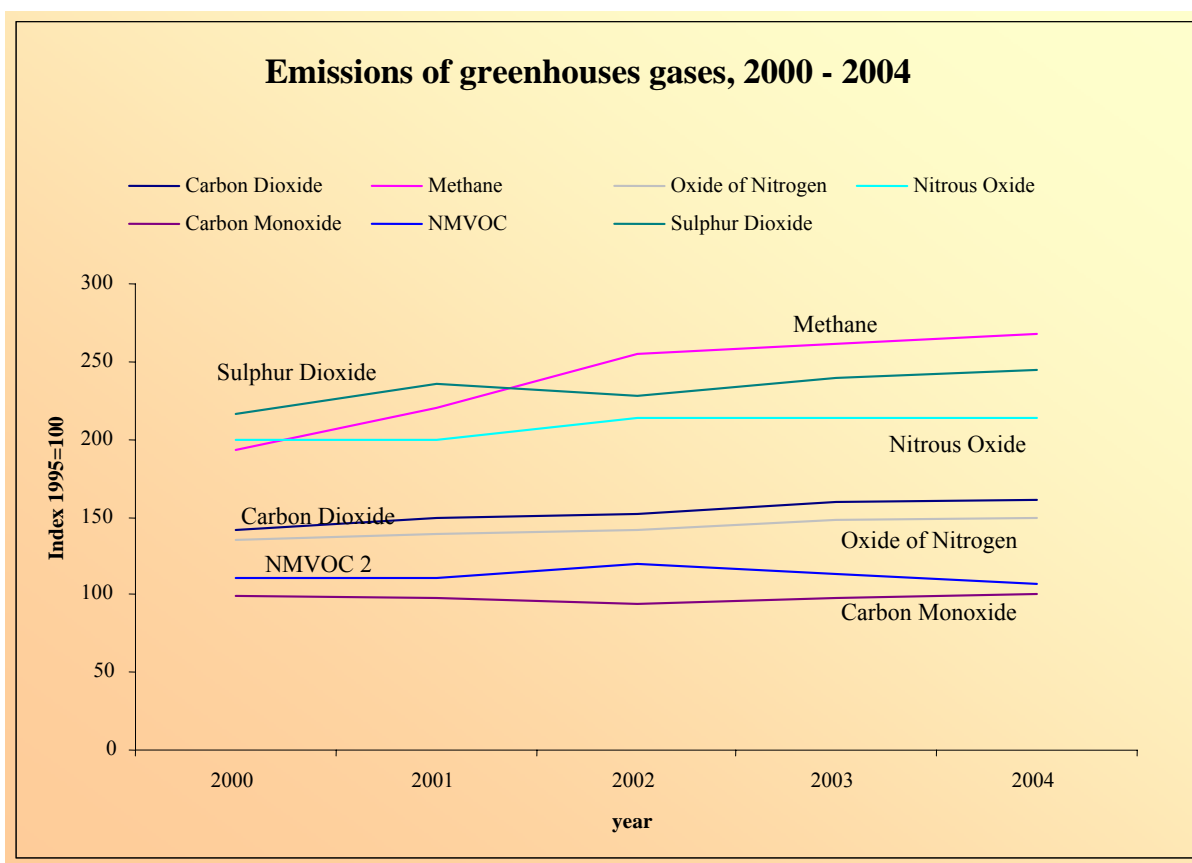
2 : 24-hour standard except for Ozone, Carbon monoxide and lead which are based on 1 hour , 8 hour and 3 month averages respectively

Note:(i) Conversion coefficients ( at 250 C and 1013 bar ) have been used to convert the ambient air quality standards.

(ii) Measurements of the parameters are taken on a quarter hourly basis and the averaging time used is 24 hours.

(iii) Missing values were due to a breakdown in the measuring apparatus in 2004

## Emissions of greenhouse gases, 1995 - 2004



(Gg or thousand tonne)

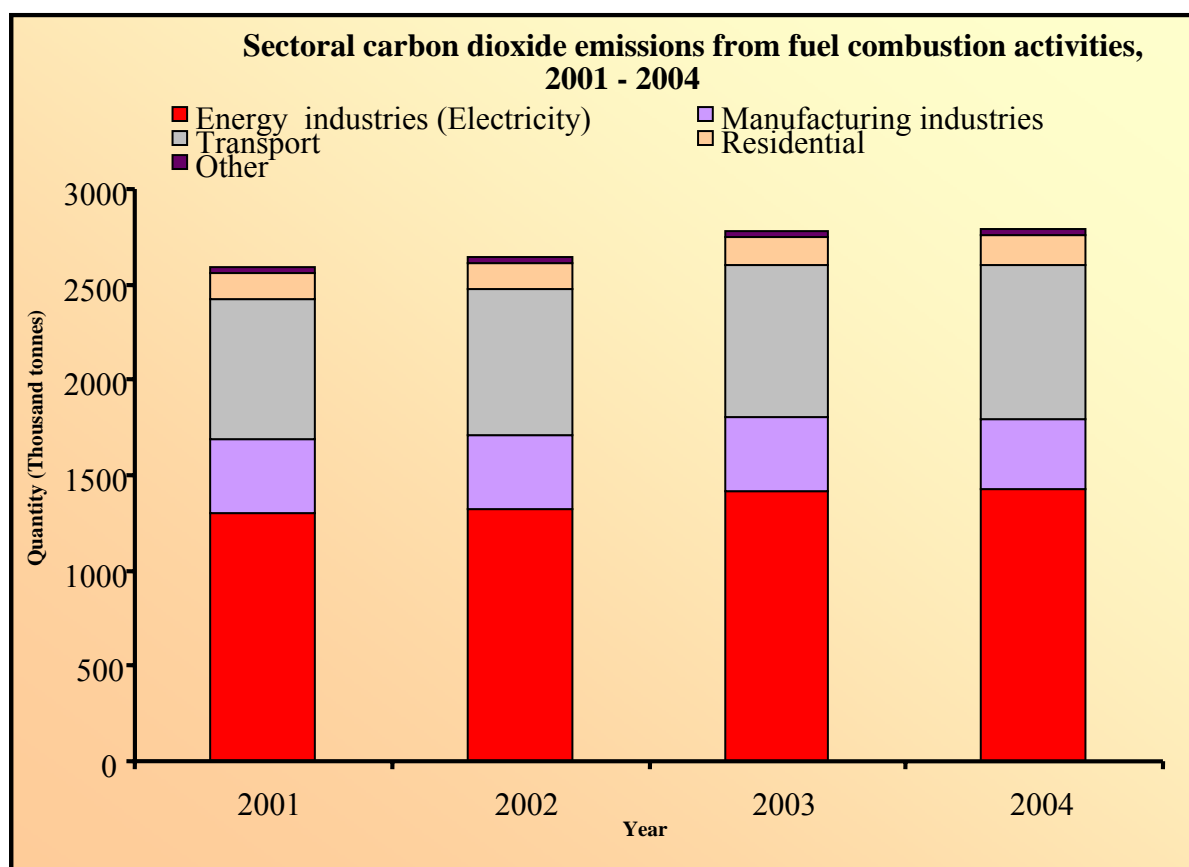
Greenhouse gas	1995	2000	2001	2002	2003	2004 <sup>1</sup>
<b>Emissions</b>						
Carbon Dioxide	1738.4	2456.8	2,597.7	2,647.9	2,783.5	2,795.7
Methane	4.6	8.9	10.1	11.7	12.0	12.3
Oxide of Nitrogen	10.2	13.8	14.2	14.5	15.1	15.2
Nitrous Oxide	0.7	1.4	1.4	1.5	1.5	1.5
Carbon Monoxide	67	66.3	65.9	62.9	65.7	66.9
NMVOC <sup>2</sup>	15.5	17.2	17.1	18.5	17.5	16.5
Sulphur Dioxide	13.4	28.9	31.5	30.6	32.1	32.7
<b>Removals</b>						
Carbon Dioxide	221.4	229.2	234.5	239.5	237.9	223.7
<b>Net emissions</b>						
Carbon Dioxide	1517.1	2227.6	2,363.2	2,408.4	2,545.6	2,572.0

This table shows the total emissions and removals of greenhouse gases of which carbon dioxide (CO<sub>2</sub>) constituted 95%. The data indicate a marginal rise in net CO<sub>2</sub> emissions from 1,517.1 thousand tonnes in 1995 to 2,572 thousand tonnes in 2004. Net emissions take into account the removal of CO<sub>2</sub> by forests which act as 'sinks'. The data on the graph have been converted into index form to facilitate comparisons over time.

<sup>1</sup> Provisional

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

## Sectoral carbon dioxide from fuel combustion activities, 2001 - 2004



Sector	2001		2002		2003		2004 <sup>1</sup>	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Energy industries (electricity)	1,302.0	50.0	1,325.9	50.1	1,418.3	51.0	1,430.5	51.2
Manufacturing industries	383.6	15.0	385.5	14.6	386.4	13.9	362.3	13.0
Transport	734.6	28.0	760.0	28.7	793.2	28.5	807.1	28.9
Residential	141.7	6.0	141.8	5.4	145.9	5.2	154.2	5.5
Other <sup>2</sup>	33.1	1.0	32.2	1.2	37.3	1.3	39.7	1.4
Total	2,595.0	100	2,645.4	100	2,781.1	100	2,793.8	100

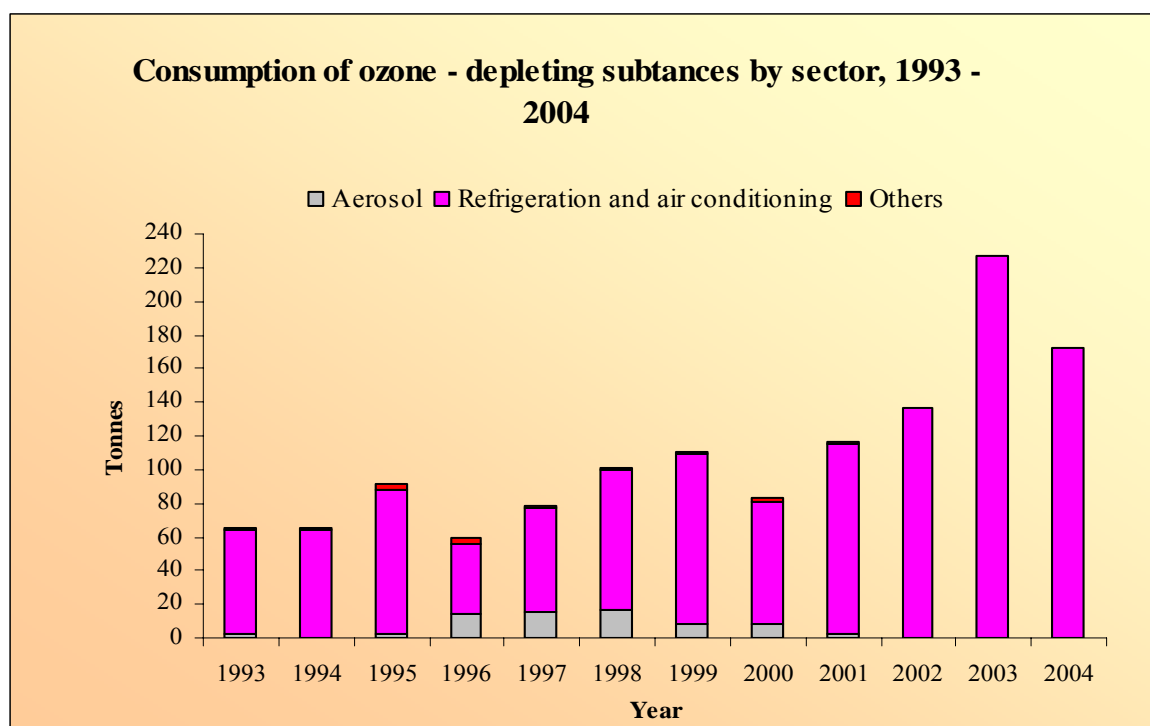
Carbon dioxide emission resulting from fuel combustion went up from 2,595 thousand tonnes in 2001 to 2,794 thousand tonnes in 2004.

The energy industries remain the principal source of CO<sub>2</sub> emission in the atmosphere. They contributed around 50% of the emissions, with 1,430 tonnes in 2004 compared to 1,302 tonnes in 2001 (+10%). They were followed by the transport sector which contributed 29% of the total emissions and the manufacturing industries with 13%.

<sup>1</sup> Provisional

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

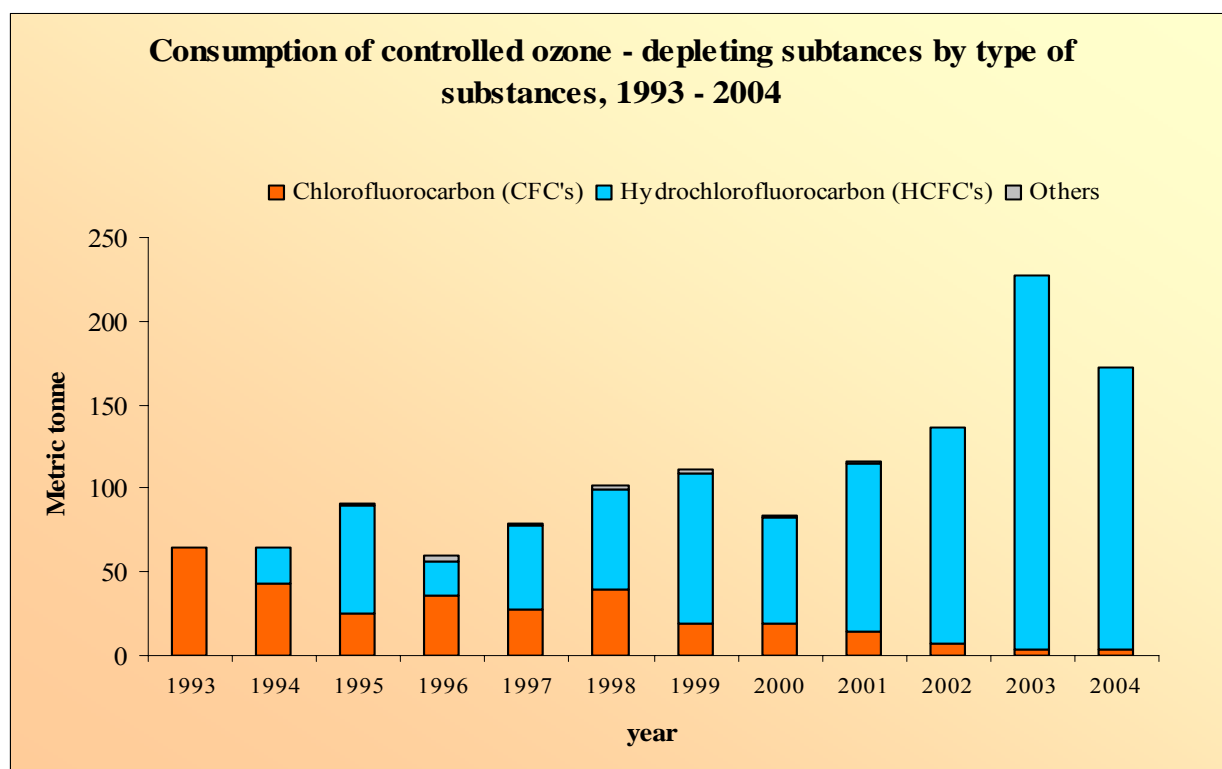
## Consumption of controlled ozone-depleting substances by sector, 1993 - 2004



Sector	Metric tonne			
	1993	1995	2000	2004
Aerosol	2.50	2.00	8.00	-
Foam	...	0.45	...	-
Fire fighting	0.27	-	-	-
Refrigeration and air conditioning	62.03	86.28	72.22	171.85
Solvent	0.05	2.17	3.15	0.02
Methyl bromide use	...	-	...	-
Tobacco fluffing	...	-	...	-
Others	0.02	-	...	...
<b>Total</b>	<b>64.87</b>	<b>90.90</b>	<b>83.37</b>	<b>171.87</b>

Ozone depleting substances (ODS) are harmful to the ozone layers and contribute to global warming. Refrigeration and air conditioning remains the main user of ODS's with 171.8 tonnes in 2004.

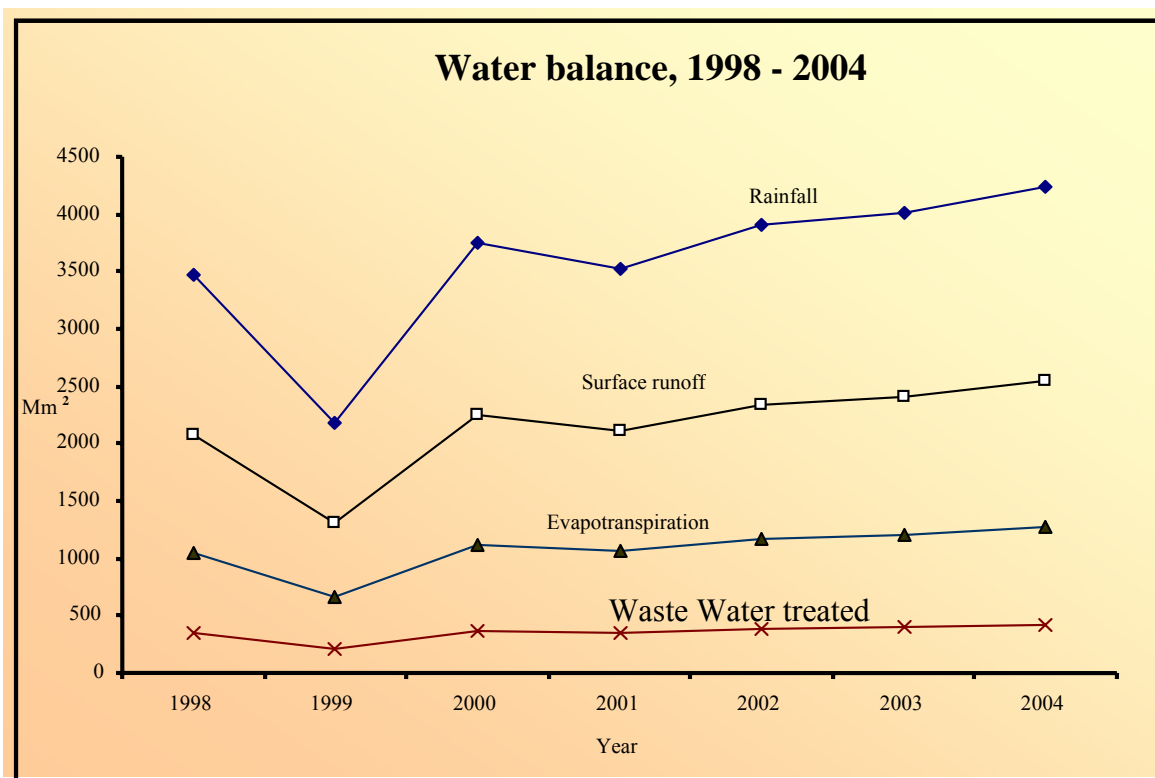
## Consumption of controlled ozone-depleting substances by type of substances, 1993 - 2004



Type of substances	Metric tonnes			
	1993	1995	2000	2004
Chlorofluorocarbon (CFC's)	64.55	24.75	19.26	3.40
Halons	0.27	-	-	-
Carbon tetrachloride	0.05	0.08	0.01	0.02
Methyl chloroform	...	0.89	1.10	-
Hydrochlorofluorocarbon (HCFC's)	...	65.18	63.00	168.45
Methyl bromide	...	-	...	-
<b>Total</b>	<b>64.87</b>	<b>90.90</b>	<b>83.37</b>	<b>171.87</b>

The table indicates a total increase in the consumption of ozone depleting substances (ODS) but should nevertheless be noted that Mauritius is a success story regarding the phasing out of CFC which is the most hazardous to the ozone layer. In fact there has been a linear reduction of inputs of CFC's from the year 2000. Its consumption has decreased to 3.4 tonnes in 2004 from 64.8 tonnes in 1993.

## Water balance, 1998 – 2004



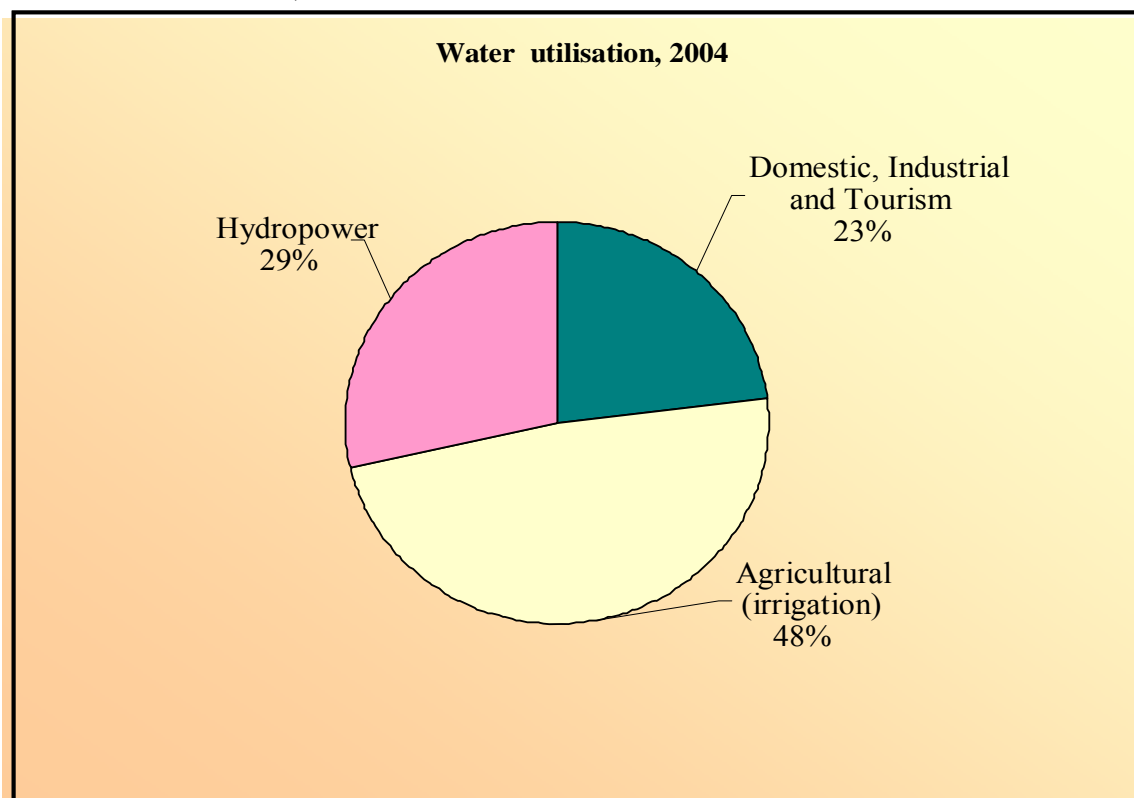
	Unit	1998	2000	2004
Rainfall	Mm <sup>3</sup>	3,473	3,749	4,233
Surface runoff	Mm <sup>3</sup>	2,084	2,249	2,540
Evapotranspiration	Mm <sup>3</sup>	1,042	1,125	1,270
Net recharge to groundwater	Mm <sup>3</sup>	347	375	423

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

In 2004, the Island of Mauritius received on average 4,233 million cubic metres (Mm<sup>3</sup>) of precipitation (rainfall) which is an increase of about 6% over the previous year. Some 1,270 Mm<sup>3</sup> of this water was lost through evapotranspiration, while surface runoff and ground water recharge accounted for 2,540 Mm<sup>3</sup> (60%) and 423 Mm<sup>3</sup> (10%) respectively.

*Note: There was an unusually severe drought in 1999 which is clearly reflected in the graph.*

### Water utilization <sup>1</sup>, 2004



Use	Million cubic metres			
	Surface water		Ground water	Total
	River-run offtakes	Storage		
Domestic, Industrial and Tourism	38	72	114	224
Industrial (private boreholes )	-	-	11	11
Agricultural (irrigation)	370	95	25	490
Hydropower	129	160	-	289
<b>Total</b>	<b>537</b>	<b>327</b>	<b>150</b>	<b>1,014</b>

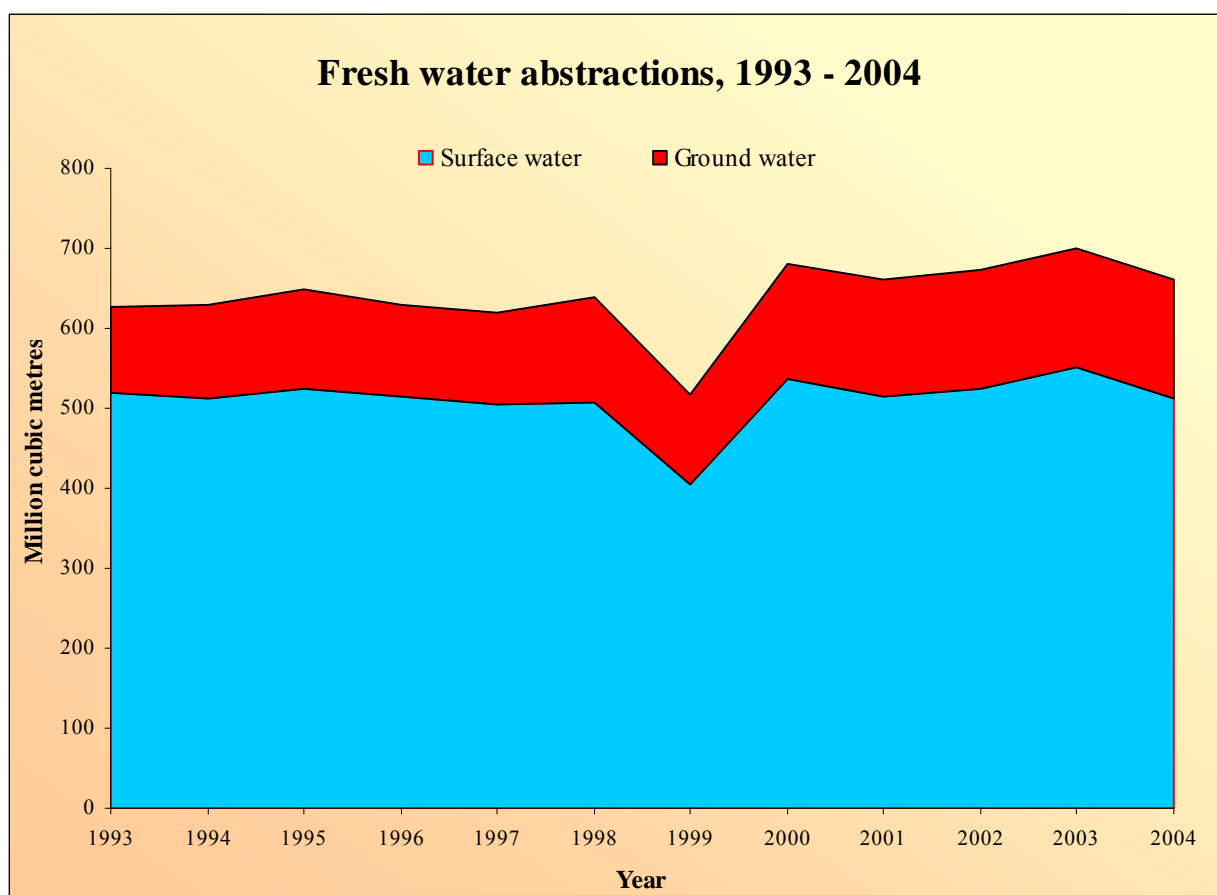
The water demand in 2004 was estimated at 1,014 Mm<sup>3</sup>, of which, 490 Mm<sup>3</sup> (48%) were used for irrigation, 289 Mm<sup>3</sup> (29%) for hydropower and 235 Mm<sup>3</sup> (23%) for domestic and industrial purposes.

Around 77% of the total fresh water supply came from surface water (reservoirs, rivers and streams) and the remaining 23% from groundwater.

<sup>1</sup> Estimate  
Source: Water Resources Unit, Ministry of Public Utilities



## Fresh water abstractions <sup>1</sup> by source, 1993 – 2004 <sup>2</sup>



Source	Million cubic metres (Mm <sup>3</sup> )			
	1993	1995	2000	2004
Surface water	519	525	536	512
<i>Reservoirs</i>	117	129	147	167
<i>Rivers and streams</i>	402	396	389	345
Ground water	109	125	145	150
<b>Total</b>	<b>628</b>	<b>650</b>	<b>681</b>	<b>662</b>

Fresh water is made accessible to the population by abstraction from two main sources, namely surface water and groundwater. Abstraction from the surface sources, such as reservoirs, rivers and streams accounted for around 77% of the total abstractions in 2004. The rest of the abstractions, 23% were from groundwater sources.

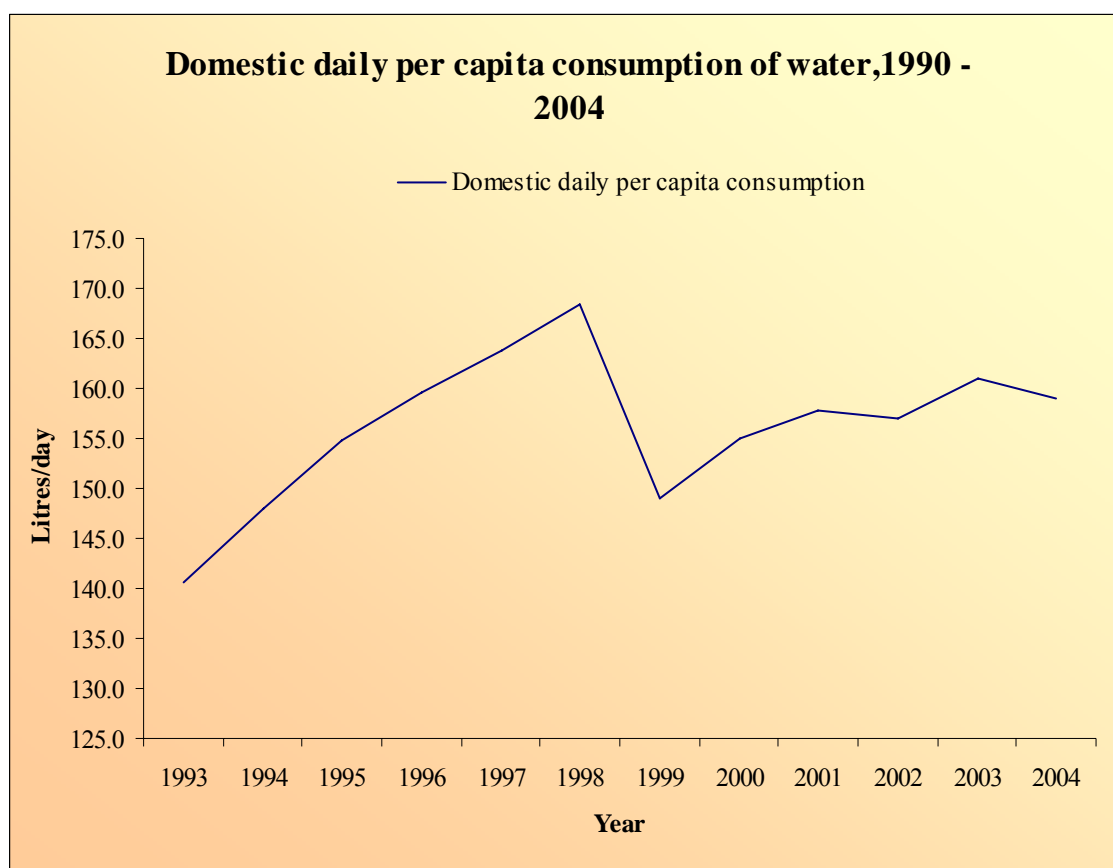
The total consolidated water demand for the year 2004 has been estimated to be 0.26 Mm<sup>3</sup> per day.

Source: Water Resources Unit, Ministry of Public Utilities

<sup>1</sup> for agricultural, domestic and industrial purposes

<sup>2</sup> Hydrologic year ( i.e. from November n-1 to October n, where n=year)

## Domestic per capita consumption of water, 1993 - 2004



Note : The fall in consumption in 1999 is due to an unusually severe drought .

Year	Domestic daily per capita consumption
1993	140.7
1994	148.0
1995	154.8
1996	159.7
1997	163.8
1998	168.4
1999	149.0
2000	154.9
2001	157.8
2002	157.0
2003	161.0
2004	159.0

Water consumption in Mauritius generally depends on the amount of rainfall. Thus, it can be seen that the year where rainfall were low, there were a lower per capita consumption. During the period 1990 to 2004, the domestic per capita consumption or water has risen from 152.9 to 159 litres per day.

**River water quality by selected physico-chemical parameters for Grand River South East (GRSE) and Grand River North West (GRNW), Jan – Nov 2002**

Parameters	Unit	GRN	GRN	GRN	GRN	GRSE	GRSE	GRSE	GRSE
		W A	W B	W C	W D	A	B	C	D
		Wooton	Cinq Arpents	Coromandel	GRNW Old Bridge	La Chartreuse	Kewal Nagar	La Nourrice	Beau Champ
Temperature	°C	19 - 22	19 - 25	20 - 26	21 - 28	19 - 24	21 - 28	22 - 26	22 - 28
pH		7.0-7.3	6.8-7.2	7.7-8.1	7.6-8.4	7.2-7.4	6.9-7.3	7.7-7.8	6.3-7.9
Conductivity	mS/cm	0.11 - 0.15	0.11 - 0.13	0.20 - 0.28	0.20 - 0.30	0.10 - 0.16	0.10 - 0.14	0.15 - 0.19	0.14 - 0.18
Total Dissolved Solids	g/l	0.05 - 0.08	0.05 - 0.07	0.10 - 0.14	0.10 - 0.15	0.05 - 0.08	0.05 - 0.07	0.07 - 0.10	0.07 - 0.09
Dissolved Oxygen (DO)	mg/l	7.0 - 8.2	6.1 - 8.4	7.0 - 8.7	6.9 - 9.0	6.6 - 8.5	5.5 - 8.1	7.4 - 8.4	6.7 - 8.8
Turbidity	NTU	0.5 - 2.9	1.6 - 4.6	0.6 - 3.6	0.4 - 2.9	1.3 - 6.2	2.5 - 22.0	1.5 - 4.1	1.4 - 14.0
Chemical Oxygen Demand(COD)	mg/l	5 - 95	3 - 30	3 - 40	3 - 38	1 - 20	2 - 19	4 - 99	3 - 21
Fluoride	mg/l	-	-	-	-	-	-	-	-
Chloride	mg/l	14.6 - 49.8	13.6 - 64.0	17.0 - 75.0	17.2 - 29.2	10.9 - 15.7	14.0 - 18.4	14.9 - 20.5	14.8 - 19.4
Nitrate (N)	mg/l	0.3 - 3.7	0.4 - 5.1	0.7 - 11.3	1.3 - 11.0	0.2 - 3.5	0.5 - 3.6	1.1 - 11.9	1.2 - 7.3
Phosphate(P)	mg/l	0.01 - 0.02	0.01 - 0.02	0.01 - 0.02	0.01 - 0.02	0.01 - 0.02	0.01 - 0.03	0.01 - 0.02	0.01 - 0.02
Sulphate	mg/l	0.5 - 8.2	0.8 - 6.2	7.7 - 19.6	7.9 - 16.8	0.8 - 4.9	1.1 - 4.2	0.8 - 4.6	1.1 - 4.7

River water temperature varied from 19 to 28 degrees Celcius. The pH values were within the range 6.3 – 8.4 as stipulated in the Guidelines for Inland Surface Water Quality. Conductivity and Total Dissolved Solids detected were generally low, but the values tend to increase downstream the rivers. This is normal as dissolved matter from various sources notably urban and agricultural activities enters the river as we go downstream. Turbidity and Nitrate values were generally low, while Chloride and Sulphate values, though lower upstream, tend to increase downstream the rivers. Phosphate values were very low and were very often not detected.

Source: National Environmental Laboratory, Ministry of Environment and National Development Unit

**Range of levels of Nitrate - Nitrogen, Phosphate and COD for selected regions, 2004.**

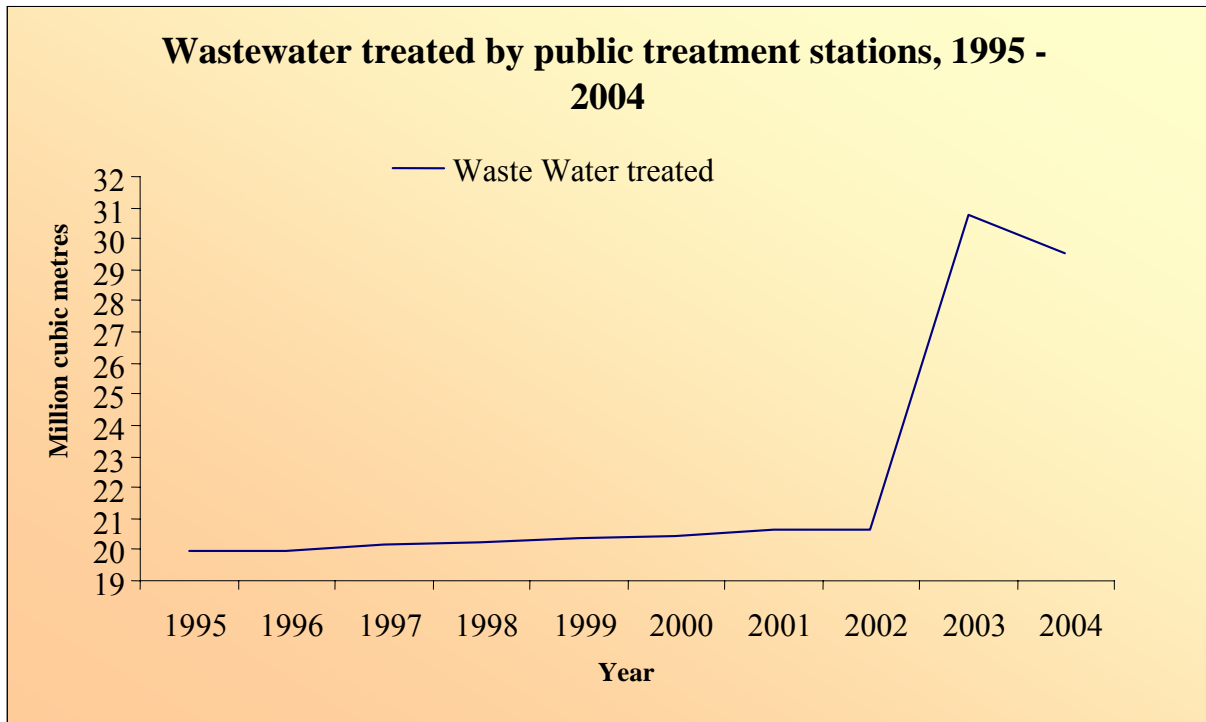
Region	Chemical water quality parameter		
	Nitrate-Nitrogen (NO <sub>3</sub> <sup>-</sup> - N)	Phosphate (PO <sub>4</sub> <sup>3-</sup> )	Chemical Oxygen Demand (COD)
Ile aux Benitier	-	0.01 - 0.02	0.1 - 0.8
Bel Ombre	-	0 - 0.05	0.1 - 0.8
Bambous Virieux	-	0 - 0.04	0.1 - 1.6
Trou D'Eau Douce	-	0 - 0.06	0.1 - 0.2
Anse la Raie	-	0 - 0.05	0.1 - 0.5
Trou aux Biches	-	0 - 0.04	0.1 - 0.8
Pointe aux Sables	0 - 0.1	0 - 0.05	0.1 - 0.8
Tombeau Bay	-	0 - 0.16	0 - 1.6
Port Louis Harbour	-	0 - 0.08	0.1 - 0.9

The parameters were generally within the guidelines for Coastal Water Quality Requirements for various categories. The level of phosphate was between 0.0 and 1.6, while Chemical Oxygen Demand values ranged from 0.1 to 1.6.

High concentrations of these substances can cause eutrophication which can make a lake or estuary become a bog or marsh and eventually disappear.

Source: Albion Fisheries Research Centre, Ministry of Agro Industry and Fisheries.

Volume of wastewater treated by public treatment stations, 1995 - 2004



Station	Million cubic metres		
	1995	2000	2004
Fort Victoria	5.00	5.20	5.06
Baie du Tombeau	4.60	4.80	8.27
Pailles TP <sup>1</sup>	0.08	0.08	0.12
B. Marchand <sup>1</sup>	0.18	0.18	0.27
Riviere du Rempart <sup>1</sup>	0.05	0.05	0.05
Borstal <sup>1</sup>	0.04	0.04	0.04
Pte aux Sables	1.30	1.34	1.34
St. Martin	8.10	8.18	13.10
Kennedy <sup>2</sup>	0.35	0.35	0.36
Robinson	0.02	0.02	0.02
Vuillemin <sup>1</sup>	0.08	0.08	0.07
Flacq <sup>1</sup>	0.03	0.03	0.18
Dubreuil <sup>3</sup>	0.10	0.13	0.68
<b>Total</b>	<b>19.93</b>	<b>20.48</b>	<b>29.56</b>

The volume of wastewater treated by public treatment stations has increased. Additional treatment plants in Baie du Tombeau, St Martin and Bois Marchand have contributed much in treating the wastewater. Total volume treated thus amounted to 29.56 Mm<sup>3</sup> in 2004.

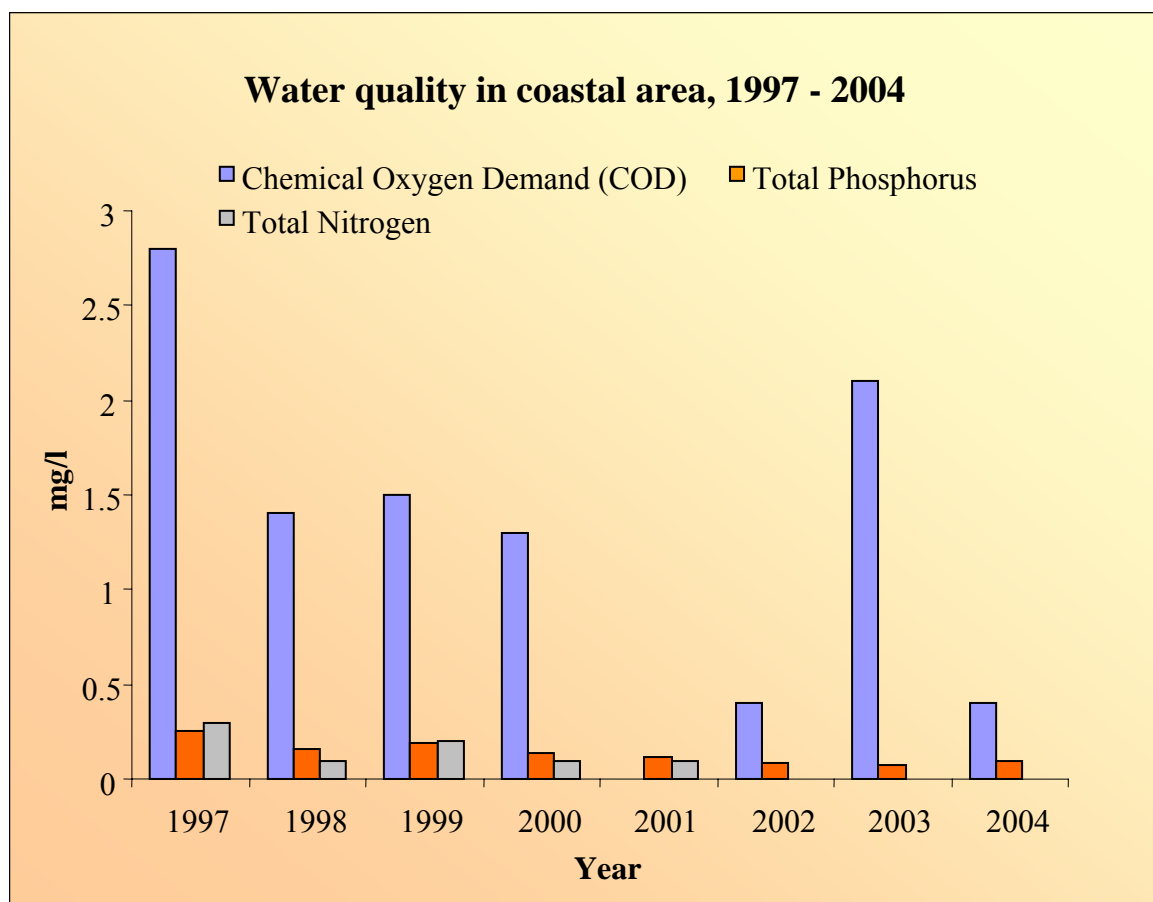
Source: Wastewater management Authority

<sup>1</sup> serves CHA houses

<sup>2</sup> serves CHA houses and V.hospital

<sup>3</sup> serves CHA + NHDC houses

## Water quality in coastal area – Terre Rouge Rivulet Bird Sanctuary



Variable	Unit	1997	2000	2004
Chemical Oxygen Demand (COD)	mg O <sub>2</sub> /l	2.8	1.3	0.4
Total Phosphorus <sup>1</sup>	mg P/l	0.3	0.1	0.1
Total Nitrogen <sup>2</sup>	mg N/l	0.3	0.1	0

The results of water analyses at the Terre Rouge Rivulet Bird Sanctuary show that the level of the parameters were generally low. It can be noticed that there is a general tendency of a decrease in the pollution level, as regards the three shown parameters, from 1997 to 2004.

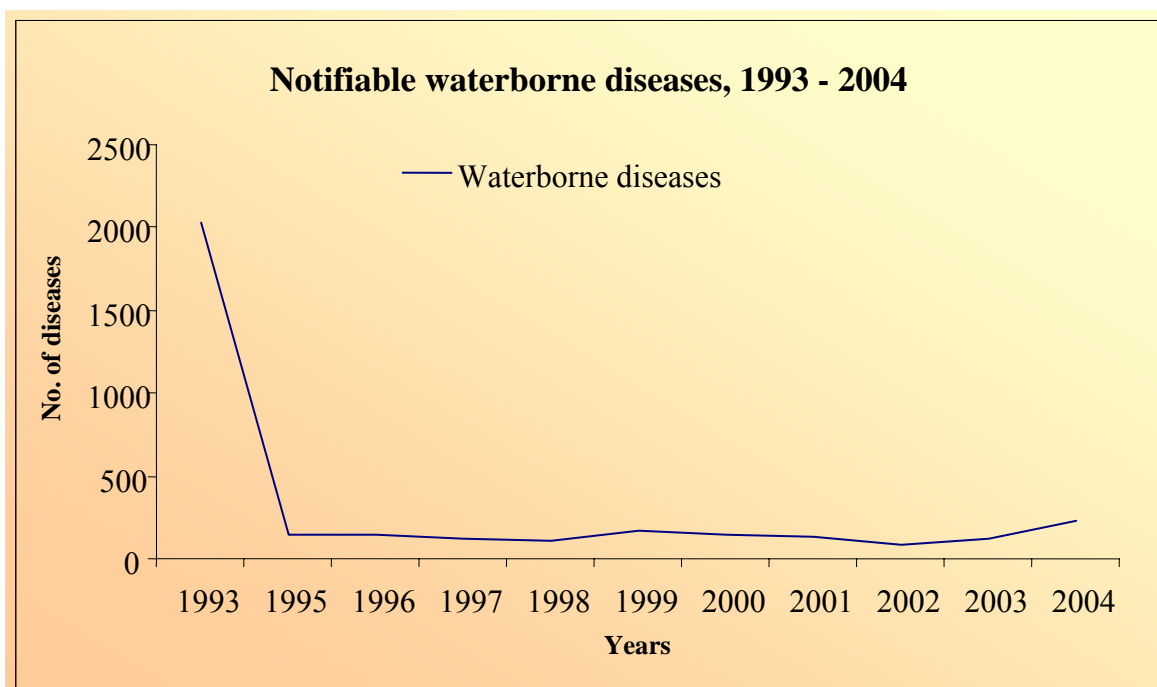
Source : Albion Fisheries Research Centre, Ministry of Agro Industry and Fisheries

<sup>1</sup> Data given are for the variable Phosphate

<sup>2</sup> Data given are for the variable Nitrate-nitrogen

Note : All values below detection limit are taken as zero.

**Number of cases of certain notifiable waterborne diseases reported to sanitary authorities, 1993 - 2004**



Year	Amoe biasis	Food Poisoning	Infective Hepatitis	Lept-ospir -osis	Malaria		Schistosomia -sis	Typhoid Fever
					Indigeno -us	Importe- d		
1993	105	57	1800	4	5	49	5	8
1995	2	57	38	4	-	45	-	2
2000	1	62	12	3	-	62	-	10
2004	-	160	19	3	-	45	-	1

Waterborne diseases are indicators of water pollution and though the occurrence of the diseases is seasonal, the number of cases reported has generally declined in 2004 except for food poisoning.

Source: Statistics unit, Ministry of Health and Quality of Life

**Mean sea surface temperature around the Island of Mauritius, 1993 - 2004**

Degrees Celcius

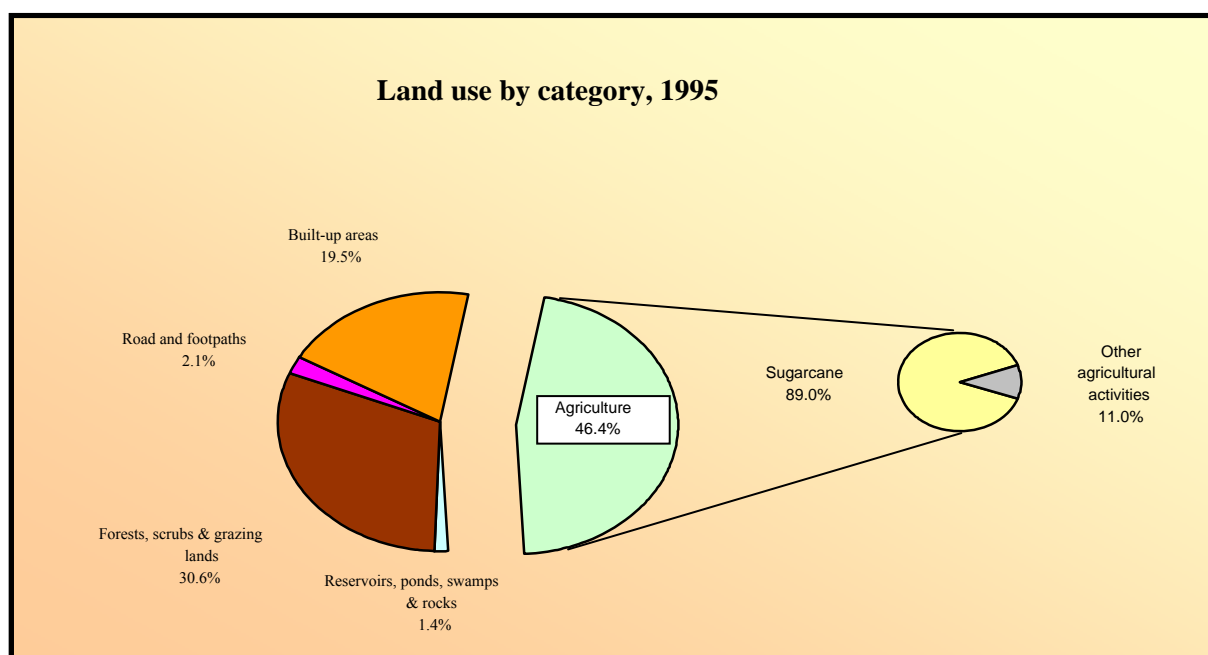
	1993		1995		2000		2004		Mean 1971 - 2000
	Mean	<i>Difference from Normal</i>	Mean	<i>Difference from Normal</i>	Mean	<i>Difference from Normal</i>	Mean	<i>Difference from Normal</i>	
<b>January</b>	27.5	0.7	26.0	-0.8	26.3	-0.5	26.9	0.1	26.8
<b>February</b>	28.2	1.0	28.3	1.1	26.6	-0.6	28.6	1.4	27.2
<b>March</b>	26.7	-0.4	25.7	-1.4	26.7	-0.4	27.7	0.6	27.1
<b>April</b>	25.6	-0.7	27.2	0.9	26.0	-0.3	27.7	1.4	26.3
<b>May</b>	24.8	-0.4	25.0	-0.2	24.8	-0.4	27.3	2.1	25.2
<b>June</b>	24.6	0.6	23.2	-0.8	24.2	0.2	24.6	0.6	24.0
<b>July</b>	22.7	-0.4	24.2	1.1	22.9	-0.2	23.9	0.8	23.1
<b>August</b>	22.4	-0.2	21.5	-1.1	22.4	-0.2	23.6	1.0	22.6
<b>September</b>	21.3	-1.3	23.3	0.7	22.6	0.0	23.4	0.8	22.6
<b>October</b>	22.0	-1.2	23.0	-0.2	23.2	0.0	24.0	0.8	23.2
<b>November</b>	23.5	-0.9	24.7	0.3	23.9	-0.5	24.4	0.9	24.4
<b>December</b>	25.2	-0.6	25.4	-0.4	24.8	-1.0	25.8	0.7	25.8
<b>Average for the year</b>	24.5		24.8		24.5		25.8	0.9	24.9

The Mauritius Meteorological Services have records of sea water temperatures around the Island of Mauritius. These data are vital for Mauritius in order to study rises in global temperature that can have an effect on local seawater temperatures and the consequent change in sea level rise, ocean circulation and climate change patterns among others.

The monthly mean sea surface temperature has been varying from 21.3° C to 28.6° C. The yearly mean has been oscillating between 24.5° C and 25.8° C.



## Land use by category, 1986 and 1995



	1986 <sup>1</sup>		1995 <sup>2</sup>		Change
	Hectares	%	Hectares	%	%
Agriculture	90,000	48.2	86,500	46.4	-1.8
Sugarcane	83,625	44.8	76,840	41.2	-3.6
Other agricultural activities	6,375	3.4	9,660	5.2	+1.8
Forests, scrubs & grazing lands	65,400	35.1	57,000	30.6	-4.5
Reservoirs, ponds, swamps & rocks	2,610	1.4	2,600	1.4	0.0
Road and footpaths	3,465	1.9	4,000	2.1	+0.2
Built-up areas	25,000	13.4	36,400	19.5	+6.1
<b>Total</b>	<b>186,475</b>	<b>100.0</b>	<b>186,500</b>	<b>100.0</b>	

An increasing population density coupled with multiple economic activities, including human settlement has given rise to major changes in land use. Despite a lack of updated data on land use distribution, an attempt has been made to estimate the land use distribution. While agriculture and forestry have been decreasing to stand at around 77% of the total land used in 2004, built-up areas have been increasing to reach around 20% of total area.

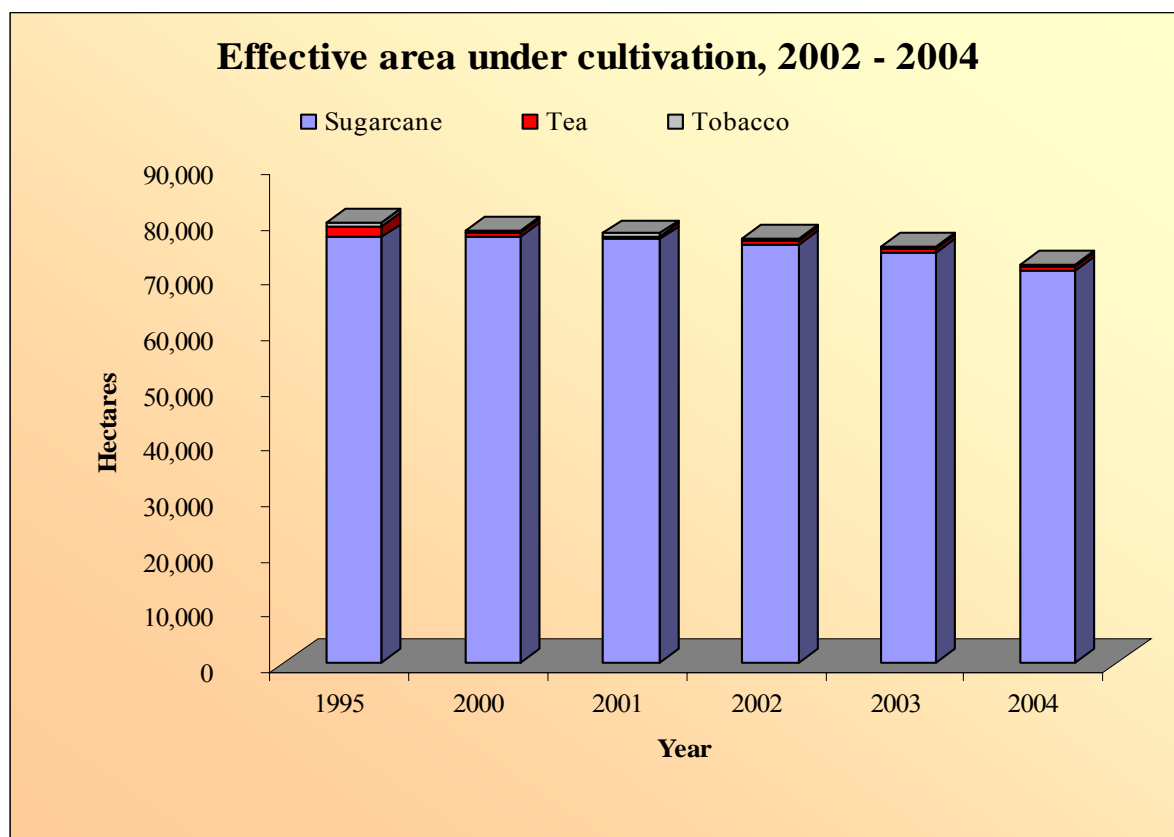
In the report “Mauritius staking out the future” published by the Ministry of Environment in 2005 land use distribution was stated as follows: Agriculture 43%, Forest & Scrubs 30 %, Built development 26% and permanent grazing land 1%.

<sup>1</sup> Source : Digest of Agricultural Statistics

<sup>2</sup> Source : Initial National Communication under the United Nations Framework Convention on Climate Change, April 1999

Note: The difference in total area between 1986 and 1995 is due to rounding

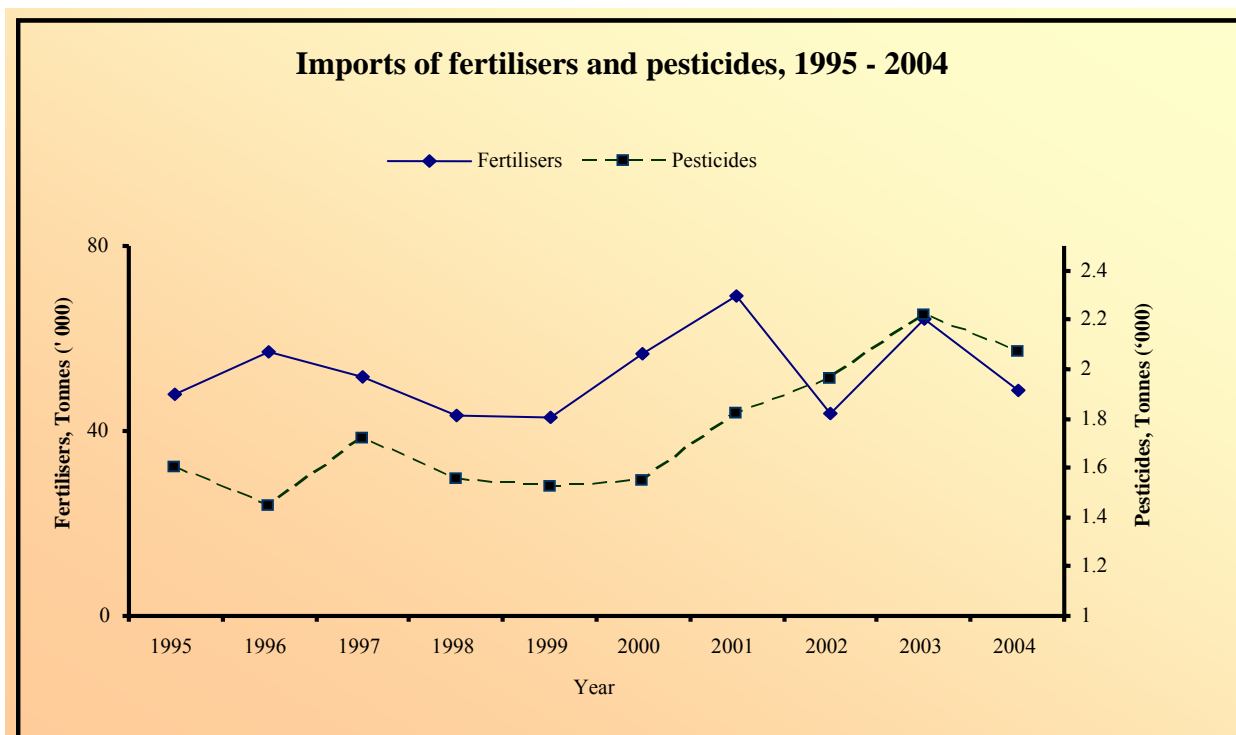
## Effective area under cultivation, 1995 -2004



Crops	Hectares			
	1995	2000	2003	2004
Sugarcane	76,338	76,962	74,117	70,785
Tea	2,077	670	681	674
Tobacco	673	397	379	356

There has been an increasing demand of land for various human activities during the past years. Thus effective area under cultivation of the main crops has witnessed a general decline from 1995 to 2004. Sugarcane area has shrunk by 6,055 (-7.8%) hectares, tea plantation dropped to 674 (-67%) and tobacco area fell to 356 hectares (-47%).

## Imports of fertilizers and pesticides, 1995 – 2004



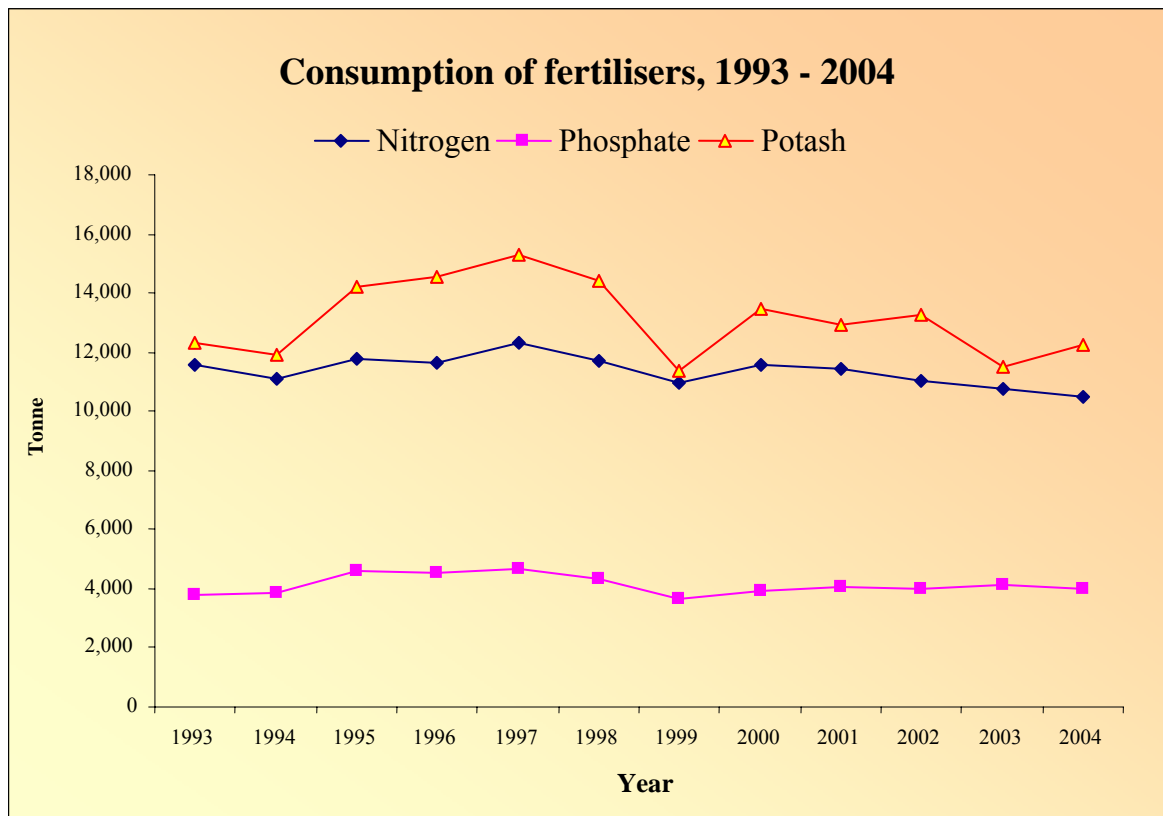
Commodities	tonnes		
	1995	2000	2004
Fertilizers	47,926	56,617	48,749
Pesticides	1,604	1,549	2,072
<i>Insecticides</i>	595	439	642
<i>Fungicides</i>	124	163	210
<i>Weedkillers</i>	885	947	1,220

Consumers can be increasingly concerned with the use of fertilizers and pesticides that not only may affect their long term health, but also cause damage to the environment.

Imports of fertilizers have been irregular for the past five years with rises and falls. In the year 2004 imports amounted to some 49,000 tonnes.

Pesticide imports have noted a general increase before a slight decrease in 2004 to stand at around 2,000 tonnes.

### Consumption of fertilisers, 1993 – 2004

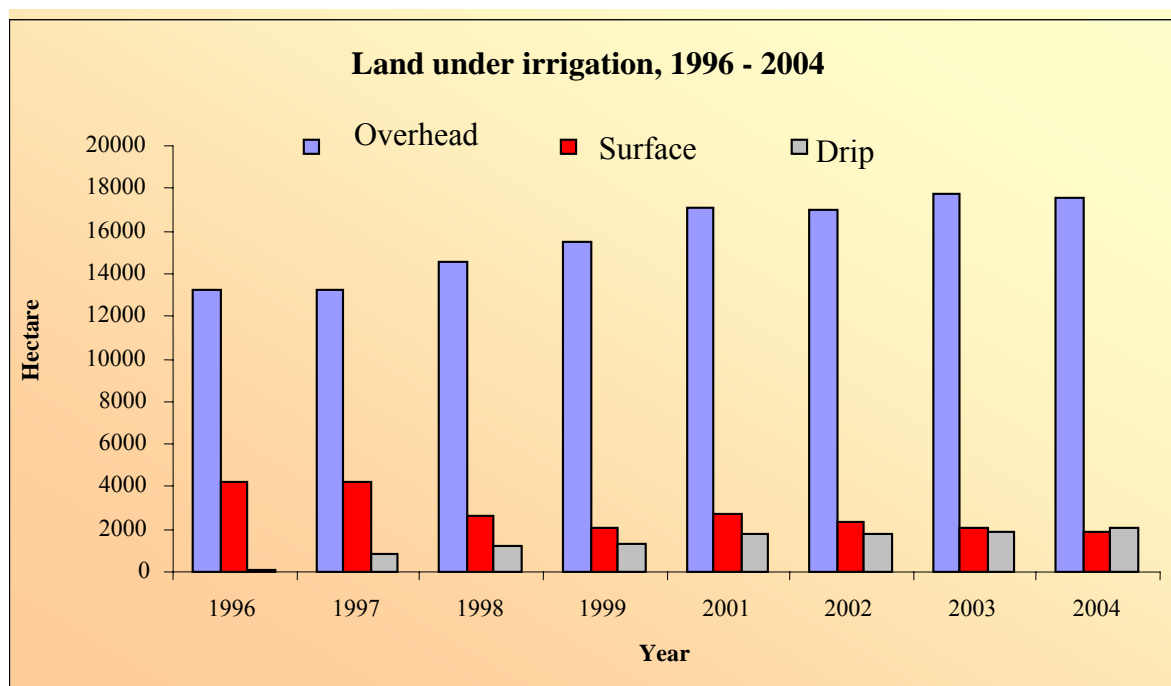


Year		1993	1995	2000	2004
Product weight		66,430	70,900	67,044	61,266
Nutrients Content	Nitrogen	11,605	11,800	11,550	10,499
	Phosphate	3,784	4,625	3,940	4,022
	Potash	12,290	14,208	13,464	12,248

Consumption of fertilizers, though vital for agriculture, exerts an intense pressure on the environment, especially its impact on surface and ground water.

The total amount of fertilizers consumed in 2004 was 61,266 tonnes and noted a slight decline as compared with previous years. The nutrients constituting the fertilizers in 2004 were distributed in the following proportions of the product weight: nitrogen 39.2%, phosphate 15.0%, and potash 48.8%.

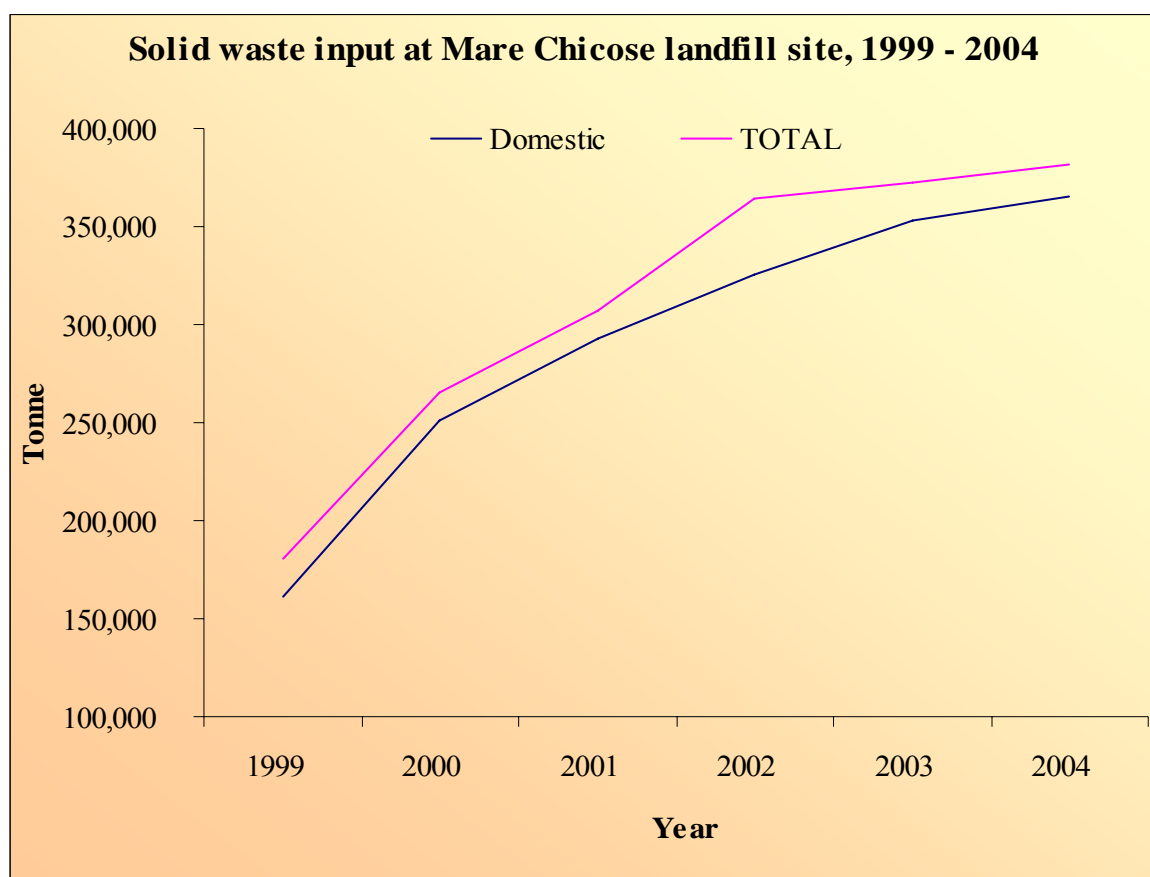
## Land under irrigation, 1996 - 2004



Year	Overhead	Surface	Drip	Total
1996	13,235	4,226	831	18,292
1997	13,232	4,226	831	18,289
1998	14,520	2,654	1,205	18,379
1999	15,455	2,066	1,355	18,876
2000	15,951	2,020	1,535	19,506
2001	17,119	2,723	1,789	21,631
2002	17,028	2,372	1,822	21,222
2003	17,706	2,032	1,881	21,619
2004	17,548	1,837	2,032	21,417

With agriculture as the biggest user of water with 48% of the overall utilization, the land under irrigation has been generally increasing. Area under irrigation increased from 18,292 hectares in 1996 to 21,417 hectares in 2004, a 17.1% rise. However, irrigation varies according to the spatial and temporal distribution of rainfall.

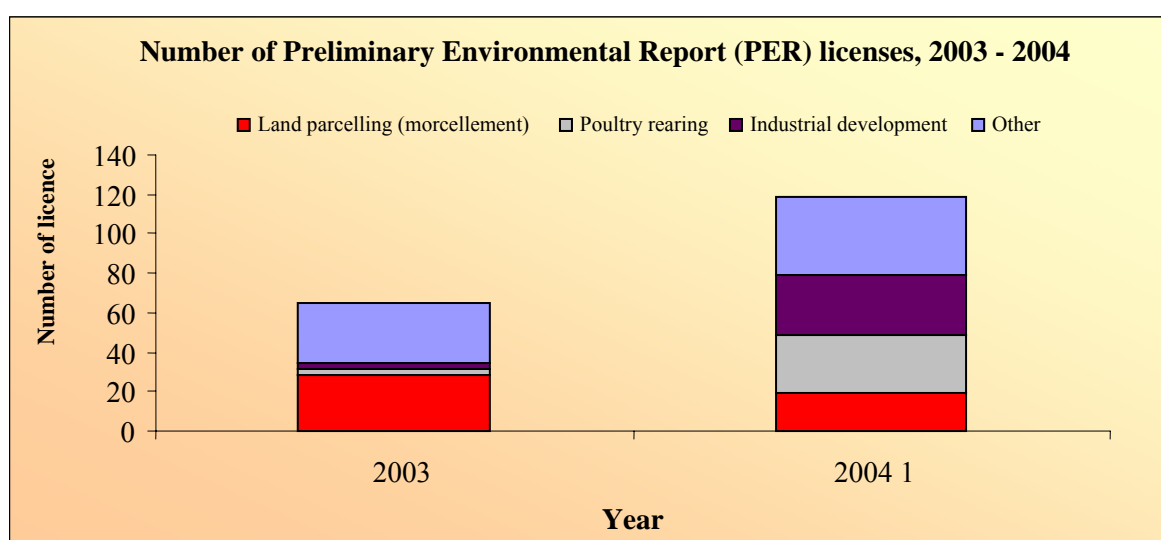
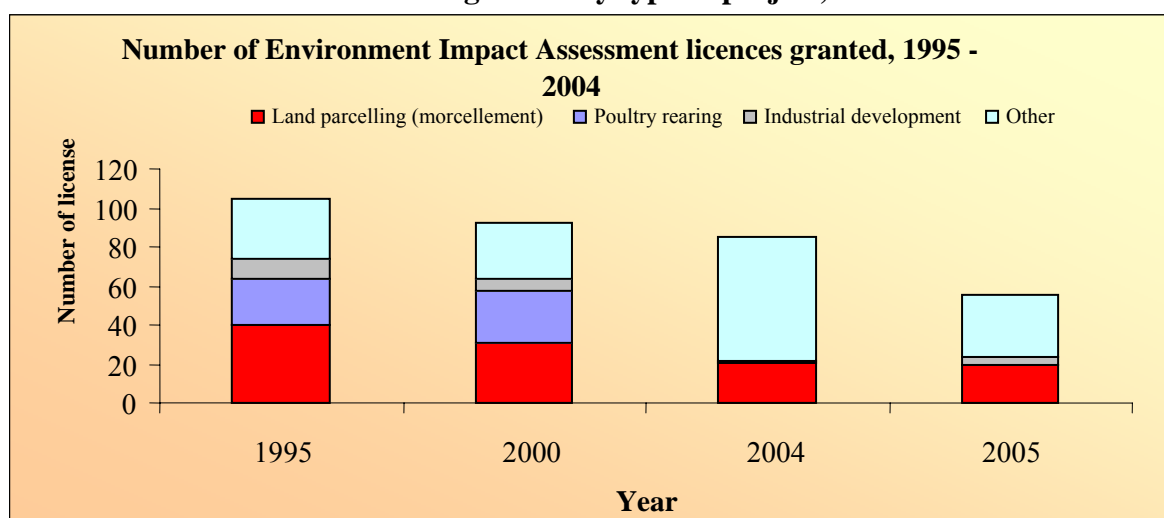
### Solid waste by type at Mare Chicose landfill site, 1999 - 2004



Waste type	Tonnes		
	1999	2000	2004
Commercial	49	505	-
Construction	14,398	6,839	6,097
Domestic	161,254	251,249	365,528
Industrial ( inc. textile )	4,566	5,861	3,097
Tuna/Sludge	...	...	189
Poultry	373	671	3,962
Rubber tyres	58	228	423
Asbestos	19	...	36
Condemned goods	43	464	1,770
Cyclone Wastes	...	...	89
Difficult and hazardous	28	...	12
<b>TOTAL</b>	<b>180,788</b>	<b>265,815</b>	<b>381,203</b>

Increasing waste generation and consequently its disposal pose a major environmental problem. The total amount of solid waste landfilled at Mare Chicose went up from 180,788 tonnes in 1999 to 381,203 tonnes in 2004, representing an increase of 200,415 tonnes or 110.9%.

Number of EIA and PER licenses granted by type of project, Island of Mauritius



Project	EIA				PER <sup>2</sup>		
	1995	2000	2004	2005	2003	2004 <sup>1</sup>	2005
Land parceling (morcellement)	40	31	21	19	28	19	16
Poultry rearing	24	26	-	-	3	30	22
Industrial development	10	7	1	5	3	30	8
Other	31	28	63	31	31	40	42
<b>Total</b>	<b>105</b>	<b>92</b>	<b>85</b>	<b>55</b>	<b>65</b>	<b>119</b>	<b>88</b>

The Department of Environment grants Environmental Impact Assessment (EIA) licenses as from the end of 1993 and Preliminary Environmental Report (PER) as from September 2002 for projects which have an impact on the environment or human health. These undertakings are listed in the First Schedule of the Environment Protection Act, 2002.

In 2005, the number of EIA and PER licenses granted was 55 and 88 respectively. For EIA, land parceling accounted for 34% and among PER licenses, poultry rearing and Industrial development represented 25% and 9% respectively.

Source: Department of Environment and National Development Unit

<sup>1</sup>Provisional

<sup>2</sup> PER license was issued as from September 2002. Four licenses issued in 2002 were included in 2003.

## Main energy indicators, Republic of Mauritius, 1993 - 2004

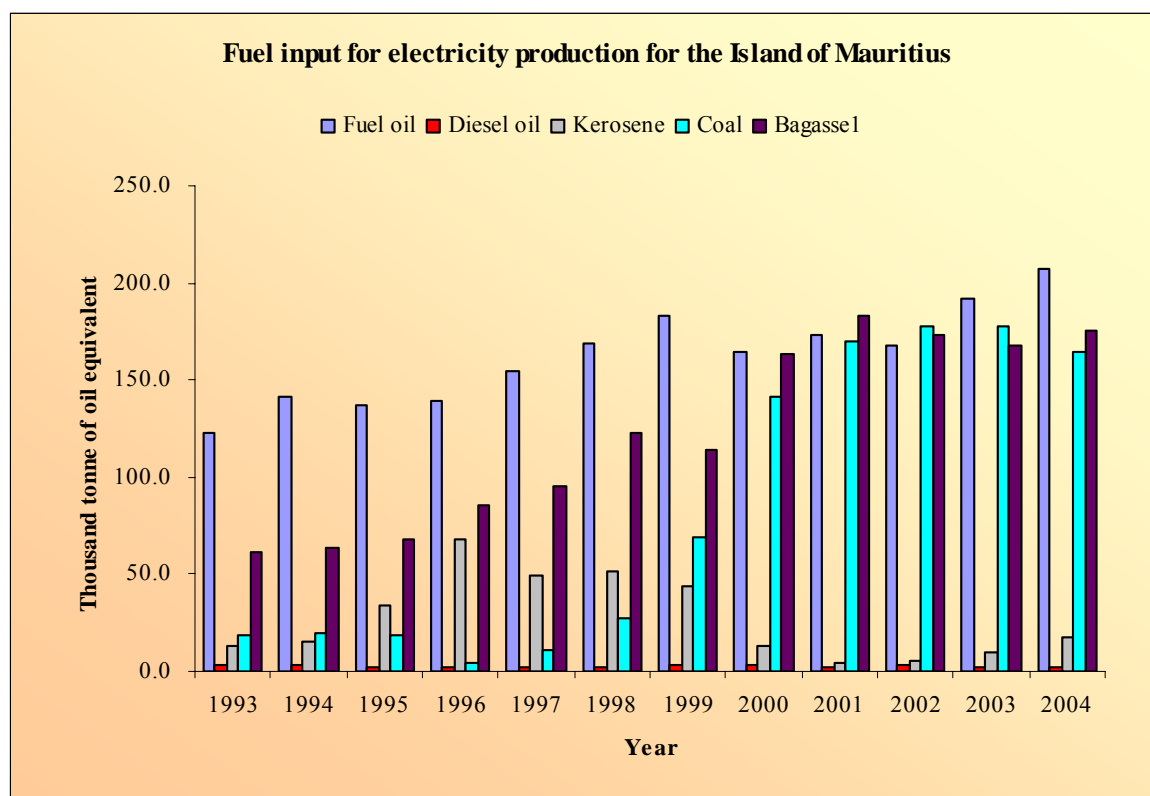
Details	Unit	1993	1995	2000	2004
Total primary energy requirement	ktoe	821.99	871.5	1113.1	1255.8
<i>Imported</i>	<i>ktoe</i>	<i>529.94</i>	<i>584.3</i>	<i>849.0</i>	<i>980.1</i>
<i>Local</i>	<i>ktoe</i>	<i>292.05</i>	<i>287.2</i>	<i>264.1</i>	<i>275.7</i>
Total primary energy requirement index (1990 = 100)		110.15	119.2	150.9	171.8
Annual increase	%	+1.25	+6.5	+11.4	+2.7
Import dependency	%	64.47	67.0	76.3	78.0
Energy intensity	toe per Rs.100,000 GDP	2.09	1.73	1.67	1.61
Per capita primary energy requirement	toe	0.75	0.78	0.94	1.02
Per capita final energy consumption	toe	0.59	0.61	0.63	0.68
Per capita consumption of electricity sold	KWh	684	814	1,158	1,382

In the year 2004, the total primary requirement of the country amounted to some 1,255.8 ktoe of which 980.1 ktoe (78%) were met from imported fuels, and 276 ktoe (22.0%), from indigenous (local) sources. Total primary energy requirement increased from 822 ktoe to 1,256 ktoe.

Energy intensity, defined as total primary energy requirement (toe) per Rs 100,000 of GDP, provides a measure of the efficiency with which energy is being used in production. A lower ratio indicates a more efficient use of energy.



## Fuel input for electricity production, Republic of Mauritius, 1993 – 2004



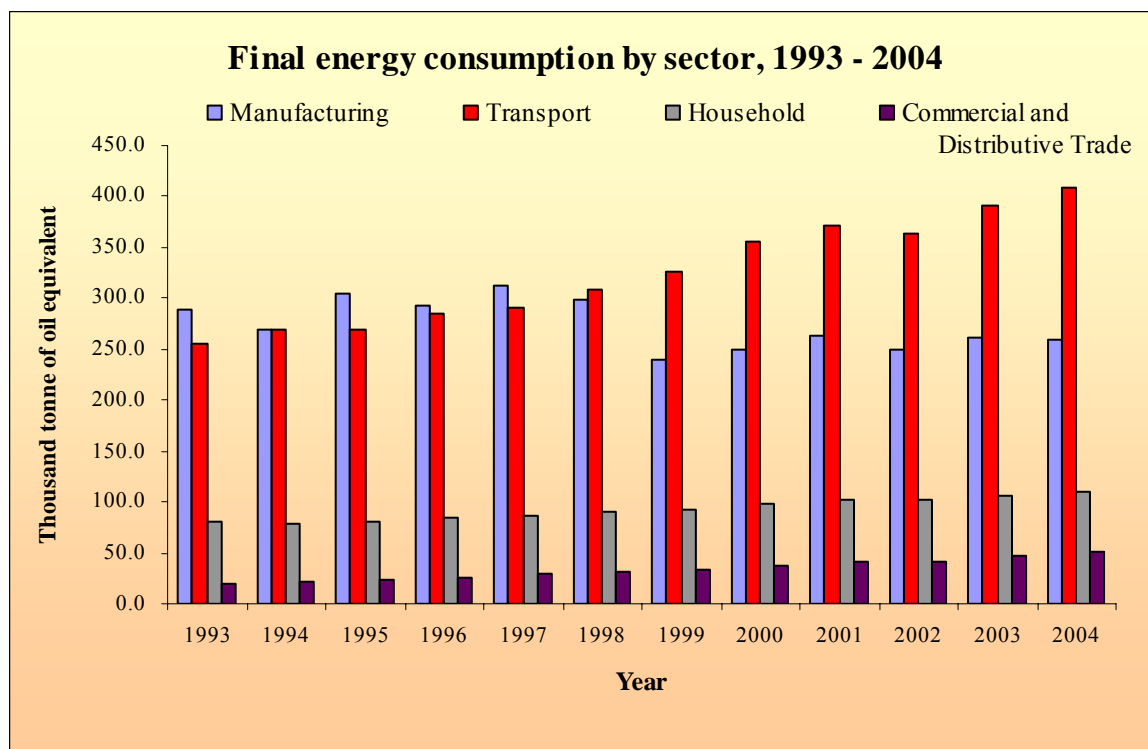
	Thousand tonne of oil equivalent (ktoe)			
	1993	1995	2000	2004
<b>Island of Mauritius</b>				
Fuel oil	123.0	137.2	164.5	206.7
Diesel oil	2.8	2.6	2.9	2.4
Kerosene	12.8	33.6	13.6	17.2
Coal	19.1	18.8	141.7	164.4
Bagasse <sup>1</sup>	61.5	67.7	163.4	174.9
<b>Island of Rodrigues</b>				
Fuel oil <sup>2</sup>	0.0	0.0	4.0	4.6
Diesel oil <sup>2</sup>	2.0	2.7	0.6	1.6
<b>Total</b>	<b>221.2</b>	<b>262.6</b>	<b>490.6</b>	<b>571.7</b>

This table shows the different types of fuel used for electricity generation. The major components of the fuel input for 2004 were: fuel oil (37.0%), bagasse (30.6%), and coal (28.8%).

<sup>1</sup> Estimates

<sup>2</sup> Figures for 1995 – 1997 are estimates

Final energy consumption by sector, Republic of Mauritius, 1993 – 2004

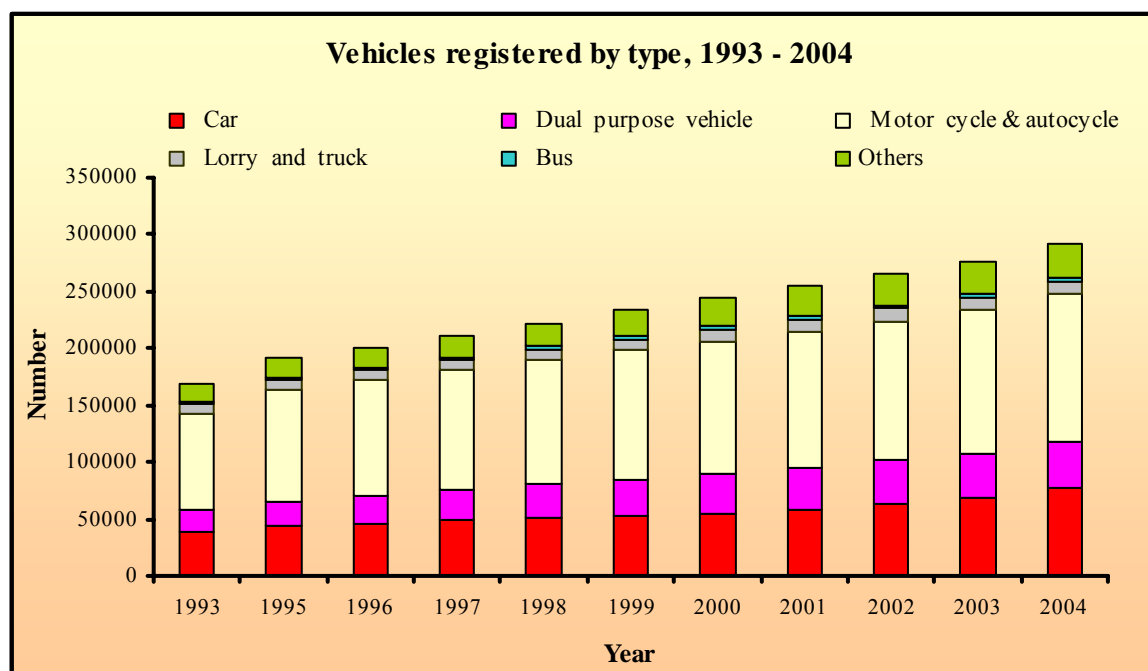


	Thousand tonne of oil equivalent (ktoe)			
Sector	1993	1995	2000	2004
Manufacturing	289.7	305.3	249.9	259.3
Transport	256.4	268.8	355.9	408.7
Household	79.9	81.3	99.2	111.0
Commercial and Distributive Trade	20.3	24.0	36.9	51.5
Agriculture	3.0	3.4	4.8	4.4
Other (n.e.s) and losses	1.1	1.3	2.3	3.2
<b>TOTAL</b>	<b>650.5</b>	<b>684.0</b>	<b>749.0</b>	<b>838.1</b>

In 2004, final energy consumption stood at 838.1 ktoe. ‘Transport’ and ‘Manufacturing’ were the two largest energy consuming sectors accounting for 48.8% and 30.9% respectively. They were followed by ‘Household’ (13.2%), ‘Commercial and Distributive Trade’ (6.1%) and ‘Agriculture’ (0.5%).

<sup>1</sup> estimates

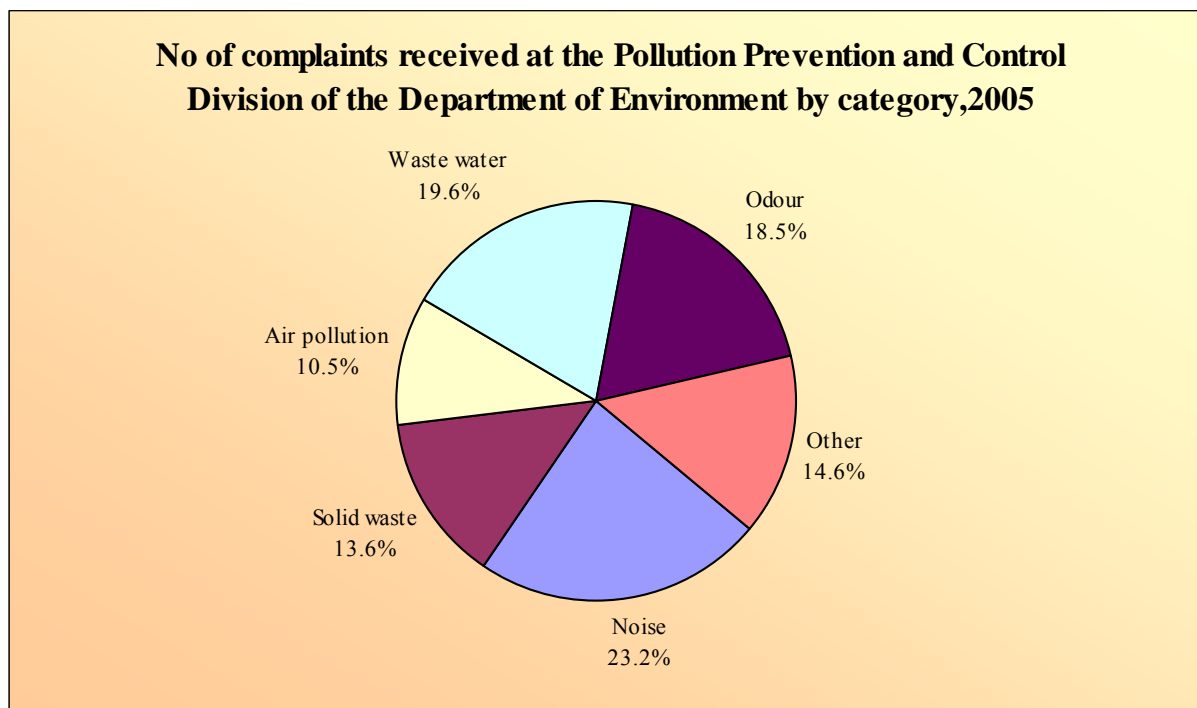
## Vehicles registered by type, 1993 - 2004



Type of vehicle	Number			
	1993	1995	2000	2004
Car	39,511	43,288	54,911	77,342
<i>of which taxi car</i>	<i>(4,050)</i>	<i>(4,439)</i>	<i>(5,039)</i>	<i>(6,482)</i>
Dual purpose vehicle	17,882	22,086	34,912	40,667
Heavy motor car	826	898	916	1,020
Motor cycle	18,829	21,492	24,523	28,646
Auto cycle	66,711	76,317	91,955	100,854
Lorry and truck	8,166	8,815	10,485	11,774
Van	9,663	10,851	18,807	23,326
Bus	2,217	2,362	2,394	2,457
Tractor and dumper	2,413	2,546	2,645	2,935
Prime mover	228	256	322	388
Trailer	1,333	1,534	1,726	1,771
Road roller	106	107	100	99
Other	273	315	322	326
<b>Total</b>	<b>168,158</b>	<b>190,867</b>	<b>244,018</b>	<b>291,605</b>

There were 291,605 vehicles registered at the National Transport Authority at the end of December 2004. The fleet consisted of 44% (129,500) motorized two-wheelers, 41% (118,009) cars and dual purpose vehicles while the remaining 15% comprised of vans (23,326), lorries and trucks (11,774), buses (2,457) and other vehicles (6,539). There is an increasing pressure on the environment with the substantial inflation in the volume of vehicular fleet over the years. The number of vehicles rose by around 73% during the past ten years.

**Number of complaints received at the Pollution Prevention and Control Division of the Department of Environment by category, 1994 - 2005**



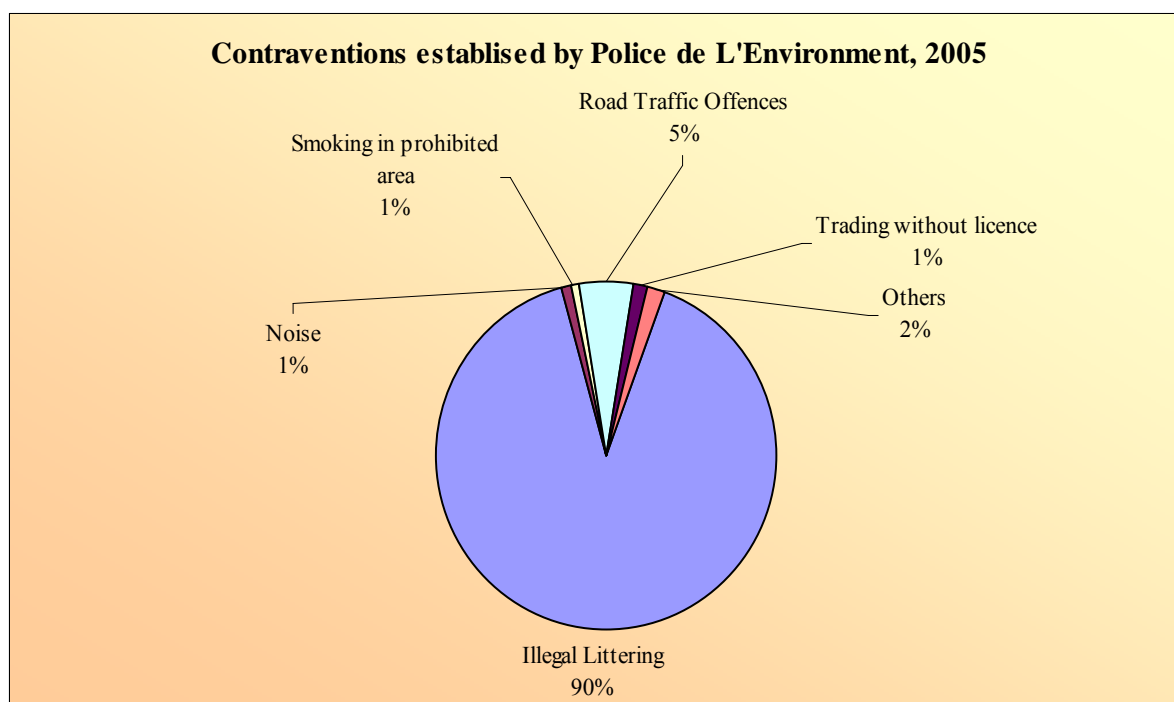
Category	Number			
	1994	2000	2004 <sup>1</sup>	2005
Noise	100	555	444	342
Solid waste	56	586	177	201
Air pollution	55	71	129	154
Waste water	78	150	180	289
Animal husbandry	-	-	-	-
Odour	44	251	328	272
Other <sup>2</sup>	37	293	447	215
Total	370	1,906	1,705	1473

These complaints are registered by the Pollution Prevention and Control Division at the Department of Environment. In 2005, the number of complaints decreased by 232 compared to year 2004. The largest cause of complaint remains noise, accounting for 23% of all complaints followed by waste water 19.6% and odour, 18.5%.

<sup>1</sup> Provisional

<sup>2</sup> Includes bare lands, illegal construction works, trading without licence, radiations, objections for giving licenses, road obstructions and flooding

Contraventions and notices established by Police de L'Environnement. 2002 - 2005



Type of contravention	Number			
	2002	2003	2004	2005
Illegal Littering	3,731	3,965	4,422	3624
Illegal Dumping	39	31	19	14
Noise	156	97	63	30
Smoking in prohibited area	267	40	77	38
Waste carriers offences	70	101	64	18
Setting fire within 50 metres from building/plantation	27	32	11	4
Obstruction	45	39	27	10
Road Traffic Offences	68	65	195	193
Trading without licence	50	126	100	56
Allowing animal to stray	18	40	15	10
Disturbance	4	11	3	1
Others	231	24	13	15
<b>Total</b>	<b>4,706</b>	<b>4,571</b>	<b>5,009</b>	<b>4,013</b>
No. of notices issued to drivers of vehicles emitting black smoke	2,764	3,666	4,172	5156

In 2005, the Police de L'Environnement issued 4,013 contraventions of which illegal littering accounted for 90% (3,624).

During the same period, 5,156 notices were issued to drivers of vehicles emitting black smoke.

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*This report is opened for comments and suggestions. Any further improvements could be considered in future issues.*