THE CARICOM ENVIRONMENT IN FIGURES 2004

Caribbean Community Secretariat
Regional Statistics Sub-Programme

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Caribbean Community Secretariat
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PREFACE

The CARICOM Environment in Figures 2004 has been prepared the Caribbean Community (CARICOM) Secretariat, Statistics Sub-programme based on data submitted by Member States and Associate Members., from the United Nations Statistics Division (UNSD) and from other regional and National Organisations. This is the second report in this area of Statistics that has been produced. The first report contained data up to the period 2002. The work on Environmental Statistics in the CARICOM Region was stimulated by a Project on "Strengthening Capacity in the Compilation of Statistics and Indicators for Conference Follow-up in the CARICOM Region," jointly carried out by the United Nations Statistics Division (UNSD) and the Caribbean Community (CARICOM) Secretariat from 1999 - 2004 approximately. The Project was executed in the CARICOM Member States, which are Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago. However relative to data collection and capacity building activities the Associate Members were also included in these efforts and data for some of these countries are found in this publication.

Of importance to note is the work of the CARICOM Advisory Group which operated in the area of Social/Gender and Environmental Statistics, developing a programme for sustaining the data collection, compilation and dissemination efforts post the end of the CARICOM/UNSD Project.

As expressed in the first report, it continues to be the case that in the CARICOM Region, most of the 15 Member States are faced with growing competition between economic interests for limited natural resources, pressures from increasing tourism and a greater frequency of natural disasters. Sound policy decisions must be made using timely and reliable information to enable sustainable development. This regional report is the second

attempt to compile Environmental Statistics and there were many challenges faced including the absence of dedicated staff to work in this area both at the regional and national levels, as well as a lack of basic environmental statistics and indicators which is a relatively new area of statistics to the region. As a consequence this report which contains data up to 2004 (with some data for 2005) is only now being published in 2008. Nonetheless, some countries such as Belize, Jamaica and Suriname continue to make tremendous efforts to produce these statistics. Trinidad and Tobago recently produced its first compendium in this area of statistics.

This publication relies as stated earlier on available data submitted by Member States as well as under a collaborative arrangement with the UNSD for selected themes. The design of this publication presents metadata, a brief evaluation and assessment of the data and the tables and graphs of the various statistics and indicators. The publication focuses on twelve (12) themes which are: Population and Households, Tourism, Environmental Health, Natural Disasters, Energy and Minerals, Land Use and Agriculture, Coastal and Marine Resources, Biodiversity, Forest, Air, Waste and Water.

For each theme, the indicators are identified and for each indicator, information and analysis as required are presented on: Concepts and Definitions, Method of Computation, Indicator Relevance, Data Assessment, Data Sources and Evaluation (of the data). An estimate of the degree of harmonisation of the data is also attempted as an indicator of the comparability of the statistics across member states. It is expected that, as this area of statistics becomes more established, concepts, definitions, classifications and methods of data collection should become increasingly more harmonised and standardised. The environmental indicators that correspond to Millennium Development Goals indicators are also identified in the report.

This report took a considerable time to produce, from the initial efforts of the CARICOM Advisory Group (now the Advisory Group on Statistics) to review and develop the programme in this area; the review and refinement of core indicators and the identification of additional indicators; the design and submission of table formats to

member countries; the monitoring of the submission of the information; the compilation of the statistics and indicators in tables and the submission to countries for review and amendments and the preparation of various drafts of the report.

In view of the fact that environment statistics is a relatively new and emerging field of statistics, with a large number of data sources and institutions involved, and with a lack of benchmarks and standards, it is anticipated that the publication would help bring to the fore some of the problems that exist with these data; differences in data at the national level and at the regional level; data that exist within various organisations at the national level but are not available at the CARICOM Secretariat. The need for increased inter-agency collaboration and the use of software such as the United Nations-based Devinfo to facilitate the compilation and dissemination of statistics that are available within agencies at the national levels must be emphasised as primary mechanism of improving data availability.

The CARICOM Secretariat therefore welcomes feedback and as well data presented as missing or inaccurately presented or updated data from countries and organisations. It is hoped that this publication could contribute to providing a picture of some aspects of the status of the environment as well as in improving the data collection and compilation efforts in the Region.

ACKNOWLEDGEMENTS

Data were collected from several sources during the preparation of this report. The CARICOM Secretariat, therefore, wishes to acknowledge and thank those Organizations and persons for their invaluable contribution in supplying the data either by means of printed publications or through direct contact. Among these sources are the National Statistical Offices of Member States and Associate Members. The Secretariat looks forward to the continued support of these Organizations in the preparation of future editions of this report.

Sincere thanks and appreciation are also extended to the staff of the Statistics subprogramme for their tireless efforts in compiling and preparing the report.

Specifically, special mention must be made of the Intern that worked in the Statistics Sub-programme for the Summer of 2007 for her tremendous data-collection, research and analytical efforts which enabled the realisation of this publication.

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ABBREVIATIONS & ACRONYMS

CARICOM	Caribbean Community
AG	Antigua and Barbuda
BS	The Bahamas
BB	Barbados
BZ	Belize
DM	Dominica
GD	Grenada
GY	Guyana
JM	Jamaica
MS	Montserrat
KN	St. Kitts and Nevis
LC	Saint Lucia
VC	St. Vincent and the Grenadines
SR	Suriname
TT	Trinidad and Tobago
AI	Anguilla
BM	Bermuda
TC	Turks and Caicos Islands
BOD5	Biochemical Oxygen Demand
$CaCO_3$	Limestone (Calcium Carbonate)
$CaMg\ (CO_3)_2$	Dolomite
$CaSO_4$	Anhydrite (Anhydrous Calcium Sulphate)
$CaSO_4 2H_2O$	Gypsum (Hydrated Calcium Sulphate)
CH_4	Methane
Cl	Chloride
CO_2	Carbon dioxide
COD	Chemical Oxygen Demand

CPI	Consumer Price Index
CTO	Caribbean Tourism Organisation
DDPH	Dissolved and Dispensed Petroleum
DDT	DichloroDiphenylTrichloroethane
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbons
E/D	Embarkation / Disembarkation Cards
EMA	Environmental Management Authority
FAO	Food and Agriculture Organisation
FOB	Freight on Board
GIS	Graphic Information System
IEA	International Energy Agency
IPCC	Intergovernmental Panel for Climate Change
JICA	Japanese International Consultants Agency
KMnO4	Potassium Permanganate
K_2O	Potassium Oxide
LAFTA	Latin American Free Trade Association
LPG	Liquid Petroleum Gas
MPA	Marine Protected Areas
NaCl	Sodium Chloride
NH_3	Ammonia
NO_2	Nitrogen Dioxide

NM-VOC_5	Non-Methane Volatile Organic Compounds
N_2O	Anthropogenic Nitrous Oxide
OECD	Organisation for Economic Cooperation and Development
OECS	Organisation of Eastern Caribbean States
OD	Ozone Depletion
PO_4	Phosphates
P_2O_5	Phosphoric Acid
Pb	Lead
SiO_2	Silica Sand
SO_2	Sulphur Dioxide
TCHTA	Turks and Caicos Hotel and Tourism Association
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
Tpo_4	Total Phosphate
UNECLAC	United Nations Economic Commission for Latin American Countries
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention for Climate Change
UNSD	United Nations Statistics Division
WC	Water Closet
WHO	World Health Organisation
Zn	Zinc

NOTES

Efforts were made to assess the degree of harmonization of the indicators.

Indicators that are fully harmonized are represented by **"H"** and imply that the conceptual and methodological differences among Member States/Associate Members are negligible.

Indicators that are partially harmonized are represented by **"PH"** and imply that there is harmonization among some Member States/Associate Members, but that there are also substantive differences among some of those same states or others.

"NH" implies that there is an absence of harmonization with regards to concepts and methodologies among Member States/Associate Members.

"DK" Impossible to assess.

Unless otherwise stated, the charts refer to data shown in the accompanying table.

PH1: NUMBER OF HOUSEHOLDS BY TYPE OF DWELLING

PH

Concepts and Definitions

The household is defined as follows: (a) a one-person household, defined as an arrangement in which one person makes provisions for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; and (b) a multi-person household, defined as a group of two or more persons living together and who make **common** provisions for food or other essentials for living. The persons in the group may pool their incomes and have a common budget. They may be related or unrelated or a combination of both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997).)*

A conventional dwelling is a room or suite of rooms and its accessories in a permanent building or structurally separated part thereof which, by the way it has been built, rebuilt or converted, is intended for habitation by one household and is not, at the time of the census, used wholly for other purposes. It should have separate access to a street (direct or via a garden or grounds) or to a common space within the building (staircase, passage, gallery and so on). Examples of dwellings are houses, flats, suites of rooms, apartments and so forth. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997*) *paras: 2.320-2.365.)*

Types of Dwellings

An *Undivided Private House* is a single dwelling unit, which takes up the whole building. It may be occupied by one or more households.

Part of a Private House occurs where the household occupies only a part of a private house and it may consist of one or more rooms.

Flat/Apartment/Condominium relates to self-contained dwellings in a single- or multi-storied building. Each such dwelling has separate and direct access to the street or a commercial staircase, passage, veranda, gallery or similar structure.

A *Town House* is similar to a flat, apartment or condominium except that the rooms are usually on two floors. It is a self-contained unit with separate legal title to ownership. Sometimes common facilities such as security and ground may be shared.

Double House/Duplex is a dwelling, which is joined to only one other dwelling, separated by a wall extending from ground to roof.

Combined Business and Dwelling: In this type of dwelling, the household occupies a part of the building for living purposes while the other parts are used for commercial purposes.

Barracks: This is a room or division in a long building containing several independent private dwellings, with or without shared facilities.

Other: This category is used for households living in a dwelling type not elsewhere specified. It includes boats, tents, trailers, etc.

Method of Computation

The number of households by type of dwelling is classified from data obtained from the 2000 Round of Census according to the categories: Undivided private house, Part of a private house, Flat/Apartment/Condominium, Townhouse, Double House/Duplex, Combined Business & Dwelling, Barracks, Other and Not Stated, which have been defined in the foregoing section.

Indicator Relevance

The increase in the number of households and reduction in average household size has far reaching environmental implications, including:

- Changes in land use as more dwellings are needed;
- Increasing quantities of goods needed, such as cookers, washing machines, refrigerators, televisions, telephones, cars, and computers, and the products (e.g. detergents) and services associated with them; consequently, a rise in total energy and water consumption;
- A demand for smaller-sized packs of groceries and other products leading to increased packaging waste material;
- Increase in transport (shopping and leisure trips); and,
- Increased waste.

Data Assessment

Data on households were obtained from data submitted by Member States and Associate Members. It should be noted that only one of the reporting countries explicitly followed the international definition of a household. This country was Jamaica. Other countries, like Barbados, Bermuda, Dominica and Trinidad and Tobago, followed the internationally recommended definition of a household but did so implicitly. That is to say that while Jamaica explicitly specified that members of a household must make common provision for food and other essentials for living, Barbados, Bermuda, Dominica and Trinidad and Tobago, etc only specified that members of a household should be living together in a dwelling unit and share meals. It is recognized, however, that living together and sharing meals can be interpreted as making provision for food and other essentials for living. All other requirements of a household were explicitly satisfied in the definitions used by

Member States and Associate Members. The concept of a household is, therefore, in accordance with the international definition and is regionally harmonized for those countries providing these definitions.

Of the seventeen countries that provided data for this indicator, only eleven provided the definition that was used for the concept of a dwelling.

Only Guyana, Jamaica, Saint Lucia, Suriname and Trinidad and Tobago, from the eleven countries that provided their definitions for a dwelling strictly followed the internationally recommended definition. Guyana and Jamaica are the only reporting countries that explicitly state that a dwelling can have one or more households. All of the other reporting countries did not specify whether a dwelling is intended to be occupied by one household or by one or more households. Antigua and Barbuda and Anguilla also neglected to specify that a dwelling must have *separate access to a street or common space within the building* in their definition of a dwelling. As such, the concept of a household is partially harmonized within the region.

Data Sources

Please refer to the **Appendix 2.1.1 (a)** for the sources of the data on the dwelling of households of Member States and Associate Members.

Evaluation

The category *Undivided Private House* was the predominant type of dwelling for households reported in CARICOM Member states. While 79 per cent of the households in Member States reportedly live in this type of dwelling, Associate Members reported that 34.8 per cent of households lived in *Undivided Private Houses*. More Associate Members reported *Flats/apartments/condominiums* as the highest category (56.7 per cent) including Bermuda with 70.2 per cent, The British Virgin Islands, 51.3 per cent and Turks and Caicos Islands, 37.2 per cent.

The highest proportions of households living in *Undivided Private Houses* were found in Grenada (90.3 per cent) followed by Antigua and Barbuda (89 per cent) while Bermuda showed the lowest proportion of households living in *Undivided Private Houses* (26.7 per cent).

The Member States of Antigua and Barbuda (5.3 per cent), Barbados (11.2 per cent), Jamaica (16.8 per cent) and Trinidad and Tobago (13.6 per cent) reported *Flats/apartments/condominiums* as the second largest category of households by type of dwelling. Belize (5.3 per cent), Dominica (10.1 per cent), Grenada (5.4 per cent), Guyana (14.2 per cent), St. Kitts/Nevis (9.9 per cent), Saint Lucia (9.3 per cent) and St. Vincent and the Grenadines (9.6 per cent) reported *Part of a private house* as the second highest category of households by type of dwelling. During the 2000 Round of Census, the remaining Member States, The Bahamas (19.7 per cent) and Montserrat (7.8 per cent) had the second highest proportion of households living in *Double house/duplex*.

Associate Members, Anguilla (72.7 per cent) and Turks and Caicos Islands, (48.1 per cent) reported that the largest proportion of households lived in an *Undivided Private Houses* with the second highest number of households occupying *Flats/apartments/condominiums* (15.3 per cent and 37.2 per cent respectively). Bermuda and the British Virgin Islands reported 26.7 per cent and 30.7 per cent of households respectively occupying *Undivided Private Houses* as the second largest category of dwelling for households.

Table 1.1 (a) Number of Households by Type of Dwelling: 2000 Round of Census

Country	Year	Undivided Private House	Part of a private house	Flat/ Apartment / Condominium	Townhouse	Double house/ duplex
AG	2001	18,198	684	1,078		185
BS	2000	54,226	1,389	14,597	. . .	17,306
BB	2000	73,031	. . .	9,319	. . .	. . .
BZ	2000	43,490	2,735	1,412	. . .	2,041
DM	2001	18,036	2,255	1,066	20	484
GD	2001	30,219	1,802	507	58	109
GY	2002	129,648	25,950	13,582	1,474	5,317
JM	2001	607,903	...	125,878	...	...
MS	2001	1,814	113	93	-	181
KN	2001	12,457	1,556	906	14	169
LC	2001	37,746	4,383	2,922	236	236
VC	2001	25,805	2,920	664	9	30
TT	2000	235,000	2,968	41,234	2,043	11,585
TOTAL MEMBER STATES		1,287,573	46,755	213,258	3,854	37,643
ASSOCIATE MEMBERS						
AI	2001	2,710	192	571		125
BM	2000	6,717	. . .	17,655	. . .	. . .
VG	2001	2,578	1,083	4,298	35	31
TC	2001	3,486	61	2,699	102	220
TOTAL ASSOCIATE MEMBERS		15,491	1,336	25,223	137	376
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		1,303,064	48,091	238,481	3,991	38,019

Table 1.1 (a) Cont'd. Number of Households by Type of Dwelling: 2000 Round of Census

Country	Year	Combined business & dwelling	Barracks	Other	Not stated	Total all Households
AG	2001	229	17	59		20,450
BS	2000	. . .	. . .	224		87,742
BB	2000	486	122	68		83,026
BZ	2000	1,375	650	242		51,945
DM	2001	377	57	64		22,359
GD	2001	674	27	81		33,477
GY	2002	4,259	446	1,393	540	182,609
JM	2001	5,115	…	9,430	…	748,326
MS	2001	23	-	105		2,329
KN	2001	310	164	104		15,680
LC	2001	942	188	471		47,124
VC	2001	451	262	121		30,262
TT	2000	3,925	448	6,043	625	303,871
TOTAL MEMBER STATES		18,166	2,381	18,405	1,165	1,629,200
ASSOCIATE MEMBERS						
AI	2001	125		7		3,730
BM	2000	306	. . .	470		25,148
VG	2001	175	48	138		8,386
TC	2001	. . .	424	262		7,254
TOTAL ASSOCIATE MEMBERS		606	472	877	-	44,518
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		18,772	2,853	19,282	1,165	1,673,718

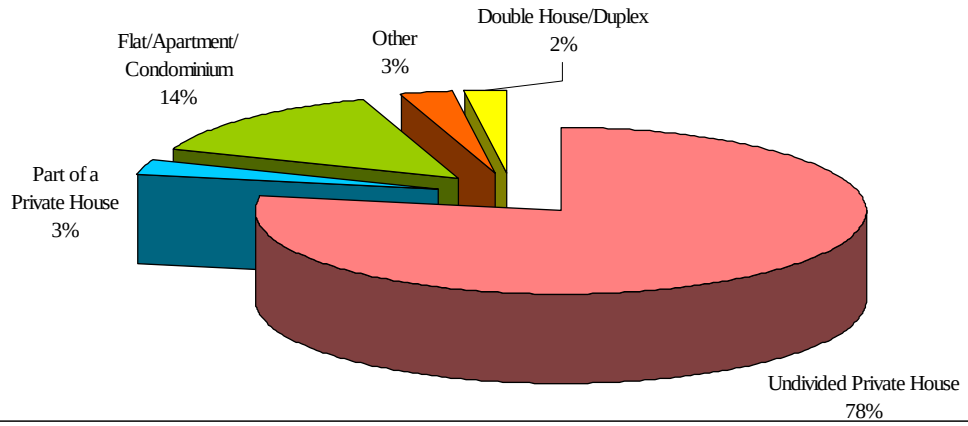
Table 1.1 (b) Percentage distribution of Households by Type of Dwelling: 2000 Round of Census

Country	Year	Undivided Private House	Part of a private house	Flat/ Apartment / Condominium	Townhouse	Double house/ duplex
AG	2001	89.0	3.3	5.3	-	0.9
BS	2000	61.8	1.6	16.6	-	19.7
BB	2000	88.0	-	11.2	-	-
BZ	2000	83.7	5.3	2.7	-	3.9
DM	2001	80.7	10.1	4.8	0.1	2.2
GD	2001	90.3	5.4	1.5	0.2	0.3
GY	2002	71.0	14.2	7.4	0.8	2.9
JM	2001	81.2	-	16.8	-	-
MS	2001	77.9	4.9	4.0	-	7.8
KN	2001	79.4	9.9	5.8	0.1	1.1
LC	2001	80.1	9.3	6.2	0.5	0.5
VC	2001	85.3	9.6	2.2	0.0	0.1
TT	2000	77.3	1.0	13.6	0.7	3.8
TOTAL MEMBER STATES		79.0	2.9	13.1	0.2	2.3
ASSOCIATE MEMBERS						
AI	2001	72.7	5.1	15.3		3.4
BM	2000	26.7	. . .	70.2	. . .	. . .
VG	2001	30.7	12.9	51.3	0.4	0.4
TC	2001	48.1	0.8	37.2	1.4	3.0
TOTAL ASSOCIATE MEMBERS		34.8	3.0	56.7	0.3	0.8
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		77.9	2.9	14.2	0.2	2.3

Table 1.1 (b) Cont'd. Percentage distribution of Households by Type of Dwelling: 2000 Round of Census

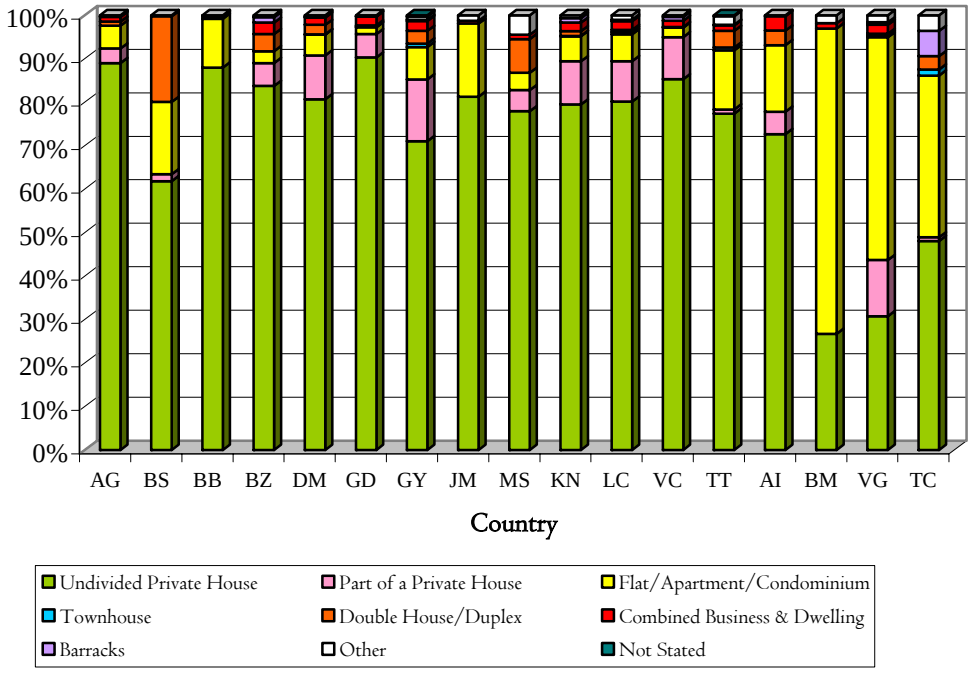
Country	Year	Combined business & dwelling	Barracks	Other	Not stated	Total all Households
AG	2001	1.1	0.1	0.3		100.0
BS	2000	-	-	0.3		100.0
BB	2000	0.6	0.1	0.1		100.0
BZ	2000	2.6	1.3	0.5		100.0
DM	2001	1.7	0.3	0.3		100.0
GD	2001	2.0	0.1	0.2		100.0
GY	2002	2.3	0.2	0.8	0.3	100.0
JM	2001	0.7	-	1.3	-	100.0
MS	2001	1.0	-	4.5		100.0
KN	2001	2.0	1.0	0.7	-	100.0
LC	2001	2.0	0.4	1.0		100.0
VC	2001	1.5	0.9	0.4	-	100.0
TT	2000	1.3	0.1	2.0	0.2	100.0
TOTAL MEMBER STATES		1.1	0.1	1.1	0.1	100.0
ASSOCIATE MEMBERS						
AI	2001	3.4		0.2		100.0
BM	2000	1.2	. . .	1.9		100.0
VG	2001	2.1	0.6	1.6		100.0
TC	2001	. . .	5.8	3.6		100.0
TOTAL ASSOCIATE MEMBERS		1.4	1.1	2.0	-	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		1.1	0.2	1.2	0.1	100.0

CHART 1.1.1 (A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF DWELLING



Note: Other includes Townhouse, Combined Business & Dwelling, Barracks, Not Stated and Other.

CHART 1.1.1 (B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF DWELLING AND COUNTRY



Note: Other includes Townhouse, Combined Business & Dwelling, Barracks, Not Stated and Other.

CHART 1.1.2: NUMBER OF HOUSEHOLDS BY TYPE OF DWELLING

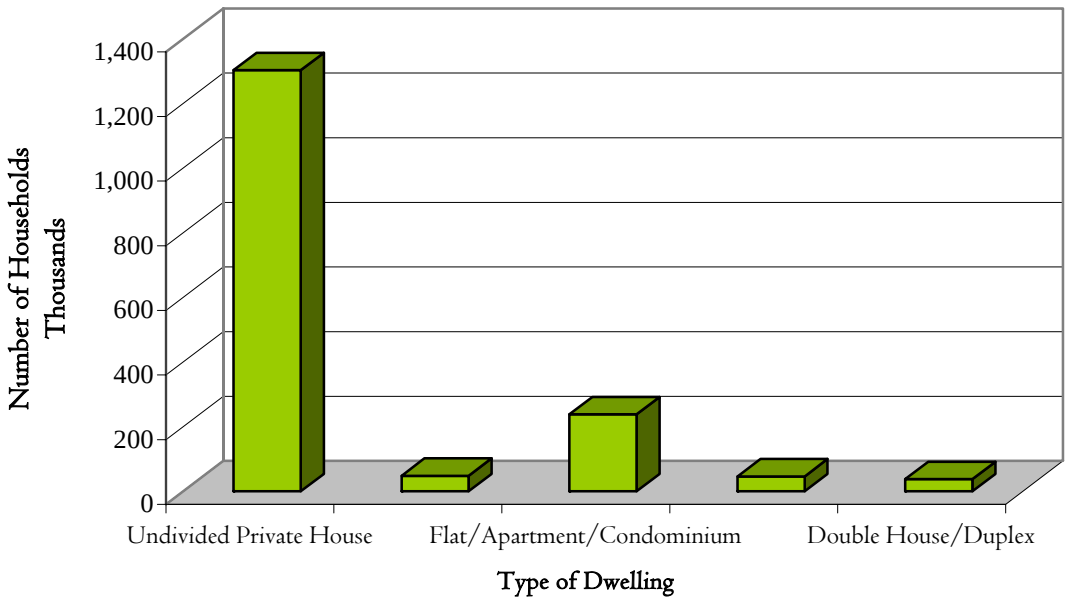
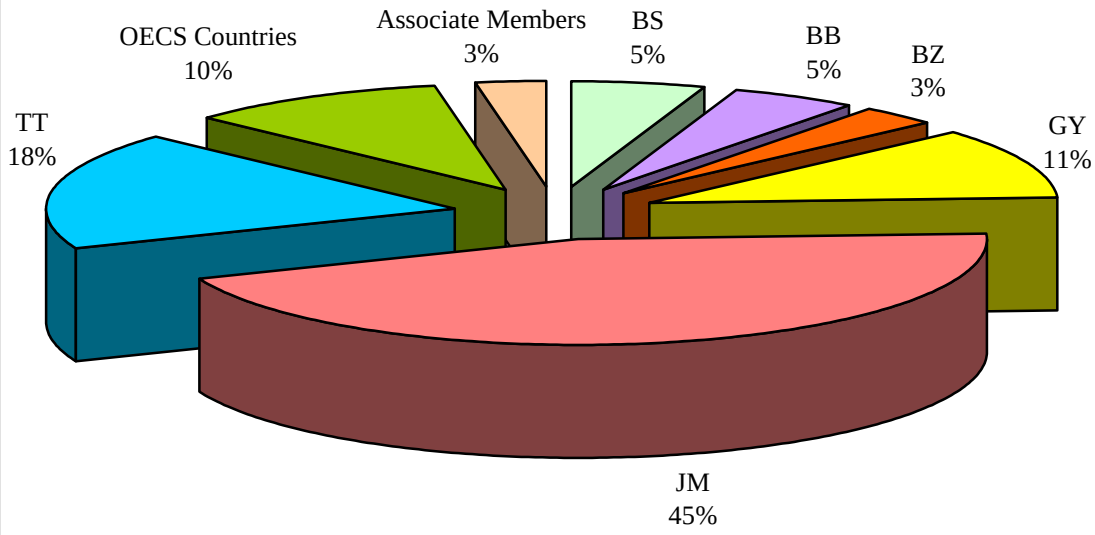
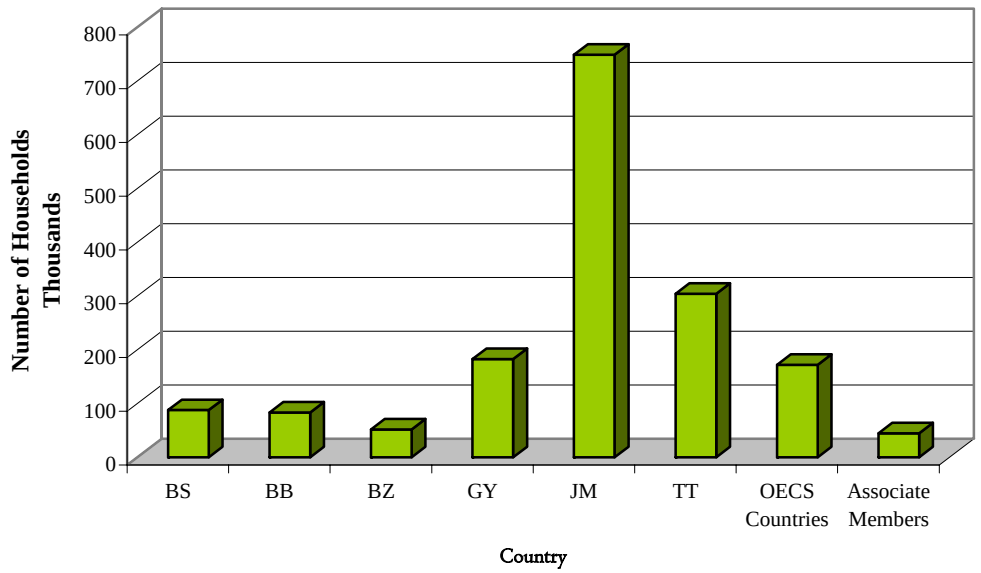


CHART 1.1.3: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS



Note: Associate Members include Anguilla, Bermuda, British Virgin Islands and Turks and Caicos.
OECS Countries include Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Lucia and St. Vincent and the Grenadines.

CHART 1.1.4: DISTRIBUTION OF THE NUMBER OF HOUSEHOLDS



Note: Associate Members include Anguilla, Bermuda, British Virgin Islands and The Turks and Caicos Islands.
OECS Countries include Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Lucia and St. Vincent and the Grenadines.

PH2: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY

Households by Type of tenure
Proportion of households with access to secure tenure

PH

Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

Concepts and Definitions

The concept of household by type of tenure refers to the arrangements under which the household occupies all or part of a housing unit. The classification of households by type of tenure is as follows:

1. Ownership of a housing unit
2. Renting all or a part of housing unit
3. Other arrangements:
   3.1 Squatted
   3.2 Leased
   3.3 Rent-Free
   3.4 Other

(*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997).)*

Types of Tenure:

Owned: This category applies to heads of households who possess legal title to the dwelling or are in the process of buying the dwelling.

Rented-Private/Government: This applies when the head of the household or any other member rents the dwelling from an individual, company, Government or Government Agency. Rental, although it may be covered by a contract, conveys the idea of payments being made monthly.

Squatted: This applies when households are found occupying an area without permission or without being the owner of any legal rights to the dwelling.

Leased: A lease differs from a rental by an agreed contract, which stipulates payment, in advance, of the total rent for the dwelling during the entire duration of the contract.

Rent-Free: Here, no member of the household pays rent for the occupancy of the dwelling.

Other: This applies when households are occupying the dwelling under conditions different from those specified above.

Method of Computation

The number of households by type of tenure is classified from data from the 2000 Round of Census according to the categories Owned, Squatted, Rent, Leased, Rent-Free and Other, which have been defined in the foregoing section.

Indicator Relevance

Tenure information collected for living quarters shows very clearly the distinction between rented units and units that are owner-occupied, but it fails to distinguish the various forms of subtenancy that exist in many areas, information regarding which could be obtained from a question directed at households, nor does it allow for an investigation of the relationship between tenure and socio-economic characteristics of information through national housing censuses or surveys of heads of the household.

Under some circumstances, it may be useful to indicate separately households that, although not subtenants in the sense that they rent from another occupant who is a main tenant or owner-occupant, rent part of a housing unit from a landlord who lives elsewhere. These households and subtenant households may be of special significance in formulating housing programmes. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997) para: 2.411.)*

Data Assessment

As discussed for indicator PH1, the concept of a household is harmonized both within the region and with international definition.

Of the seventeen countries that provided data for this indicator, only five provided the definition that was used for the concept of tenure. It was, therefore, assumed that all other countries adhered to the internationally recommended definition for tenure.

The five countries that provided type of tenure definitions were Dominica, Jamaica, St. Kitts and Nevis, Suriname and Trinidad and Tobago. Dominica, Jamaica, St. Kitts and Nevis and Trinidad and Tobago followed the internationally recommended definition of type of tenure. In addition, Dominica and St. Kitts and Nevis also specified that the arrangements under which the household occupies all or part of a housing unit must be of a legal and financial nature. Suriname, on the other hand, defined type of tenure as the right to exclusive occupancy, and not as the arrangements under which occupancy occurs. Dominica, Jamaica and St. Kitts and Nevis stated that occupancy should be in living quarters. Suriname and Trinidad and Tobago specified that occupancy should be in a dwelling. This indicator is therefore, partially harmonized within the Region.

Data Sources

Please refer to **Appendix 2.1.2 (a)** for the sources of the data on Households by type of tenure for Member States and Associate Members.

Evaluation

The data presented in **Tables 1.2 (a)** and **(b)** show that 63.9 per cent of households in the Region reported *Owned* for type of tenure and 21 per cent of households reported that they rented. For Associate Members 42.4 per cent reported *Owned*.

Member States with the highest proportions reporting "*Owned*" were Grenada with 81.8 per cent and Trinidad and Tobago, 75.8 per cent, St Vincent and the Grenadines, 75.7 per cent, Saint Lucia 74.6 per cent, and Barbados with 74.7 per cent. Antigua and Barbuda, Jamaica and The Bahamas also reported "*Owned*" as the largest category with 63.1 per cent, 57 per cent and 55.5 per cent respectively. Montserrat with 44.9 per cent recorded the highest per cent for *Rented / Private/Government* type of tenure followed by The Bahamas with 36.5 per cent, Antigua and Barbuda, 32.8 per cent, St Kitts and Nevis, 26.9 per cent, Belize 24 per cent, Jamaica 23.2 per cent, and Barbados 22 per cent. The proportion for all Members States with type of tenure as *Rented/Private/Government* was 21 per cent. *Rent-Free* type of tenure reflected a percentage of 12.1 for all Members with Guyana, Jamaica and Belize recording the highest of 17.4, 15.8 and 12.2 per cent respectively.

For Associate Members the percentage reporting *Owned* was Anguilla 67.1 per cent, Bermuda 43.2, The British Virgin Islands 35.1 per cent, Turks and Caicos Islands 35.6 per cent with an overall proportion of 42.4 per cent. *Rented/Private/Government* type of tenure was recorded by the British Virgin Island as 58.2 per cent, Turks and Caicos Islands as 57.6 per cent, Bermuda 51.1 per cent, Anguilla 30 per cent, and an overall average of 51.7 per cent.

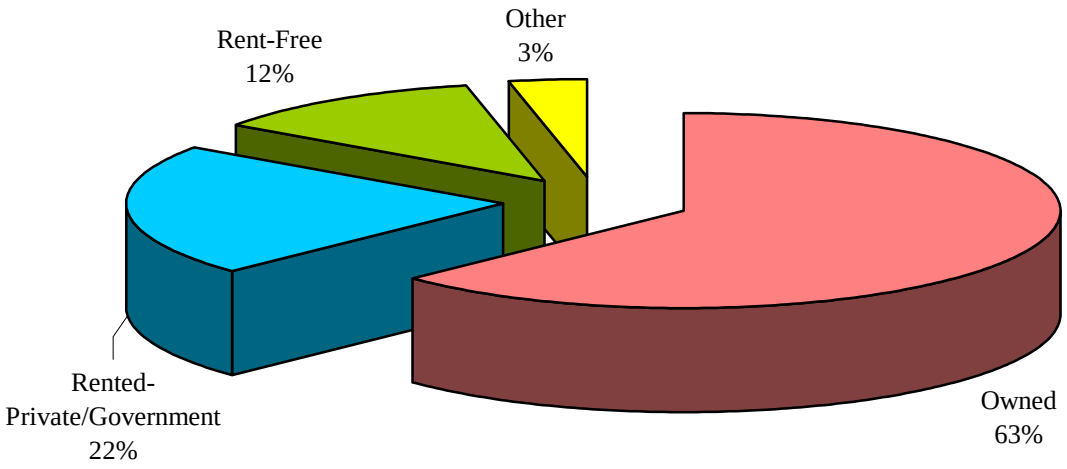
Table 1.2 (a) Number of Households by Type of Tenure: 2000 Round of Census

Country	Year	Owned	Squatted	Rented-Private/ Government	Leased	Rent-Free	Other	Not Stated	Total all Households
AG	2001	12,895		6,707		562	286		20,450
BS	2000	48,660		32,126		6,738	218		87,742
BB	2000	61,904		18,286		2,203	633		83,026
BZ	2000	32,519		12,490		6,353	583		51,945
DM	2001	15,918		4,232		1,880	329		22,359
GD	2001	27,383	142	3,737	42	1,630	543		33,477
GY	2002	116,497	4,218	26,977	965	31,797	386	1,769	182,609
JM	2001	426,445		173,860		118,454	29,567		748,326
MS	2001	849	11	1,046	16	268	90	49	2,329
KN	2001	9,677	101	4,215	13	1,161	129	384	15,680
LC	2001	35,202		8,529		2,545	848		47,124
VC	2001	22,906	131	3,899	27	2,733	482	84	30,262
TT	2000	230,291	1,454	46,145	1,752	20,994	1,391	1,844	303,871
TOTAL MEMBER STATES		1,041,146	6,057	342,249	2,815	197,318	35,485	4,130	1,629,200
ASSOCIATE MEMBERS									
AI	2001	2,504	. . .	1,120	. . .	85	21	. . .	3,730
BM	2000	10,863	. . .	12,854	. . .	1,006	425	. . .	25,148
VG	2001	2,944	2	4,879	15	386	57	103	8,386
TC	2001	2,583	7	4,178	13	464	9	. . .	7,254
TOTAL ASSOCIATE MEMBERS		18,894	9	23,031	28	1,941	512	103	44,518
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		1,060,040	6,066	365,280	2,843	199,259	35,997	4,233	1,673,718

Table 1.2 (b) Percentage Distribution of Households by Type of Tenure: 2000 Round of Census

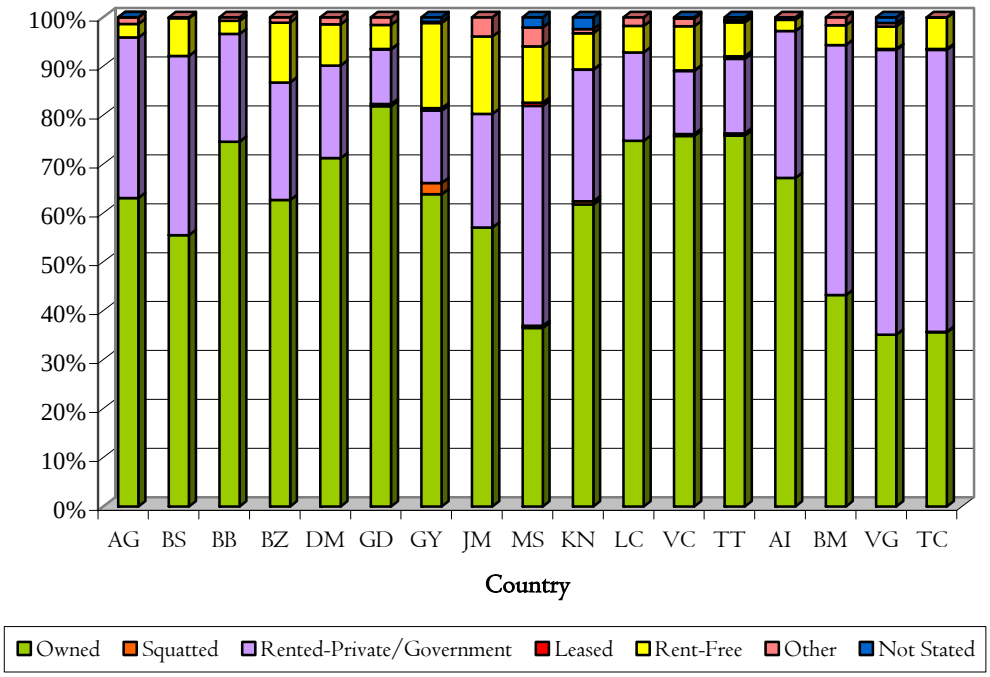
Country	Year	Owned	Squatted	Rented-Private/ Government	Leased	Rent-Free	Other	Not Stated	Total all Households
AG	2001	63.1		32.8		2.7	1.4		100.0
BS	2000	55.5		36.6		7.7	0.2		100.0
BB	2000	74.6		22.0		2.7	0.8		100.0
BZ	2000	62.6		24.0		12.2	1.1		100.0
DM	2001	71.2		18.9		8.4	1.5		100.0
GD	2001	81.8	0.4	11.2	0.1	4.9	1.6	0.0	100.0
GY	2002	63.8	2.3	14.8	0.5	17.4	0.2	1.0	100.0
JM	2001	57.0	0.0	23.2	0.0	15.8	4.0	0.0	100.0
MS	2001	36.5	0.5	44.9	0.7	11.5	3.9	2.1	100.0
KN	2001	61.7	0.6	26.9	0.1	7.4	0.8	2.4	100.0
LC	2001	74.7		18.1		5.4	1.8		100.0
VC	2001	75.7	0.4	12.9	0.1	9.0	1.6	0.3	100.0
TT	2000	75.8	0.5	15.2	0.6	6.9	0.5	0.6	100.0
TOTAL MEMBER STATES		63.9	0.4	21.0	0.2	12.1	2.2	0.3	100.0
ASSOCIATE MEMBERS									
AI	2001	67.1	. . .	30.0	. . .	2.3	0.6	. . .	100.0
BM	2000	43.2	0.0	51.1	0.0	4.0	1.7	0.0	100.0
VG	2001	35.1	0.0	58.2	0.2	4.6	0.7	1.2	100.0
TC	2001	35.6	0.1	57.6	0.2	6.4	0.1	. . .	100.0
TOTAL ASSOCIATE MEMBERS		42.4	0.0	51.7	0.1	4.4	1.2	0.2	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		63.3	0.4	21.8	0.2	11.9	2.2	0.3	100.0

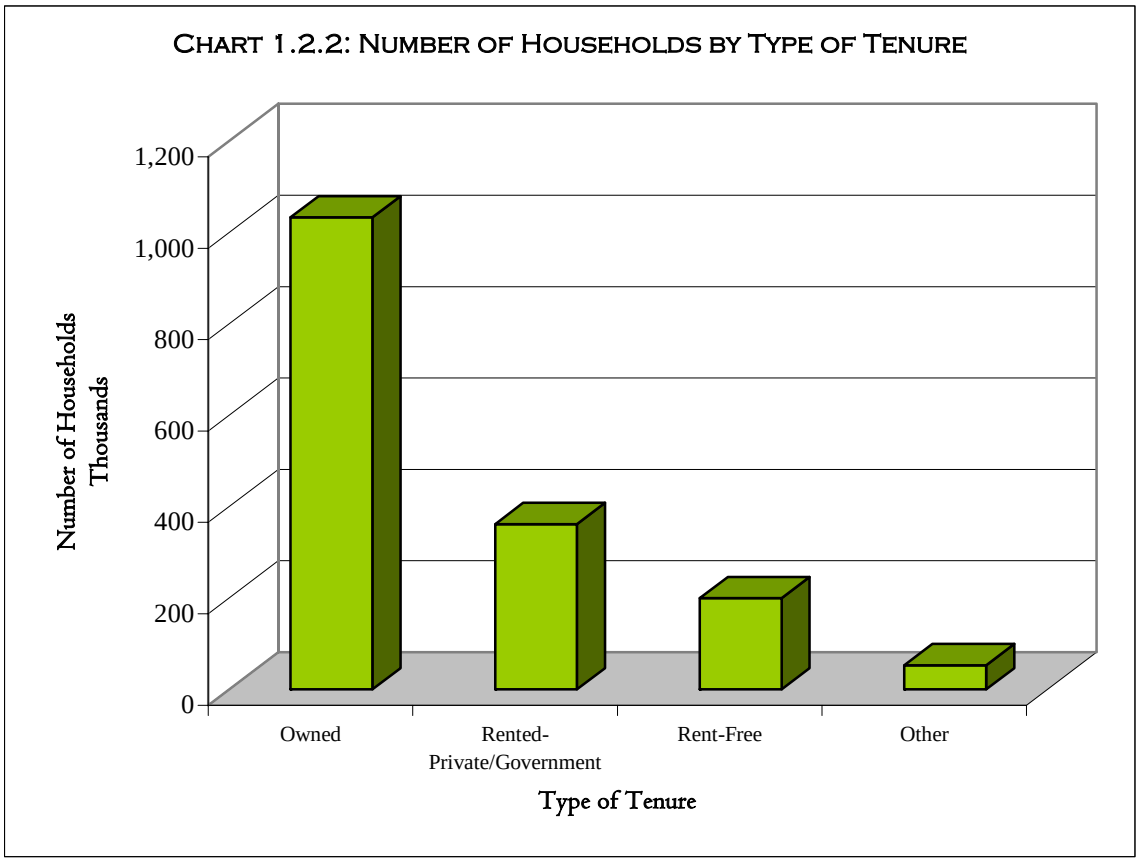
CHART 1.2.1 (A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF TENURE



Note: Other includes Squatted, Leased, Other and Not Stated.

CHART 1.2.1 (B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF TENURE AND MEMBER STATE/ASSOCIATE MEMBER





Note: Other includes Squatted, Leased, Other and Not Stated.

PH3: NUMBER OF HOUSEHOLDS BY TYPE OF MATERIALS OF OUTER WALLS

PH

Concept and Definition

The number of households by type of materials of outer walls refers to the construction material of external (outer) walls of the building in which the sets of living quarters are located. If the walls are constructed of more than one type of material, the predominant type of material should be reported. (*Please refer to the United Nations' Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997).)*

Types of Materials of Outer Walls:

Wood: This is applicable where the walls are made solely of wood.

Concrete: This is applicable where the walls are made solely of concrete.

Wood & Concrete: This category includes walls that are made of both wood and concrete blocks or wood and reinforced concrete.

Stone: This applies to buildings where the walls are made of stone.

Brick/Concrete Block: This applies to buildings where the walls are made of hollow clay blocks or concrete bricks, whether plastered or unplastered.

Adobe is unburnt sun-dried bricks or the clay from which such bricks are made.

Wood/Concrete Block/Galvanize Stucco: This applies where the walls are made of wood, galvanize and concrete blocks.

Makeshift includes any material that is not normally used for housing e.g. galvanize, cardboard, etc. Some persons may use an old car/truck, for example, to provide shelter or live under a bridge or other unconventional dwelling structure.

Other: This includes types of material of construction of outer walls not previously described.

Method of Computation

The number of households by type of materials of outer walls is classified from data from the 2000 Round of Census according to the categories Wood, Concrete, Wood & Concrete, Stone, Brick, Adobe, Make-shift and Other, which have been defined in the foregoing section.

Indicator Relevance

In some countries, the material used for the construction of roofs or of floors may be of special significance for the assessment of durability and, in such cases, it may be necessary to collect information on this as well as on the material of the walls. Durability refers to the period of time for which the structure remains habitable, subject to regular maintenance. A durable structure is one expected to remain sound for a considerable period of time. Countries may wish to define the length of the period, for example, 15 or 20 years.

Durability does not depend solely on the materials used in construction, since it is also affected by the way the building was erected, that is to say, the consideration whether it was built according to construction standards and regulations. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997) para: 2.305)*

Data Assessment

As discussed for indicator PH1, the concept of a household is harmonized both within the region and with the international definition.

The number of households by type of materials of outer walls was obtained from data submitted by Member States and Associate Members. It is assumed that the data collected is in accordance with the international definition. The indicator is partially harmonized

Data Sources

Please refer to **Appendix 2.1.3 (a)** for the sources of the data on the populations and households of Member States and Associate Members.

Evaluation

The highest proportion of houses (43.9 per cent or 715,088) in the Region during the 2000 round of census was made of *Concrete* walls followed by *Wood* (25.0 per cent or 406,728) and *Brick/Concrete Block* (15.5 per cent or 253,238). Among Member States The Bahamas account for 76 per cent of houses with *concrete* outer walls and 15.2 per cent with *Wooden* walls followed by St. Vincent and the Grenadines reporting 71.6 per cent of houses with *Concrete* outer walls and 19.2 per cent with *Wooden* walls (see Tables 1.3 (a) and 1.3 (b)). Guyana reported the highest proportion of houses made of *Wooden* walls (61.6 per cent or 112,557) while Trinidad and Tobago (67 per cent or 203,505) and Barbados (44.3 per cent or 36,819) had the highest proportion of houses made of *Brick/Concrete Block.*

The Associate Member States reported that for most houses, 74.4 per cent or 14,419, the outer walls were made of *Concrete* with the proportion in Anguilla being (93.4 per cent), the Virgin Islands (82.8 per cent) and to a lesser extent Turks and Caicos Islands with 55 per cent.

Table 1.3 (a) Number of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Year	Wood	Concrete	Wood & Concrete	Stone	Brick/ Concrete block
AG	2001	9,023	6,747	4,434	37	25
BS	2000	13,375	66,710	2,537	1,772	65
BB	2000	22,358	1,554	1,797	1,518	36,819
BZ	2000	22,923	20,924	2,231	. . .	29
DM	2001	8,026	10,754	3,300	29	19
GD	2001	13,762	13,696	5,851	22	36
GY	2002	112,557	27,067	34,666	510	761
JM	2001	140,309	515,013	56,764	5,431	11,815
MS	2001	591	1,286	217	0	3
KN	2001	2,890	10,349	2,134	53	3
LC	2001	18,802	19,321	8,247	47	141
VC	2001	5,820	21,667	2,318	94	17
TT	2000	36,292		54,936		203,505
TOTAL MEMBER STATES		406,728	715,088	179,432	9,513	253,238
ASSOCIATE MEMBERS						
AI	2001	101	3,482	98	20	
VG	2001	732	6,947	509	12	5
TC	2001	1,909	3,990	819	68	
TOTAL ASSOCIATE MEMBERS		2,742	14,419	1,426	100	5
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		409,470	729,507	180,858	9,613	253,243

Table 1.3 (a) Cont'd. Number of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Year	Adobe	Wood/ Concrete block/ Galvanize/ Stucco	Make-shift	Other	Not stated/ Don't Know	Total all Households
AG	2001				184		20,450
BS	2000	2,952	. . .	. . .	331		87,742
BB	2000		18,842	. . .	138		83,026
BZ	2000	. . .		33	5,805		51,945
DM	2001	1		185	45		22,359
GD	2001	0		110			33,477
GY	2002	3,325		51	3,477	195	182,609
JM	2001	2,823	4,102		12,069		748,326
MS	2001	0		1	228	3	2,329
KN	2001			75	176		15,680
LC	2001	94		0	472		47,124
VC	2001	91		205	50		30,262
TT	2000	1,279	6,013		686	1,160	303,871
TOTAL MEMBER STATES		10,565	28,957	660	23,661	1,358	1,629,200
ASSOCIATE MEMBERS							
AI	2001	. . .		. . .	29		3,730
VG	2001	. . .		36	145		8,386
TC	2001	. . .	367	8	93		7,254
TOTAL ASSOCIATE MEMBERS		0	367	44	267	0	19,370
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		10,565	29,324	704	23,928	1,358	1,648,570

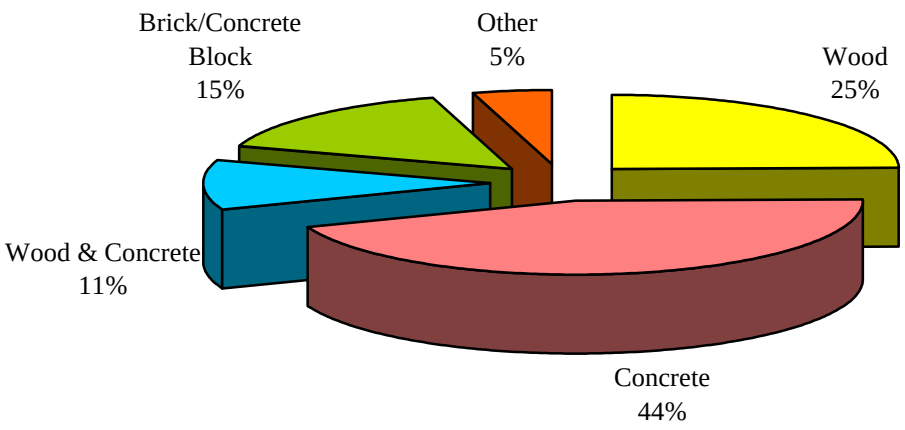
Table 1.3 (b) Percentage Distribution of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Year	Wood	Concrete	Wood & Concrete	Stone	Brick/ Concrete block
AG	2001	44.1	33.0	21.7	0.2	0.1
BS	2000	15.2	76.0	2.9	2.0	0.1
BB	2000	26.9	1.9	2.2	1.8	44.3
BZ	2000	44.1	40.3	4.3	. . .	0.1
DM	2001	35.9	48.1	14.8	0.1	0.1
GD	2001	41.1	40.9	17.5	0.1	0.1
GY	2002	61.6	14.8	19.0	0.3	0.4
JM	2001	18.7	68.8	7.6	0.7	1.6
MS	2001	25.4	55.2	9.3	0.0	0.1
KN	2001	18.4	66.0	13.6	0.3	0.0
LC	2001	39.9	41.0	17.5	0.1	0.3
VC	2001	19.2	71.6	7.7	0.3	0.1
TT	2000	11.9		18.1		67.0
TOTAL MEMBER STATES		25.0	43.9	11.0	0.6	15.5
ASSOCIATE MEMBERS						
AI	2001	2.7	93.4	2.6	0.5	
VG	2001	8.7	82.8	6.1	0.1	0.1
TC	2001	26.3	55.0	11.3	0.9	
TOTAL ASSOCIATE MEMBERS		14.2	74.4	7.4	0.5	0.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		24.8	44.3	11.0	0.6	15.4

Table 1.3 (b) Cont'd. Percentage Distribution of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Year	Adobe	Wood/ Concrete block/ Galvanize/ Stucco	Make-shift	Other	Not stated/ Don't Know	Total all Households
AG	2001	0.0	0.0	0.0	0.9	0.0	100.0
BS	2000	3.4	. . .	. . .	0.4		100.0
BB	2000		22.7	. . .	0.2		100.0
BZ	2000	. . .		0.1	11.2		100.0
DM	2001	0.0	0.0	0.8	0.2	0.0	100.0
GD	2001	0.0		0.3	0.0		100.0
GY	2002	1.8		0.0	1.9	0.1	100.0
JM	2001	0.4	0.5	0.0	1.6	0.0	100.0
MS	2001	0.0		0.0	9.8	0.1	100.0
KN	2001	0.0	0.0	0.5	1.1	0.0	100.0
LC	2001	0.2		0.0	1.0		100.0
VC	2001	0.3		0.7	0.2		100.0
TT	2000	0.4	2.0		0.2	0.4	100.0
TOTAL MEMBER STATES		0.6	1.8	0.0	1.5	0.1	100.0
ASSOCIATE MEMBERS							
AI	2001	. . .		. . .	0.8		100.0
VG	2001	. . .		0.4	1.7		100.0
TC	2001	. . .	5.1	0.1	1.3		100.0
TOTAL ASSOCIATE MEMBERS		0.0	1.9	0.2	1.4	0.0	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		0.6	1.8	0.0	1.5	0.1	100.0

CHART 1.3.1 (A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF MATERIAL OF OUTER WALLS



Note: Other includes Stone, Adobe, Wood/Concrete Block/ Galvanize/Stucco, Makeshift, Other and Not Stated/Don't Know.

CHART 1.3.1 (B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF MATERIAL OF OUTER WALLS AND MEMBER STATE/ASSOCIATE MEMBERS

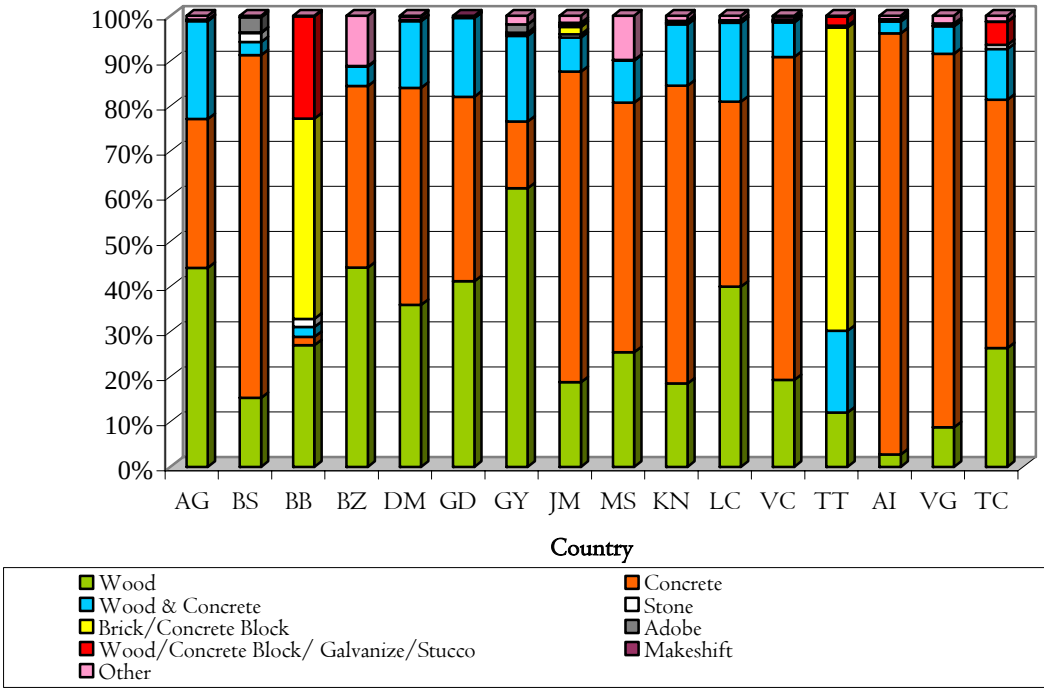
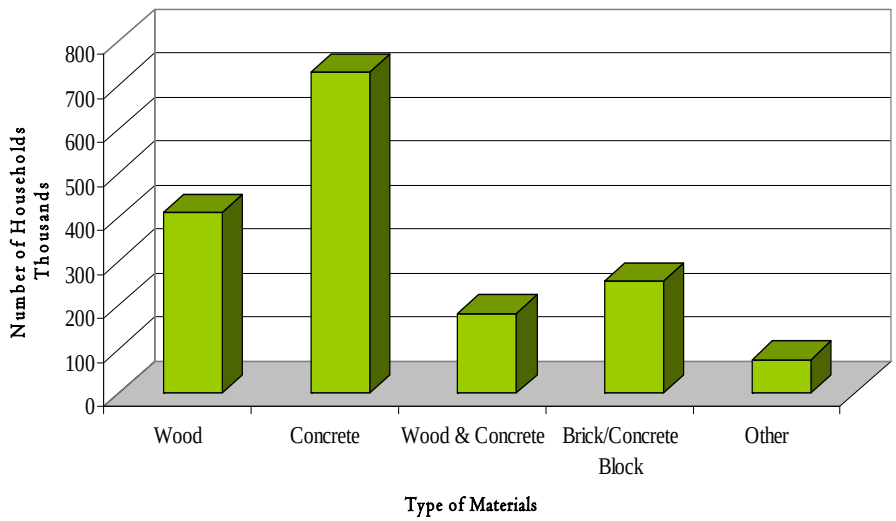


CHART 1.3.2: NUMBER OF HOUSEHOLDS BY TYPE OF MATERIAL OF OUTER WALLS



Note: Other includes Stone, Adobe, Wood/Concrete Block/ Galvanize/Stucco, Makeshift, Other and Not Stated/Don't Know.

PH4: NUMBER OF HOUSEHOLDS BY TYPE OF MATERIAL USED FOR ROOFING

PH

Concept and Definition

The type of material used for roofing refers to the construction material of the roof. Only the predominant material of the roof is enumerated.

Types of Material Used for Roofing:

Sheet metal: Zinc, aluminium galvanize or galvanize

Shingle: Asphalt

Shingle: Wood

Shingle – other: This includes fibreglass or any other type of shingle.

Tile: Concrete, clay and other tiles. This category includes "decramastic" and similar types of roofing tiles.

Concrete: Usually referred to as concrete slab.

Makeshift/Thatched: As in the case of the material used for outer walls, this includes any unconventional material used such as cardboard, the roofs of cars, etc.

Other: Any other material used not mentioned above.

Method of Computation

The number of households by type of material used for roofing is classified from data from the 2000 Round of Census according to the categories Sheet-Metal, Shingle-Asphalt, Shingle-Wood, Shingle-Other, Tile, Concrete, Make-shift, Thatched and Other, which have been defined in the foregoing section.

Indicator Relevance

One of the ways of ascertaining the improvements in the quality of housing structures where people live is by analyzing the material of the roof, wall and floor: the three main components of any house. Data on the construction material of the roof also provides information of the construction and replacement of housing units.

The number of households by type of material used for roofing also determines how many of the households are housed in structurally acceptable housing units. Structural acceptability of housing units implies that these are made of durable construction materials that will safeguard the household occupants from adverse climatic effects and provide protection and privacy. (*Please refer to the Philippines' National Statistics Office website at http://www.census.gov.ph/data/technotes/notecph00.html*.)

Data Assessment

As discussed for indicator PH1, the concept of a household is harmonized both within the region and with international definition.

The number of households by type of material used for roofing was obtained from data submitted by Member States and Associate Members. However, the Member States and Associate Members did not provide the definitions that were used to gather the data for this indicator. The indicator is partially harmonized.

Data Sources

Please refer to **Appendix 2.1.4 (a)** for the sources of the data on the populations and households of Member States and Associate Members.

Evaluation

Most of the roofs of houses in the CARICOM Region were made of *Sheet Metal (Zinc)* (81.5 per cent) followed by *concrete* (11.7 per cent). *Zinc roofing* has a number of environmental benefits including that it is 100 per cent recyclable; nontoxic (in fact, it is a vital mineral often lacking in the body), and uses ½ of the energy in production compared with copper roofing, another metal roofing alternative. It also has a life cycle of 50 to 100 years, bringing its life cycle costs down below shingles or stainless steel.

The proportion of households with roofs made of *Sheet Metal (Zinc)* was higher in Member States (82.3 per cent) than in Associate Member States (33.7 per cent) with Associate Member States reporting more houses with roofs made of *Concrete* (34.5 per cent) and *asphalt shingle* (20.8 per cent).

Data in **Tables 1.4 (a)** and **1.4 (b)** show that the highest proportions of households with roofs made of *Sheet Metal* were found in Grenada (96.4 per cent) followed by Saint Lucia (93.7 per cent) while Anguilla reported the lowest proportion of households living in houses with roofs made of *Sheet Metal* (19.2 per cent).

Houses with *Makeshift* and *Thatched* roofs were low, recording 0.2 or 2,690 and 0.6 per cent or 7,014 respectively.

Table 1.4 (a) Number of Households by Type of Material used for Roofing: 2000 Round of Census

Country	Year	Sheet metal (Zinc)	Shingle- Asphalt	Shingle - Wood	Shingle - other	Tile	Concrete	Make-shift	Thatched	Other	Not stated	Total all Households
AG	2001	18,849	826	124	75	108	232	. . .		236		20,450
BB	2000	73,539	4,997	464	. . .	1,124	1,121	. . .		1,781		83,026
BZ	2000	41,617	. . .	. . .	204	. . .	4,297	. . .		5,827		51,945
DM	2001	20,097	554	84	40	25	1,468	10		81		22,359
GD	2001	32,278	578	116	85	135	235	12		38		33,477
GY	2002	164,873	1,104	1,755	1,839	1,953	325	2,522	7,014	1,199	25	182,609
JM	2001	583,434	. . .	10,054	7,902	2,626	128,535	. . .		15,775		748,326
MS	2001	1,297	594	64	6	0	299	0		63	6	2,329
KN	2001	10,818	3,400	201	40	40	928	14		80	159	15,680
LC	2001	44,155	1,272	188	47	47	895	47		473		47,124
VC	2001	27,175	975	150	67	69	1,550	31		192	53	30,262
TOTAL MEMBER STATES		1,018,132	14,300	13,200	10,305	6,127	139,885	2,636	7,014	25,745	243	1,237,587
ASSOCIATE MEMBERS												
AI	2001	716	25	. . .	63	10	2,806	8		70	32	3,730
VG	2001	3,928	182	319	23	53	3,600	1		258	22	8,386
TC	2001	1,875	3,830	740	282	198	284	45		0		7,254
TOTAL ASSOCIATE MEMBERS		6,519	4,037	1,059	368	261	6,690	54	0	328	54	19,370
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		1,024,651	18,337	14,259	10,673	6,388	146,575	2,690	7,014	26,073	297	1,256,957

Table 1.4 (b) Percentage Distribution of Households by Type of Material used for Roofing: 2000 Round of Census

Country	Year	Sheet metal (Zinc)	Shingle- Asphalt	Shingle - Wood	Shingle - other	Tile	Concrete	Make-shift	Thatched	Other	Not stated	Total all Households
AG	2001	92.2	4.0	0.6	0.4	0.5	1.1	0.0		1.2		100.0
BB	2000	88.6	6.0	0.6	0.0	1.4	1.4	0.0		2.1		100.0
BZ	2000	80.1	0.0	0.0	0.4	0.0	8.3	0.0		11.2		100.0
DM	2001	89.9	2.5	0.4	0.2	0.1	6.6	0.0		0.4		100.0
GD	2001	96.4	1.7	0.3	0.3	0.4	0.7	0.0		0.1		100.0
GY	2002	90.3	0.6	1.0	1.0	1.1	0.2	1.4	3.8	0.7	0.0	100.0
JM	2001	78.0	0.0	1.3	1.1	0.4	17.2	0.0	0.0	2.1	0.0	100.0
MS	2001	55.7	25.5	2.7	0.3	0.0	12.8	0.0		2.7	0.3	100.0
KN	2001	69.0	21.7	1.3	0.3	0.3	5.9	0.1	0.0	0.5	1.0	100.0
LC	2001	93.7	2.7	0.4	0.1	0.1	1.9	0.1		1.0		100.0
VC	2001	89.8	3.2	0.5	0.2	0.2	5.1	0.1		0.6	0.2	100.0
TOTAL MEMBER STATES		82.3	1.2	1.1	0.8	0.5	11.3	0.2	0.6	2.1	0.0	100.0
ASSOCIATE MEMBERS												
AI	2001	19.2	0.7	0.0	1.7	0.3	75.2	0.2		1.9	0.9	100.0
VG	2001	46.8	2.2	3.8	0.3	0.6	42.9	0.0		3.1		100.0
TC	2001	25.8	52.8	10.2	3.9	2.7	3.9	0.6		0.0		100.0
TOTAL ASSOCIATE MEMBERS		33.7	20.8	5.5	1.9	1.3	34.5	0.3	0.0	1.7	0.3	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		81.5	1.5	1.1	0.8	0.5	11.7	0.2	0.6	2.1	0.0	100.0

CHART 1.4.1 (A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF MATERIAL USED FOR ROOFING

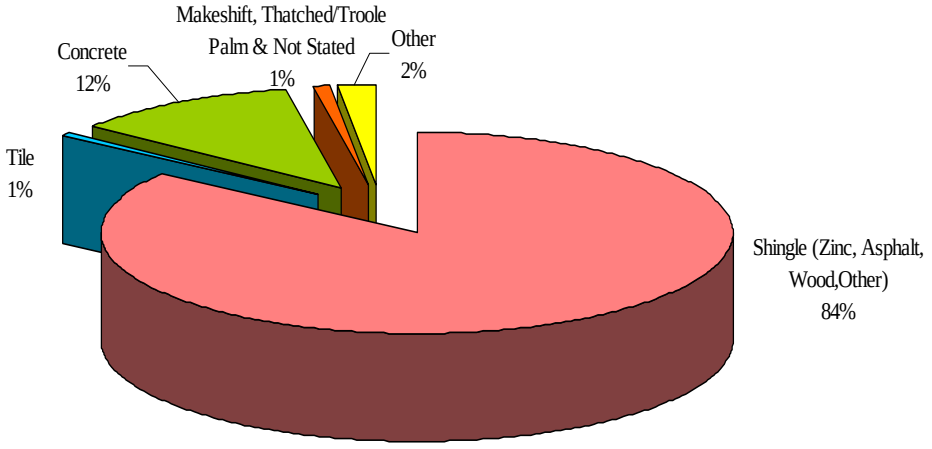


CHART 1.4.1 (B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY MATERIALS USED FOR ROOFING AND MEMBER STATE/ASSOCIATE MEMBER

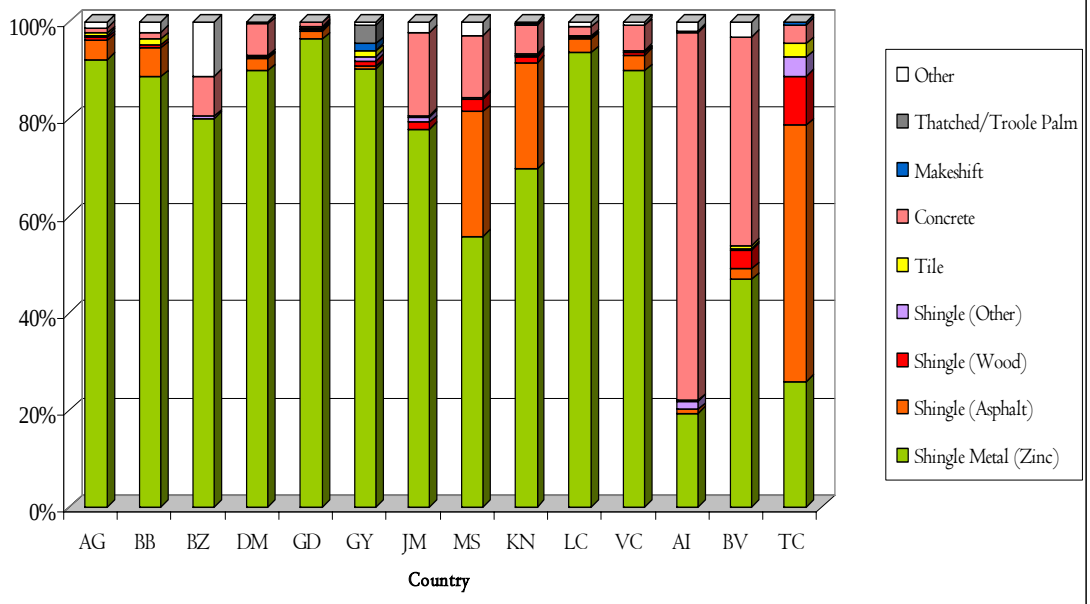
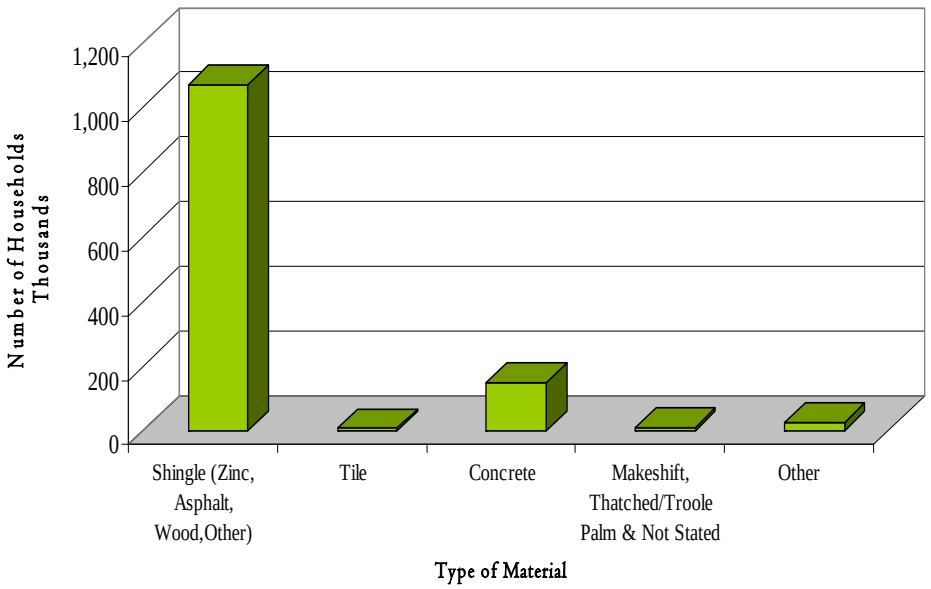


CHART 1.4.2: NUMBER OF HOUSEHOLDS BY TYPE OF MATERIAL USED FOR ROOFING



PH5: HOUSEHOLDS BY NUMBER OF BEDROOMS

PH

Concepts and Definitions

A bedroom is defined as a room equipped with a bed and used for night rest. A room is defined as a space in a housing unit or other living quarters enclosed by walls reaching from the floor to the ceiling or roof covering, or to a height of at least two metres, of an area large enough to hold a bed for an adult, that is, at least four square metres. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997) paras. 2.375 and 2.423.)*

Household by number of bedrooms is the number of permanent sleeping quarters that one or more persons who occupy a dwelling (living quarters) has/have.

Average Number of Bedrooms per Household is the ratio of the total number of bedrooms per household to the total number of households.

Average Household Size is the estimated number of persons forming a household. It is the ratio of the total population to the total number of households.

Average number of persons per bedroom refers to the estimated number of persons occupying a bedroom.

Method of Computation

Average Household Size:

$$\frac{\text{Total Population}}{\text{Total Number of Households}}$$

Average Number of Bedrooms per Household:

$$\frac{\text{Total Number of Bedrooms per Household}}{\text{Total Number of Households}}$$

Average Number of Persons per Bedroom:

$$\frac{\text{Average Size of Household}}{\text{Average Number of Bedrooms per Household}}$$

Indicator Relevance

The number of households by number of bedrooms allows density levels to be studied according to the number of bedrooms available in relation to the number of occupants. The number of households by number of bedrooms is also a useful indicator for assessing the current housing situation and measuring the need for housing. (*Please* refer *to the United*

Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997) para. 2.404.)

Data Assessment

As discussed for indicator PH1, the concept of a household is harmonized both within the region and in the international realm.

The number of households by number of bedrooms was obtained from data submitted by Member States and Associate Members. It is assumed that the data collected is in accordance with the international definition. The indicator is partially harmonized.

Bermuda reported 25,148 as the total number of households. This total is reflected in all of the indicators but this one: number of households by number of bedrooms, for which the total is reported as 24,763. This difference in the number of households was attributed to the fact that 385 households were omitted from this indicator because they were grouped.

Data Sources

Please refer to **Appendix 2.1.5 (a)** for the sources of the data on the populations and households of Member States and Associate Members.

Evaluation

The majority of households in the Region reported that they lived in a *two-bedroom* unit (32.9 per cent), followed by *one-bedroom* units (25.6 per cent) and *three-bedroom* or larger units (25.4 per cent). Six countries including two Associate Member States reported data on average number of persons per bedroom which shows that all countries had more than one person per bedroom. The average number of persons per bedroom was higher in Grenada (1.65) and Saint Lucia (1.60) compared Bermuda (1.23) and St. Vincent and the Grenadines (1.29).

The average size of households for the ten reporting countries ranged from 2.5 in Bermuda to 3.7 persons per household in Trinidad and Tobago. Of the countries which provided data on number of bedrooms per household, St. Vincent and the Grenadines had the highest (2.7) whereas Turks and Caicos Islands reported the least number of bedrooms per household (1.9). (See **Tables 1.5 (a) and (b)).**

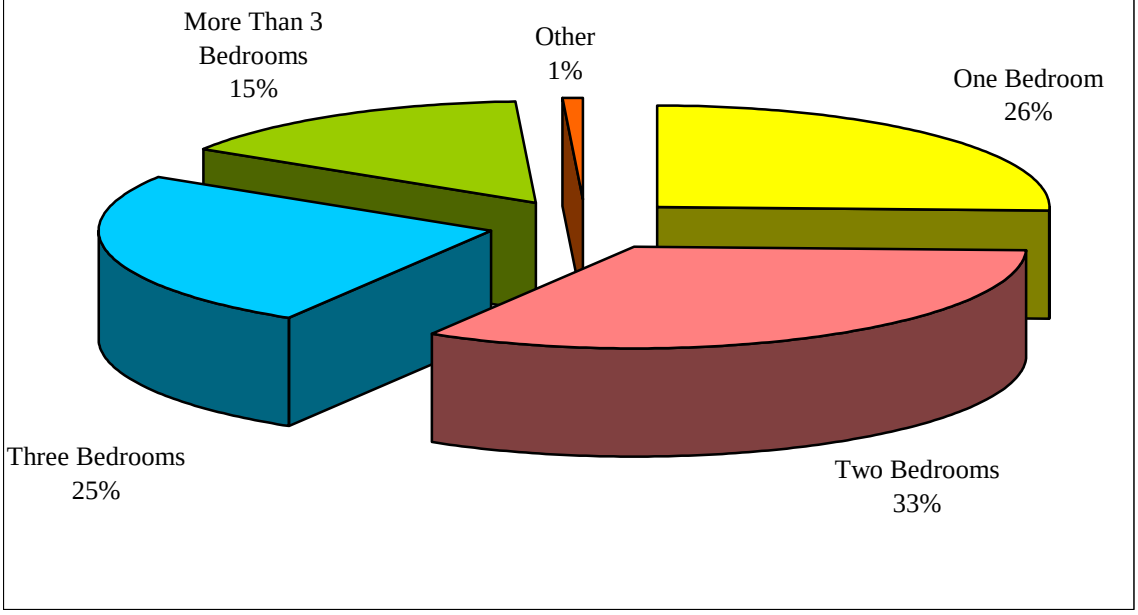
Table 1.5(a) - Households by Number of Bed Rooms: 2000 Round of Census

Country	Year	No bedroom	One bedroom	Two bedrooms	Three bedrooms	More than three bedrooms	Not Stated/ Don't Know	Total all households	Average number of bedrooms per household	Average size of the household	Average number of persons per bedroom
AG	2001	163	3,029	7,750	7,121	2,357	30	20,450	. . .	. . .	. . .
BS	2000	. . .	5,525	12,188	23,109	46,920	. . .	87,742	. . .	. . .	. . .
BB	2000	. . .	9,300	24,998	39,929	8,799	. . .	83,026	. . .	3.2	. . .
BZ	2000	2,451	12,223	18,969	12,920	5,382	. . .	51,945	. . .	4.5	...
DM	2001	. . .	1,233	5,396	6,150	9,580	. . .	22,359	. . .	3.1	. . .
GD	2001	1,069	5,448	14,526	9,687	2,747	. . .	33,477	2	3.3	1.7
GY	2002	...	54,033	68,600	46,291	13,685		182,609	a	a	a
JM	2001	. . .	266,843	262,486	132,374	86,623		748,326	2	3.2	1.5
MS	2001	. . .	446	929	579	173	202	2,329	. . .	. . .	. . .
KN	2001	. . .	991	2,831	3,930	7,928		15,680			
LC	2001	1,367	13,195	16,493	10,085	5,984	. . .	47,124	2	3	2
VC	2001		1,855	5,548	8,718	14,141	. . .	30,262	3	3.5	1.3
TT	2000	3,699	43,447	96,685	111,525	45,009	3,506	303,871	. . .	3.67	. . .
TOTAL MEMBER STATES		8,749	417,568	537,399	412,418	249,328	3,738	1,629,200			
ASSOCIATE MEMBERS											
AI	2001	. . .	594	1,156	1,151	623	206	3,730	...	3.1	. . .
BM	2000	1,188	6,385	8,964	6,866	1,319	41	24,763	2.03	2.47	1.23
VG	2001	0	997	2,033	2,645	2,711	0	8,386	. . .	. . .	
TC	2001	791	2,724	1,722	1,137	880	. . .	7,254	1.87	2.74	1.47
TOTAL ASSOCIATE MEMBERS		1,979	10,700	13,875	11,799	5,533	247	44,133			
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		10,728	428,268	551,274	424,217	254,861	3,985	1,673,333			

Table 1.5(b) - Percentage distribution of Households by Number of Bed Rooms: 2000 Round of Census

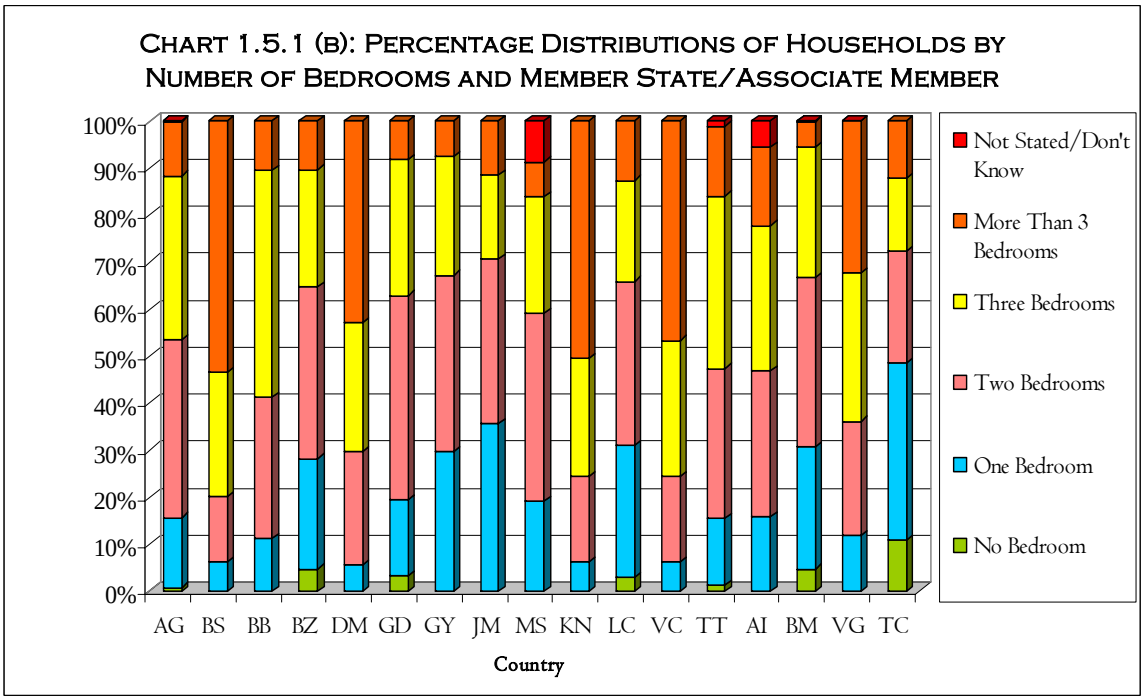
Country	Year	No bedroom	One bedroom	Two bedrooms	Three bedrooms	More than three bedrooms	Not Stated/ Don't Know	Total all households	Average number of bedrooms per household	Average size of the household	Average number of persons per bedroom
AG	2001	0.8	14.8	37.9	34.8	11.5	0.1	100	. . .	. . .	. . .
BS	2000	. . .	6.3	13.9	26.3	53.5	. . .	100	. . .	. . .	. . .
BB	2000	. . .	11.2	30.1	48.1	10.6	. . .	100	. . .	3.2	. . .
BZ	2000	4.7	23.5	36.5	24.9	10.4	0.0	100	. . .	0.0	...
DM	2001	. . .	5.5	24.1	27.5	42.8	. . .	100	. . .	3.1	. . .
GD	2001	3.2	16.3	43.4	28.9	8.2	. . .	100	2	3.3	1.7
GY	2002	0.0	29.6	37.6	25.3	7.5	0.0	100	a	a	a
JM	2001	. . .	35.7	35.1	17.7	11.6	. . .	100	2	3.2	1.5
MS	2001	. . .	19.1	39.9	24.9	7.4	8.7	100	. . .	. . .	. . .
KN	2001	0.0	6.3	18.1	25.1	50.6	0.0	100	. . .	. . .	. . .
LC	2001	2.9	28.0	35.0	21.4	12.7	. . .	100	2	3	2
VC	2001		6.1	18.3	28.8	46.7	. . .	100	3	3.5	1.3
TT	2000	1.2	14.3	31.8	36.7	14.8	1.2	100	. . .	3.67	. . .
TOTAL MEMBER STATES		0.5	25.6	33.0	25.3	15.3	0.2	100	. . .	. . .	. . .
ASSOCIATE MEMBERS											
AI	2001	. . .	15.9	31.0	30.9	16.7	5.5	100	...	3.1	. . .
BM	2000	4.8	25.8	36.2	27.7	5.3	0.2	100	2.03	2.47	1.23
VG	2001	0.0	11.9	24.2	31.5	32.3	0.0	100	. . .	. . .	
TC	2001	10.9	37.6	23.7	15.7	12.1	. . .	100	1.87	2.74	1.47
TOTAL ASSOCIATE MEMBERS		4.5	24.2	31.4	26.7	12.5	0.6	100	. . .	. . .	. . .
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		0.6	25.6	32.9	25.4	15.2	0.2	100	. . .	. . .	. . .

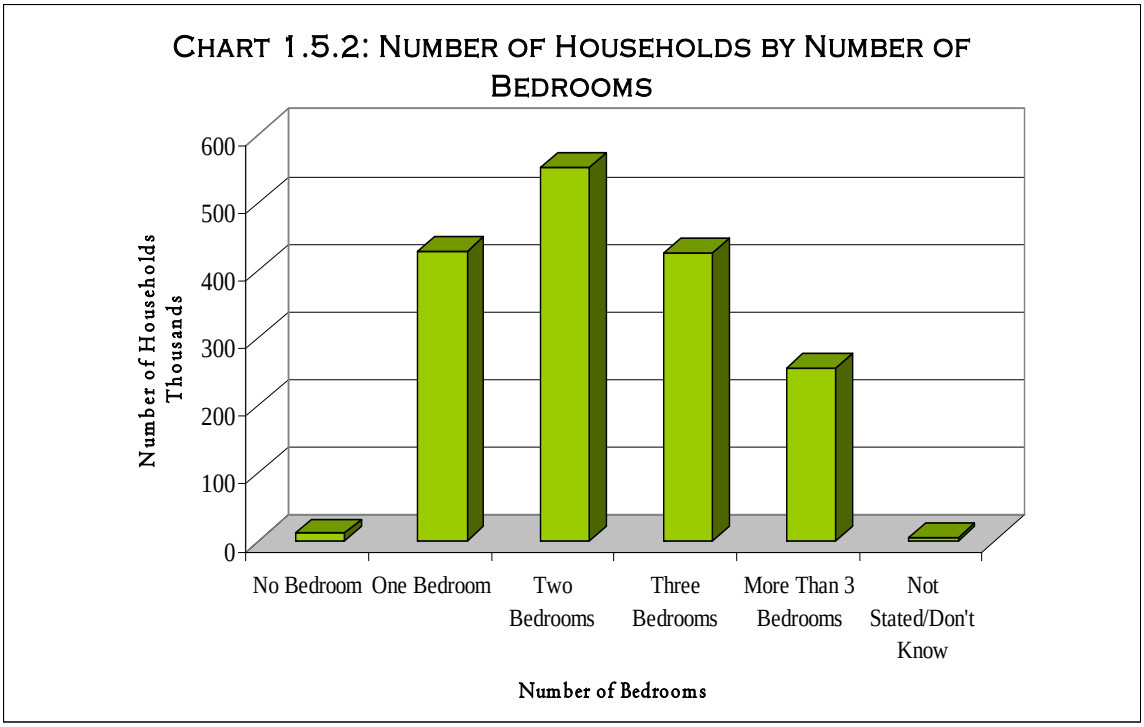
CHART 1.5.1 (A): HOUSEHOLDS BY NUMBER OF BEDROOOMS



Note: Other includes No Bedroom and Not Stated/Don't Know.

CHART 1.5.1 (B): PERCENTAGE DISTRIBUTIONS OF HOUSEHOLDS BY NUMBER OF BEDROOMS AND MEMBER STATE/ASSOCIATE MEMBER





Note: Other includes No Bedroom and Not Stated/Don't Know.

PH6: POPULATION BY SIZE OF HOUSEHOLD

H

Concept and Definition

The population by size of household is the ratio of the total population to the total number of households.

The concept of a household is based on the arrangements made by persons, individually or in groups, for providing themselves with food or other essentials for living. A household may be either (a) a one-person household, that is to say, a person who makes provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household or (b) a multi-person household, that is to say, a group of two or more persons living together who make common provision for food or other essentials for living. The persons in the group may pool their incomes and may, to a greater or lesser extent, have a common budget; they may be related or unrelated persons or constitute a combination of persons both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1997*) para: 1.324.)

Method of Computation

Population by Size of Household:

$$\frac{\text{Total Population}}{\text{Total Number of Households}}$$

The population by size of household is classified from data from the 2000 Round of Census according to the categories: One person households, Two person households, Three person households, Four person households and Five or more person households.

Indicator Relevance

Household size affects the pattern of consumption of goods and services which could be shared among household members. For example, in industrialized countries, decreasing household size is one of the factors causing an increase in per capita and aggregate energy use in residential buildings, including lighting, heating and fuel for cooking. Other goods and services which may be affected by household size include water supply, solid waste disposal and household appliances. The population by household size, therefore, monitors the number of persons per household which is an important factor that may affect household consumption in the residential sector.

Households, population in households and number of family nuclei by size of households is important information for planners and suppliers of goods and services, for agencies dealing with housing problems and for the planning of sample surveys.

Data Assessment

As discussed for indicator PH1, the concept of a household is harmonized both within the region and in the international realm. The population by size of household was derived from data submitted by Member States and Associate Members. The indicator is harmonized.

Data Sources

Please refer to **Appendix 2.1.6 (a)** for the sources of the data on the Population by Size of Households of Member States and Associate Members.

Evaluation

According to data given in **Table 1.6 (a)** and **(b)** below, households in the CARICOM region comprised 29.4 per cent of Households reporting *five or more persons* and 19.5 per cent reporting *One-person* households.

St Kitts and Nevis had the highest percentage of *One-person* Household with 33.3 per cent followed by Montserrat with 31.9 per cent, Dominica with 29 per cent Barbados 24.7 per cent, St Vincent and the Grenadines 24.3 per cent an the Bahamas with 21 per cent. Within the *Five or more person* category, Belize reported the highest with 44.1 per cent, followed by Guyana with 37.3 per cent, Suriname 34.2 per cent, Trinidad and Tobago with 29.9 per cent and the Bahamas with 21 per cent. Barbados has the highest *Two person Household* with 23 per cent followed by The Bahamas with 20 per cent.

For the Associate Members 31.5 per cent of Households were reported for *One-person* Households with the British Virgin Islands reporting 41.7 per cent, Turks and Caicos Islands 29.7 per cent, Bermuda 29.3 per cent, and Anguilla with 27.1 per cent. For *Two person* Households Bermuda reported the highest proportion of 30 per cent among Associate Members while the remaining countries reported over 21 per cent with the exception of the British Virgin Islands.

Table 1.6(a) Number of Households by Size of Household: 2000 Round of Census

Country	Year	Size of household					Total households	Average size of household
		One person	Two person	Three person	Four person	Five or more persons		
BS	2000	18,407	17,543	14,769	13,846	23,177	87,742	. . .
BB	2000	20,512	19,065	15,375	13,104	14,970	83,026	3.2
BZ	2000	6,219	6,724	7,676	8,411	22,915	51,945	4.5
DM	2001	6,483	4,388	3,398	3,045	5,045	22,359	3.1
GY	2002	22,409	26,491	30,743	34,871	68,095	182,609	. . .
JM	2001	169,226	136,069	125,221	111,766	206,044	748,326	3.5
MS	2001	744	447	389	334	415	2,329	. . .
KN	2001	5,214	2,917	2,287	2,039	3,223	15,680	. . .
VC	2001	7,354	5,027	4,546	4,509	8,855	30,291	. . .
SR	2004	18,479	20,032	20,429	22,353	42,170	123,463	3.9
TT	2000	46,259	52,478	54,734	59,495	90,905	303,871	3.7
TOTAL MEMBER STATES		321,306	291,181	279,567	273,773	485,814	1,651,641	. . .
ASSOCIATE MEMBERS								
AI	2001	1,009	792	598	546	785	3,730	3.1
BM	2000	7,358	7,539	4,489	3,683	2,079	25,148	2.47
VG	2001	3,500	1,312	1,121	856	1,597	8,386	. . .
TC	2001	2,153	1,854	1,281	818	1,148	7,254	2.7
TOTAL ASSOCIATE MEMBERS		14,020	11,497	7,489	5,903	5,609	44,518	. . .
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		335,326	302,678	287,056	279,676	491,423	1,696,159	. . .

Table 1.6(b) - Percentage distribution of Households by Size of Household: 2000 Round of Census

Country	Year	Size of household					Total households	Average size of household
		One person	Two person	Three person	Four person	Five or more persons		
BS	2000	21.0	20.0	16.8	15.8	26.4	100	. . .
BB	2000	24.7	23.0	18.5	15.8	18.0	100	3.2
BZ	2000	12.0	12.9	14.8	16.2	44.1	100	4.5
DM	2001	29.0	19.6	15.2	13.6	22.6	100	3.1
GY	2002	12.3	14.5	16.8	19.1	37.3	100	. . .
JM	2001	22.6	18.2	16.7	14.9	27.5	100	3.5
MS	2001	31.9	19.2	16.7	14.3	17.8	100	. . .
KN	2001	33.3	18.6	14.6	13.0	20.6	100	. . .
VC	2001	24.3	16.6	15.0	14.9	29.2	100	. . .
SR	2004	15.0	16.2	16.5	18.1	34.2	100	3.9
TT	2000	15.2	17.3	18.0	19.6	29.9	100	3.7
TOTAL MEMBER STATES		19.5	17.6	16.9	16.6	29.4	100	. . .
ASSOCIATE MEMBERS								
AI	2001	27.1	21.2	16.0	14.6	21.0	100	3.1
BM	2000	29.3	30.0	17.9	14.6	8.3	100	2.5
VG	2001	41.7	15.6	13.4	10.2	19.0	100	. . .
TC	2001	29.7	25.6	17.7	11.3	15.8	100	2.7
TOTAL ASSOCIATE MEMBERS		31.5	25.8	16.8	13.3	12.6	100	. . .
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		19.8	17.8	16.9	16.5	29.0	100	. . .

CHART 1.6.1 (A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY SIZE OF HOUSEHOLD

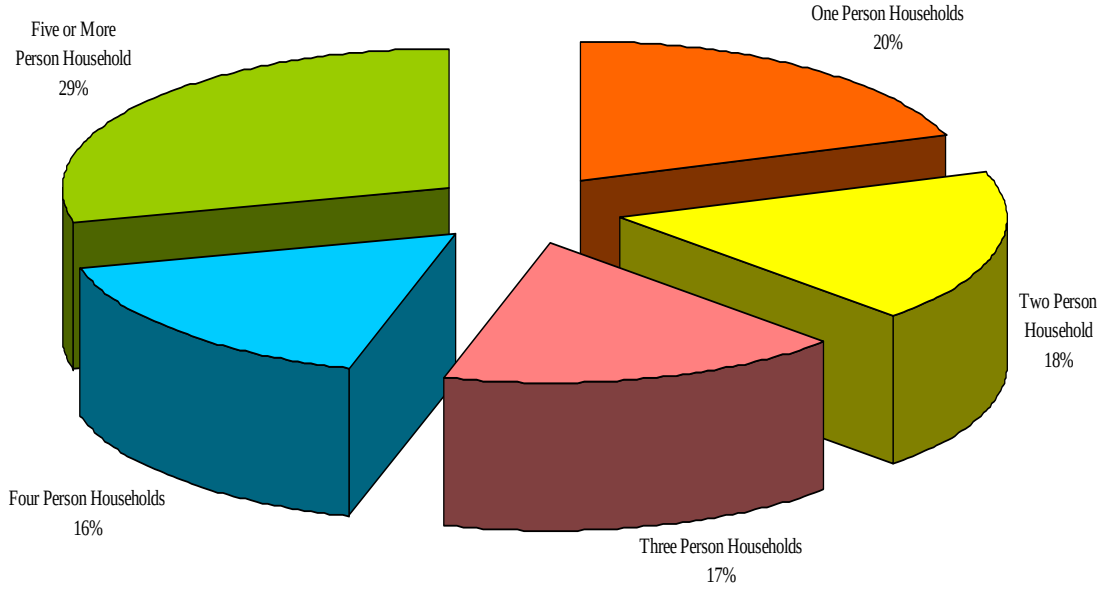


CHART 1.6.1 (B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY SIZE OF HOUSEHOLD AND MEMBER STATE/ASSOCIATE MEMBER

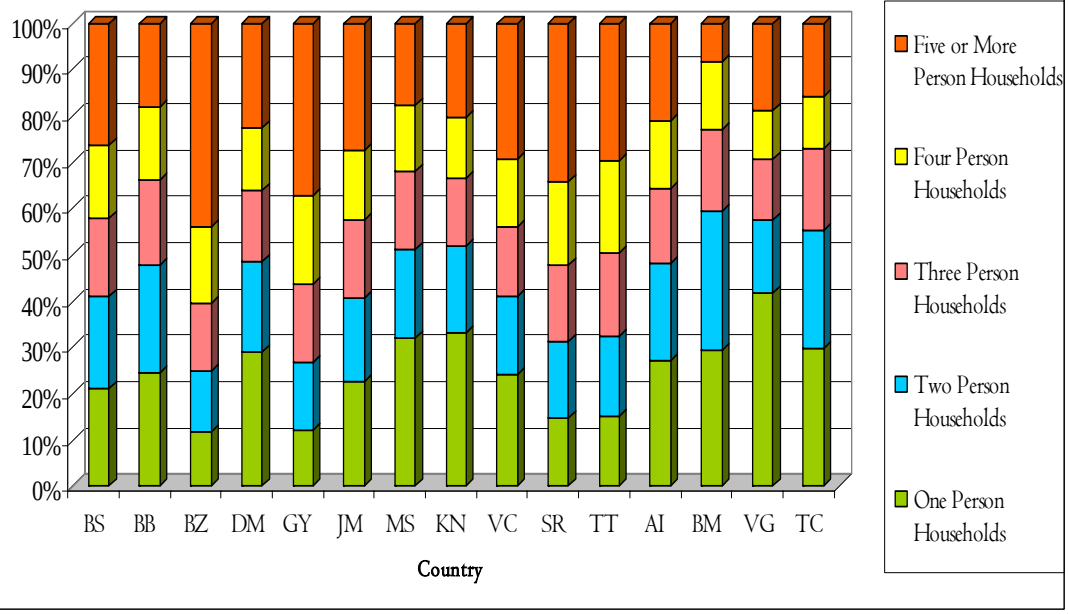
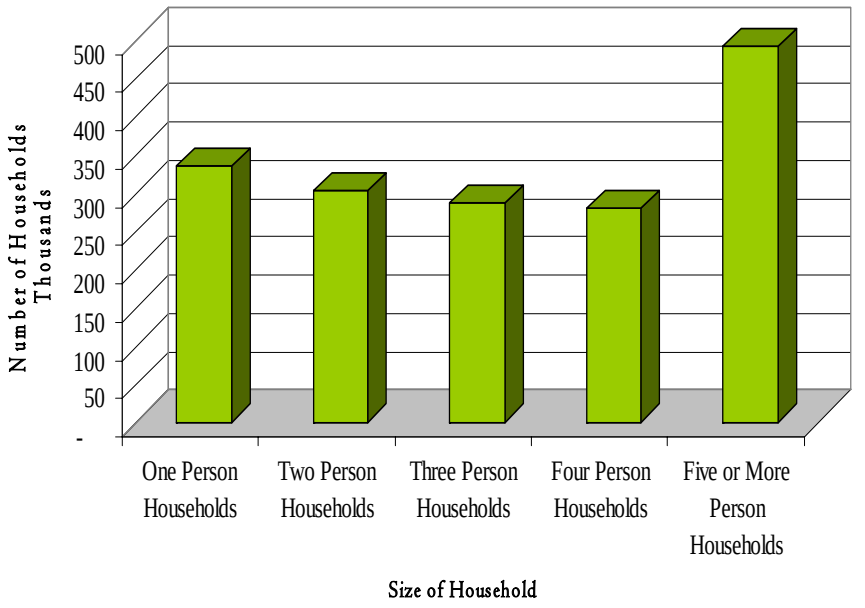


CHART 1.6.2: NUMBER OF HOUSEHOLDS BY SIZE OF HOUSEHOLD



Appendix 1.1
Concepts of Dwelling, Tenure and Household by Member State and Associate Member

Country	Concept of Household	Concept of Dwelling	Concept of Tenure
Anguilla		- A residential building can consist of one or more private dwelling units. For example a detached single house is one residential building and one private dwelling unit. - An apartment building is one residential building but many private dwelling units. - A private dwelling unit may be a single house, flat, apartment, outroom, part of a commercial building, hotel or a boarding house catering for less than six persons.	
Antigua and Barbuda		Any building/edifice/ structure or separate and independent part of a building/edifice/structure wherein resides a person or group of persons—Private Households, at the time of the census enumeration process.	
The Bahamas	The concept of a household for the census applies to a single individual or groups of individuals who occupy the same dwelling. Four types of households were identified for the purpose of enumeration. They composite any of the following: a person living alone; a family with or without lodgers or servants; a group of unrelated persons living together and occupants of		

	institutions, hotels and other collective dwellings.		
Barbados	A household, for the purposes of the Census, consists of a person or group of persons living together in a dwelling unit. Where there are several persons living together as a household, these persons may comprise a single family, but there are also households where the members are not members of one family.	A private dwelling unit is either a separate building or an independent part of a building used or intended to be used for living purposes. The key factors in identifying a dwelling unit are separateness and independence entrances without having to pass through the living quarters of another household.	
Belize		Dwelling units are classified in the 2000 Census as: Undivided Private House, Part of House, Flat, Double House, Business welling, Barracks and Other.	
Bermuda	For purposes of the 2000 Census, a household is a person or group of person living together in a dwelling unit. In most cases, the members of a household are related by family ties but there are three main variations: A servant who sleeps in the same dwelling unit as his/her employed, i.e. does not have separate quarters equipped with cooking and sleeping facilities, etc is included as a member of the employer's household; a boarders or lodger, i.e. a person who sleeps and/or eats in the dwelling and takes meals with the household is considered a member of the household; and a group of unrelated persons living together and	A private dwelling unit is a room or group of rooms used, or intended to be used, for living purposes. It must be capable of permanent human habitation and must have: (i) Its own separate access to the street or common landing or staircase, and (ii) Its own cooking, living, sleeping and sanitary facilities which the occupants of the dwelling do not have to share with any persons other than their own household members.	

	sharing one dwelling unit.		
Dominica	A private household consists of one or more persons living together (i.e. sleeping most nights of a week 4 out of 7) and sharing at least one daily meal. It is important to note that a member of a household need not be a relative of the main family. For example, a boarder or domestic servant who sleeps inmost nights of the week is a member of the household. It is possible for a household to consist of just one person, or of more than one family, as long as they share living arrangements. A group of unrelated persons living together can also comprise a household.		This relates to the legal and financial arrangements under which the household occupies its living quarters.
Guyana		A dwelling unit is any building or separate and independent part of a building in which a person or group of persons is living at the time of census enumeration. It must have direct access from the street or common landing, staircase, passage or gallery where occupants can enter or leave without passing through anybody else's living quarters. One dwelling unit may have one or more household.	
Jamaica	A household may consist of one person who lives alone or a group of person who, as a unit, jointly occupy the whole or part of a dwelling unit, who have common	A dwelling is any building or separate part of a building/housing unit in which a person or group of persons lived at the time of the census. It therefore represents the living	Questions on tenure relate to the conditions under which households occupied their living quarters.

	arrangements for housekeeping, and who generally share at least one meal. The household may be composed of related persons only, of unrelated persons, or of a combination of both.	quarters of those present. The key factors in identifying a dwelling were separateness and independence. Occupiers of a dwelling unit must have free access to the street by their own separate and independent entrances without having to pass through the living quarters of another household. It is possible for several households to be contained in one dwelling.	
Saint Lucia		A dwelling unit is any building or separate and independent part of a building in which a person or group of persons (private household) are living at the time of the census enumeration. The essential features of a dwelling unit are "separateness" and "independence".	
St. Kitts and Nevis	A private household consists of one or more persons living together (i.e. sleeping most nights of a week 4 out of 7) and sharing at least one daily meal. It is important to note that a member of a household need not be a relative of the main family. For example, a boarder or domestic servant who sleeps inmost nights of the week is a member of the household. It is possible for a household to consist of just one person, or of more than one family, as long as they share living arrangements. A group of	A dwelling unit is any building or separate and independent part of a building in which a person or group of persons is living at the time of the Census Enumeration. It must have direct access from the street or common landing; staircase, passage or gallery where occupants can enter or leave without passing through anybody else's living quarters.	This is a description of the legal and financial arrangements under which the household occupies its living quarters. For Census purposes, the following Dwelling Tenure classifications were used: Owned, Squatted, Rented-Private, Rented-Government, leases, rent-Free, and Other.

	unrelated persons living together can also comprise a household.		
Suriname		A dwelling unit is every separate and independent part of a building/house in which a person or group of persons (private household) lives or can live. The essential features are “separateness” and “independence”. A dwelling unit is separate if it has walls or another form of separation and is covered with a roof or a ceiling. A dwelling unit is independent if it has direct access from the street or a common yard, by common stairs, common passage or gallery. It is important that the inhabitants can come and go without passing through the dwelling of another household.	Right to the exclusive occupancy and use of a specified area of land or dwelling.
Trinidad and Tobago	A private household is defined as one or more persons living together and sharing at least one of the main daily meals. It is important to note that a member of the household is not necessarily a relative of the main family. For example, a boarder or a domestic employee who sleeps-in most nights of the week and shares at least one of the daily meals is also included as a member of the household.	A dwelling unit is any building or separate and independent part of a building in which a person or group of persons (private household) are living at the time of the census enumeration. The essential features of a dwelling unit are “separateness” and “independence”.	The type of tenure of the dwelling unit refers to the conditions/living arrangements under which a private household occupies all or part of it.

Appendix 2.1

2.1.1 (a) Sources of Data for Table 1.1 - Number of Households by Type of Dwelling: 2000 Round of Census

Country	Year	Data Source
ANTIGUA AND BARBUDA	2001	Basic Table Volume
THE BAHAMAS	2000	Census Data
BARBADOS	2000	Census Data
BELIZE	2000	Census Data
DOMINCA	2001	Census Data
GRENADA	2001	2001 Population and Housing Census
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Census Data
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
SAINT LUCIA	2001	2001 Population and Housing Census report
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
TRINIDAD AND TOBAGO	2000	Central Statistical Office/ 2000 Population and Housing Census
ANGUILLA	2001	Census Data
BERMUDA	2000	Census Data
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
TURKS AND CAICOS	2001	TCI 2001 Population and Housing Census

2.1.1 (b) Notes for Table 1.1 - Number of Households by Type of Dwelling: 2000 Round of Census

Country	Notes
ANTIGUA AND BARBUDA	Other includes Not Stated
THE BAHAMAS	Other includes Not Stated
BELIZE	Other includes Not Stated
DOMINCA	Other includes Not Stated
GRENADA	Other includes Not Stated
GUYANA	Not Stated includes Don't Know
JAMAICA	Data available in per cent
MONTSERRAT	Other includes Not Stated. Other types of dwelling include shelters.
SAINT LUCIA	Other includes Not Stated
TRINIDAD AND TOBAGO	Undivided private house refers to separate house. Out-room, Wafda and Group Dwelling are included in Other. Other private dwelling is included in Part of a private house
BRITISH VIRGIN ISLANDS	Other includes Not Stated
TURKS AND CAICOS	Other includes Not Stated. Out-room, Wafda, Other Private Dwelling and Group dwelling are included in Other. Townhouse = townhouse/condominium. Flat/apartment/condominium = apartment.

2.1.2 (a): Sources of Data for Table 1.2 - Number of Households by Type of Tenure: 2000 Round of Census

Country	Year	Data Source
ANTIGUA AND BARBUDA	2001	Basic Table Volume
THE BAHAMAS	2000	Census Data
BARBADOS	2000	2000 Population and Housing Census
BELIZE	2000	Census Data
DOMINCA	2001	2001 Population and Housing Census
GRENADA	2001	2001 Population and Housing Census
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Statistical Institute of Jamaica, Population Census 2001
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
SAINT LUCIA	2001	2001 Population and Housing Census report
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
TRINIDAD AND TOBAGO	2000	Census Data
ANGUILLA	2001	Census Data
BERMUDA	2000	Population and Housing Census, 2000, & 2004 Household Expenditure Survey
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
THE TURKS AND CAICOS ISLANDS	2001	Census Data

2.1.2 (b): Notes for Table 1.2 - Number of Households by Type of Tenure: 2000 Round of Census

Country	Notes
ANTIGUA AND BARBUDA	Not Stated includes Don't Know
DOMINCA	Other includes Not Stated
GUYANA	Not Stated includes Don't Know
MONTSERRAT	Other includes Not Stated. Other types of tenure include shelters.
ST VINCENT AND THE GRENADINES	Not Stated includes Don't Know
TRINIDAD AND TOBAGO	Not Stated includes Don't Know
ANGUILLA	Other includes Not Stated
BERMUDA	Other Includes 385 Group Dwellings
BRITISH VIRGIN ISLANDS	Not Stated includes Don't Know
THE TURKS AND CAICOS ISLANDS	Lease includes Lease-Private and Lease-Government. Rent = rented private + rented government

2.1.3 (a): Sources of Data for Table 1.3 – Number of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Year	Data Source
ANTIGUA AND BARBUDA	2001	Basic Table Volume
THE BAHAMAS	2000	2000 Census Report
BARBADOS	2000	2000 Population and Housing Census, Volume 1
BELIZE	2000	Census Data
DOMINCA	2001	Census Data
GRENADA	2001	Census Data
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Census Data
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
SAINT LUCIA	2001	Census Data
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
TRINIDAD AND TOBAGO	2000	Census Data
ANGUILLA	2001	Census Data
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
THE TURKS AND CAICOS ISLANDS	2001	Census Data

2.1.3 (b): Notes for Table 1.3 – Number of Households by Type of Materials of Outer Walls: 2000 Round of Census

Country	Notes
ANTIGUA AND BARBUDA	Other includes Don't Know
THE BAHAMAS	Other includes Not Stated
BARBADOS	Other includes Not Stated
BELIZE	Other includes Not Stated
DOMINCA	Other includes Not Stated
GRENADA	Other includes Not Stated
GUYANA	Wood/ concrete block refers to Clay Brick. Not stated includes don't know.
JAMAICA	Other includes Not Stated
MONTSERRAT	Other includes Not Stated; Not Stated includes Don't Know. Other types of walls include sheet rock, galvanise, etc.
SAINT LUCIA	Other includes Not Stated
ST VINCENT AND THE GRENADINES	Other includes Not Stated
TRINIDAD AND TOBAGO	Wood/ galvanise refers to wood/ concrete block/ galvanise/ Stucco. Abode refers to wattle/adobe/tapia
ANGUILLA	Other includes Not Stated
BRITISH VIRGIN ISLANDS	Other includes Not Stated
THE TURKS AND CAICOS ISLANDS	Other includes Not Stated. Wood/concrete block/galvanise. Stucco refers to Wood/Stucco

2.1.4 (a): Sources of Data for Table 1.4 - Number of Households by Type of Material Used for Roofing: 2000 Round of Census

Country	Year	Data Source
ANTIGUA AND BARBUDA	2001	Basic Table Volume
BARBADOS	2000	2000 Population and Housing Census, Volume 1
BELIZE	2000	Census Data
DOMINCA	2000	2001 Population and Housing Census
GRENADA	2001	2001 Population and Housing Census
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Population Census 2001
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
SAINT LUCIA	2001	2001 Population and Housing Census report
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
ANGUILLA	2001	Census 2001
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
THE TURKS AND CAICOS ISLANDS	2001	TCI 2001 Population & Housing Census

2.1.4 (b): Notes for Table1. 4 - Number of Households by Type of Material Used for Roofing: 2000 Round of Census

Country	Notes
ANTIGUA AND BARBUDA	Other includes Don't Know
DOMINCA	Other includes Don't Know
GUYANA	Not Stated includes Don't Know
JAMAICA	Other includes Not Reported
MONTSERRAT	Not Stated includes Don't Know
ST VINCENT AND THE GRENADINES	Other includes Don't Know
ANGUILLA	Make-shift includes Thatched
BRITISH VIRGIN ISLANDS	Other refers to Other/Don't Know/Not Stated

2.1.5 (a): Sources of Data for Table 1.5 - Households by Number of Bedrooms: 2000 Round of Census

Country	Year	Data Source
ANTIGUA AND BARBUDA	2001	Basic Table Volume
THE BAHAMAS	2000	Census Data
BARBADOS	2000	2000 Population and Housing Census, Volume 1
BELIZE	2000	Census Data
DOMINCA	2000	Census Data
GRENADA	2001	Census Data
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Census Data
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
SAINT LUCIA	2001	Census Data
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
TRINIDAD AND TOBAGO	2000	Census Data
ANGUILLA	2001	Census Data
BERMUDA	2000	Population and Housing Census, 2000, & 2004 Household Expenditure Survey
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
THE TURKS AND CAICOS ISLANDS	2001	Census Data

2.1.5 (b): Notes for Table 1.5 - Households by Number of Bedrooms: 2000 Round of Census

Country	Notes
GUYANA	a- No data is available on number of bedrooms
JAMAICA	Other includes Not Reported
MONTSERRAT	Not Stated/ Don't Know includes Not Stated and Undefined
TRINIDAD AND TOBAGO	The average number of bedrooms could not be calculated.
BERMUDA	No bedroom refers to Studio dwelling (0 bedrooms) Total number of households. Excludes 385 Group dwelling households

2.1.6 (a): Sources of Data for Table 1.6 - Population by Size of Household: 2000 Round of Census

Country	Year	Data Source
THE BAHAMAS	2000	Census Data
BARBADOS	2000	2000 Population and Housing census, Volume 1
BELIZE	2000	Census data
DOMINCA	2000	1991 and 2001 Population and Housing Census
GUYANA	2002	Basic Table Volume
JAMAICA	2001	Census Data
MONTSERRAT	2001	Basic Table Volume
ST KITTS AND NEVIS	2001	Basic Table Volume
ST VINCENT AND THE GRENADINES	2001	Basic Table Volume
SURINAME	2004	Census Data
TRINIDAD AND TOBAGO	2000	Central Statistical Office/ 2000 Population and Housing Census
ANGUILLA	2001	Census Data
BERMUDA	2000	Population and Housing Census, 2000, & 2004 Household Expenditure Survey
BRITISH VIRGIN ISLANDS	2001	Basic Table Volume
THE TURKS AND CAICOS ISLANDS	2001	TCI 2001 Population and Housing Census

2.1.6 (b): Notes for Table 1.6 - Population by Size of Household: 2000 Round of Census

Country	Notes
BERMUDA	Group dwellings represent 385 households which are dispersed throughout the table.

TOR1 (a): TOURIST ARRIVALS BY TYPE OF ARRIVAL AND NUMBER OF TOURIST NIGHTS SPENT

DK

Concept and Definition

A visitor is a traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited. These trips taken by visitors qualify as tourism trips. *Tourism* refers to the activity of visitors.(*Please refer to the 2008* ***International Recommendations for Tourism Statistics (IRTS)*** *for United Nations World Tourism Organization and United Nations Statistics Division*)

Visitor: A *visitor* is a traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited. These trips taken by visitors qualify as tourism trips. (*IRTS 2008 para. 2.13.)*

Stopover: A visitor (domestic, inbound or outbound) is classified as a *tourist* (or overnight visitor), if his/her trip includes an *overnight* stay, or as a same-day visitor (or excursionist) otherwise. (*IRTS 2008 para. 2.13.)*

Same-day visitor (or excursionist): A visitor (domestic, inbound or outbound) is classified as a tourist (or overnight visitor), if his/her trip includes an overnight stay, or as a *same-day visitor* (or excursionist) otherwise. (*IRTS 2008 para. 2.13.)*

Cruise passengers are regarded as a special type of same-day visitor (even if the ship overnights at the port) who stay less than twenty-four hours in the country visited.

Cruise ship arrivals refer to the number of times cruise ships enter the country. A cruise ship can be counted multiple times if it leaves the country, then returns with new passengers within the same month.

Number of tourist nights spent refers to the number of nights that a guest actually spends (sleeps or stays) or is registered (his/her physical presence there being unnecessary) in a collective accommodation establishment or in private tourism accommodation.

Method of Computation

Data for this indicator was obtained through the analysis of the embarkation/disembarkation (E/D) cards which must be completed for the various immigration authorities, as part of the frontier formalities, by visitors on arrival at the destination.

Some tourists visit more than one country while in the Caribbean or may make repeat visits to a particular destination. In such cases, each visit is recorded as a new arrival. It should also be noted that there are a significant number of Caribbean residents visiting other countries in the region. This intra-Caribbean travel is done largely by those on business and those visiting friends and relatives.

Nights spent by residents and non-residents: Overnight stays are calculated by country of residence of the guest and by month. Normally, the date of arrival is different from the date of departure, but persons arriving after midnight and leaving on the same day are included in overnight stays. A person should not be registered in two accommodations at the same time. The overnight stays of non-tourists (e.g. refugees) should be excluded, if possible.

Indicator Relevance

Tourism exerts pressures on the existing scarce resources in a country and generates a disproportionately high level of waste, which must be managed in an organized manner. Data on tourist arrivals, therefore, indicate tourism hotspots and pressures on the environment linked to land use and resources, as well as travel levels. They also provide information on other needs of tourists that may have environmental and social implications (accommodation, public catering, transport in cities, employment, etc.). (*Please refer to the European Environment Agency's website at http://ims.eionet.europa.eu/Sectors_and_activities/ Tourism/indicators/tourism_intensity/to08arrivals.pdf.)*

The duration of stay is a very important statistical datum since besides being the most significant measure of the volume of tourism of any kind, it is instrumental in establishing the maximum limit beyond which the visit is no longer considered a tourism visit (one year) and in distinguishing between tourists and same day visitors. The duration of stay or trip is also useful, albeit indirectly, for assessing tourism expenditure, especially if the average duration is calculated for homogeneous groups of visitors or trips.

An increase in the number and size of cruise ships, and hence an increase in the number of cruise passengers, puts pressure on countries to increase the size of their harbour and the number of facilities that are available for cruise passengers. Cruise ships in the Caribbean are also estimated to produce more than 70,000 tons of waste each year. Solid waste and littering can degrade the physical appearance of the water and shoreline and can cause the death of marine animals.

Data Assessment

Fourteen Member States and Associate Members reported data on the number of Non-residents (stop over) arrivals or Tourists. Bermuda reported data on the number of Non-residents arrivals for all tables. With the exception of Belize no country provided the definition of Non-residents (stop over) arrivals. Belize reported that Non-residents (stop over) refers to

overnight tourists. It is therefore difficult to assess how categories of arrivals such as Nationals residing abroad, Transit passengers, Crews and Frequent border crossers were classified when compiling the data.

St. Vincent and the Grenadines and British Virgin Islands also reported data for same-day visitors and day trippers respectively.

Of the nine countries that provided data for the number of tourist nights spent, five provided the average number of nights spent and the remaining countries provided data for the total number of nights spent. Those five countries were Dominica, Grenada, Jamaica, the British Virgin Islands and The Turks and Caicos Islands.

Data Sources

The main data sources for the information provided in this report are the Central Statistical Offices and the National Tourist Offices of the individual countries. Details are given in the notes to the tables in Appendix **1.2.1 (a)**.

Evaluation

Data on Tourist arrivals by type of arrivals is presented in **Table 2.1 (a)** below. For the period 1990 to 2004 countries reported steady increases overall with declines in the number of tourist arrivals in the year 2001 and 2002. The number of *Stop over* tourist arrivals to the region has since increased. Tourist arrivals was greater in The Bahamas and Jamaica than other countries in the Region with tourist arrivals to the Bahamas averaging more than 1.5 million visitors per year while Jamaica averaged 1 million tourists per year. The Bahamas was also the favorite destination for cruise passengers followed by Jamaica during the period. Cruise Passenger arrivals increased in most Member States after 2001 in comparison to the declines in tourist arrivals by air. Of the countries which supplied data in 2004, Cruise ship arrivals were greater in The Bahamas (43.9 per cent), Barbados (11.4 per cent) and Jamaica (10.4 per cent).

Table 2.1 (a) Tourists, Same-day Visitors, Cruise ships arrivals and Average/Number of Tourist nights spent by year: 1990, 1995, 1998-2005

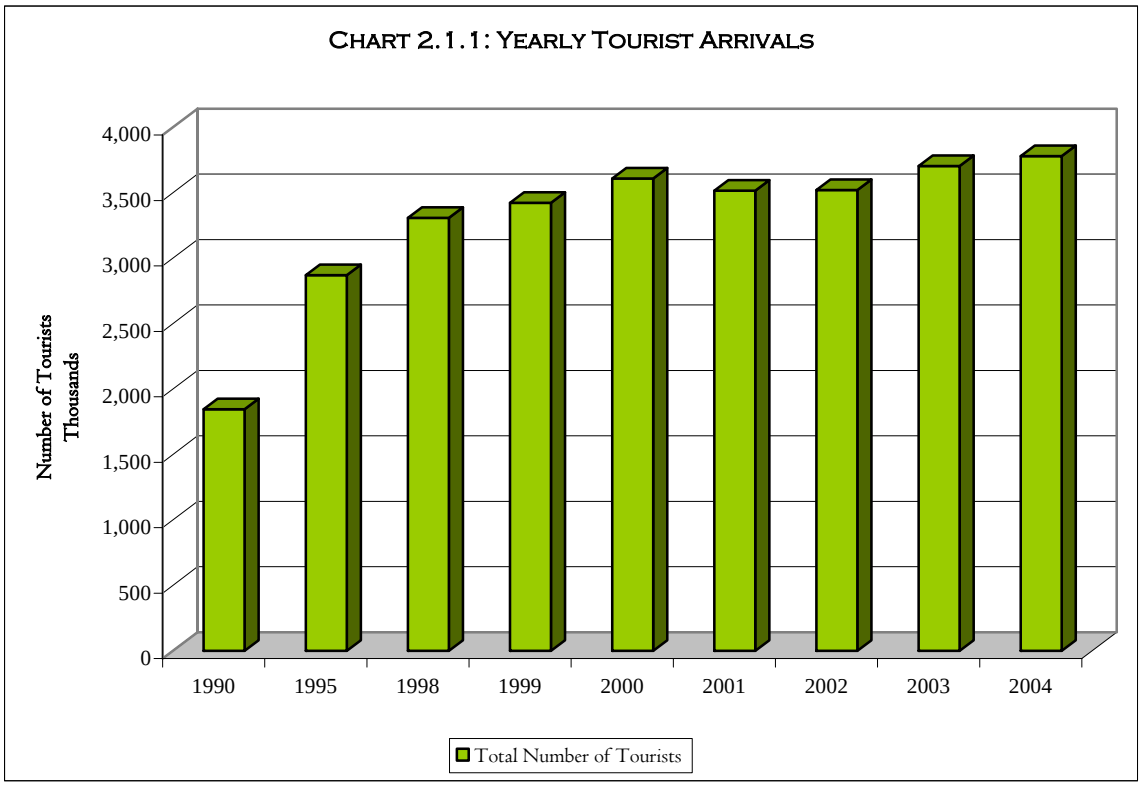
Country	Year	Stop over (Tourists)	Same-day Visitors		Cruise ships arrivals	Average/Number of tourists nights spent
			Cruise passengers	Other		
BS						
	1990	1,561,665	1,853,897	. . .	. . .	8,962,855
	1995	1,598,135	1,543,495	. . .	1,771	9,031,455
	1998	1,527,707	1,729,894	. . .	1,482	. . .
	1999	1,577,066	1,981,471	. . .	1,891	. . .
	2000	1,543,959	2,512,626	. . .	1,875	9,048,361
	2001	1,537,780	2,551,673	. . .	. . .	8,972,782
	2002	1,513,151	2,802,112	. . .	1,759	8,703,805
	2003	1,510,169	2,970,174	. . .	1,976	8,956,743
	2004	1,561,312	3,360,012	. . .	2,068	9,898,181
BB						
	1990	432,092	362,611	. . .	534	2,306,825
	1995	442,107	484,670	. . .	573	437,401
	1998	512,614	506,610	. . .	446	2,485,688
	1999	514,614	432,854	. . .	404	2,459,605
	2000	544,696	533,278	. . .	485	2,695,000
	2001	507,078	527,597	. . .	453	507,078
	2002	497,899	523,253	. . .	423	497,899
	2003	531,211	559,119	. . .	442	2,031,313
	2004	551,502	721,270	. . .	539	2,460,447
BZ						(average)
	1995	130,809	7,953	. . .	. . .	. . .
	1998	176,054	14,183	. . .	. . .	. . .
	1999	180,795	34,130	. . .	52	. . .
	2000	195,766	58,131	. . .	70	7.6
	2001	195,955	48,116	. . .	48	7.6
	2002	199,521	319,690	. . .	200	7.6
	2003	220,574	575,196	. . .	315	6.8
	2004	230,832	851,436	. . .	406	. . .
DM						(average)
	1990	45,087	6,777	. . .	40	. . .
	1995	60,471	134,921	. . .	267	. . .
	1998	65,501	244,603	. . .	268	9.4
	1999	73,506	202,003	. . .	263	9.2
	2000	69,598	239,796	. . .	287	9.2
	2001	66,393	207,627	. . .	231	7.8
	2002	69,193	136,859	. . .	187	8.6
	2003	73,190	177,044	. . .	206	9.7
	2004	80,077	383,614	. . .	299	9.5
GD						(average)
	1990	82,008	183,159	. . .	343	. . .
	1995	94,552	249,879	. . .	446	7.4
	1998	104,151	265,875	. . .	328	7.4
	1999	114,540	245,461	. . .	369	7.3
	2000	128,864	180,308	. . .	360	7.2
	2001	123,351	147,381	. . .	288	7.2
	2002	132,416	135,061	. . .	259	7.3
	2003	142,355	146,925	. . .	267	7.7
	2004	133,865	229,800	. . .	249	7.5

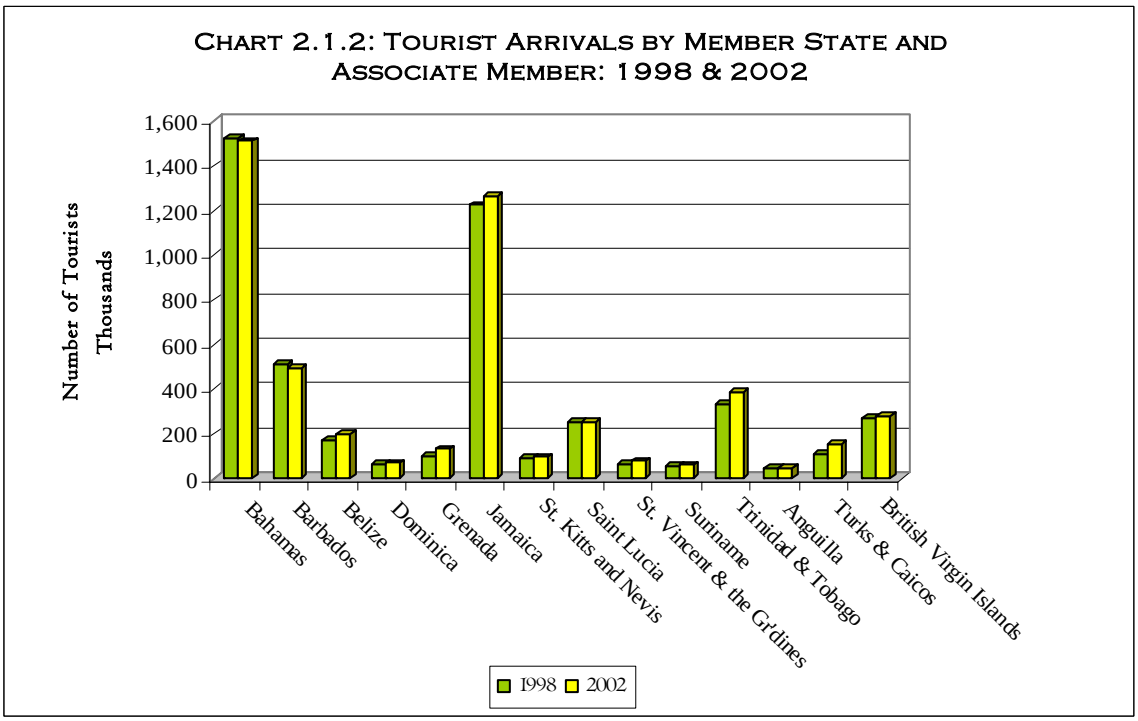
Table 2.1 (a) Contd. Tourists, Same-day Visitors, Cruise ships arrivals and Average/Number of Tourist nights spent by year: 1990, 1995, 1998-2005

Country	Year	Stop over (Tourists)	Same-day Visitors		Cruise ships arrivals	Average/Number of tourists nights spent
			Cruise passengers	Other		
JM						(average)
	1990	840,777	385,205	. . .	336	11
	1995	1,147,001	605,178	. . .	440	11
	1998	1,225,287	673,690	. . .	457	11
	1999	1,248,397	764,341	. . .	488	10
	2000	1,322,690	907,611	. . .	499	10
	2001	1,276,516	840,337	. . .	423	10
	2002	1,266,366	865,419	. . .	396	10
	2003	1,350,285	1,132,596	. . .	510	10
	2004	1,414,786	1,099,773	. . .	482	10
KN						
	1995	98,848	121,405	. . .	. . .	. . .
	1998	90,566	162,821	. . .	. . .	. . .
	1999	84,002	144,912	. . .	. . .	. . .
	2000	73,149	164,611	. . .	. . .	. . .
	2001	70,565	252,172	. . .	. . .	. . .
	2002	95,677	167,230	. . .	. . .	. . .
	2003	...	146,317	. . .	. . .	. . .
LC						
	1990	140,987	101,948	. . .	226	1,480,364
	1995	231,259	169,571	. . .	265	2,081,331
	1998	252,237	372,068	. . .	345	2,320,580
	1999	263,793	351,233	. . .	356	2,400,516
	2000	269,850	443,551	. . .	389	2,576,999
	2001	250,132	489,912	. . .	378	2,426,045
	2002	253,463	387,180	. . .	245	2,337,255
	2003	276,948	393,240	. . .	262	2,602,450
	2004	298,431	481,279	. . .	328	2,811,351
VC						
	1990	60,206	85,258	31,154	. . .	. . .
	1995	67,228	34,903	20,882	. . .	. . .
	1998	68,293	47,743	17,468	. . .	. . .
	1999	72,895	86,247	21,135	. . .	. . .
	2000	70,636	76,494	15,049	. . .	. . .
	2001	77,631	70,314	13,062	. . .	. . .
	2002	78,535	64,608	13,696	. . .	. . .
	2003	86,721	77,585	12,936	225	. . .
	2004	95,505	69,391	8,928	181	. . .
	2005					
SR		54,584	. . .	. . .	. . .	. . .
	1998	57,275	. . .	. . .	. . .	. . .
	1999	56,841	. . .	. . .	. . .	. . .
	2000	54,341	. . .	. . .	. . .	. . .
	2001	60,223	. . .	. . .	. . .	. . .
	2002	82,298	. . .	. . .	. . .	. . .
	2003	840,777	385,205	. . .	336	11

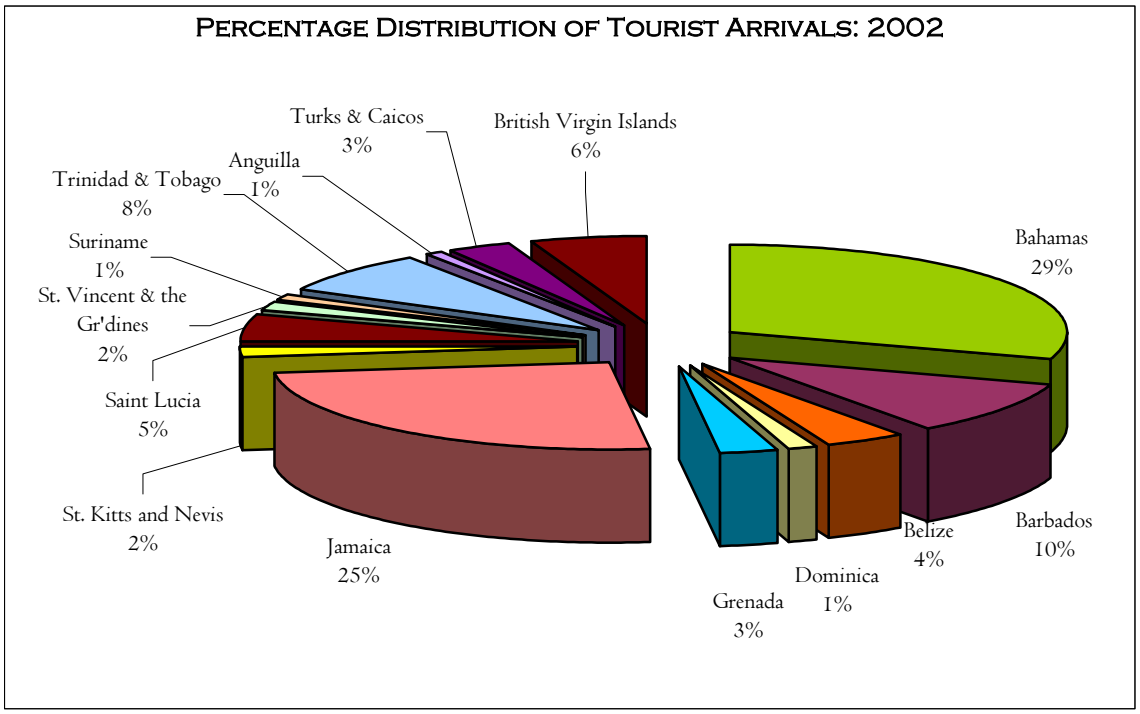
Table 2.1 (a) Contd. Tourists, Same-day Visitors, Cruise ships arrivals and Average/Number of Tourist nights spent by year: 1990, 1995, 1998-2005

Country	Year	Stop over (Tourists)	Same-day Visitors		Cruise ships arrivals	Average/Number of tourists nights spent
			Cruise passengers	Other		
TT						
	1990	**194,521**	...	...	...	...
	1995	**259,784**	...	...	...	...
	1998	**334,037**	**43,188**	...	**91**	...
	1999	**358,193**	**63,251**	...	**117**	...
	2000	**398,559**	**104,061**	...	**146**	...
	2001	**383,101**	**82,245**	...	**136**	...
	2002	**384,214**	**60,047**	...	**96**	...
	2003	**409,071**	**55,532**	...	**88**	...
	2004	**442,596**	**54,254**	...	**86**	...
ASSOCIATE MEMBERS						
AI						
	1995	**38,531**	...	...	...	**366,348**
	1998	**43,874**	...	...	...	**404,468**
	1999	**46,782**	...	...	...	**398,647**
	2000	**43,789**	...	...	...	**376,457**
	2001	**47,965**	...	...	...	**410,673**
	2002	**43,969**	...	...	...	**369,583**
	2003	**46,915**	**3,871**	...	**92**	**395,874**
	2004	**53,987**	**6,383**	...	**64**	**419,185**
BM						
	1990	...	**112,551**	...	...	...
	1995	...	**169,712**	...	...	...
	1998	...	**188,331**	...	...	...
	1999	...	**195,586**	...	**14**	...
	2000	...	**209,727**	...	**173**	...
	2001	...	**179,435**	...	**136**	...
	2002	...	**200,065**	...	**140**	...
	2003	...	**226,097**	...	**158**	...
	2004	...	**206,133**	...	...	...
VG						
	1995	**219,510**	**122,054**	...	...	...
	1998	**267,715**	**115,231**	...	...	...
	1999	**285,858**	**180,714**	...	...	...
	2000	**281,119**	**188,522**	...	...	...
	2001	**295,625**	**202,518**	...	...	...
	2002	**281,696**	**230,067**	...	...	...
	2003	**317,758**	**300,415**	...	...	...
	2004e	**303,756**	**466,601**	...	...	...
TC						**(average)**
	1990	**48,756**	...	...	...	...
	1995	**78,957**	...	...	...	**6.1**
	1998	**110,855**	...	...	...	**6.3**
	1999	**120,898**	...	...	...	**6.3**
	2000	**151,372**	**15,368**	...	...	**6.5**
	2001	**165,836**	...	...	...	**6.4**
	2002	**154,961**	**2,411**	...	...	**6.5**
	2003	**164,100**	**49,734**	...	...	**6.5**





Note: OECS Countries include Dominica, Grenada and Saint Lucia.
Associate Members include Anguilla, Bermuda, The Turks and Caicos Islands and the British Virgin Islands.



Note: OECS Countries include Dominica, Grenada and Saint Lucia.
Associate Members include Anguilla, The Turks and Caicos Islands and the British Virgin Islands.

TOR1 (b): TOURIST INTENSITY/GROWTH RATE AND TOURIST PENETRATION RATIO

H

Concept and Definition

Tourist intensity/growth rate measures the impact of the tourism industry per kilometer square. The information required for this indicator includes tourist arrivals and total land area. From these data, the increase in the number of tourists per annum per one kilometer square is obtained.

The *Tourist Penetration Ratio* quantifies the average number of tourists per thousand inhabitants in the country at any one time. The value of the ratio is constrained by the fact that tourist flows are seasonal and cruise passengers are not.

Method of Computation

Embarkation/disembarkation (E/D) cards were analyzed to monitor tourist growth. These E/D cards are completed for the various immigration authorities, as part of the frontier formalities, by visitors on arrival at the destination.

$$\text{Tourist Penetration Ratio} = \frac{\text{Average Length of stay} * \text{number of visitors}}{365 * \text{mid year population estimates}}$$

$$\text{Tourist intensity/growth rate} = \frac{\text{Average Length of stay} * \text{number of visitors}}{365 * \text{area in square kilometers}}$$

Indicator Relevance

Tourism is one of the most important social and economic activities in the Caribbean. While bringing economic and employment gains, tourism also uses up resources and different tourist activities can create a wide variety of stress, damage and pollution in the host area. Therefore, the purpose of the tourist intensity indicator is to measure the overall pressure brought to host areas.

The tourist penetration ratio gives an indication of crowding and can also be a useful measure for monitoring carrying capacity. As more tourists flock to the region, the demand for accommodation increases. Turning a rural area into a tourist destination comes at a cost—transport links, particularly roads, need to be built; water resources are exploited; waste needs to be treated and unfortunately, ecologically sensitive areas are compromised.

The Tourist intensity/growth rate is an indicator of social carrying capacity, which expresses both the level of tolerance on the part of the host population and the quality of the international tourist experience in the host country.
International Handbook on the Economics of Tourism By Larry Dwyer, Peter Forsyth

Data Assessment

Data were obtained from two Member States and one Associate Member for both indicators. The Member States were Belize and Dominica and the Associate Member was The Turks and Caicos Islands. The definitions for tourist intensity/growth rate and tourist penetration ratio were provided to the reporting countries. None of the countries indicated that they had deviated from the definitions provided, so it was assumed that the international definitions were followed. This indicator is harmonized.

Data Sources

The main data sources for this indicator were the Central Statistical Offices and the National Tourist Offices of the individual countries.

Evaluation

The Tourist penetration ratio is presented below with the tourist intensity ratio for three countries Belize, Dominica and The Turks and Caicos Islands. Both ratios experienced slight disturbances between 2000 and 2001. The tourism penetration ratio for Dominica has stabilized since 1999 at an average of 100 tourists per thousand inhabitants. For Belize, the tourism penetration ratio was also stable with an average of 15.4 for the period 1999 to 2003. The Turks and Caicos Islands experienced small fluctuations in the tourism penetration ratio, increasing by 58 per cent from 92 tourists per thousand inhabitants in 1995 to 145 tourists per thousand inhabitants in 2000 and 2001 and thereby experiencing a 19 per cent decline to 116 tourists per thousand inhabitants.

The Tourist intensity ratio for Dominica experienced major fluctuation through out the period ranging from 11.1 persons per annum per 1 square kilometer in 1990 to the lowest recorded at -5.2 persons per annum per 1 square kilometer in 2000. Belize saw gradual increases in the tourist intensity ratio moving from 5.2 in 1995 to 10.1 in 2004. Of the three countries which supplied data on this indicator, The Turks and Caicos Islands had the lowest average of 2.6 persons per annum per 1 square kilometer from 1995 to 2004. The Associate Member State also saw increases in the ratio from 1.4 persons per annum per 1 square kilometer in 1995 to 3.4 persons per annum per 1 square kilometer in 2004.

Table 2.1 (b) Tourists intensity / growth rate and Tourist penetration ratio: 1990, 1995, 1998-2004

Country	Year	Tourists intensity / growth	Tourist penetration ratio
BZ			
	1995	**5.7**	**. . .**
	1998	**7.7**	**. . .**
	1999	**7.9**	**14.2**
	2000	**8.5**	**16.3**
	2001	**8.5**	**15.9**
	2002	**8.7**	**15.7**
	2003	**9.6**	**15.0**
	2004	**10.1**	**. . .**
DM			
	1990	**11.1**	**63.0**
	1995	**5.3**	**83.0**
	1998	**0.1**	**91.0**
	1999	**10.7**	**102.0**
	2000	**-5.2**	**97.0**
	2001	**-4.3**	**94.0**
	2002	**3.7**	**98.0**
	2003	**5.3**	**104.0**
	2004	**9.2**	**113.0**
TC			
	1995	**1.4**	**92**
	1998	**2.0**	**116**
	1999	**2.2**	**121**
	2000	**2.8**	**145**
	2001	**3.0**	**145**
	2002	**2.9**	**131**
	2003	**3.1**	**115**
	2004	**3.4**	**116**

CHART 2.1.4: TOURIST INTENSITY/GROWTH RATE, 1990, 1995, 1998-2004

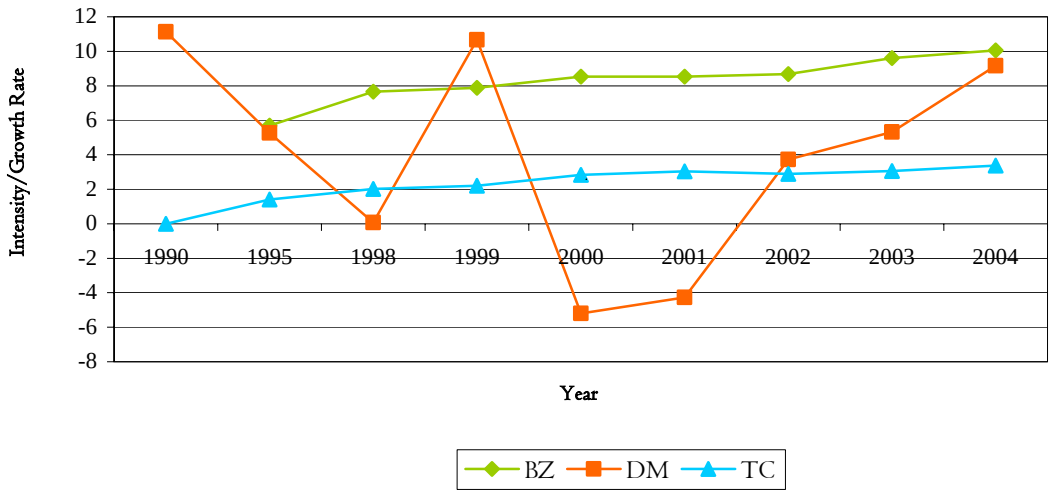
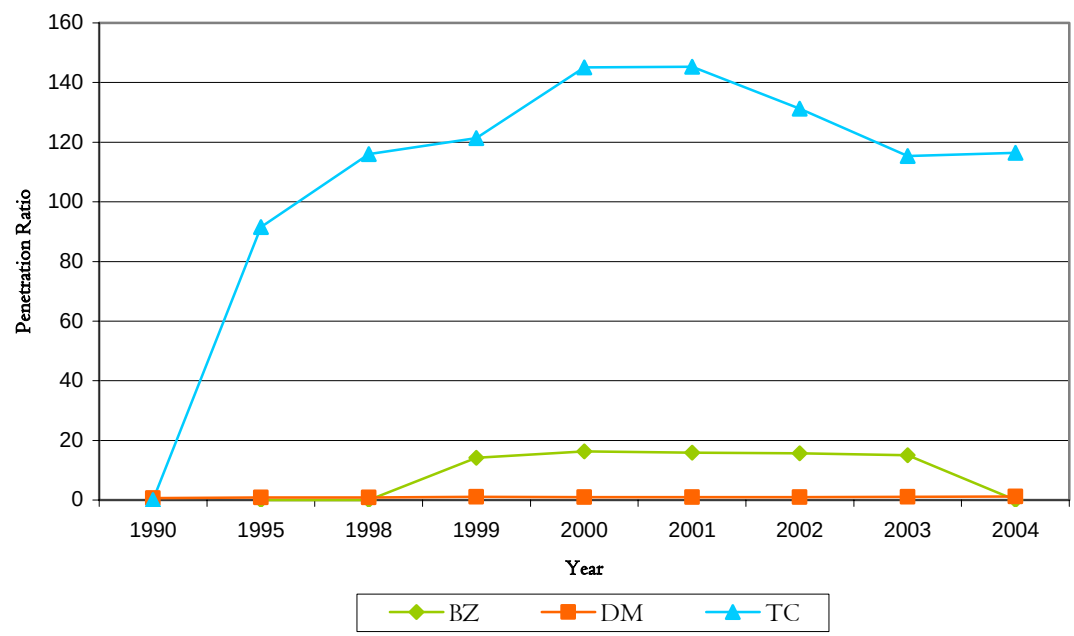


CHART 2.1.5: TOURIST PENETRATION RATIO, 1990, 1995, 1998-2004



TOR2: NUMBER OF HOTELS CLASSIFIED BY SIZE, BEDS AND ROOMS BY YEAR

PH

Concept and Definition

The number of hotels classified by size, beds and rooms by year refers to the number, size, and type of hotels available for use within the hospitality industry.

Hotels: Hotels comprise: Commercial hotels, apartment hotels, motels, roadside inns, beach hotels, residential clubs and similar establishments providing accommodation services, including more than daily bed-making and cleaning of the room and sanitary facilities.

Number of rooms: The number of existing rooms is the number the establishment habitually has available to accommodate guests (overnight visitors), excluding rooms used by the employees working for the establishment. If a room is used as a permanent residence (for more than a year), it should not be included. Bathrooms and toilets do not count as a room. An apartment is a special type of room. It consists of one or more rooms and has a kitchen unit and its own bathroom and toilet.

Number of beds: This is the total number of beds available only for guests. Only beds serving for tourism are included; occasional beds are not included.

*Room occupancy rate***:** For hotels and similar establishments, the net rate of room occupancy is a measure of capacity utilization. It is calculated by dividing the monthly or yearly sum of occupied rooms by the number of rooms available for use, then multiplying the quotient by 100 to express the rate as a percentage.

(*Please refer to the Caribbean Tourism Statistical Report 2002-2003 (2004) pg. 299.*)

(*Please refer to the Eurostat, Statistical Office of the European Communities website at http://europa.eu.int/estatref/info/sdds/en/tour/tour_cap_sm.htm)*

Method of Computation

$$\text{Room Occupancy Rate} = \frac{\text{Number of occupied rooms} * 100}{\text{Number of rooms available for use}}$$

Indicator Relevance

The number of beds and the number of rooms in the hotel industry is a measure of the capacity of accommodation in the host country. A measure of the capacity of accommodation gives an indication of the amount of energy and water used and the amount of waste produced.

Data Assessment

Data on the total number of rooms occupied and on the number of hotels by the number of rooms were sparse with only a few countries submitting detailed data. On the other hand, data on the number of beds available and on occupancy rates were dense with detailed information provided by the Member States and Associate Members.

Member States and Associate Members did not specify what constitutes a hotel. It was, therefore, assumed that an establishment was classified across the region as a hotel if it consisted of five or more rooms for the purpose of tourism.

In the calculation of the room occupancy rate, all Member States and Associate Members, except The Turks and Caicos Islands, followed the Caribbean Tourism Organization's definition of room occupancy rate. The Turks and Caicos Islands retrieved the data directly from The Turks and Caicos Islands Hotel & Tourism Association, whose rate reflects data for its members only and not for accommodation establishments across the country.

Data Sources

Please refer to the similar section in indicator TOR1(a).

Evaluation

The data in **Table 2.2** shows the number of hotels by the number of rooms, total number of rooms occupied, the number of beds available and occupancy rates. Detailed data on the number of hotels by the number of rooms are available for five countries. Jamaica recorded the highest number of hotels, more than 80 hotels with 50 rooms or more and more than 2,000 hotels with less than 50 rooms in 2004. At the end of 2004, The Bahamas recorded 46 hotels with 50 rooms or more and 254 hotels with less than 50 rooms. Saint Lucia recorded a total of 135 hotels in 2004 of which 19 had more than 50 rooms while The Turks and Caicos Islands and Grenada had 38 and 20 hotels respectively with 10 in the case of The Turks and Caicos Islands having 50 plus rooms and 7 hotels having under 50 rooms.

With the exception of Grenada and Jamaica, the number of hotels increased in 2004 from the previous year for most of the countries for which data were available (for more than one year), although it should be noted that some Hotels in Grenada closed due to the damage caused by Hurricane Ivan in 2004. Data on the number of beds are given in Table

2.2 for eight countries. The trend in the number of beds followed that of the number of hotels. Of the countries which presented data, The Turks and Caicos Islands, Jamaica, Belize and the Bahamas saw increases in the number of beds over time while Barbados, Saint Lucia and Bermuda saw fluctuations in the number of beds available. Prior to 2004 the number of hotel beds in Grenada increased gradually from 2,936 in 1990 to 3,844 in 2003.

Data on the total number of rooms occupied were supplied for five Member States of which the Bahamas recorded the highest with on average more than 2 million beds occupied per year. Data on the number of rooms occupied reveal overall increases for Jamaica, gradual increases but one decline in 2002 and 2003, experienced for both Belize and the Bahamas respectively and overall fluctuations for Grenada and Saint Lucia during the period 1990 to 2004.

Hotel room occupancy rate could not be compared by country due to the variations in the types of establishments covered by the figures; however the figures supplied reveal that, Saint Lucia and the Bahamas recorded the highest average room occupancy rates of 66 and 64 per cent respectively.

Table 2.2 - Number of Hotels classified by Size, Land area occupied, Beds and Rooms by Year: 1990, 1995, 1998-2004

Country	Year	Number of hotels by size					Number of beds	Total number of rooms occupied	Room occupancy rate
		Rooms 5 and more and less than 10	Rooms 10 and more and less than 25	Rooms 25 and more and less than 50	Rooms 50 and more	Total			
BS									
	1995	...	...	...	...	...	26,842	...	59.7
	1998	...	...	...	...	...	28,486	1,848,092	70.3
	1999	...	...	...	...	...	28,306	2,088,985	68.6
	2000	...	...	...	...	...	29,402	2,199,298	67.2
	2001	96	91	38	47	272	30,390	2,117,973	60.5
	2002	108	99	36	45	288	30,290	2,134,962	62.0
	2003	105	98	39	47	289	30,786	2,105,713	59.2
	2004	113	102	39	46	300	31,016	2,132,153	65.1
BB									
	1990	...	...	...	...	...	13,767	...	57.5
	1995	...	...	...	...	...	10,229	...	57.9
	1998	...	...	...	...	...	11,661	...	58.6
	1999	...	...	...	...	...	11,006	...	55.9
	2000	...	...	...	...	...	12,240	...	56.9
	2001	...	...	...	...	...	13,176	...	51.1
	2002	...	...	...	...	...	13,050	...	42.5
	2003	...	...	...	...	...	10,770	...	49.9
	2004	...	...	...	...	...	11,237	...	49.7
BZ									
	1990	...	...	...	...	210	3,451	...	...
	1995	...	...	...	...	362	6,137	...	...
	1998	...	...	...	...	408	6,617	1,172	29.9
	1999	...	...	...	...	390	6,810	1,244	31.4
	2000	...	...	...	...	391	7,045	1,712	41.7
	2001	...	...	...	...	418	7,187	1,999	44.8
	2002	...	...	...	...	437	7,902	1,887	40.1
	2003	...	...	...	...	466	8,166	2,086	41.3
	2004	...	...	...	...	506	8,722	2,096	40.7
GD									
	1995	...	...	...	...	27	2936	1652	...
	1998	...	...	...	...	28	2995	1802	...
	1999	...	...	...	...	27	3274	1800	...
	2000	...	...	...	...	30	3091	1822	...
	2001	...	...	...	...	28	3142	1734	...
	2002	...	...	...	...	28	3590	1777	...
	2003	...	...	...	...	25	3844	1758	...
	2004	1	7	5	7	20	1792	860	...
JM									
	1990	...	...	...	...	1,352	32,863	16,103	62.1
	1995	...	...	1,876	69	1,945	43,370	20,896	60.8
	1998	...	...	1,866	74	1,940	46,966	22,715	58.7
	1999	...	...	2,106	74	2,180	47,582	23,067	57.0
	2000	...	...	2,094	79	2,173	48,892	23,630	58.5
	2001	...	...	2,081	79	2,160	50,265	24,007	56.3
	2002	...	...	2,101	80	2,181	50,742	24,239	55.5
	2003	...	...	2,107	85	2,192	51,494	24,625	57.9
	2004	...	...	2,043	84	2,127	51,614	24,947	61.4

Table 2.2 Contd. Number of Hotels classified by Size, Land area occupied, Beds and Rooms by Year: 1990, 1995, 1998-2004

Country	Year	Number of hotels by size					Number of beds	Total number of rooms occupied	Room occupancy rate
		Rooms 5 and more and less than 10	Rooms 10 and more and less than 25	Rooms 25 and more and less than 50	Rooms 50 and more	Total			
LC									
	1990	...	...	...	...	...	5,239	2,370	70.8
	1995	...	...	...	...	...	7,423	3,974	73.2
	1998	...	...	...	...	...	7,705	4,077	75.3
	1999	...	...	...	...	...	7,768	4,125	72.5
	2000	...	...	...	...	...	8,236	4,428	67.0
	2001	...	...	...	...	...	8,236	4,428	57.0
	2002	...	...	...	...	...	8,236	4,428	56.1
	2003	...	...	...	...	...	6,748	3,749	58.8
	2004	31	37	16	51	135	7,153	3,974	64.8
TT									
	1990	...	...	...	...	42	...	...	52.9
	1995	...	...	...	...	69	...	...	50.3
	1998	...	...	...	...	87	...	...	55.7
	1999	...	...	...	...	108	...	...	61.2
	2000	...	...	...	...	113	...	...	52.2
	2001	...	...	...	...	118	...	...	43.0
	2002	...	...	...	...	106	...	...	41.0
	2003	...	...	...	...	119	...	...	44.5
	2004	...	...	...	...	117	...	...	...
ASSOCIATE MEMBERS									
BM									
	1999	...	...	...	...	...	7383	...	59.6
	2000	...	...	...	...	...	6557	...	61.6
	2001	...	...	...	...	...	7915	...	51.9
	2002	...	...	...	...	...	6523	...	55.0
	2003	...	...	...	...	...	6293	...	54.5
VG									
	1990	...	...	...	...	...	...	...	...
	1995	...	...	...	...	...	...	...	56.4
	1998	...	...	...	...	...	...	...	61.4
	1999	...	...	...	...	...	...	...	57.3
	2000	...	...	...	...	...	...	...	63.2
	2001	...	...	...	...	...	...	...	59.9
	2002	...	...	...	...	...	...	...	61.4
	2003	...	...	...	...	...	...	...	66.8
	2004e	...	...	...	...	...	...	...	67.1
TC									
	1990	3	7	2	4	16	1,659	...	...
	1995	4	10	2	3	19	1,278	...	...
	1998	6	12	4	4	26	2,336	...	...
	1999	6	13	5	7	31	2,928	...	...
	2000	7	12	5	7	31	2,903	...	...
	2001	7	12	6	8	33	2,993	...	58.0
	2002	8	14	6	9	37	3,416	...	51.0
	2003	7	14	6	9	36	3,402	...	57.0
	2004	6	15	7	10	38	3,743	...	55.0

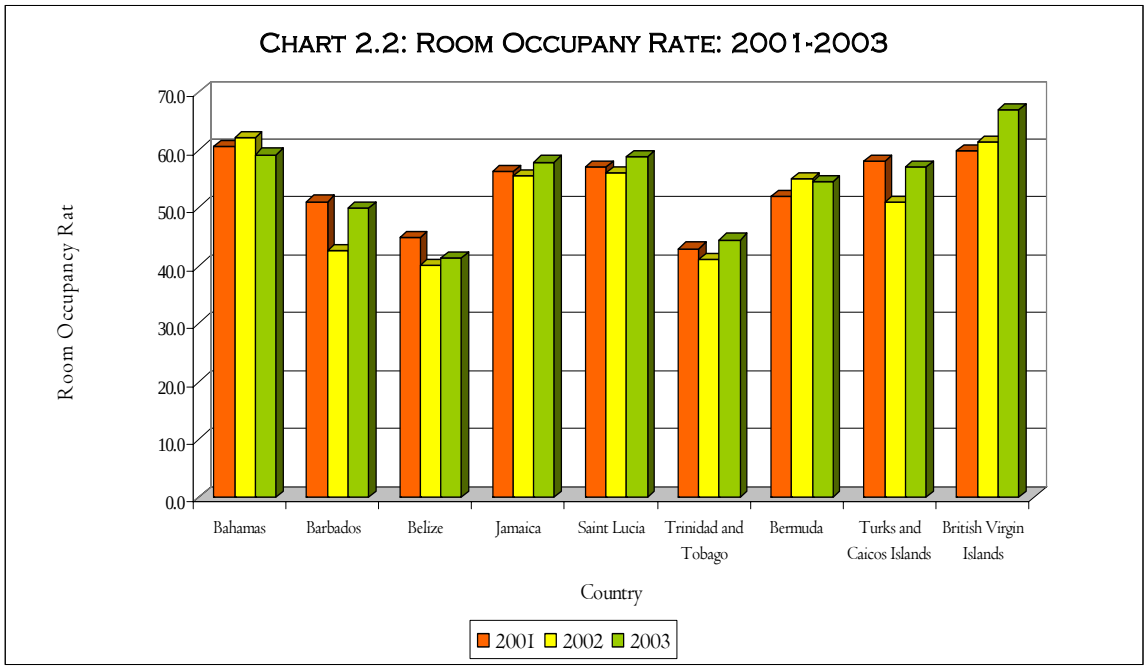


CHART 2.2: ROOM OCCUPANY RATE: 2001-2003
Room Occupancy Rat
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Bahamas
Barbados
Belize
Jamaica
Saint Lucia
Trinidad and Tobago
Bermuda
Turks and Caicos Islands
British Virgin Islands
Country
2001
2002
2003

TOR3: VISITOR EXPENDITURE

DK

Concept and Definition

Tourism (Visitor) Expenditure is the total consumption expenditure made by a visitor, or on behalf of a visitor, for and during his or her trip and stay at a specific country destination. Total tourism expenditure can be broken down into:

- International and domestic tourism expenditure;
- Expenditures on same-day visits and overnight stays; and,
- Expenditure on accommodations, meals and drinks, shopping, entertainment, etc.

Tourism (Visitor) Expenditure encompasses a wide variety of items, ranging from the purchase of consumer goods and services inherent in travel and stays to the purchase of small durable goods for personal use and souvenirs and gifts for family and friends. Tourism expenditure is not restricted to payments made during the visit. It also includes advance or outlays necessary for the preparation and undertaking of the trip and travel-related purchases made in the place of residence after returning from a trip. These categories refer to payments for travel insurance, transport, the purchase of travel guides, etc.

There are certain types of outlays or acquisitions which are excluded from tourism expenditure. These are purchases for commercial purposes, capital-type investments, transactions (e.g. real estate, cars, boats, etc.), even if they may in the future be used for tourism purposes, and cash or donations made to private persons or institutions which do not represent payment for tourism goods or services.

(Please refer to the Eurostat, Statistical Office of the European Communities website)

Types of Expenditures

International tourism expenditures are defined as expenditures of outbound visitors in other countries, including their payments to foreign carriers for international transport. They should also include any other pre- or post- payments for goods and services purchased from the countries visited.

Domestic tourism expenditures are defined as expenditures incurred as a direct result of resident visitors travelling within their own country of residence.

Expenditures on same day/overnight visits are defined as the expenditures of visitors who spend less than twenty-four hours in the country being visited.

Method of Computation

Barbados: Using the assumption that the tourist staying in recognized accommodation spends 55 per cent of his/her total expenditure in Barbados on room and board, the figures are grossed up by 45 per cent to give a total expenditure of tourists staying in recognized accommodation. Tourists in private and unrecognized accommodation are subdivided in the following three categories: (i) those staying in rented apartments/cottages (ii) those staying with friends/relatives or in their own homes and (iii) others. Tourist nights spent by these three groups are multiplied by daily expenditure for the corresponding groups to give expenditure in private and unrecognized accommodation.

Other Member States and Associate Members: Data was collected from Tourism Surveys conducted

Indicator Relevance

Data on visitor expenditure give an indication of the impact of tourism on an economy. Expenditure on accommodation, meals and drinks, shopping, entertainment, etc. also gives an indication of the demand on existing goods and services within the economy.
Moreover, data on visitor expenditure answer the following questions:

- How much wealth is transferred to destinations?
- What is the contribution of tourism to the economy?
- How does tourism relate to other sectors?

Visitor expenditure can also be used for application in:

- Calculations of Consumer Price Indicies (CPI) and derived "Tourism Price Indicies";
- Welfare analysis;
- National accounts;
- Other type of analysis; and,
- Consumer demand and market research.

Data Assessment

The Bahamas, British Virgin Islands and The Turks and Caicos Islands provided the definitions that were used in the compilation of total visitor expenditure. The definitions provided are in accordance with the international definition. These countries did not, however, provide the criteria that were used to determine the types of expenditure that would count as visitor expenditure. It is therefore difficult to assess the degree of harmonization of this indicator.

Data Sources

Please refer to the similar section in indicator TOR1(a)

Evaluation

Estimated visitor expenditure for eight Member State and four Associate Members is summarised in **Table 2.3.** It can be seen that The Bahamas, Barbados and Jamaica were the major earners from tourisms averaging more than 1 billion US dollars for the period of data except for 1990 in the case of Barbados. International and Domestic tourists accounted for 99 per cent of total expenditure in The Bahamas and Expenditure on accommodation, meals and drinks, shopping, entertainment etc averaged 1.5 billion US dollars with some fluctuations during the period for this Member State. Tourist expenditure in Jamaica and Barbados increased significantly since 1990 with few periods of declines most notably in 2001 and 2002.

Among Associate Members, the Virgin Islands and Bermuda averaged more than 325 million US dollars for the period 2001 to 2004. Visitor expenditure in Bermuda was 353.7 million US dollars in 2004 while the estimate for the British Virgin Islands was 391.3 million US dollars for the same year.

Visitor Expenditure in Belize showed a steady increase throughout the period from 44.5 million US dollars in 1990 to 172.7 million US dollars in 2004. Data for Saint Lucia also revealed significant increases with few periods of declines in 1999, 2001 and 2002 in Visitor Expenditure revealing not only increase in visitors to the island but opportunities for visitors to spend while on the island. Visitor Expenditure in this Member State increased from US$152.9 million in 1990 to US$263.1 million in 1995 and averaged US$267.8 million over the period 1998 to 2003.

Table 2.3 also revealed that visitor expenditure in Montserrat was generally stable since a 37 per cent decline in earnings from US$4.1 dollars in 1990 to US$2.6 million in 1995 due to volcano activity within the island. In St. Kitts and Nevis increases and declines in visitor expenditure were equal for reporting years with average earnings estimated at US$65 million for 1995 and 1998 to 2004. St. Vincent and the Grenadines reported overall increases in visitor expenditure which averaged 86.7 million US dollars from 1998 to 2004. Trinidad and Tobago's visitor expenditure moved from US$72.6 million in 1995 to US$242.0 million in 2002, declining only once in 2001. For the period 1995 to 1998 visitor expenditure on accommodation, meals and drinks, shopping, entertainment etc in Grenada increased by 30.7 per cent from US$53 million in 1995. From 1998 expenditure increased to US$172.6 million in 2000 then declined by 8.3 per cent in 2001 after which it increased to US$169.5 million in 2002 and again to US$169.5 in 2003 before declining once more in 2004 due to Hurricanes.

Data on the number of workers directly employed in tourism is also given in Table 2.3 for Belize, Grenada, Anguilla and The Turks and Caicos Islands along with Jamaica and Bermuda for which totals were provided. The number of persons employed in the industry in Jamaica averaged 30,000 during the period 1995 to 2004 after recording 20,561 persons employed in the industry in 1990. In 1998, the Tourism sector provided employment to 1,974 persons in Grenada of which 61 per cent or 1,195 were women.

Belize supplied data from 1995 which shows an overall increase in the number of persons employed in tourism sector from 2,107 persons in 1995 to 3,770 persons in 2004 an increase of 79 per cent. The proportion of women employed in the sector declined from 55.3 per cent in 1995 to 49.8 per cent in 2003 and increased to 49.9 per cent in 2004.

From 2001 to 2004 an average 2,923 persons were employed in the tourism industry in Bermuda. Bermuda also saw overall declines during the period from 3,670 in 2001 to 2,191 in 2004. In Anguilla, the number of persons employed in this sector was 11.4 per cent higher in 2001 compared to the 1999 figure of 1,425 and the proportion of women increased from 57 per cent in 1999 to 60 per cent in 2001. The Turks and Caicos Islands reported 2,368 persons employed in tourism comprising 1,126 women in 2001.

Table 2.3 Visitor expenditure and Number Employed in Tourism: 1990, 1995, 1998-2004

Country	Year	Visitor expenditure ('000US$)	Int'l and domestic tourism expenditure ('000US$)	Expenditure on same-day visits ('000US$)	Expenditure on accommodation, meals and drinks, shopping, entertainment etc. ('000US$)	Total directly employed in tourism		
						Women	Men	Total
BS								
	1990	1,332,950	1,320,500	12,470	1,209,930	...	...	...
	1995	1,346,150	1,341,100	5,050	1,245,390	...	...	...
	1998	1,354,060	1,350,000	4,090	1,244,400	...	...	...
	1999	1,582,930	1,578,500	4,440	1,463,600	...	...	...
	2000	1,734,500	1,727,700	6,750	1,579,750	...	...	...
	2001	1,647,680	1,642,400	5,290	1,494,810	...	...	...
	2002	1,759,800	1,753,800	6,020	1,602,550	...	...	...
	2003	1,757,380	1,752,400	5,040	1,595,340	...	...	...
	2004	1,884,480	1,879,300	5,180	1,693,490	...	...	...
BB								
	1990	987,004	...	...	...	...	...	...
	1995	1,359,035	...	...	...	...	...	...
	1998	1,405,944	...	...	...	...	...	...
	1999	1,332,427	...	...	...	...	...	...
	2000	1,422,631	...	...	...	...	...	...
	2001	1,373,518	...	...	...	...	...	...
	2002	1,295,655	...	...	...	...	...	...
	2003	1,493,760	...	...	...	...	...	...
	2004	1,526,341	...	...	...	...	...	...
BZ								
	1990	44,500	...	...	...	...	...	...
	1995	77,100	...	...	...	1,166	941	2,107
	1998	108,300	...	...	...	1,180	1,023	2,203
	1999	111,500	...	...	...	1,385	1,185	2,570
	2000	120,200	...	...	...	1,494	1,275	2,769
	2001	120,500	...	...	...	1,538	1,396	2,934
	2002	132,800	...	...	...	1,531	1,543	3,074
	2003	155,700	...	...	...	1,717	1,730	3,447
	2004	172,700	...	...	...	1,884	1,886	3,770
GD								
	1995	...	...	4,581	53,022	...	...	...
	1998	...	...	7,878	145,942	1,195	779	1,974
	1999	...	...	7,273	162,195	...	...	...
	2000	...	...	5,342	172,608	...	...	...
	2001	...	...	4,367	158,203	...	...	...
	2002	...	...	4,002	169,508	...	...	...
	2003	...	...	4,353	169,541	...	...	...
	2004	...	...	6,809	147,918	...	...	...
JM								
	1990	740,000	...	...	...	...	...	20,561
	1995	1,068,500	...	...	...	...	...	27,937
	1998	1,197,140	...	...	...	...	...	30,131
	1999	1,279,532	...	...	...	...	...	30,325
	2000	1,332,597	...	...	...	...	...	31,080
	2001	1,232,960	...	...	...	...	...	29,142
	2002	1,209,484	...	...	...	...	...	30,434
	2003	1,351,142	...	...	...	...	...	30,512
	2004	1,436,577	...	...	...	...	...	30,999

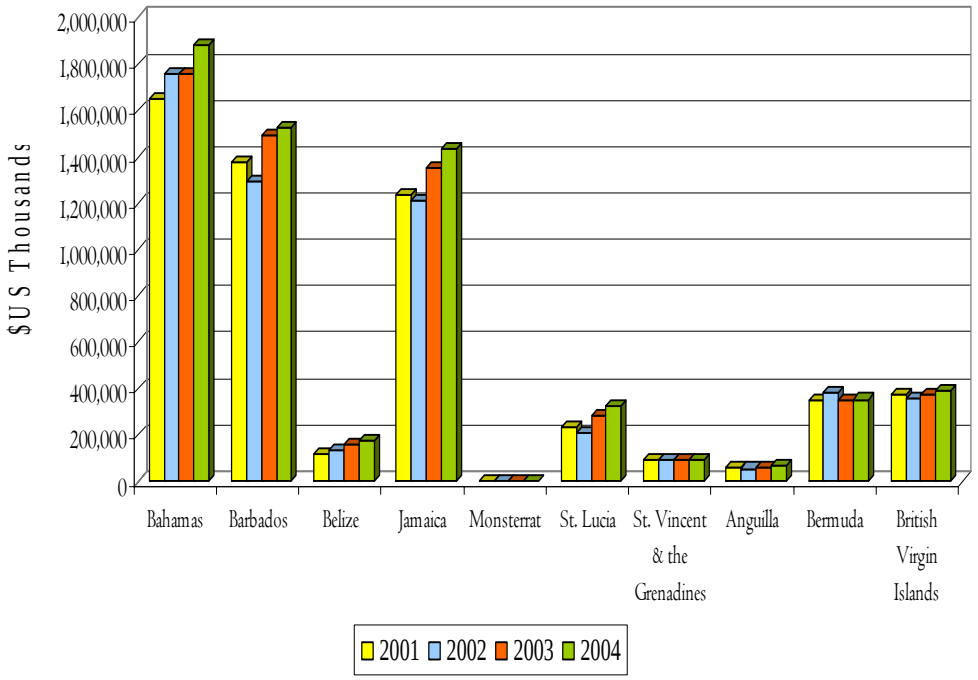
Table 2.3 Contd. Visitor expenditure and Number Employed in Tourism: 1990, 1995, 1998-2004

Country	Year	Visitor expenditure ('000US$)	Int'l and domestic tourism expenditure ('000US$)	Expenditure on same-day visits ('000US$)	Expenditure on accommodation, meals and drinks, shopping, entertainment etc. ('000US$)	Total directly employed in tourism		
						Women	Men	Total
MS								
	1990	**4,143**	...	...	...	...	...	...
	1995	**2,606**	...	...	...	...	...	...
	1998	**2,963**	...	...	...	...	...	...
	1999	**3,073**	...	...	...	...	...	...
	2000	**3,320**	...	...	...	...	...	...
	2001	**3,141**	...	...	...	...	...	...
	2002	**3,237**	...	...	...	...	...	...
	2003	**2,716**	...	...	...	...	...	...
	2004	**3,402**	...	...	...	...	...	...
KN								
	1995	**63,037**	...	...	...	...	...	...
	1998	**76,315**	...	...	...	...	...	...
	1999	**67,426**	...	...	...	...	...	...
	2000	**58,444**	...	...	...	...	...	...
	2001	**61,852**	...	...	...	...	...	...
	2002	**57,148**	...	...	...	...	...	...
	2003	**75,333**	...	...	...	...	...	...
LC								
	1990	**152,900**	...	...	...	...	...	...
	1995	**263,170**	...	...	...	...	...	...
	1998	**281,600**	...	...	...	...	...	...
	1999	**272,370**	...	...	...	...	...	...
	2000	**276,790**	...	...	...	...	...	...
	2001	**231,500**	...	...	...	...	...	...
	2002	**208,700**	...	...	...	...	...	...
	2003	**280,500**	...	...	...	...	...	...
	2004	**323,500**	...	...	...	...	...	...
VC								
	1995	**52,890**	...	...	...	...	...	...
	1998	**73,340**	...	...	...	...	...	...
	1999	**84,570**	...	...	...	...	...	...
	2000	**82,280**	...	...	...	...	...	...
	2001	**89,010**	...	...	...	...	...	...
	2002	**91,010**	...	...	...	...	...	...
	2003	**91,190**	...	...	...	...	...	...
	2004	**95,550**	...	...	...	...	...	...
TT								
	1995	...	**72,600**	...	**72,600**	...	...	...
	1998	...	**201,200**	...	**201,200**	...	...	...
	1999	...	**209,600**	...	**209,600**	...	...	...
	2000	...	**212,800**	...	**212,800**	...	...	...
	2001	...	**200,900**	...	**200,900**	...	...	...
	2002	...	**242,000**	...	**242,000**	...	...	...

Table 2.3 Contd. Visitor expenditure and Number Employed in Tourism: 1990, 1995, 1998-2004

Country	Year	Visitor expenditure ('000US$)	Int'l and domestic tourism expenditure ('000US$)	Expenditure on same-day visits ('000US$)	Expenditure on accommodation, meals and drinks, shopping, entertainment etc. ('000US$)	Total directly employed in tourism		
						Women	Men	Total
ASSOCIATE MEMBERS								
AI								
	1995	**48,500**	**45,600**	**2,900**	**. . .**	**. . .**	**. . .**	**. . .**
	1998	**57,200**	**54,100**	**3,100**	**. . .**	**. . .**	**. . .**	**. . .**
	1999	**56,200**	**53,400**	**2,800**	**. . .**	**808**	**617**	**1,425**
	2000	**55,200**	**52,100**	**3,100**	**. . .**	**. . .**	**. . .**	**. . .**
	2001	**61,000**	**58,300**	**2,700**	**. . .**	**956**	**631**	**1,587**
	2002	**55,300**	**51,590**	**3,710**	**. . .**	**. . .**	**. . .**	**. . .**
	2003	**61,653**	**58,022**	**3,631**	**. . .**	**. . .**	**. . .**	**. . .**
	2004	**69,100**	**65,200**	**3,900**	**. . .**	**. . .**	**. . .**	**. . .**
BM								
	2001	**349,700**	**. . .**	**. . .**	**349,700**	**. . .**	**. . .**	**3,670**
	2002	**378,800**	**. . .**	**. . .**	**378,800**	**. . .**	**. . .**	**3,563**
	2003	**347,900**	**. . .**	**. . .**	**347,900**	**. . .**	**. . .**	**2,266**
	2004	**353,700**	**. . .**	**. . .**	**353,700**	**. . .**	**. . .**	**2,191**
VG								
	1995	**183,180**	**. . .**	**11,630**	**171,550**	**. . .**	**. . .**	**. . .**
	1998	**286,330**	**. . .**	**10,390**	**275,940**	**. . .**	**. . .**	**. . .**
	1999	**311,520**	**. . .**	**17,050**	**294,470**	**. . .**	**. . .**	**. . .**
	2000	**386,030**	**. . .**	**20,780**	**365,250**	**. . .**	**. . .**	**. . .**
	2001	**400,770**	**. . .**	**21,670**	**379,100**	**. . .**	**. . .**	**. . .**
	2002	**344,550**	**. . .**	**23,860**	**320,690**	**. . .**	**. . .**	**. . .**
	2003	**341,950**	**. . .**	**32,120**	**309,830**	**. . .**	**. . .**	**. . .**
	2004e	**407,110**	**. . .**	**48,800**	**358,310**	**. . .**	**. . .**	**. . .**
TC								
	2001	**. . .**	**. . .**	**. . .**	**. . .**	**1,126**	**1,242**	**2,368**
	2002	**. . .**	**. . .**	**. . .**	**271,600**	**. . .**	**. . .**	**. . .**
	2004	**. . .**	**. . .**	**. . .**	**314,900**	**. . .**	**. . .**	**. . .**

CHART 2.3: VISITOR EXPENDITURE BY MEMBER STATE & ASSOCIATE MEMBER: 2001-2004



TOR4: TOURIST ARRIVALS BY TYPE OF ACCOMMODATION

PH

Concept and Definition

Tourist Arrivals include all stay-over visitors. It does not, however, include cruise passenger and yacht arrivals.

Tourist accommodation refers to any facility that regularly or occasionally provides overnight accommodation for tourists. There are two basic categories of tourist accommodations:
- *Collective accommodation establishments*: e.g. Hotels and similar establishments; and,
- *Private tourist accommodations*: e.g. owned dwellings, rented rooms in family homes, accommodation provided by friends and relatives. (*Please refer to the Caribbean Tourism Statistical Report 2002-2003 (2004) pg. 299.*)

Types of Accommodation Establishments

Hotels: Hotels comprise hotels, apartment hotels, motels, roadside inns, beach hotels, residential clubs and similar establishments providing hotel services, including more than daily bed-making and cleaning of the room and sanitary facilities.

Apartments/Villas: These are self-contained private dwellings in a single or multi-storeyed building with separate and direct access to the street or a communal staircase, passage, veranda, gallery, etc.

Guest Houses: Guest houses are hotels with fewer than ten rooms.

Cottage: Cottages are small single-storeyed houses that act as a vacation house, usually in the country.

Yacht: A yacht is a small sailing or motor-driven vessel used for pleasure cruises or racing.

Private Home: Private homes include accommodation at privately owned residences, as well as holiday-furnished premises.

Other: This category refers to accommodation establishments not so far mentioned.

Method of Computation

Embarkation/disembarkation (E/D) cards were analyzed to gather data for this indicator. These E/D cards are completed for the various immigration authorities, as part

of the frontier formalities, by visitors on arrival at the port of entry at the destination countries.

Indicator Relevance

Data on tourist arrivals by accommodation indicate tourism hotspots and pressures on the environment linked to land use and resources, as well as travel levels.

Tourist accommodations are known to generate higher amounts of solid waste on a per capita basis than nationals. Moreover, energy consumption is boosted by the tourist sector as accommodation and other attractions are large consumers of energy. Most of the Caribbean countries are reliant upon the importation of non-renewable fossil fuels as a source of energy. Other environmental impacts arise from the construction of infrastructure (hotels, marinas, transport links, waste treatment facilities, groynes, etc) and from recreational facilities (golf courses, water sports, etc) for tourists.

In addition, tourist accommodations are large consumers of fresh water—water is often used excessively for drinking, showers, laundry, swimming pools, maintenance of golf courses, etc. This is a problem on islands which are already densely populated. Supply shortages may lead to health risks if the water quality diminishes due to raw or improperly treated sewage or the run-off from showers, laundries and kitchen sink disposals.

Tourist arrivals by type of accommodation also gives an indication of the level of waterfront vacationing. This is especially important because waterfront vacationing tends to have negative impacts on the environment. Some of these negative impacts are beach and dune erosion, inadequate wastewater treatment, over-fishing and depriving access by local communities to traditional fishing grounds and recreational areas. An indication of the level of waterfront vacationing is also important because it gives an indication of the possible solutions that can be used to combat its negative effects. Solutions may include evaluating and classifying coastal areas according to ecological, social and cultural sensitivity and determining an area's level of tourist activity according to its carrying capacity. *(Please refer to the Earth Negotiations Bulletin website at http://www.iisd.ca/vol05/enb05125e.html.)*

Data Assessment

Of the ten reporting countries, eight countries provided data for at least five of the nine years for which data was requested. The two exceptions were Grenada, who provided data for three years, and Montserrat, who provided data for four years.

Most of the reporting Member States and Associate Members provided data for 'tourist arrivals by type of accommodation' with the exception of Bermuda, who reported 'visitor

arrivals by type of accommodation'. This indicator is partially harmonized within the Region.

It was assumed that the concept of tourist accommodations is in accordance with the international definition and is harmonized across the region since no definition was provided by the reporting Member States and Associate Members.

Data Sources Please refer to the similar section in indicator TOR1(a).

Evaluation **Table 2.4 (a)** presents data on tourist arrival by type of accommodation for seven (7) Member States and three (3) Associate Members. While *Hotels* were the popular choice of visitors to The Bahamas, Saint Lucia, The Turks and Caicos Islands and Bermuda, more than 60 per cent of tourists to other Member states preferred *Other accommodation* such as villas, apartments, cottages, yachts or private accommodation.

Tourists who were reported under the category *other accommodation* accounted for a significant proportion of total tourist arrivals in Suriname and Trinidad and Tobago although there were marked declines towards the end of the period for both countries.

In The Bahamas hotel accommodation from the year 2000 onwards averaged 1.1 million tourists per annum. *Hotel* accommodation saw a decline by 1.6 per cent in 2002 from 73.4 per cent in 2001 while accommodation in *cottages*, *yachts* and *private homes* increased by 3.5 per cent from 8.8 per cent in 2001. *Hotel* visitors recovered towards the end of the period, increasing by 2 per cent.

Hotel accommodations in Saint Lucia increased throughout the period except for a marked decline in 2002 by 14 per cent in 2001 while in Bermuda data revealed steady declines since 1999, although the number of non-resident air and sea arrivals grew throughout the period, with visitors preferring accommodations such as *cottages*, *yachts* and *private homes*.

Except for a slight dip in 1999 and 2002, the number of tourists accommodated in *hotels* in The Turks and Caicos Islands has been steadily increasing.

Although tourists arrivals in Montserrat was reportedly less than all other countries averaging 9,547 during the period 2001 to 2004, 77.5 per cent preferred private homes rather than *hotels*, *guest houses* or *apartments*. Grenada, St. Vincent and the Grenadines and the Virgin islands also reported data with a similar trend of increased preference for *cottages*, *yachts* and *private homes* by tourists.

Table 2.4 (a) Tourist Arrivals by Types of Accommodation: 1990, 1995, 1998-2005

Country	Year	Hotels	Apartments /Villas	Guest Houses	Cottages/ Yacht/ Private Home	Other	Total
BS							
	2000	1,138,154	38,021	0	142,140	225,644	1,543,959
	2001	1,128,415	42,127	0	135,267	231,971	1,537,780
	2002	1,085,907	36,192	0	185,788	205,264	1,513,151
	2003	1,098,185	38,619	0	120,080	253,285	1,510,169
	2004	1,152,068	49,971	0	133,719	225,554	1,561,312
GD							
	2002	47,951	9,702	3,884	70,879	0	132,416
	2003	54,201	11,338	4,619	63,660	8,537	142,355
	2004	45,325	11,894	3,894	63,331	9,421	133,865
MS							
	2001	923	617	372	7,555	355	9,822
	2002	831	356	763	7,382	504	9,836
	2003	736	292	243	6,623	496	8,390
	2004	1,020	522	180	8,032	384	10,138
LC							
	1990	93,017	4,048	6,672	27,265	9,985	140,987
	1995	163,340	11,924	6,521	29,267	20,207	231,259
	1998	182,261	6,796	13,948	29,467	19,765	252,237
	1999	189,357	12,019	8,763	31,907	21,747	263,793
	2000	204,389	6,924	8,562	28,283	21,692	269,850
	2001	183,248	8,185	10,026	26,431	22,242	250,132
	2002	150,463	5,171	2,568	42,898	52,363	253,463
	2003	194,518	5,300	3,779	33,982	39,369	276,948
	2004	211,916	9,448	5,510	38,256	33,301	298,431
VC							
	1998	11,505	1,466	401	31,400	22,456	67,228
	1999	11,745	1,083	335	29,607	25,523	68,293
	2002	20,950	5,824	1,074	44,625	5,158	77,631
	2003	14,162	11,206	887	36,408	15,872	78,535
	2004	13,600	13,578	990	38,266	20,287	86,721
	2005	14,622	14,819	1,393	41,317	23,354	95,505
SR							
	1995	1,455	0		0	41,987	43,442
	1998	3,817	0	535	0	50,233	54,585
	1999	4,184	0	565	0	52,526	57,275
	2000	4,330	0	564	0	51,949	56,843
	2001	6,153	0	527	0	47,661	54,341
	2002	6,022	0	602	0	53,599	60,223
	2003	23,043	0	4,116	0	55,139	82,298
	2004	22,728	0	5,678	0	46,481	74,887
	2004*	41,877	0	10,454	0	85,711	138,042
	2005*	51,069	0	12,910	0	96,043	160,022

Table 2.4 (a) Contd. Tourist Arrivals by Types of Accommodation: 1990, 1995, 1998-2005

Country	Year	Hotels	Apartments /Villas	Guest Houses	Cottages/ Yacht/ Private Home	Other	Total
TT							
	1990	32,306	0	2,452	0	159,763	194,521
	1995	35,627	0	11,468	0	212,689	259,784
	1998	57,045	0	16,697	0	260,295	334,037
	1999	53,658	0	23,267	0	281,268	358,193
	2000	52,487	0	25,812	0	320,260	398,559
	2001	57,074	0	23,739	0	302,288	383,101
	2002	89,127	11,968	17,339	0	265,780	384,214
	2003	103,673	12,470	21,671	0	271,257	409,071
	2004	110,117	10,935	19,855	0	301,689	442,596
ASSOCIATE MEMBERS							
BM*							
	1990	331,581	. . .	8,859	. . .	92,266	432,706
	1995	301,423	. . .	3,043	. . .	83,090	387,556
	1998	288,553	. . .	2,235	. . .	77,968	368,756
	1999	270,451	. . .	2,726	. . .	80,849	354,026
	2000	239,412	. . .	2,422	. . .	86,471	328,305
	2001	193,606	. . .	2,390	. . .	79,013	275,009
	2002	205,383	. . .	2,329	. . .	75,845	283,557
	2003	182,021	. . .	1,148	. . .	73,407	256,576
	2004	187,880	. . .	2,844	. . .	80,897	271,621
VG							
	1995	76,251	0	0	129,553	13,706	219,510
	1998	65,437	0	0	175,077	27,201	267,715
	1999	74,888	0	0	182,238	28,733	285,858
	2000	77,412	0	0	182,605	21,102	281,119
	2001	73,714	0	0	202,154	19,757	295,625
	2002	57,790	0	0	201,166	22,740	281,696
	2003	60,299	0	0	233,768	23,691	317,758
	2004e	85,092	0	0	191,116	27,548	303,756
TC							
	1990	. . .	. . .	. . .	. . .	. . .	48,756
	1995	59,066	0	1,272	. . .	18,619	78,957
	1998	74,505	0	989	. . .	35,361	110,855
	1999	74,381	0	1,123	. . .	45,394	120,898
	2000	87,379	28,439	728	. . .	34,826	151,372
	2001	104,043	34,061	1,036	. . .	26,696	165,836
	2002	100,944	30,695	996	. . .	22,326	154,961
	2003	102,141	37,551	1,045	. . .	23,363	164,100
	2004	. . .	. . .	. . .	. . .	. . .	173,081

*Non-resident Air and Sea arrivals

Table 2.4 (b) Contd. Tourist Arrivals by Types of Accommodation: 1990, 1995, 1998-2005

Country	Year	Hotels	Apartments /Villas	Guest Houses	Cottages/ Yacht/ Private Home	Other	Total
BS							
	2000	73.7	2.5	0.0	9.2	14.6	100.0
	2001	73.4	2.7	0.0	8.8	15.1	100.0
	2002	71.8	2.4	0.0	12.3	13.6	100.0
	2003	72.7	2.6	0.0	8.0	16.8	100.0
	2004	73.8	3.2	0.0	8.6	14.4	100.0
GD							
	2002	36.2	7.3	2.9	53.5	0.0	100.0
	2003	38.1	8.0	3.2	44.7	6.0	100.0
	2004	33.9	8.9	2.9	47.3	7.0	100.0
MS							
	2001	9.4	6.3	3.8	76.9	3.6	100.0
	2002	8.4	3.6	7.8	75.1	5.1	100.0
	2003	8.8	3.5	2.9	78.9	5.9	100.0
	2004	10.1	5.1	1.8	79.2	3.8	100.0
LC							
	1990	66.0	2.9	4.7	19.3	7.1	100.0
	1995	70.6	5.2	2.8	12.7	8.7	100.0
	1998	72.3	2.7	5.5	11.7	7.8	100.0
	1999	71.8	4.6	3.3	12.1	8.2	100.0
	2000	75.7	2.6	3.2	10.5	8.0	100.0
	2001	73.3	3.3	4.0	10.6	8.9	100.0
	2002	59.4	2.0	1.0	16.9	20.7	100.0
	2003	70.2	1.9	1.4	12.3	14.2	100.0
	2004	71.0	3.2	1.8	12.8	11.2	100.0
VC							
	1998	17.1	2.2	0.6	46.7	33.4	100.0
	1999	17.2	1.6	0.5	43.4	37.4	100.0
	2002	27.0	7.5	1.4	57.5	6.6	100.0
	2003	18.0	14.3	1.1	46.4	20.2	100.0
	2004	15.7	15.7	1.1	44.1	23.4	100.0
	2005	15.3	15.5	1.5	43.3	24.5	100.0
SR							
	1995	3.3	0.0	0.0	0.0	96.7	100.0
	1998	7.0	0.0	1.0	0.0	92.0	100.0
	1999	7.3	0.0	1.0	0.0	91.7	100.0
	2000	7.6	0.0	1.0	0.0	91.4	100.0
	2001	11.3	0.0	1.0	0.0	87.7	100.0
	2002	10.0	0.0	1.0	0.0	89.0	100.0
	2003	28.0	0.0	5.0	0.0	67.0	100.0
	2004	30.3	0.0	7.6	0.0	62.1	100.0
	2004*	30.3	0.0	7.6	0.0	62.1	100.0
	2005*	31.9	0.0	8.1	0.0	60.0	100.0

Table 2.4 (b) Contd. Tourist Arrivals by Types of Accommodation: 1990, 1995, 1998-2005

Country	Year	Hotels	Apartments /Villas	Guest Houses	Cottages/ Yacht/ Private Home	Other	Total
TT							
	1990	16.6	0.0	1.3	0.0	82.1	100.0
	1995	13.7	0.0	4.4	0.0	81.9	100.0
	1998	17.1	0.0	5.0	0.0	77.9	100.0
	1999	15.0	0.0	6.5	0.0	78.5	100.0
	2000	13.2	0.0	6.5	0.0	80.4	100.0
	2001	14.9	0.0	6.2	0.0	78.9	100.0
	2002	23.2	3.1	4.5	0.0	69.2	100.0
	2003	25.3	3.0	5.3	0.0	66.3	100.0
	2004	24.9	2.5	4.5	0.0	68.2	100.0
ASSOCIATE MEMBERS							
BM*							
	1990	76.6	0.0	2.0	0.0	21.3	100.0
	1995	77.8	0.0	0.8	0.0	21.4	100.0
	1998	78.3	0.0	0.6	0.0	21.1	100.0
	1999	76.4	0.0	0.8	0.0	22.8	100.0
	2000	72.9	0.0	0.7	0.0	26.3	100.0
	2001	70.4	0.0	0.9	0.0	28.7	100.0
	2002	72.4	0.0	0.8	0.0	26.7	100.0
	2003	70.9	0.0	0.4	0.0	28.6	100.0
	2004	69.2	0.0	1.0	0.0	29.8	100.0
VG							
	1995	34.7	0.0	0.0	59.0	6.2	100.0
	1998	24.4	0.0	0.0	65.4	10.2	100.0
	1999	26.2	0.0	0.0	63.8	10.1	100.0
	2000	27.5	0.0	0.0	65.0	7.5	100.0
	2001	24.9	0.0	0.0	68.4	6.7	100.0
	2002	20.5	0.0	0.0	71.4	8.1	100.0
	2003	19.0	0.0	0.0	73.6	7.5	100.0
	2004e	28.0	0.0	0.0	62.9	9.1	100.0
TC							
	1995	74.8	0.0	1.6	0.0	23.6	100.0
	1998	67.2	0.0	0.9	0.0	31.9	100.0
	1999	61.5	0.0	0.9	0.0	37.5	100.0
	2000	57.7	18.8	0.5	0.0	23.0	100.0
	2001	62.7	20.5	0.6	0.0	16.1	100.0
	2002	65.1	19.8	0.6	0.0	14.4	100.0
	2003	62.2	22.9	0.6	0.0	14.2	100.0

*Non-resident Air and Sea arrivals

CHART 2.4.1: PERCENTAGE DISTRIBUTION OF TOURIST ARRIVALS BY TYPE OF ACCOMODATION, 1990, 1995, 1998-2004

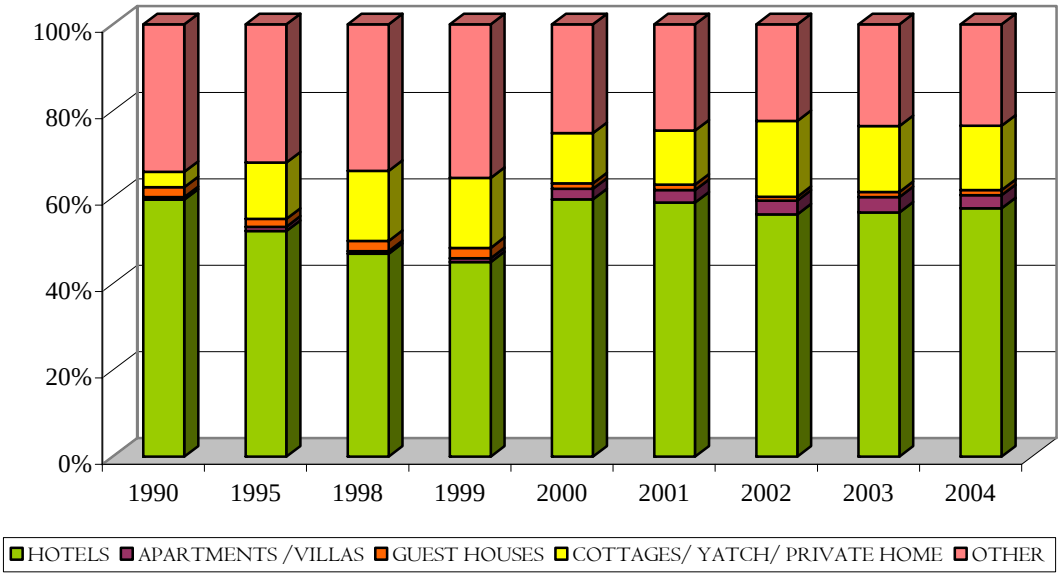


CHART 2.4.2 (A): PERCENTAGE DISTRIBUTION OF TOURIST ARRIVALS BY TYPE OF ACCOMODATION: 2002

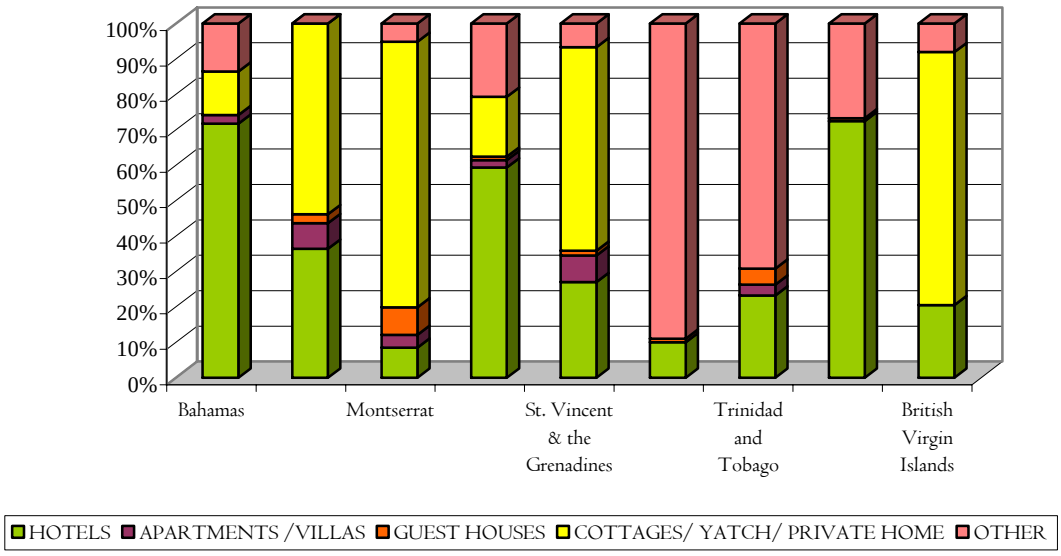
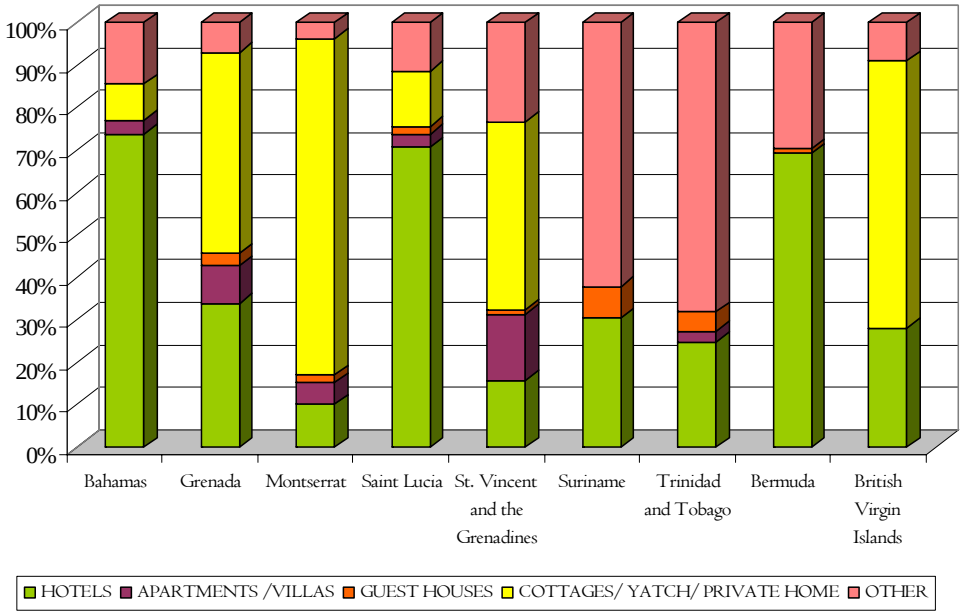


CHART 2.4.2 (B): PERCENTAGE DISTRIBUTION OF TOURIST ARRIVALS BY TYPE OF ACCOMMODATION: 2004



TOR5: TOURIST ARRIVALS BY COUNTRY OF ORIGIN

PH

Concept and Definition

Tourist Arrivals include all stay-over visitors. It does not, however, include cruise passengers and yacht arrivals.

Country of Origin: For inbound tourism, it is essential to classify visitors by country of residence rather than by nationality. It is in the country of usual residence that the decision to travel is taken and it is where the trip begins. Hence, the country of residence is the country of origin. The country of usual residence is also a criterion for determining whether a person arriving in a country is a visitor or not and if a visitor, whether he/she is a national or overseas resident.

Country of Residence: A person is considered to be a resident in a country (place) if the person (i) has lived for most of the past year or 12 months in that country (place), or (ii) has lived in that country (place) for a shorter period and intends to return within 12 months to live in that country (place).

Method of Computation

Embarkation/disembarkation (E/D) cards were analyzed to gather data for the country of origin of tourists. These E/D cards are completed for the various immigration authorities, as part of the frontier formalities, by visitors on arrival at the port of entry at the destination countries.

Indicator Relevance

Tourism in the Caribbean attracts a lot of international visitors rather than domestic visitors. As such, transport by air is continuously increasing in response to the rising number of tourists. One consequence of this increase in air travel is that tourism is responsible for an important share of greenhouse gas emissions since air travel involves the production of carbon dioxide. In fact, it is estimated that a single transatlantic return flight emits almost half the carbon dioxide produced by all other sources (lighting, heating, car use, etc.) consumed by an average person yearly.

Data Assessment

St. Vincent and the Grenadines followed the internationally recommended definition and used the country of residence to determine the country of origin. Grenada and Suriname, on the other hand, used nationality to determine the country of origin. None of the other reporting Member States and Associate Members specified whether the country of origin referred to the country of residence or the country last visited. It was, therefore, assumed that the internationally recommended definition was followed.

Furthermore, most of the reporting Member States and Associate Members provided data for 'tourist arrivals by country of origin' with the exception of Bermuda, who reported 'visitor arrivals by country of origin'. This indicator is partially harmonized within the Region.

Data Sources

Please refer to the similar section in indicator TOR1(a).

Evaluation

The data presented in **Table 2.5 (b)** shows that the United States and the United Kingdom and Europe accounted for more than fifty per cent of all tourst arrivals to the region with the exception of Dominica and Monstserrat where a greater percentage of non-resident (stopover) arrivals were from the Caribbean Region.

In 2004 tourist arrivals to the region increased by 19.6 per cent or a total of 95,505 visitors when compared to the 1998 figure of 3,163,887. During the period 1998 to 2004, the year 2001 saw a high decline of 155,655 visitors from 5,633,632 recorded in 2000 of which the UK/Europe accounted for 34.1 per cent, the USA 17.8 per cent and Canada 13 per cent.

The United States market continued to be dominant in the Bahamas with an average 1.3 million visitors during the years 1990, 1995, 1998 to 2004 representing an average of 85 per cent of total visitors to the island. Out of a total of 1.56 tourists to the Bahamas in 1990, 6.2 per cent or 96,625 were from Europe and this per cent fluctuated during the period peaking in 1999 at 8 per cent or 125,485 visitors and subsequently declining to 5.4 per cent or 83,590. Tourist arrivals from Canada declined for most of the period from 96,755 visitors in 1990 to 68,462 in 2004.

Tourist arrivals from the United States to Barbados registered 33.2 per cent of the total 432,092 in 1990 and declined by 9.7 toward the end of the period. There were significant increases in the European Market which increased its share from 34.2 in 1990 to 44.2 in 2004 while the canadian market declined from 13.4 per cent of the total in 1990 to 9.1 per cent of the total in 2004. tourists from the CARICOM/Caribbean region increased from 1.4 per cent in 1990 to 18.9 per cent in 2004.

Tourists to Dominica from the United States increased from 13.5 per cent of the total 45,087 arrivals in 1990 to 21.9 per cent of the total 80,077 arrivals in 2004. the major market in this island was the Caribbean market which accounted for an average 58.2 per cent of all tourists for the years 1990, 1995, 1998 to 2004.

Out of the total visitors of 82,002 to Greanda in 1990, 30.2 per cent originated from other countries, 27.2 from the United States, 21.4 from other CARICOM countries and 15.4 per cent were from Europe. Major increases can be seen in the United Kingdom market which increased its share by 10 per cent from 1990 to 2004 and the CARICOM market which increased its share by 7 per cent.

For the period 1996 to 2005, tourists from the United States, the most important market in Guyana, increased market share from 39 per cent in 1996 to 51.5 per cent in 2006 although there were initial declines from 1996 and 1997 and 1997 to 1998. The Caribbean market, second to the US market, declined during the period from 33.7 per cent of the total in 1996 to 23 per cent in 2005. The Canadian market was also significant in Guyana although its total share declined from 15.9 per cent of the total in 1996 to 13.6 per cent in 2005.

The major markets in Jamaica were United States, Europe and Canada. While the United States market increased for the period from 67.3 per cent of the total to 70.4 per cent, the European market experienced major fluctuations for the period 1990 to 2004 increasing from14.4 per cent in 1990 to 17.4 per cent 1998 and then declining to 14.1 per cent in 2002 and finally increasing to 17.1 to 2004 by the end of the period.

The major market for Montserrat during this period was CARICOM with an average of 43.8 per cent of the total or 4,113 tourists for the period 1998 to 2004. The United Kingdom was second with an average 24.8 per cent followed by the United States with 16.6 per cent.

Overall the total tourist arrivals to St. Kitts and Nevis declined from 98,848 in 1995 to 70,565 in 2001 befor increasing by 35.6 per cent in 2003. The United States share of the St. Kitts and Nevis market saw two major declines in 1999 by 2.7 per cent from 44.1 per cent in 1998 and by 9.2 per cent from 1998 to 2000. Since 1998, the share of other countries increased from 30.8 per cent to 61 per cent in 2004 while the Canadian market and the European Markets declined by 53 per cent and 46 per cent after initial percentage shares of 9.3 per cent of the total and 10.3 per cent of the total respectively.

The United States, Europe and the Caribbean were the main tourist markets for Saint Lucia. For the years 1990, 1995, 1998 to 2004 the total market share of United States, Europe and the Caribbean averaged 34.7, 31.0 and 24.0 per cent of the total respectively.

The data presented for St. Vincent and the Greanadine revealed that the Carribbean, The United States and Europe were the main tourist markets with averages 37.6 per cent, 28.8 per cent and 25.5 per cent of the total respectively.

More than 80 per cent of tourist to Suriname originated from Europe, specifically from Holland during the period 1995, 1998 to 2004 compared with an average 5.0 per cent of the total from CARICOM countries.

Trinidad and Tobago’s data shows that the United States was the major market with Other Countries also being important. Data also showed that tourists from European,

Canada and the Caribbean also constituted a significant proportion of total arrivals with percentages of 11.6 in Canada and the Caribbean and 12.6 per cent in Europe. Tourist arrivals from the United States recorded increases during the period from 71,085 in 1990 to 159,467 in 2004 and it share of the total market averaged 34.3 per cent.

Data on the Associate Member States, Anguilla, Bermuda and The Turks and Caicos Islands showed that tourist arrivals from the United States made up more than 60 per cent of all arrivals to the islands. The European and Caribbean markets were also significant markets in Anguilla while the more important markets in Bermuda and The Turks and Caicos Islands were Canada and Europe.

Table 2.5 (a) Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
BS						
	1990	1,321,930	96,755	96,625	46,355	1,561,665
	1995	1,328,925	85,600	114,950	68,660	1,598,135
	1998	1,250,026	83,086	117,954	76,641	1,527,707
	1999	1,293,235	87,973	125,485	70,373	1,577,066
	2000	1,294,295	82,840	104,610	62,214	1,543,959
	2001	1,308,163	79,715	94,047	55,855	1,537,780
	2002	1,310,140	68,592	79,564	54,855	1,513,151
	2003	1,305,335	63,148	93,170	48,516	1,510,169
	2004	1,360,912	68,462	83,590	48,348	1,561,312
BB						
	1990	143,295	57,841	147,804	83,152	432,092
	1995	111,983	53,373	195,970	80,781	442,107
	1998	106,314	59,946	250,352	96,002	512,614
	1999	104,953	57,333	243,993	108,335	514,614
	2000	112,153	59,957	260,775	111,811	544,696
	2001	106,629	52,381	246,125	101,943	507,078
	2002	123,429	46,754	217,934	109,782	497,899
	2003	129,326	49,641	232,090	120,154	531,211
	2004	129,664	50,032	243,977	127,829	551,502
DM						
	1990	6,066	1,524	9,329	28,168	45,087
	1995	10,923	1,828	12,940	34,780	60,471
	1998	14,121	1,904	11,710	37,766	65,501
	1999	15,613	2,158	12,001	43,734	73,506
	2000	15,078	2,177	11,145	41,198	69,598
	2001	14,493	1,870	10,825	39,205	66,393
	2002	15,464	2,039	10,131	41,559	69,193
	2003	15,638	1,968	10,772	44,812	73,190
	2004	17,570	1,724	10,208	50,575	80,077
GD						
	1990	22,321	4,333	12,668	42,686	82,008
	1995	30,033	3,920	24,822	49,232	108,007
	1998	31,640	5,343	27,357	51,454	115,794
	1999	34,694	6,136	30,553	53,906	125,289
	2000	32,541	4,849	36,822	54,652	128,864
	2001	32,219	5,442	32,153	53,537	123,351
	2002	36,508	4,684	32,741	58,483	132,416
	2003	35,154	5,599	36,856	64,746	142,355
	2004	30,127	5,309	30,933	67,496	133,865
GY						
	1996	35,833	14,585	6,063	35,491	91,972
	1997	33,295	11,499	5,212	25,731	75,737
	1998	27,513	9,419	4,297	17,376	58,605
	2000	46,177	15,948	7,229	35,688	105,042
	2001	46,999	12,916	8,689	30,713	99,317
	2002	50,058	14,190	8,190	31,903	104,341
	2003	49,625	14,144	8,136	29,006	100,911
	2004	56,629	14,217	8,036	28,745	107,627
	2005	60,071	15,876	8,704	31,945	116,596

Table 2.5 (a) Contd. Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
JM						
	1990	565,504	113,917	121,049	40,307	840,777
	1995	760,304	108,440	197,544	80,713	1,147,001
	1998	829,330	109,802	212,689	73,466	1,225,287
	1999	870,019	100,338	208,689	69,351	1,248,397
	2000	942,561	107,492	198,979	73,658	1,322,690
	2001	916,681	111,158	180,632	68,045	1,276,516
	2002	925,629	97,413	179,089	64,235	1,266,366
	2003	969,699	95,265	218,500	66,821	1,350,285
	2004	996,151	105,623	241,925	71,087	1,414,786
MS						
	1998	891	216	1,539	5,061	7,707
	1999	1,356	307	2,296	5,926	9,885
	2000	1,561	346	2,652	5,778	10,337
	2001	1,652	368	2,540	5,262	9,822
	2002	1,950	375	2,759	4,752	9,836
	2003	1,541	297	2,414	4,138	8,390
	2004	2,084	334	3,197	4,523	10,138
KN						
	1995	37,166	9,187	10,141	42,354	98,848
	1998	39,907	7,596	15,166	27,897	90,566
	1999	34,716	5,880	15,759	27,647	84,002
	2000	23,474	5,395	12,841	31,439	73,149
	2001	25,558	5,237	8,726	31,044	70,565
	2002	27,525	4,352	5,464	58,336	95,677
LC						
	1990	43,220	14,600	35,980	47,187	140,987
	1995	84,377	11,243	73,046	62,593	231,259
	1998	81,161	15,439	81,103	74,534	252,237
	1999	83,475	13,153	95,352	71,813	263,793
	2000	97,532	14,968	91,717	65,633	269,850
	2001	91,248	12,254	76,405	70,225	250,132
	2002	94,044	12,927	70,611	75,881	253,463
	2003	98,078	13,494	85,025	80,351	276,948
	2004	107,089	15,315	92,341	83,686	298,431
VC						
	1990	13,401	4,399	14,277	21,836	53,913
	1995	15,762	4,702	17,551	22,191	60,206
	1998	20,709	4,501	20,301	21,717	67,228
	1999	19,156	4,509	20,264	24,364	68,293
	2000	. . .	. . .	. . .	...	72,895
	2001	19,311	3,929	18,850	28,546	70,636
	2002	22,412	5,268	17,997	31,954	77,631
	2003	22,194	4,918	17,198	34,225	78,535
	2004	25,106	5,219	18,653	37,743	86,721
	2005	27,153	6,187	19,928	42,237	95,505
SR						
	1995	1,722	704	14,845	26,171	43,442
	1998	456	86	45,280	8,763	54,585
	1999	571	95	48,333	8,276	57,275
	2000	712	189	45,137	10,805	56,843
	2001	574	120	48,746	4,901	54,341
	2002	767	91	53,592	5,783	60,233
	2003	911	718	72,896	7,773	82,298
	2004	1,059	731	62,552	10,545	74,887
	2005	1,736	504	51,716	12,110	66,066

Table 2.5 (a) Contd. Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
TT						
	1990	**71,085**	**24,893**	**19,020**	**79,523**	**194,521**
	1995	**92,185**	**33,669**	**26,332**	**107,598**	**259,784**
	1998	**114,416**	**39,827**	**46,324**	**133,470**	**334,037**
	1999	**118,390**	**43,459**	**49,480**	**146,864**	**358,193**
	2000	**132,578**	**47,382**	**55,048**	**163,551**	**398,559**
	2001	**118,962**	**43,291**	**48,570**	**172,278**	**383,101**
	2002	**133,566**	**41,506**	**51,688**	**157,454**	**384,214**
	2003	**138,935**	**43,036**	**57,566**	**169,534**	**409,071**
	2004	**159,467**	**43,565**	**66,089**	**173,475**	**442,596**
ASSOCIATE MEMBERS						
AI						
	1990	**20,046**	**896**	**2,002**	**8,237**	**31,181**
	1995	**24,149**	**1,107**	**2,405**	**10,870**	**38,531**
	1998	**26,297**	**1,444**	**10,110**	**6,023**	**43,874**
	1999	**25,960**	**1,487**	**11,720**	**7,615**	**46,782**
	2000	**24,799**	**1,512**	**9,422**	**8,056**	**43,789**
	2001	**30,099**	**1,258**	**8,027**	**8,581**	**47,965**
	2002	**28,755**	**1,301**	**5,383**	**8,530**	**43,969**
	2003	**30,644**	**1,289**	**6,308**	**8,674**	**46,915**
	2004	**35,751**	**1,549**	**7,667**	**9,020**	**53,987**
BM						
	1990	**363,072**	**32,745**	**20,035**	**16,854**	**432,706**
	1995	**313,136**	**35,478**	**22,754**	**16,188**	**387,556**
	1998	**289,980**	**33,629**	**30,379**	**14,768**	**368,756**
	1999	**280,315**	**30,700**	**28,137**	**14,874**	**354,026**
	2000	**253,714**	**30,617**	**28,721**	**15,253**	**328,305**
	2001	**210,984**	**27,494**	**23,603**	**12,928**	**275,009**
	2002	**217,570**	**25,864**	**25,519**	**14,604**	**283,557**
	2003	**197,908**	**24,485**	**21,667**	**12,516**	**256,576**
	2004	**209,054**	**26,492**	**21,434**	**14,641**	**271,621**
TC						
	1995	**54,926**	**9,073**	**8,494**	**6,464**	**78,957**
	1998	**75,370**	**9,682**	**11,879**	**13,924**	**110,855**
	1999	**83,551**	**9,949**	**11,491**	**15,907**	**120,898**
	2000	**112,511**	**15,597**	**11,829**	**11,435**	**151,372**
	2001	**125,085**	**15,291**	**11,085**	**14,375**	**165,836**
	2002	**119,553**	**14,721**	**10,548**	**10,139**	**154,961**
	2003	**128,985**	**14,689**	**12,626**	**7,800**	**164,100**
	2004	**118,156**	**16,048**	**10,828**	**22,872**	**167,904**
VG						
	1995	**240,430**	**14,127**	**88,032**	**22,750**	**365,339**
	1998e	**255,756**	**13,951**	**97,271**	**24,033**	**391,011**
	1999	**319,285**	**21,090**	**108,040**	**35,641**	**484,056**
	2000	**344,627**	**21,765**	**125,700**	**27,317**	**519,409**
	2001	**355,763**	**13,757**	**132,479**	**33,112**	**535,111**
	2002	**348,035**	**18,092**	**148,150**	**29,146**	**543,423**
	2003	**422,154**	**22,302**	**169,928**	**43,119**	**657,503**
	2004e	**533,020**	**29,669**	**199,792**	**50,428**	**812,908**

Table 2.5 (b) Percentage distribution of Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
BS						
	1990	84.6	6.2	6.2	3.0	100.0
	1995	83.2	5.4	7.2	4.3	100.0
	1998	81.8	5.4	7.7	5.0	100.0
	1999	82.0	5.6	8.0	4.5	100.0
	2000	83.8	5.4	6.8	4.0	100.0
	2001	85.1	5.2	6.1	3.6	100.0
	2002	86.6	4.5	5.3	3.6	100.0
	2003	86.4	4.2	6.2	3.2	100.0
	2004	87.2	4.4	5.4	3.1	100.0
BB						
	1990	33.2	13.4	34.2	19.2	100.0
	1995	25.3	12.1	44.3	18.3	100.0
	1998	20.7	11.7	48.8	18.7	100.0
	1999	20.4	11.1	47.4	21.1	100.0
	2000	20.6	11.0	47.9	20.5	100.0
	2001	21.0	10.3	48.5	20.1	100.0
	2002	24.8	9.4	43.8	22.0	100.0
	2003	24.3	9.3	43.7	22.6	100.0
	2004	23.5	9.1	44.2	23.2	100.0
DM						
	1990	13.5	3.4	20.7	62.5	100.0
	1995	18.1	3.0	21.4	57.5	100.0
	1998	21.6	2.9	17.9	57.7	100.0
	1999	21.2	2.9	16.3	59.5	100.0
	2000	21.7	3.1	16.0	59.2	100.0
	2001	21.8	2.8	16.3	59.0	100.0
	2002	22.3	2.9	14.6	60.1	100.0
	2003	21.4	2.7	14.7	61.2	100.0
	2004	21.9	2.2	12.7	63.2	100.0
GD						
	1990	27.2	5.3	15.4	52.1	100.0
	1995	27.8	3.6	23.0	45.6	100.0
	1998	27.3	4.6	23.6	44.4	100.0
	1999	27.7	4.9	24.4	43.0	100.0
	2000	25.3	3.8	28.6	42.4	100.0
	2001	26.1	4.4	26.1	43.4	100.0
	2002	27.6	3.5	24.7	44.2	100.0
	2003	24.7	3.9	25.9	45.5	100.0
	2004	22.5	4.0	23.1	50.4	100.0
GY						
	1996	39.0	15.9	6.6	38.6	100.0
	1997	44.0	15.2	6.9	34.0	100.0
	1998	46.9	16.1	7.3	29.6	100.0
	2000	44.0	15.2	6.9	34.0	100.0
	2001	47.3	13.0	8.7	30.9	100.0
	2002	48.0	13.6	7.8	30.6	100.0
	2003	49.2	14.0	8.1	28.7	100.0
	2004	52.6	13.2	7.5	26.7	100.0
	2005	51.5	13.6	7.5	27.4	100.0

Table 2.5 (b) Contd. Percentage distribution of Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
JM						
	1990	67.3	13.5	14.4	4.8	100.0
	1995	66.3	9.5	17.2	7.0	100.0
	1998	67.7	9.0	17.4	6.0	100.0
	1999	69.7	8.0	16.7	5.6	100.0
	2000	71.3	8.1	15.0	5.6	100.0
	2001	71.8	8.7	14.2	5.3	100.0
	2002	73.1	7.7	14.1	5.1	100.0
	2003	71.8	7.1	16.2	4.9	100.0
	2004	70.4	7.5	17.1	5.0	100.0
MS						
	1998	11.6	2.8	20.0	65.7	100.0
	1999	13.7	3.1	23.2	59.9	100.0
	2000	15.1	3.3	25.7	55.9	100.0
	2001	16.8	3.7	25.9	53.6	100.0
	2002	19.8	3.8	28.1	48.3	100.0
	2003	18.4	3.5	28.8	49.3	100.0
	2004	20.6	3.3	31.5	44.6	100.0
KN						
	1995	42.4	10.5	11.1	36.1	100.0
	1998	44.1	8.4	16.7	30.8	100.0
	1999	41.3	7.0	18.8	32.9	100.0
	2000	32.1	7.4	17.6	43.0	100.0
	2001	36.2	7.4	12.4	44.0	100.0
	2002	28.8	4.5	5.7	61.0	100.0
LC						
	1990	30.7	10.4	25.5	33.5	100.0
	1995	36.5	4.9	31.6	27.1	100.0
	1998	32.2	6.1	32.2	29.5	100.0
	1999	31.6	5.0	36.1	27.2	100.0
	2000	36.1	5.5	34.0	24.3	100.0
	2001	36.5	4.9	30.5	28.1	100.0
	2002	37.1	5.1	27.9	29.9	100.0
	2003	35.4	4.9	30.7	29.0	100.0
	2004	35.9	5.1	30.9	28.0	100.0
VC						
	1990	24.9	8.2	26.5	40.5	100.0
	1995	26.2	7.8	29.2	36.9	100.0
	1998	30.8	6.7	30.2	32.3	100.0
	1999	28.0	6.6	29.7	35.7	100.0
	2000	. . .	. . .	. . .	...	100.0
	2001	27.3	5.6	26.7	40.4	100.0
	2002	28.9	6.8	23.2	41.2	100.0
	2003	28.3	6.3	21.9	43.6	100.0
	2004	29.0	6.0	21.5	43.5	100.0
	2005	28.4	6.5	20.9	44.2	100.0
SR						
	1995	4.0	1.6	34.2	60.2	100.0
	1998	0.8	0.2	83.0	16.1	100.0
	1999	1.0	0.2	84.4	14.4	100.0
	2000	1.3	0.3	79.4	19.0	100.0
	2001	1.1	0.2	89.7	9.0	100.0
	2002	1.3	0.2	89.0	9.6	100.0
	2003	1.1	0.9	88.6	9.4	100.0
	2004	1.4	1.0	83.5	14.1	100.0
	2005	2.6	0.8	78.3	18.3	100.0

Table 2.5 (b) Contd. Percentage distribution of Tourist Arrivals by country of Origin: 1990, 1995, 1998-2005

Country	Year	United States	Canada	Europe	Rest of the World	Total
TT						
	1990	36.5	12.8	9.8	40.9	100.0
	1995	35.5	13.0	10.1	41.4	100.0
	1998	34.3	11.9	13.9	40.0	100.0
	1999	33.1	12.1	13.8	41.0	100.0
	2000	33.3	11.9	13.8	41.0	100.0
	2001	31.1	11.3	12.7	45.0	100.0
	2002	34.8	10.8	13.5	41.0	100.0
	2003	34.0	10.5	14.1	41.4	100.0
	2004	36.0	9.8	14.9	39.2	100.0
ASSOCIATE MEMBERS						
AI						
	1990	64.3	2.9	6.4	26.4	100.0
	1995	62.7	2.9	6.2	28.2	100.0
	1998	59.9	3.3	23.0	13.7	100.0
	1999	55.5	3.2	25.1	16.3	100.0
	2000	56.6	3.5	21.5	18.4	100.0
	2001	62.8	2.6	16.7	17.9	100.0
	2002	65.4	3.0	12.2	19.4	100.0
	2003	65.3	2.7	13.4	18.5	100.0
	2004	66.2	2.9	14.2	16.7	100.0
BM*						
	1990	83.9	7.6	4.6	3.9	100.0
	1995	80.8	9.2	5.9	4.2	100.0
	1998	78.6	9.1	8.2	4.0	100.0
	1999	79.2	8.7	7.9	4.2	100.0
	2000	77.3	9.3	8.7	4.6	100.0
	2001	76.7	10.0	8.6	4.7	100.0
	2002	76.7	9.1	9.0	5.2	100.0
	2003	77.1	9.5	8.4	4.9	100.0
	2004	77.0	9.8	7.9	5.4	100.0
TC						
	1995	69.6	11.5	10.8	8.2	100.0
	1998	68.0	8.7	10.7	12.6	100.0
	1999	69.1	8.2	9.5	13.2	100.0
	2000	74.3	10.3	7.8	7.6	100.0
	2001	75.4	9.2	6.7	8.7	100.0
	2002	77.2	9.5	6.8	6.5	100.0
	2003	78.6	9.0	7.7	4.8	100.0
	2004	70.4	9.6	6.4	13.6	100.0
VG						
	1995	65.8	3.9	24.1	6.2	100.0
	1998e	65.4	3.6	24.9	6.1	100.0
	1999	66.0	4.4	22.3	7.4	100.0
	2000	66.3	4.2	24.2	5.3	100.0
	2001	66.5	2.6	24.8	6.2	100.0
	2002	64.0	3.3	27.3	5.4	100.0
	2003	64.2	3.4	25.8	6.6	100.0
	2004e	65.6	3.6	24.6	6.2	100.0

*Non-resident Air and Sea arrivals

CHART 2.5.1: PERCENTAGE DISTRIBUTION OF TOURIST ARRIVALS BY COUNTRY OF ORIGIN

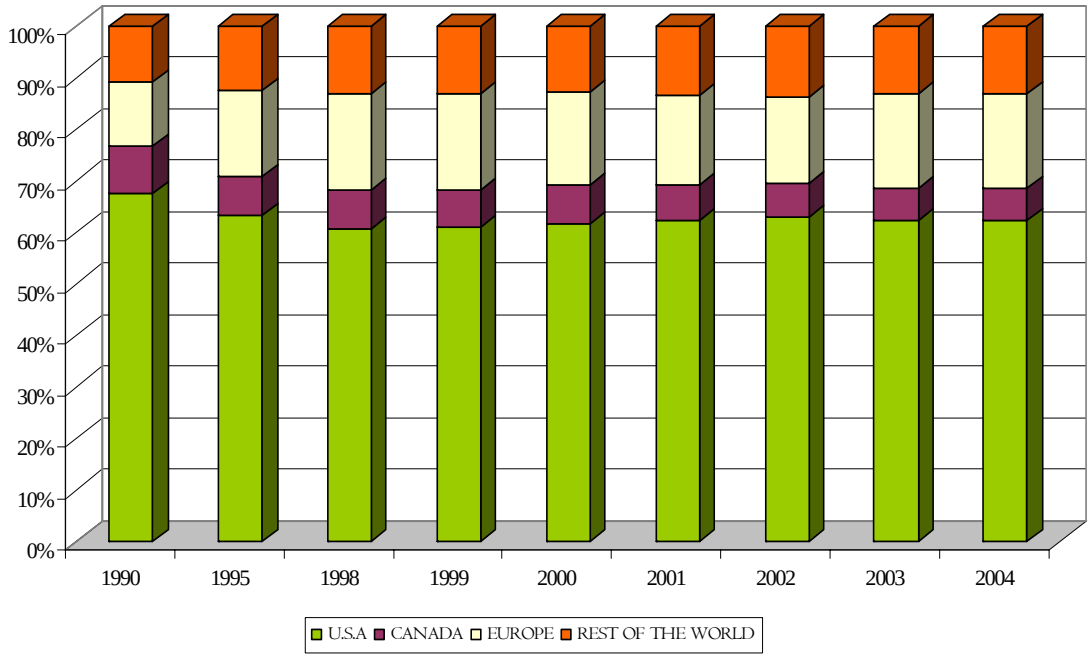
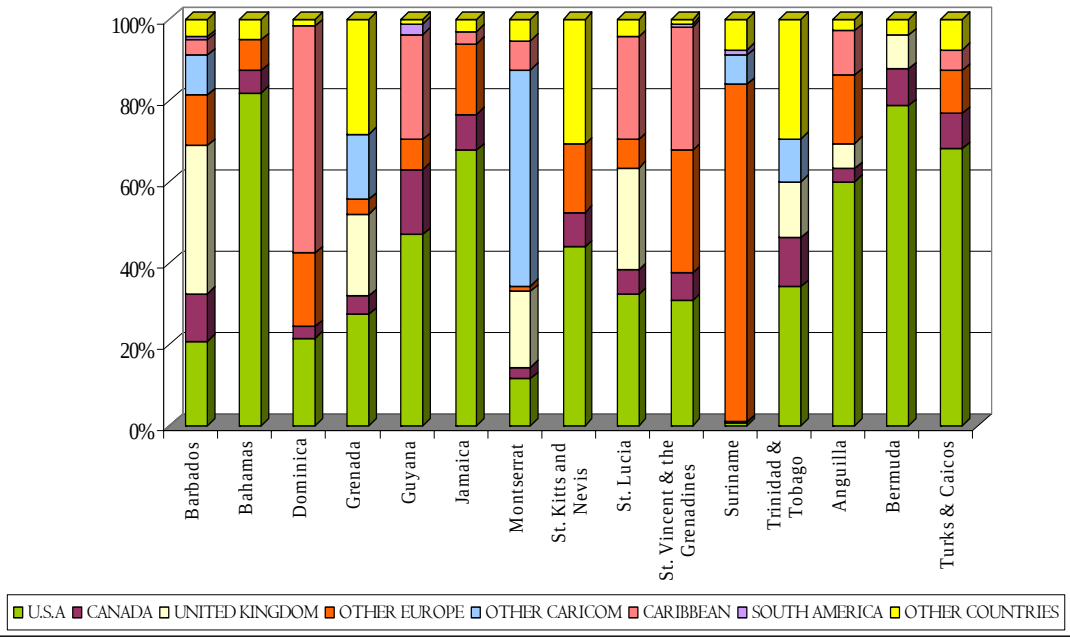


CHART 2.5.2(A): PERCENTAGE DISTRIBUTION OF TOURIST ARRIVALS BY COUNTRY OF ORIGIN: 1998



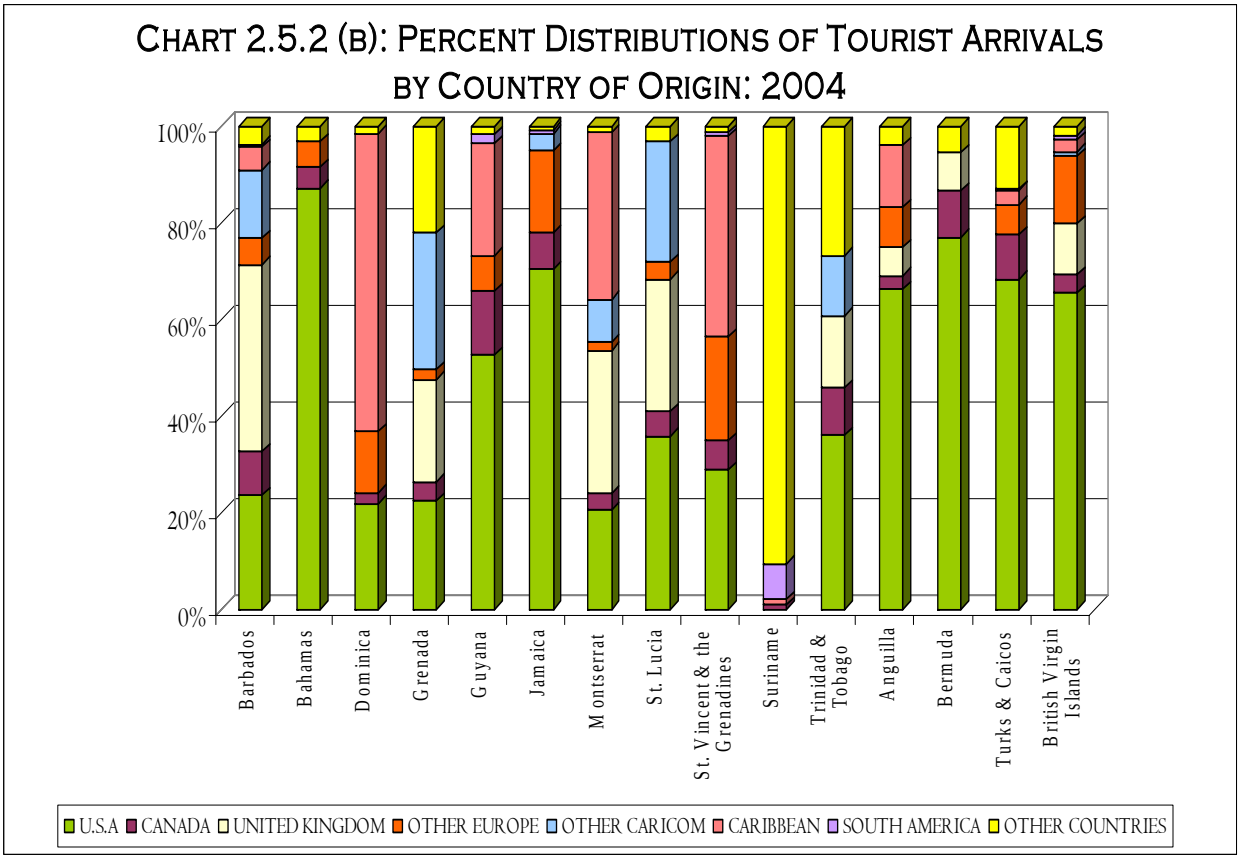


CHART 2.5.2 (B): PERCENT DISTRIBUTIONS OF TOURIST ARRIVALS BY COUNTRY OF ORIGIN: 2004
100%
80%
60%
40%
20%
0%
Barbados
Bahamas
Dominica
Grenada
Guyana
Jamaica
Montserrat
St. Lucia
St. Vincent & the Grenadines
Suriname
Trinidad & Tobago
Anguilla
Bermuda
Turks & Caicos
British Virgin Islands
U.S.A
CANADA
UNITED KINGDOM
OTHER EUROPE
OTHER CARICOM
CARIBBEAN
SOUTH AMERICA
OTHER COUNTRIES

Appendix 1.2

Table 1 (a) - Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
BS										
	1990	1,321,930	96,755		96,625				46,355	1,561,665
	1995	1,328,925	85,600		114,950				68,660	1,598,135
	1998	1,250,026	83,086		117,954				76,641	1,527,707
	1999	1,293,235	87,973		125,485				70,373	1,577,066
	2000	1,294,295	82,840		104,610				62,214	1,543,959
	2001	1,308,163	79,715		94,047				55,855	1,537,780
	2002	1,310,140	68,592		79,564				54,855	1,513,151
	2003	1,305,335	63,148		93,170				48,516	1,510,169
	2004	1,360,912	68,462		83,590				48,348	1,561,312
BB										
	1990	143,295	57,841	94,890	52,914	43,984	18,350	1,719	19,099	432,092
	1995	111,983	53,373	126,621	69,349	40,990	17,645	2,006	20,140	442,107
	1998	106,314	59,946	186,734	63,618	50,573	19,785	2,857	22,787	512,614
	1999	104,953	57,333	202,772	41,221	61,122	25,005	2,212	19,996	514,614
	2000	112,153	59,957	226,787	33,988	64,209	23,215	2,948	21,439	544,696
	2001	106,629	52,381	217,466	28,659	59,075	21,010	2,843	19,015	507,078
	2002	123,429	46,754	192,606	25,328	64,118	25,559	2,153	17,952	497,899
	2003	129,326	49,641	202,564	29,526	69,279	27,530	1,823	21,522	531,211
	2004	129,664	50,032	213,947	30,030	77,845	26,492	1,952	21,540	551,502
DM										
	1990	6,066	1,524		9,329		27,177		991	45,087
	1995	10,923	1,828		12,940		33,725		1,055	60,471
	1998	14,121	1,904		11,710		36,617		1,149	65,501
	1999	15,613	2,158		12,001		42,641		1,093	73,506
	2000	15,078	2,177		11,145		39,920		1,278	69,598
	2001	14,493	1,870		10,825		37,851		1,354	66,393
	2002	15,464	2,039		10,131		40,289		1,270	69,193
	2003	15,638	1,968		10,772		43,561		1,251	73,190
	2004	17,570	1,724		10,208		49,361		1,214	80,077
GD										
	1990	22,321	4,333	9,138	3,530	17,547			25,139	82,008
	1995	30,033	3,920	18,480	6,342	14,615			34,617	108,007
	1998	31,640	5,343	23,338	4,019	18,725			32,729	115,794
	1999	34,694	6,136	26,234	4,319	21,998			31,908	125,289
	2000	32,541	4,849	32,236	4,586	23,774			30,878	128,864
	2001	32,219	5,442	28,488	3,665	27,160			26,377	123,351
	2002	36,508	4,684	29,760	2,981	32,303			26,180	132,416
	2003	35,154	5,599	33,323	3,533	36,164			28,582	142,355
	2004	30,127	5,309	28,232	2,701	37,866			29,630	133,865
GY										
	1996	35,833	14,585	. . .	6,063	. . .	31,039	3,072	1,380	91,972
	1997	33,295	11,499	. . .	5,212	. . .	21,626	2,889	1,216	75,737
	1998	27,513	9,419	. . .	4,297	. . .	15,124	1,604	648	58,605
	2000	46,177	15,948	. . .	7,229	. . .	29,993	4,007	1,688	105,042
	2001	46,999	12,916	. . .	8,689	. . .	25,357	3,589	1,767	99,317
	2002	50,058	14,190	. . .	8,190	. . .	28,211	2,161	1,531	104,341
	2003	49,625	14,144	. . .	8,136	. . .	24,779	2,474	1,753	100,911
	2004	56,629	14,217	. . .	8,036	. . .	25,009	2,004	1,732	107,627
	2005	60,071	15,876	. . .	8,704	. . .	26,810	2,711	2,424	116,596

Table 1 (a) Contd. Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
JM										
	1990	565,504	113,917	...	121,049	...	20,870	...	19,437	840,777
	1995	760,304	108,440	...	197,544	...	29,386	...	51,327	1,147,001
	1998	829,330	109,802	...	212,689	...	36,818	...	36,648	1,225,287
	1999	870,019	100,338	...	208,689	...	38,023	...	31,328	1,248,397
	2000	942,561	107,492	...	198,979	...	43,971	...	29,687	1,322,690
	2001	916,681	111,158	...	180,632	...	40,845	...	27,200	1,276,516
	2002	925,629	97,413	...	179,089	...	41,138	...	23,097	1,266,366
	2003	969,699	95,265	...	218,500	...	43,829	...	22,992	1,350,285
	2004	996,151	105,623	...	241,925	...	49,443	...	21,644	1,414,786
MS										
	1998	891	216	1,440	99	4,103	552	...	406	7,707
	1999	1,356	307	2,178	118	4,615	612	...	699	9,885
	2000	1,561	346	2,592	60	4,708	596	...	474	10,337
	2001	1,652	368	2,419	121	4,379	766	...	117	9,822
	2002	1,950	375	2,581	178	4,005	661	...	86	9,836
	2003	1,541	297	2,269	145	3,342	731	...	65	8,390
	2004	2,084	334	3,021	176	3,640	745	...	138	10,138
KN										
	1995	37,166	9,187	...	10,141	...	...	...	42,354	98,848
	1998	39,907	7,596	...	15,166	...	...	...	27,897	90,566
	1999	34,716	5,880	...	15,759	...	...	...	27,647	84,002
	2000	23,474	5,395	...	12,841	...	...	...	31,439	73,149
	2001	25,558	5,237	...	8,726	...	...	...	31,044	70,565
	2002	27,525	4,352	...	5,464	...	...	...	58,336	95,677
LC										
	1990	43,220	14,600	26,274	9,706	...	37,608	...	9,579	140,987
	1995	84,377	11,243	54,557	18,489	...	46,073	...	16,520	231,259
	1998	81,161	15,439	63,160	17,943	...	63,524	...	11,010	252,237
	1999	83,475	13,153	73,101	22,251	...	60,342	...	11,471	263,793
	2000	97,532	14,968	73,433	18,284	...	54,595	...	11,038	269,850
	2001	91,248	12,254	66,496	9,909	...	61,047	...	9,178	250,132
	2002	94,044	12,927	63,277	7,334	...	66,409	...	9,472	253,463
	2003	98,078	13,494	75,426	9,599	...	70,543	...	9,808	276,948
	2004	107,089	15,315	81,370	10,971	...	74,242	...	9,444	298,431
VC										
	1990	13,401	4,399	...	14,277	...	20,865	474	497	53,913
	1995	15,762	4,702	...	17,551	...	21,052	320	819	60,206
	1998	20,709	4,501	...	20,301	...	20,422	554	741	67,228
	1999	19,156	4,509	...	20,264	...	22,543	772	1,049	68,293
	2000	...	...	...	...	...	...	...	...	72,895
	2001	19,311	3,929	...	18,850	...	26,428	854	1,264	70,636
	2002	22,412	5,268	...	17,997	...	30,229	556	1,169	77,631
	2003	22,194	4,918	...	17,198	...	32,779	427	1,019	78,535
	2004	25,106	5,219	...	18,653	...	36,011	533	1,199	86,721
	2005	27,153	6,187	...	19,928	...	39,944	889	1,404	95,505

Table 1 (a) Contd. Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
SR										
	1995	1,722	704		14,845	10,279		6,815	9,077	43,442
	1998	456	86		45,280	3,858		757	4,148	54,585
	1999	571	95		48,333	3,905		1,270	3,101	57,275
	2000	712	189		45,137	4,597		2,129	4,079	56,843
	2001	574	120		48,746	1,707		719	2,475	54,341
	2002	767	91		53,592	2,116		1,065	2,602	60,233
	2003	911	718		72,896	2,593		2,315	2,865	82,298
	2004	1,059	731		62,552	2,247		3,058	5,240	74,887
TT										
	1990	71,085	24,893	19,020		17,309			62,214	194,521
	1995	92,185	33,669	26,332		27,470			80,128	259,784
	1998	114,416	39,827	46,324		34,922			98,548	334,037
	1999	118,390	43,459	49,480		42,734			104,130	358,193
	2000	132,578	47,382	55,048		46,618			116,933	398,559
	2001	118,962	43,291	48,570		43,008			129,270	383,101
	2002	133,566	41,506	51,688		50,528			106,926	384,214
	2003	138,935	43,036	57,566		56,540			112,994	409,071
	2004	159,467	43,565	66,089		55,017			118,458	442,596
ASSOCIATE MEMBERS										
AI										
	1990	20,046	896	2,002	-		7,675		562	31,181
	1995	24,149	1,107	2,405	-		10,016		854	38,531
	1998	26,297	1,444	2,738	7,372		4,793		1,230	43,874
	1999	25,960	1,487	2,703	9,017		6,002		1,613	46,782
	2000	24,799	1,512	2,786	6,636		6,084		1,972	43,789
	2001	30,099	1,258	2,789	5,238		6,682		1,899	47,965
	2002	28,755	1,301	2,529	2,854		6,925		1,605	43,969
	2003	30,644	1,289	2,962	3,346		6,830		1,844	46,915
	2004	35,751	1,549	3,198	4,469		6,949		2,071	53,987
BM*										
	1990	363,072	32,745	20,035					16,854	432,706
	1995	313,136	35,478	22,754					16,188	387,556
	1998	289,980	33,629	30,379					14,768	368,756
	1999	280,315	30,700	28,137					14,874	354,026
	2000	253,714	30,617	28,721					15,253	328,305
	2001	210,984	27,494	23,603					12,928	275,009
	2002	217,570	25,864	25,519					14,604	283,557
	2003	197,908	24,485	21,667					12,516	256,576
	2004	209,054	26,492	21,434					14,641	271,621
TC										
	1995	54,926	9,073		8,494		3,768	. . .	2,696	78,957
	1998	75,370	9,682		11,879		5,594	. . .	8,330	110,855
	1999	83,551	9,949		11,491		5,138	. . .	10,769	120,898
	2000	112,511	15,597		11,829		7,059	. . .	4,376	151,372
	2001	125,085	15,291		11,085		6,920	. . .	7,455	165,836
	2002	119,553	14,721		10,548		4,977	589	4,573	154,961
	2003	128,985	14,689		12,626		5,398	. . .	2,402	164,100
	2004	118,156	16,048		10,828		5,177	369	22,503	173,081

*Non-resident Air and Sea arrivals

Table 1 (b) Contd. Percentage Distribution of Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
BS										
	1990	84.6	6.2	0.0	6.2	0.0	0.0	0.0	3.0	100.0
	1995	83.2	5.4	0.0	7.2	0.0	0.0	0.0	4.3	100.0
	1998	81.8	5.4	0.0	7.7	0.0	0.0	0.0	5.0	100.0
	1999	82.0	5.6	0.0	8.0	0.0	0.0	0.0	4.5	100.0
	2000	83.8	5.4	0.0	6.8	0.0	0.0	0.0	4.0	100.0
	2001	85.1	5.2	0.0	6.1	0.0	0.0	0.0	3.6	100.0
	2002	86.6	4.5	0.0	5.3	0.0	0.0	0.0	3.6	100.0
	2003	86.4	4.2	0.0	6.2	0.0	0.0	0.0	3.2	100.0
	2004	87.2	4.4	0.0	5.4	0.0	0.0	0.0	3.1	100.0
BB										
	1990	33.2	13.4	22.0	12.2	10.2	4.2	0.4	4.4	100.0
	1995	25.3	12.1	28.6	15.7	9.3	4.0	0.5	4.6	100.0
	1998	20.7	11.7	36.4	12.4	9.9	3.9	0.6	4.4	100.0
	1999	20.4	11.1	39.4	8.0	11.9	4.9	0.4	3.9	100.0
	2000	20.6	11.0	41.6	6.2	11.8	4.3	0.5	3.9	100.0
	2001	21.0	10.3	42.9	5.7	11.7	4.1	0.6	3.7	100.0
	2002	24.8	9.4	38.7	5.1	12.9	5.1	0.4	3.6	100.0
	2003	24.3	9.3	38.1	5.6	13.0	5.2	0.3	4.1	100.0
	2004	23.5	9.1	38.8	5.4	14.1	4.8	0.4	3.9	100.0
DM										
	1990	13.5	3.4	0.0	20.7	0.0	60.3	0.0	2.2	100.0
	1995	18.1	3.0	0.0	21.4	0.0	55.8	0.0	1.7	100.0
	1998	21.6	2.9	0.0	17.9	0.0	55.9	0.0	1.8	100.0
	1999	21.2	2.9	0.0	16.3	0.0	58.0	0.0	1.5	100.0
	2000	21.7	3.1	0.0	16.0	0.0	57.4	0.0	1.8	100.0
	2001	21.8	2.8	0.0	16.3	0.0	57.0	0.0	2.0	100.0
	2002	22.3	2.9	0.0	14.6	0.0	58.2	0.0	1.8	100.0
	2003	21.4	2.7	0.0	14.7	0.0	59.5	0.0	1.7	100.0
	2004	21.9	2.2	0.0	12.7	0.0	61.6	0.0	1.5	100.0
GD										
	1990	27.2	5.3	11.1	4.3	21.4	0.0	0.0	30.7	100.0
	1995	27.8	3.6	17.1	5.9	13.5	0.0	0.0	32.1	100.0
	1998	27.3	4.6	20.2	3.5	16.2	0.0	0.0	28.3	100.0
	1999	27.7	4.9	20.9	3.4	17.6	0.0	0.0	25.5	100.0
	2000	25.3	3.8	25.0	3.6	18.4	0.0	0.0	24.0	100.0
	2001	26.1	4.4	23.1	3.0	22.0	0.0	0.0	21.4	100.0
	2002	27.6	3.5	22.5	2.3	24.4	0.0	0.0	19.8	100.0
	2003	24.7	3.9	23.4	2.5	25.4	0.0	0.0	20.1	100.0
	2004	22.5	4.0	21.1	2.0	28.3	0.0	0.0	22.1	100.0
GY										
	1996	39.0	15.9	0.0	6.6	0.0	33.7	3.3	1.5	100.0
	1997	44.0	15.2	0.0	6.9	0.0	28.6	3.8	1.6	100.0
	1998	46.9	16.1	0.0	7.3	0.0	25.8	2.7	1.1	100.0
	2000	44.0	15.2	0.0	6.9	0.0	28.6	3.8	1.6	100.0
	2001	47.3	13.0	0.0	8.7	0.0	25.5	3.6	1.8	100.0
	2002	48.0	13.6	0.0	7.8	0.0	27.0	2.1	1.5	100.0
	2003	49.2	14.0	0.0	8.1	0.0	24.6	2.5	1.7	100.0
	2004	52.6	13.2	0.0	7.5	0.0	23.2	1.9	1.6	100.0

Table 1 (b) Contd. Percentage Distribution of Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
JM										
	1990	67.3	13.5	0.0	14.4	0.0	2.5	0.0	2.3	100.0
	1995	66.3	9.5	0.0	17.2	0.0	2.6	0.0	4.5	100.0
	1998	67.7	9.0	0.0	17.4	0.0	3.0	0.0	3.0	100.0
	1999	69.7	8.0	0.0	16.7	0.0	3.0	0.0	2.5	100.0
	2000	71.3	8.1	0.0	15.0	0.0	3.3	0.0	2.2	100.0
	2001	71.8	8.7	0.0	14.2	0.0	3.2	0.0	2.1	100.0
	2002	73.1	7.7	0.0	14.1	0.0	3.2	0.0	1.8	100.0
	2003	71.8	7.1	0.0	16.2	0.0	3.2	0.0	1.7	100.0
	2004	70.4	7.5	0.0	17.1	0.0	3.5	0.0	1.5	100.0
MS										
	1998	11.6	2.8	18.7	1.3	53.2	7.2	0.0	5.3	100.0
	1999	13.7	3.1	22.0	1.2	46.7	6.2	0.0	7.1	100.0
	2000	15.1	3.3	25.1	0.6	45.5	5.8	0.0	4.6	100.0
	2001	16.8	3.7	24.6	1.2	44.6	7.8	0.0	1.2	100.0
	2002	19.8	3.8	26.2	1.8	40.7	6.7	0.0	0.9	100.0
	2003	18.4	3.5	27.0	1.7	39.8	8.7	0.0	0.8	100.0
	2004	20.6	3.3	29.8	1.7	35.9	7.3	0.0	1.4	100.0
KN										
	1995	37.6	9.3	0.0	10.3	0.0	0.0	0.0	42.8	100.0
	1998	44.1	8.4	0.0	16.7	0.0	0.0	0.0	30.8	100.0
	1999	41.3	7.0	0.0	18.8	0.0	0.0	0.0	32.9	100.0
	2000	32.1	7.4	0.0	17.6	0.0	0.0	0.0	43.0	100.0
	2001	36.2	7.4	0.0	12.4	0.0	0.0	0.0	44.0	100.0
	2002	28.8	4.5	0.0	5.7	0.0	0.0	0.0	61.0	100.0
LC										
	1990	30.7	10.4	18.6	6.9	0.0	26.7	0.0	6.8	100.0
	1995	36.5	4.9	23.6	8.0	0.0	19.9	0.0	7.1	100.0
	1998	32.2	6.1	25.0	7.1	0.0	25.2	0.0	4.4	100.0
	1999	31.6	5.0	27.7	8.4	0.0	22.9	0.0	4.3	100.0
	2000	36.1	5.5	27.2	6.8	0.0	20.2	0.0	4.1	100.0
	2001	36.5	4.9	26.6	4.0	0.0	24.4	0.0	3.7	100.0
	2002	37.1	5.1	25.0	2.9	0.0	26.2	0.0	3.7	100.0
	2003	35.4	4.9	27.2	3.5	0.0	25.5	0.0	3.5	100.0
	2004	35.9	5.1	27.3	3.7	0.0	24.9	0.0	3.2	100.0
VC										
	1990	24.9	8.2	0.0	26.5	0.0	38.7	0.9	0.9	100.0
	1995	26.2	7.8	0.0	29.2	0.0	35.0	0.5	1.4	100.0
	1998	30.8	6.7	0.0	30.2	0.0	30.4	0.8	1.1	100.0
	1999	28.0	6.6	0.0	29.7	0.0	33.0	1.1	1.5	100.0
	2001	27.3	5.6	0.0	26.7	0.0	37.4	1.2	1.8	100.0
	2002	28.9	6.8	0.0	23.2	0.0	38.9	0.7	1.5	100.0
	2003	28.3	6.3	0.0	21.9	0.0	41.7	0.5	1.3	100.0
	2004	29.0	6.0	0.0	21.5	0.0	41.5	0.6	1.4	100.0
	2005	28.4	6.5	0.0	20.9	0.0	41.8	0.9	1.5	100.0

Table 1 (b) Contd. Percentage Distribution of Tourist Arrivals by Country of Origin: 1990, 1995, 1998-2005

Country	Year	U.S.A	Canada	United Kingdom	Other Europe	Other CARICOM	Caribbean	South America	Other Countries	Total All Countries
SR										
	1995	4.0	1.6	0.0	34.2	23.7	0.0	15.7	20.9	100.0
	1998	0.8	0.2	0.0	83.0	7.1	0.0	1.4	7.6	100.0
	1999	1.0	0.2	0.0	84.4	6.8	0.0	2.2	5.4	100.0
	2000	1.3	0.3	0.0	79.4	8.1	0.0	3.7	7.2	100.0
	2001	1.1	0.2	0.0	89.7	3.1	0.0	1.3	4.6	100.0
	2002	1.3	0.2	0.0	89.0	3.5	0.0	1.8	4.3	100.0
	2003	1.1	0.9	0.0	88.6	3.2	0.0	2.8	3.5	100.0
	2004	1.4	1.0	0.0	83.5	3.0	0.0	4.1	7.0	100.0
TT										
	1990	36.5	12.8	9.8	0.0	8.9	0.0	0.0	32.0	100.0
	1995	35.5	13.0	10.1	0.0	10.6	0.0	0.0	30.8	100.0
	1998	34.3	11.9	13.9	0.0	10.5	0.0	0.0	29.5	100.0
	1999	33.1	12.1	13.8	0.0	11.9	0.0	0.0	29.1	100.0
	2000	33.3	11.9	13.8	0.0	11.7	0.0	0.0	29.3	100.0
	2001	31.1	11.3	12.7	0.0	11.2	0.0	0.0	33.7	100.0
	2002	34.8	10.8	13.5	0.0	13.2	0.0	0.0	27.8	100.0
	2003	34.0	10.5	14.1	0.0	13.8	0.0	0.0	27.6	100.0
	2004	36.0	9.8	14.9	0.0	12.4	0.0	0.0	26.8	100.0
ASSOCIATE MEMBERS										
AI										
	1990	64.3	2.9	6.4	0.0	0.0	24.6	0.0	1.8	100.0
	1995	62.7	2.9	6.2	0.0	0.0	26.0	0.0	2.2	100.0
	1998	59.9	3.3	6.2	16.8	0.0	10.9	0.0	2.8	100.0
	1999	55.5	3.2	5.8	19.3	0.0	12.8	0.0	3.4	100.0
	2000	56.6	3.5	6.4	15.2	0.0	13.9	0.0	4.5	100.0
	2001	62.8	2.6	5.8	10.9	0.0	13.9	0.0	4.0	100.0
	2002	65.4	3.0	5.8	6.5	0.0	15.7	0.0	3.7	100.0
	2003	65.3	2.7	6.3	7.1	0.0	14.6	0.0	3.9	100.0
	2004	66.2	2.9	5.9	8.3	0.0	12.9	0.0	3.8	100.0
BM*										
	1990	83.9	7.6	4.6	0.0	0.0	0.0	0.0	3.9	100.0
	1995	80.8	9.2	5.9	0.0	0.0	0.0	0.0	4.2	100.0
	1998	78.6	9.1	8.2	0.0	0.0	0.0	0.0	4.0	100.0
	1999	79.2	8.7	7.9	0.0	0.0	0.0	0.0	4.2	100.0
	2000	77.3	9.3	8.7	0.0	0.0	0.0	0.0	4.6	100.0
	2001	76.7	10.0	8.6	0.0	0.0	0.0	0.0	4.7	100.0
	2002	76.7	9.1	9.0	0.0	0.0	0.0	0.0	5.2	100.0
	2003	77.1	9.5	8.4	0.0	0.0	0.0	0.0	4.9	100.0
	2004	77.0	9.8	7.9	0.0	0.0	0.0	0.0	5.4	100.0
TC										
	1995	69.6	11.5	0.0	10.8	0.0	4.8	0.0	3.4	100.0
	1998	68.0	8.7	0.0	10.7	0.0	5.0	0.0	7.5	100.0
	1999	69.1	8.2	0.0	9.5	0.0	4.2	0.0	8.9	100.0
	2000	74.3	10.3	0.0	7.8	0.0	4.7	0.0	2.9	100.0
	2001	75.4	9.2	0.0	6.7	0.0	4.2	0.0	4.5	100.0
	2002	77.2	9.5	0.0	6.8	0.0	3.2	0.4	3.0	100.0
	2003	78.6	9.0	0.0	7.7	0.0	3.3	0.0	1.5	100.0
	2004	68.3	9.3	0.0	6.3	0.0	3.0	0.2	13.0	100.0

*Non-resident Air and Sea arrivals

Appendix 2.2

2.2.1 (i) (a): Sources of Data for Table 2.1 (a): Tourists, Cruise Ship Arrivals and Number of Tourist Nights Spent by Year

Country	Data Source
THE BAHAMAS	Immigration Card and Research & Statistics Department, Ministry of Tourism
BARBADOS	National Statistics Office
BELIZE	Belize Tourism Board/ ESU,MNRE
DOMINCA	Central Statistical Office
GRENADA	Central Statistical Office/ Economic Section
JAMAICA	Jamaica Tourist Board
ST. KITTS AND NEVIS	1995, 1996. C.T.O. Statistical Report 1994, 1995, 1999-2000; 2002-2003, ECCB Statistical Digest 1998. (1997) ; 1999 (1998), 2000-2001 : ECCB Economic and Financial Review Dec 2001& Dec.2002
SAINT LUCIA	Government Statistics Department
ST. VINCENT & THE GRENADINES	National Statistics Office
SURINAME	General Bureau of Statistics, Section: Traffic and Transport Statistics
TRINIDAD AND TOBAGO	Central Statistical Office/Tourism
ANGUILLA	Statistics Department
BERMUDA	Department of Statistics: Facts and Figures
BRITISH VIRGIN ISLANDS	Development Planning Unit
THE TURKS AND CAICOS ISLANDS	Tourist Board

2.2.1 (i)(b): Notes for Table 2.1 (a): Tourists, Cruise Ship Arrivals and Number of Tourist Nights Spent by Year

Country	Notes
BELIZE	b/-average number of tourist nights available
ST. VINCENT & THE GRENADINES	Data provided by the Ministry of Tourism is tabulated according to the following categories: Stopovers (tourists), Excursionists (same day), Cruise ships and Yachts.
BRITISH VIRGIN ISLANDS	e means estimate
THE TURKS AND CAICOS ISLANDS	Number of tourist nights spent is based on the Survey of Departing Visitors 2002 & 2004: Statistical Office.

2.2.1(ii) (a): Sources of Data for Table 2.1 (b): Tourist Intensity/Growth Rate and Tourist Penetration Ratio

Country	Data Source
BELIZE	Belize Tourism Board/ ESU,MNRE
DOMINCA	Central Statistical Office
THE TURKS AND CAICOS ISLANDS	Tourist Board

2.2.1(ii) (b): Notes for Table 2.1 (b): Tourist Intensity/Growth Rate and Tourist Penetration Ratio

Country	Notes
THE TURKS AND CAICOS ISLANDS	TCI has 366.11 square miles or 948.23 square km

2.2.2 (a): Sources of Data for Table 2.2: Number of Hotels Classified by Size, Land Area Occupied, Beds and Rooms by Year

Country	Data Source
THE BAHAMAS	Hotel Licensing
BARBADOS	National Statistics Office
BELIZE	Belize Tourism Board
GRENADA	Central Statistical Office/ Economic Section
JAMAICA	Jamaica Tourist Board
SAINT LUCIA	St. Lucia Tourist Board
TRINIDAD AND TOBAGO	Central Statistical Office/Tourism
BERMUDA	Department of Statistics: Facts and Figures
BRITISH VIRGIN ISLANDS	Development Planning Unit
THE TURKS AND CAICOS ISLANDS	Tourist Board. Room Occupancy Source: Turks & Caicos Hotel & Tourism Association

2.2.2(b): Notes for Table 2.2: Number of Hotels Classified by Size, Land Area Occupied, Beds and Rooms by Year

Country	Notes
THE BAHAMAS	Total number of beds available was calculated based on double occupancy. Total number of rooms occupied is based on a sample of large and some small hotels in the Bahamas.
JAMAICA	Room 25 and more and less than 50 refer to rooms 50 and under. Rooms 50 and more refer to rooms 51 and more. Number of apartments, resort villas and guesthouses included in 50 rooms and under category.
SAINT LUCIA	Data provided is for all accommodation establishments (i.e. hotels, villas/apartments, guest houses).
BRITISH VIRGIN ISLANDS	e means estimate.
THE TURKS AND CAICOS ISLANDS	Room occupancy rate was sourced from the Turks & Caicos Hotel & Tourism Association (TCHTA) and the rate reflects only for the members of this association which is in fact many of the largest accommodations. Therefore, the formula for the rate was not applied to obtain these figures but they were taken directly from the TCHTA.

2.2.3 (a): Sources of Data for Table 2.3: Visitor Expenditure

Country	Data Source
THE BAHAMAS	Research and Statistics Department, Ministry of Tourism
BARBADOS	National Statistics Office
BELIZE	Belize Tourism Board
GRENADA	National Statistics Office
JAMAICA	Jamaica Tourist Board
MONTSERRAT	Statistics Department, Development Unit
ST. KITTS AND NEVIS	1995, 1996. C.T.O. Statistical Report 1994, 1995, 1999-2000; 2002-2003, ECCB Statistical Digest 1998. (1997) ; 1999 (1998), 2000-2001 : ECCB Economic and Financial Review Dec 2001& 2002
SAINT LUCIA	Government Statistics Department
ST. VINCENT & THE GRENADINES	The Statistical Office
TRINIDAD AND TOBAGO	Central Statistical Office/Tourism
ANGUILLA	Statistics Department
BERMUDA	Department of Statistics
BRITISH VIRGIN ISLANDS	Development Planning Unit
THE TURKS AND CAICOS ISLANDS	Statistical Office, Survey of Departing Visitors, June 2002

2.2.3 (b): Notes for Table 2.3: Visitor Expenditure

Country	Notes
THE BAHAMAS	Visitor Expenditure is total expenditure including day and cruise visitors. Information listed under Int'l and Domestic expenditure consists of stopover and cruise expenditures for visitors only. Expenditure on accommodation, meals and drinks, shopping, entertainment, etc is based on stopover visitors only.
JAMAICA	Expenditure on same-day visits = average expenditure per person - cruise passengers. Expenditure on accommodation, meals and drinks, shopping, entertainment, etc = average expenditure per person per night. Data for total directly employed in tourism refers to the accommodation sector.
BRITISH VIRGIN ISLANDS	Expenditure on accommodation, …, entertainment, etc. includes expenditure on hotel, charter boat, rented accommodation, own accommodation, friend, etc. e means estimate.
THE TURKS AND CAICOS ISLANDS	Employment in Tourism (2001) is taken as those employed in "hotels, restaurant, tourism" industrial classification for the 2001 Census.

2.2.4 (a): Sources of Data for Table 2.4: Tourist Arrivals by Type of Accommodation

Country	Data Source
THE BAHAMAS	Immigration Card and Research & Statistics Department, Ministry of Tourism
GRENADA	Central Statistical Office/Economic Section
MONTSERRAT	Statistics Department, Development Unit
SAINT LUCIA	St. Lucia Tourist Board
ST. VINCENT AND THE GRENADINES	Ministry of Tourism
SURINAME	The figures are from the Ministry of Justice, Department of Foreign Affairs and include all visitors who stay longer than 7 days (8 days and more and less than 365 days) in Suriname. These visitors have to register themselves at this Department.
TRINIDAD AND TOBAGO	Central Statistical Office/Tourism
BERMUDA	Department of Statistics: Quarterly Report from the Department of Tourism
BRITISH VIRGIN ISLANDS	Development Planning Unit
THE TURKS AND CAICOS ISLANDS	Tourist Board

2.2.4 (b): Notes for Table 2.4: Tourist Arrivals by Type of Accommodation

Country	Notes
THE BAHAMAS	Other includes no response and timeshare.
MONTSERRAT	Cottages/yacht/private homes include only private homes. Other includes Bed and Breakfasts.
SAINT LUCIA	Estimates were used to calculate data for 2001. Cottages/ Yacht/ Private Home refer to private dwellings, boats and condos. Other includes Undefined Inns, Other Paid Accommodation, and Not Stated.
ST. VINCENT AND THE GRENADINES	Other includes Not Stated. Villas includes resorts. Apartments include villas for data from 2002-2005. The data for years 1998-2000, the category "Hotel" includes villas. Cottages/ Yacht/ Private Home refers to private accommodation.
SURINAME	Guest houses include pension. Other includes unknown. 2004* and 2005* - Number of tourist arrivals as presented by the Suriname Tourist Foundation and includes all stayover visitors. This is due to a new method that is used for registering tourist arrivals- starting point: 2004.
BERMUDA	Other includes private homes and not stated.
BRITISH VIRGIN ISLANDS	Cottages/ Yacht / Private Home include charter boat and own or friend's private home. Other includes rented accommodations. e means estimate.
THE TURKS AND CAICOS ISLANDS	Other includes live aboard, B&B and private dwellings. Breakdown for 2004 is not yet available.

2.2.5 (a): Sources of Data for Table 2.5: Tourist Arrivals by Country of Origin

Country	Data Source
THE BAHAMAS	Immigration Card and Research & Statistics Department, Ministry of Tourism
BARBADOS	National Statistics Office
DOMINCA	Central Statistical Office
GRENADA	Central Statistical Office/ Economic Section
GUYANA	Bureau of Statistics and Guyana Tourism Authority
JAMAICA	Jamaica Tourist Board
MONTSERRAT	Statistical Department, Development Unit
ST. KITTS AND NEVIS	1995, 1996. C.T.O. Statistical Report 1994, 1995, 1999-2000; 2002-2003, ECCB Statistical Digest 1998. (1997); 1999 (1998), 2000-2001 :ECCB Economic and Financial Review Dec 2001& Dec.2002
SAINT LUCIA	Government Statistics Department
ST. VINCENT & THE GRENADINES	Ministry of Tourism
SURINAME	National Statistics Office
TRINIDAD & TOBAGO	Central Statistical Office/Tourism
ANGUILLA	Statistics Department
BERMUDA	Department of Statistics - Quarterly Report from the Department of Tourism
THE TURKS AND CAICOS ISLANDS	Tourist Board

2.2.5 (b): Notes for Table 2.5: Tourist Arrivals by Country of Origin

Country	Notes
THE BAHAMAS	Other Europe = Europe
BARBADOS	Caribbean = Trinidad and Tobago. South America = Venezuela. Other = Other + Other LAFTA countries.
DOMINCA	Other Europe = Europe.
GRENADA	Other Europe = Germany. Other CARICOM = CARICOM.
GUYANA	1998 figures are from January - November only. Other Europe refers to Europe. South America refers to South and Central America. Other includes not stated.
JAMAICA	Other Europe = Europe. Other = Other + Latin America. Other countries are: U.K., Denmark, Finland, Norway, Sweden, Greece, Italy, Portugal, Spain, Austria, Belgium, France, Germany, Luxemburg, Netherlands, Switzerland, Czechoslovakia, Hungary, Poland, Russia as well as other European countries, Japan, Israel, Saudi Arabia, Turkey, India, Pakistan, China, Taiwan, Korea, The Philippines, Singapore, Australia and New Zealand, other Asian countries, Brazil, Mexico, Belize, Costa Rica, El Salvador, Guatemala, Nicaragua, Panama, Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Surinam, Uruguay and Venezuela.
MONTSERRAT	Other CARICOM includes OECS countries and Rest of CARICOM. Caribbean includes all other Caribbean countries that are not members of CARICOM. Other countries include Latin America.
SAINT LUCIA	Other Europe includes Germany and France.
ST. VINCENT AND THE GRENADINES	Data is tabulated by the Ministry of Tourism as Tourist arrival by country of residence rather than by country of origin. Other Europe refers to Europe.
SURINAME	Data is tabulated as tourist Arrival by nationality. Dutch nationals are included in Other Europe. Other CARICOM refers to Dominicans, Trinidadians, Haitians and Guyanese. South America refers to Brazil. Other includes Chinese Nationals and Other.
TRINIDAD AND TOBAGO	Other CARICOM refers to Barbados and Grenada.
ANGUILLA	Other Europe includes Germany and Italy.

EH1: NUMBER OF REPORTED CASES AND INCIDENCE OF ENVIRONMENTALLY RELATED DISEASES

DK

Concept and Definition

Environmentally related diseases refer to diseases that cause an interruption, cessation or disorder of human bodily functions, systems or organs due to unfavorable environmental factors. According to the Dictionary of Epidemiology, edited for the International Epidemiological Association by John M. Last, a case in epidemiology, is a person in the population or study group identified as having the particular disease, health disorder, or condition under investigation. A variety of criteria may be used to identify cases, e.g. individual physician's diagnoses, registries and notifications, abstracts of clinical records, surveys of the general population, and population screening, among others. The epidemiological definition of a case is not necessarily the same as the ordinary clinical definition. (*http://www.paho.org/English/SHA/be991norms.htm*)

A CASE refers to a person who has the particular disease, health disorder, or condition which meets the case definition for surveillance and outbreak investigation purposes. The definition of a case for surveillance and outbreak investigation purpose is not necessarily the same as the ordinary clinical definition.

PREVALENCE refers to the number of instances of illness or of persons ill, or of any other event such as accidents, in a specified population, without any distinction between new and old cases. Prevalence may be recorded at a stated moment (point prevalence) or during a given period of time (period prevalence). (*Prevalence and Incidence. WHO Bulletin , 1966; 35:783-784*).

An INCIDENCE is the number of instances of illness commencing, or of persons falling ill, during a given period in a specified population. Incidence is usually expressed as a rate, the denominator being the average number of persons in the specified population during the defined period or the estimated number of persons at the mid-point of that period (*Prevalence and Incidence. WHO Bulletin, 1966, 35: 783-784*).

WHO BASIC Information for nurses

REPORTED CASES refers to the number of cases reported/registered in a specific year, for a given country, territory, or geographic area.

Types of Environmentally Related Diseases

Gastroenteritis is an inflammation of the stomach and intestines with many possible causes, such as: bacteria (responsible for acute food poisoning), parasites, food intolerances, drugs (antibiotics in particular) or most common viral infections. Symptoms can include nausea, vomiting, diarrhea, fever, abdominal cramping and/or pain and a general feeling of tiredness. It is often called the "stomach flu", although it is not caused by the influenza viruses. *(Please refer to the Center for Disease Control website at*

http://www.cdc.gov/ncidod/dvrd/revb/gastro/faq.htm.)

Typhoid: Typhoid fever is a bacterial infection caused by ingesting contaminated food or water. Symptoms are characterized by headaches, nausea and loss of appetite.

Malaria is caused by a parasite called Plasmodium, which is transmitted via the bites of infected mosquitoes. In the human body, the parasites multiply in the liver, and then infect red blood cells. Symptoms of malaria include fever, headache, and vomiting, and usually appear between 10 and 15 days after the mosquito bite. If not treated, malaria can quickly become life-threatening by disrupting the blood supply to vital organs.
(Please refer to the World Health Organization's website at http://www.who.int/topics/ malaria/en/)

Cholera is an acute intestinal infection caused by ingestion of food or water contaminated with the bacterium Vibrio cholerae. It has a short incubation period, from less than one day to five days, and produces an enterotoxin that causes a copious, painless, watery diarrhoea that can quickly lead to severe dehydration and death if treatment is not promptly given. Vomiting also occurs in most patients.
Please refer to the World Health Organization's website at http://www.who.int/topics /cholera/en/)

*Poisonin*g: A poison is any substance that causes harm if it gets into the body. Harm can be mild (for example, headache or nausea) or severe (for example, fits or very high fever), and severely poisoned people may die. When people are in contact with a poison they are said to be exposed to it. Exposure may happen only once or many times. *Acute exposure* is a single contact that lasts for seconds, minutes or hours, or several exposures over about a day or less. *Chronic exposure* is contact that lasts for many days, months or years. It may be continuous or broken by periods when there is no contact. Exposure that happens only at work, for example, is not continuous. Chronic exposure to small amounts of poison may not cause any signs or symptoms of poisoning at first. It may be many days or months before there is enough chemical inside the body to cause poisoning. For example, a person may use pesticide every day. Each day the person is exposed to only a small amount of pesticide, but the amount of pesticide in the body gradually builds up, until eventually, after many days, it adds up to a poisonous dose. Only then does the person begin to feel unwell.

Dengue is an acute, febrile illness, caused by one of four types of dengue virus. Viral transmission is through the bite of an infected Aedes Aegypti mosquito. The disease occurs in all countries infested with the vector and is prevalent in the Caribbean. Dengue fever is usually seasonal, with an increase in cases occurring after the onset of the rainy season.

Accidental Pesticide Poisoning: A case of *Accidental Pesticide Poisoning* is defined as any person who, after having been exposed to one or more pesticides, presents clinical manifestations of poisoning, or specific laboratory test results compatible with poisoning,

in the first 24 hours after contact. Accidental refers to the unintentional and unexpected exposure to pesticides. This includes food poisoning. (*PAHO/WHO Epidemiological Bulletin, Vol. 22 No. 4, December 2000)*

Diarrhoea is the passage of three (3) or more loose or liquid stools per day, or more frequently than is normal for the individual. It is usually a symptom of gastrointestinal infection, which can be caused by a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or drinking-water, or from person to person as a result of poor hygiene.

Severe diarrhoea leads to fluid loss, and may be life-threatening, particularly in young children and people who are malnourished or have impaired immunity
(Please refer to the World Health Organization's website at http://www.who.int/topics/ diarrhoea/en/)

Respiratory tract diseases are diseases that affect the air passages, including the nasal passages, the bronchi and the lungs. They range from acute infections, such as pneumonia and bronchitis, to chronic conditions such as asthma and chronic obstructive pulmonary disease.
(*Please refer to the World Health Organization's website*

Other: Other refers to any other environmentally related diseases not previously mentioned.

Method of Computation

The number of reported cases and incidence of environmentally related diseases is classified from data obtained from Member States/Associate Members according to the categories: Gastroenteritis, Typhoid, Malaria, Cholera, Accidental Pesticide Poisoning, Dengue, Poisoning, Diarrhoea, Respiratory Diseases and Other as defined above.

Indicator Relevance

Setting priorities for action to reduce hazardous environmental exposures and their health effects, and evaluating the effectiveness of the actions carried out, require reliable information. This indicator, the number of reported cases and incidence of environmentally related diseases, provides the means for that information to be collected to ensure good decision making and the monitoring of potentially deadly exposure to environmental diseases.

Data Assessment

Of the eighteen Member States and Associate Members in the Community who usually submit data, only nine provided data for this indicator. Those nine countries were The Bahamas, Belize, Dominica, Grenada, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago,

Bermuda and Turks and Caicos Islands. Of those nine countries, only the Bahamas, Belize, Dominica and Bermuda provided detailed data.

The degree of harmonisation for this indicator is difficult to assess since definitions were not provided by reporting Member States and Associate Members.

Data Sources

Please refer to **Appendix 1.3.1 (a)** for the sources of the data on the number of reported cases and incidence of environmentally related diseases of Member States and Associate Members.

Evaluation

Table 3.1 below reveals that *gastroenteritis*, *malaria*, *dengue* and *respiratory diseases* were the most significant environmental related diseases in the Region during the period. *Gastroenteritis* was found to be prevalent in most member states but more pronounced in Trinidad and Tobago. *Malaria* was most prevalent in Suriname whereas in Trinidad and Tobago *dengue* was more common. Among Member States, Grenada reported the highest number of cases of environmental related diseases in the region with the most significant category being *respiratory diseases*. Belize also reported a significant number of total cases of environmental related diseases during the period with Malaria being the most common. Eight countries also presented data by gender with no significant disparities between men and women. Most notable was the increased cases of Respiratory diseases, a significant indicator of pollution, for most Member States from a total of 1,551 cases in 1998[1] to 10,179 cases in 2004[2].

During the period 1982 to 1984, there were high numbers of reported cases of *dengue fever* in Belize, ranging from 482 in 1982 to 26 in 1983 and rising again to 127 in 1984. However, for the rest of the period 1980-1990, there were less than 10 reported cases of *dengue fever* each year.

In Trinidad and Tobago, the highest number of reported cases of dengue was in 1990 (526), over 100 cases were also reported in 1983, 1986 and 1987. For nine out of the 10 years for which data is available, Trinidad has had reported cases of dengue. In Jamaica, for 1980-1990, cases of dengue were reported each year. However, unlike Trinidad and Tobago and Belize, the numbers of reported cases for Jamaica were all under 100 each year with less than 50 cases for eight of the 10 years. In the other CARICOM countries, with the exception of St. Lucia in 1986, the number of cases of dengue fever reported each year have all been under 100 cases. High incidence rates for dengue fever were seen in Belize in 1982 (315/100,000) and 1984 (78.4/100,000). Also, in St. Lucia, there was an incidence rate of 130/100,000 in 1986. For all other countries and all other years during 1980-1990, the dengue incidence rate was less than 50/100,000.

[1] Includes totals for The Bahamas, Belize and Bermuda.
[2] Excludes The Bahamas for which data is not available.

Table 3.1: Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Gastroenteritis			Typhoid			Malaria			Cholera		
		F	M	T	F	M	T	F	M	T	F	M	T
BS													
	1998	. . .	. . .	1,679	. . .	. . .	9	. . .	. . .	21	. . .	. . .	0
	1999	. . .	. . .	1,493	. . .	. . .	1	. . .	. . .	30	. . .	. . .	0
	2000	. . .	. . .	2,544	. . .	. . .	3	. . .	. . .	2	. . .	. . .	0
	2001	. . .	. . .	2,521	. . .	. . .	1	. . .	. . .	4	. . .	. . .	0
	2002	. . .	. . .	4,904	. . .	. . .	0	. . .	. . .	1	. . .	. . .	0
	2003	. . .	. . .	3,759	. . .	. . .	1	. . .	. . .	1	. . .	. . .	0
BZ													
	1998	1,227	1,284	2,511	0	1	1	816	1,170	1,986	17	9	29
	1999	411	529	940	0	0	0	835	1,018	1,853	5	7	12
	2000	406	493	899	0	0	0	655	831	1,486	0	0	0
	2001	313	390	703	0	0	0	503	660	1,163	0	0	0
	2002	134	159	293	0	0	0	485	628	1,113	0	0	0
	2003	236	240	476	0	1	1	550	774	1,324	0	0	0
	2004	1,550	1,455	3,005	2	1	3	466	599	1,065	0	0	0
DM													
	1998	27	29	56	5	5	10	1	1	2	. . .	. . .	. . .
	1999	33	25	58	1	2	3	0	0	0	. . .	. . .	. . .
	2000	9	7	16	0	0	0	0	1	1	. . .	. . .	. . .
	2001	15	40	55	1	0	1	0	1	1	. . .	. . .	. . .
	2002	120	117	237	0	2	2	0	0	0	. . .	. . .	. . .
	2003	78	57	135	1	1	2	0	0	0	. . .	. . .	. . .
	2004	54	64	118	0	0	0	0	0	0	. . .	. . .	. . .
GD													
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	2,571	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2000	. . .	. . .	1,532	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2001	. . .	. . .	1,513	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2002	. . .	. . .	1,058	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2003	. . .	. . .	1,566	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2004	. . .	. . .	1,376	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
VC													
	2000	1,312	1,179	2,491	. . .	. . .	. . .	. . .	. . .	0	. . .	. . .	0
	2001	1,144	987	2,131	. . .	. . .	. . .	. . .	. . .	0	. . .	. . .	0
	2002	844	691	1,535	. . .	. . .	. . .	. . .	. . .	0	. . .	. . .	0
	2003	1,974	1,813	3,787	. . .	. . .	. . .	. . .	. . .	0	. . .	. . .	0
	2004	1,093	1,028	2,121	. . .	. . .	. . .	. . .	. . .	0	. . .	. . .	0
SR				(a)			(b)			(d)			
	1998	. . .	. . .	6,672	. . .	. . .	12	. . .	. . .	. . .	. . .	. . .	0
	1999	. . .	. . .	5,875	. . .	. . .	2	. . .	. . .	. . .	. . .	. . .	0
	2000	. . .	. . .	5,871	. . .	. . .	0	. . .	. . .	9,936	. . .	. . .	. . .
	2001	. . .	. . .	7,557	. . .	. . .	2	. . .	. . .	16,088	. . .	. . .	. . .
	2002	. . .	. . .	7,645	. . .	. . .	0	. . .	. . .	13,206	. . .	. . .	. . .
	2003	. . .	. . .	5,246	. . .	. . .	. . .	. . .	. . .	14,683	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Table 3.1 Contd. Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Poisoning			Dengue			Accidental pesticide			Diarrhoea		
		F	M	T	F	M	T	F	M	T	F	M	T
BS													
	1998	81	45	126	. . .	. . .	336	5	7	12	. . .	. . .	. . .
	1999	38	39	77	. . .	. . .	0	3	1	4	. . .	. . .	. . .
	2000	45	40	85	. . .	. . .	0	2	2	4	. . .	. . .	. . .
	2001	64	51	115	. . .	. . .	0	3	2	5	. . .	. . .	. . .
	2002	50	28	78	. . .	. . .	0	1	9	10	. . .	. . .	. . .
	2003	75	32	107	. . .	. . .	180	3	4	7	. . .	. . .	. . .
BZ													
	1998	20	2	22	. . .	. . .	. . .	3	3	6	1,268	1,346	2,614
	1999	23	23	46	2	4	6	0	8	8	431	559	990
	2000	14	21	35	2	2	4	1	1	2	428	507	935
	2001	16	30	46	2	2	4	3	3	6	343	426	769
	2002	24	35	59	25	16	41	7	15	22	143	170	313
	2003	19	36	55	5	2	7	2	16	18	293	283	576
	2004	18	39	57	24	17	41	2	9	11	1,624	1,544	3,168
DM													
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	15	4	19
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	5	3	8
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	4	1	5
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	1	2
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	12	5	17
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	12	7	19
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	6	4	10
GD													
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	0	. . .	. . .	29	. . .	. . .	0	. . .	. . .	452
	2000	. . .	. . .	0	. . .	. . .	16	. . .	. . .	0	. . .	. . .	517
	2001	. . .	. . .	0	. . .	. . .	19	. . .	. . .	0	. . .	. . .	446
	2002	. . .	. . .	0	. . .	. . .	282	. . .	. . .	0	. . .	. . .	423
	2003	. . .	. . .	0	. . .	. . .	21	. . .	. . .	0	. . .	. . .	533
	2004	. . .	. . .	0	. . .	. . .	8	. . .	. . .	0	. . .	. . .	380
VC													
	2000	. . .	. . .	. . .	2	1	3	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	2	1	3	. . .	. . .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	. . .	54	75	129	. . .	. . .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	1	2	3	. . .	. . .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	2	2	4	. . .	. . .	. . .	. . .	. . .	. . .
SR				(c)			(e)						
	1998	. . .	. . .	198	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	16	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	8	. . .	. . .	1,093	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	8	. . .	. . .	516	. . .	. . .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	3	. . .	. . .	446	. . .	. . .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	. . .	. . .	218	. . .	. . .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Table 3.1 Contd. Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Respiratory diseases			Other			TOTAL CASES, all causes		
		F	M	T	F	M	T	F	M	T
BS										
	1998	129	134	263	. . .	. . .	1,177	. . .	. . .	3,623
	1999	161	172	333	. . .	. . .	1,153	. . .	. . .	3,091
	2000	156	176	332	. . .	. . .	999	. . .	. . .	3,969
	2001	124	131	255	. . .	. . .	1,019	. . .	. . .	3,920
	2002	140	191	331	. . .	. . .	1,333	. . .	. . .	6,657
	2003	171	194	365	. . .	. . .	1,213	. . .	. . .	5,633
BZ										
	1998	375	439	814	. . .	. . .	. . .	4,101	4,693	8,797
	1999	370	430	800	. . .	. . .	. . .	2,447	3,008	5,455
	2000	408	515	923	. . .	. . .	. . .	2,322	2,885	5,207
	2001	392	505	897	. . .	. . .	. . .	1,964	2,521	4,485
	2002	360	442	802	. . .	. . .	. . .	1,538	1,907	3,445
	2003	463	548	1,011	. . .	. . .	. . .	2,031	2,448	4,479
	2004	413	434	847	. . .	. . .	. . .	4,512	4,532	9,044
DM										
	1998	. . .	. . .	0	. . .	. . .	. . .	48	39	87
	1999	. . .	. . .	0	. . .	. . .	. . .	39	35	74
	2000	. . .	. . .	0	. . .	. . .	. . .	13	9	22
	2001	. . .	. . .	0	. . .	. . .	. . .	17	42	59
	2002	12	19	31	. . .	. . .	. . .	132	124	256
	2003	. . .	. . .	0	. . .	. . .	. . .	91	65	156
	2004	. . .	. . .	0	. . .	. . .	. . .	60	68	128
GD										
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	8,560	. . .	. . .	. . .	. . .	. . .	11,612
	2000	. . .	. . .	9,654	. . .	. . .	. . .	. . .	. . .	11,719
	2001	. . .	. . .	6,954	. . .	. . .	. . .	. . .	. . .	8,932
	2002	. . .	. . .	9,503	. . .	. . .	. . .	. . .	. . .	11,266
	2003	. . .	. . .	9,170	. . .	. . .	. . .	. . .	. . .	11,290
	2004	. . .	. . .	7,698	. . .	. . .	. . .	. . .	. . .	9,462
VC										
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
SR										
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Table 3.1 Contd. Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Gastroenteritis			Typhoid			Malaria			Cholera		
		F	M	T	F	M	T	F	M	T	F	M	T
TT													
	1998	. . .	. . .	14,109	. . .	. . .	. . .	. . .	. . .	8	. . .	. . .	0
	1999	. . .	. . .	19,796	. . .	. . .	. . .	. . .	. . .	8	. . .	. . .	0
	2000	. . .	. . .	17,356	. . .	. . .	3	. . .	. . .	17	. . .	. . .	0
	2001	. . .	. . .	22,694	. . .	. . .	. . .	. . .	. . .	11	. . .	. . .	0
	2002	. . .	. . .	16,897	. . .	. . .	. . .	. . .	. . .	8	. . .	. . .	0
	2003	. . .	. . .	18,925	. . .	. . .	. . .	. . .	. . .	9	. . .	. . .	0
	2004	. . .	. . .	22,231	. . .	. . .	. . .	. . .	. . .	11	. . .	. . .	0
ASSOCIATE MEMBERS													
BM													
	1998	36	24	60	0	0	0	0	0	0	0	0	0
	1999	22	26	48	0	0	0	0	0	0	0	0	0
	2000	30	26	56	0	0	0	0	0	0	0	0	0
	2001	20	21	41	0	0	0	0	2	2	0	0	0
	2002	37	21	58	0	0	0	0	0	0	0	0	0
	2003	29	22	51	0	0	0	0	0	0	0	0	0
	2004	27	23	50	0	0	0	0	0	0	0	0	0
TC													
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	158	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0
	2002	. . .	. . .	99	. . .	. . .	0	. . .	. . .	2	. . .	. . .	0
	2003	. . .	. . .	217	. . .	. . .	0	. . .	. . .	1	. . .	. . .	0
	2004	. . .	. . .	371	. . .	. . .	0	. . .	. . .	0	. . .	. . .	0

Table 3.1 Contd. Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Poisoning			Dengue			Accidental pesticide			Diarrhoea		
		F	M	T	F	M	T	F	M	T	F	M	T
TT													
	1998	. . .	. . .	. . .	. . .	. . .	2,984	. . .	. .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	1,199	. . .	. .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	2,235	. . .	. .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	2,417	. . .	. .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	. . .	. . .	. . .	6,311	. . .	. .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	. . .	. . .	2,371	. . .	. .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	594	. . .	. .	. . .	. . .	. . .	. . .
ASSOCIATE MEMBERS													
BM													
	1998	14	13	27	0	0	0	0	0	0	5	4	9
	1999	15	11	26	0	0	0	0	0	0	8	1	9
	2000	28	21	49	0	0	0	0	0	0	5	9	14
	2001	24	13	37	0	0	0	0	0	0	2	0	2
	2002	27	16	43	0	1	1	0	0	0	0	0	0
	2003	13	14	27	0	1	1	0	0	0	4	1	5
	2004	21	11	32	0	0	0	0	0	0	5	0	5
TC													
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	31	. . .	. . .	0	. . .	. .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	104	. . .	. . .	0	. . .	. .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	172	. . .	. . .	0	. . .	. .	. . .	. . .	. . .	. . .

Table 3.1 Contd. Number of Reported Cases and Incidence of Environmentally Related Diseases

Country	Year	Respiratory diseases			Other			TOTAL CASES, all causes		
		F	M	T	F	M	T	F	M	T
TT										
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
ASSOCIATE MEMBERS										
BM										
	1998	229	245	474	. . .	. . .	. . .	284	286	570
	1999	314	296	610	. . .	. . .	. . .	359	334	693
	2000	262	263	525	. . .	. . .	. . .	325	319	644
	2001	208	265	473	. . .	. . .	. . .	254	301	555
	2002	201	212	413	. . .	. . .	. . .	265	250	515
	2003	239	202	441	. . .	. . .	. . .	285	240	525
	2004	198	228	426	. . .	. . .	. . .	251	262	513
TC										
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	158
	2002	. . .	. . .	429	. . .	. . .	. . .	. . .	. . .	561
	2003	. . .	. . .	1,635	. . .	. . .	. . .	. . .	. . .	1,957
	2004	. . .	. . .	1,226	. . .	. . .	. . .	. . .	. . .	1,769

EH2: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY

Number of Households by Type of Sanitation facilities
Proportion of population with access to improved sanitation, urban and rural

DK

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Concept and Definition

The household is defined as follows: (a) a one-person household, defined as an arrangement in which one person makes provisions for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; and (b) a multi-person household, defined as a group of two or more persons living together who make common provisions for food or other essentials for living. The persons in the group may pool their incomes and have a common budget. They may be related or unrelated or a combination of both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1998)*

A sanitary facility is a unit for disposal of human excreta which isolates faeces from contact with people, animals, crops and water sources.

The number of households by sanitation facilities describes the types of toilet facilities available to households.

Types of Sanitation Facilities

W.C. Linked to Sewer: This is a flush toilet or water closet (W.C.), which fills from a piped water supply and empties into a sewerage disposal system.

W.C. Cesspit/Septic Tank is a waterborne toilet facility and empties into a cesspit or septic tank (a tank in which sewage is decomposed by the action of bacteria).

A *pit latrine* is a type of toilet facility that is available to the household outside of the dwelling. It is not waterborne.

None refers to households that are without sanitary facilities.

Other refers to all other sanitary facilities not so far mentioned.

Method of Computation

The number of households by sanitation facilities is classified from data obtained from Member

States/Associate Members according to the categories: W.C. Linked to Sewer, W.C.Cesspit/Septic Tank, Pit latrine, None, Other and Not Stated as defined under the concepts and definition.

Indicator Relevance

The number of households by type of sanitation facilities is a basic indicator useful for assessing human health as it is a measure of the number of households that have access to basic/improved sanitary facilities. Accessibility to adequate excreta disposal facilities is fundamental to decreasing the faecal risk and the frequency of associated environmental diseases.

Data Assessment

Definitions for this indicator were not provided by Member States/Associate Members and therefore the degree of harmonisation is impossible to assess.

Data Sources

Please refer to **Appendix 1.3.2 (a)** for the sources of the data on the number of households by type of sanitation facilities of Member States and Associate Members.

Evaluation

The data presented in ***Tables 3.2 (a)*** and ***(b)*** shows that the *W.C.Cesspit/Septic Tank* was the most commonly used sanitation facility in the Region with 44.6 percent of all households followed by the *Pit Latrine* with 33.6 percent. 2.3 per cent of households in the Region reported no sanitation facility. Among Member States, Barbados reported the highest percentage of households using the *W.C.Cesspit/Septic Tank* as the most commonly used sanitation facility at 81.3 per cent followed by St. Kitts and Nevis with 78.1 per cent of households. Bermuda reported 90 percent of households using the *W.C.Cesspit/Septic Tank* as the most used sanitation facility among Associated Members and this was the highest reported percentage in the Region.

In the Region only 17 per cent of households were linked to a *sewerage disposal system* and this was highest in Anguilla (89.9 per cent) followed by Antigua and Barbuda (72.7 per cent).

The *Pit Latrine* was most common in Guyana where more than 57.6 percent of households reportedly used this method of sanitation followed by St. Vincent and the Grenadines (44.3 per cent) and Belize (44 per cent).

In Dominica, 16 per cent of households reported no sanitation facility followed by Saint Lucia where 10.9 per cent of households reported no sanitation facility.

Table 3.2 (a) – Number of Households by Sanitation facilities: 2000 Round of Census

Country	Year	W.C. Linked to sewer	W.C. Cesspit / Septic Tank	Pit Latrine	None	Other	Not Stated	Total all Households
AG	2001	14,868	0	5,176	293	113	0	20,450
BS	2000	9,978	66,507	5,445	1,054	4,703	55	87,742
BB	2000	428	67,511	13,684	487	453	463	83,026
BZ	2000	7,851	18,049	22,864	2,222	847	112	51,945
DM	2001	3,010	8,991	6,332	3,572	454	0	22,359
GY	2002	7,630	66,182	105,223	3,292	202	80	182,609
JM	2001	157,851	268,783	273,086	18,978	0	29,628	748,326
MS	2001	355	1,673	170	84	47	0	2,329
KN	2001	124	12,239	2,774	499	44	0	15,680
LC	2001	2,333	20,224	15,072	4,652	417	0	42,698
VC	2001	189	15,549	13,408	1,046	70	0	30,262
TT	2000	65,851	152,713	81,318	1,320	2,669	0	303,871
TOTAL MEMBER STATES		270,468	698,421	544,552	37,499	10,019	30,338	1,591,297
ASSOCIATE MEMBERS								
AI	2001	3,354	25	144	78	129	0	3,730
VG	2001	2,056	6,079	88	77	86	0	8,386
TC	2001	0	4,954	2,000	267	33	0	7,254
TOTAL ASSOCIATE MEMBERS		6,648	27,669	2,481	422	270	329	37,819
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		277,116	726,090	547,033	37,921	10,289	30,667	1,629,116

Table 3.2 (b) – Percentage distribution of Households by Sanitation facilities: 2000 Round of Census

Country	Year	W.C. Linked to sewer	W.C. Cesspit / Septic Tank	Pit Latrine	None	Other	Not Stated	Total all Households
AG	2001	72.7	0.0	25.3	1.4	0.6	0.0	100.0
BS	2000	11.4	75.8	6.2	1.2	5.4	0.1	100.0
BB	2000	0.5	81.3	16.5	0.6	0.5	0.6	100.0
BZ	2000	15.1	34.7	44.0	4.3	1.6	0.2	100.0
DM	2001	13.5	40.2	28.3	16.0	2.0	0.0	100.0
GY	2002	4.2	36.2	57.6	1.8	0.1	0.0	100.0
JM	2001	21.1	35.9	36.5	2.5	0.0	4.0	100.0
MS	2001	15.2	71.8	7.3	3.6	2.0	0.0	100.0
KN	2001	0.8	78.1	17.7	3.2	0.3	0.0	100.0
LC	2001	5.5	47.4	35.3	10.9	1.0	0.0	100.0
VC	2001	0.6	51.4	44.3	3.5	0.2	0.0	100.0
TT	2000	21.7	50.3	26.8	0.4	0.9	0.0	100.0
TOTAL MEMBER STATES		17.0	43.9	34.2	2.4	0.6	1.9	100.0
ASSOCIATE MEMBERS								
AI	2001	89.9	0.7	3.9	2.1	3.5	0.0	100.0
VG	2001	24.5	72.5	1.0	0.9	1.0	0.0	100.0
TC	2001	0.0	68.3	27.6	3.7	0.5	0.0	100.0
TOTAL ASSOCIATE MEMBERS		17.6	73.2	6.6	1.1	0.7	0.9	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		17.0	44.6	33.6	2.3	0.6	1.9	100.0

CHART 3.2.1(A): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF SANITATION

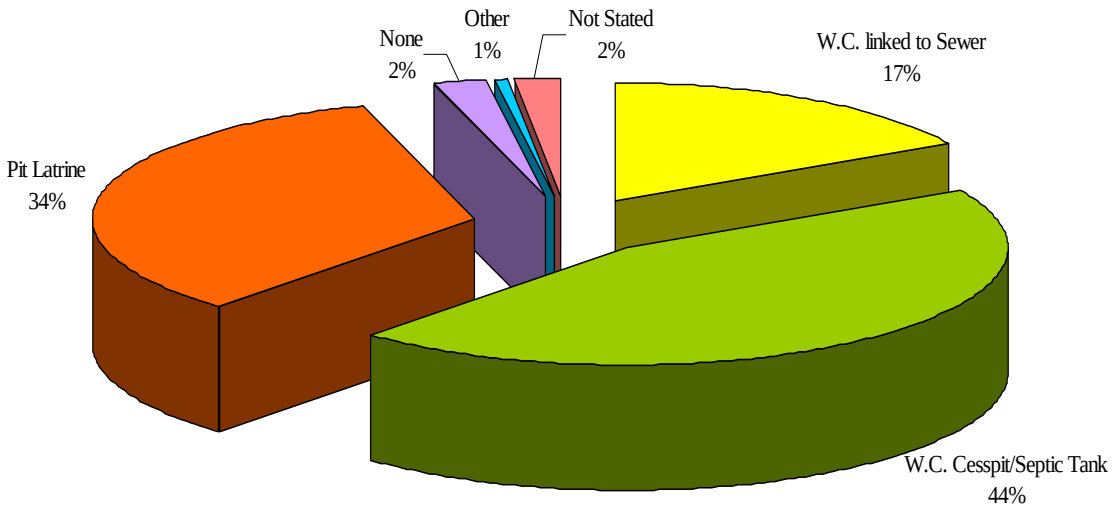
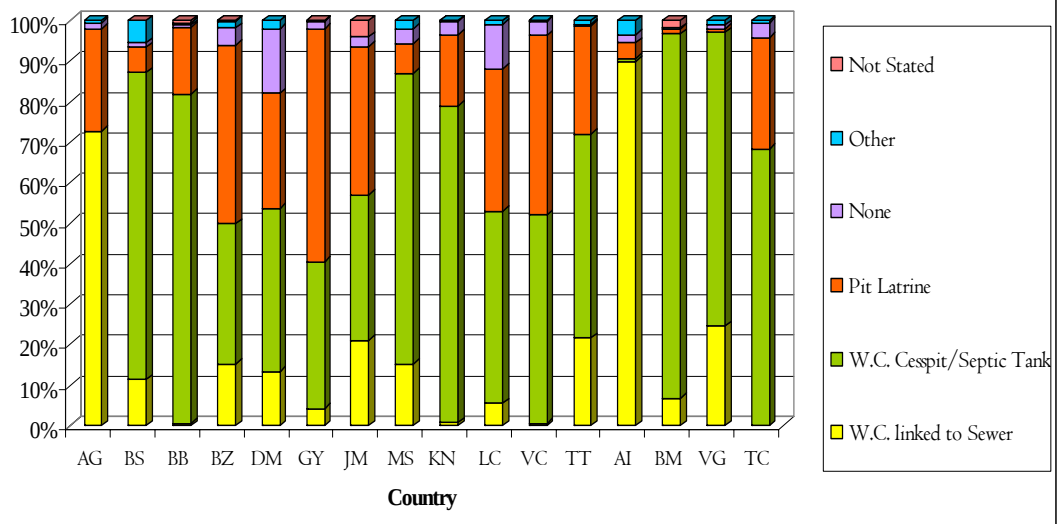


CHART 3.2.1(B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF SANITATION AND MEMBER STATE/ASSOCIATE MEMBER



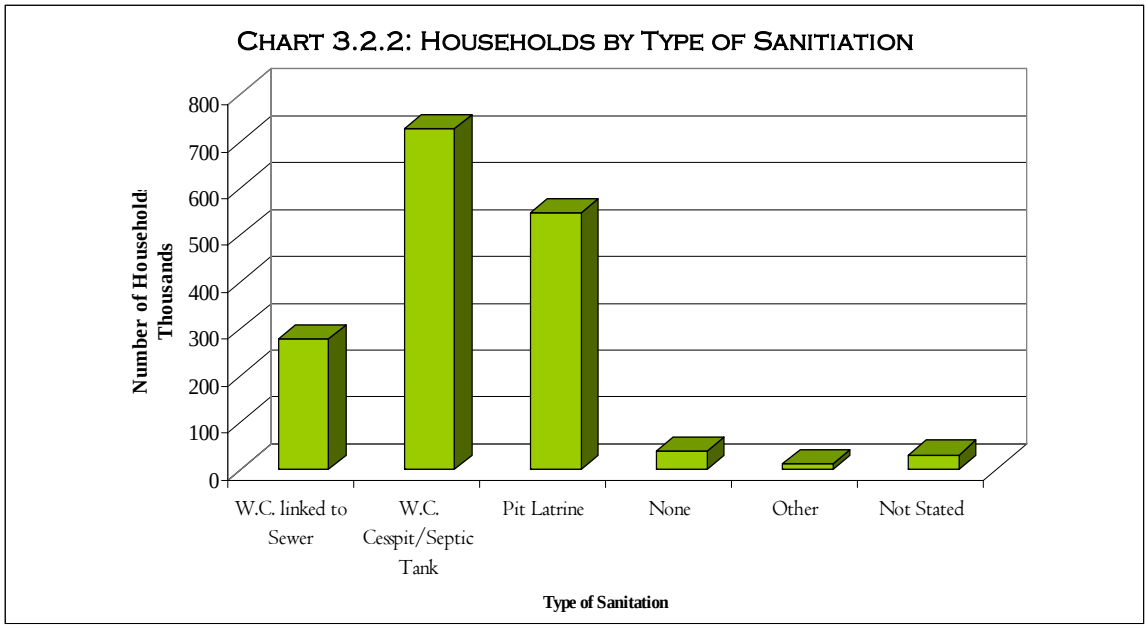


CHART 3.2.2: HOUSEHOLDS BY TYPE OF SANITIATION
Number of Household
Thousands
800
700
600
500
400
300
200
100
0
W.C. linked to Sewer
W.C. Cesspit/Septic Tank
Pit Latrine
None
Other
Not Stated
Type of Sanitation

EH3: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY

Number of Households by Type of Water Supply
Proportion of population with sustainable access to an improved water source, urban and rural

H

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Concept and Definition

The household is defined as follows: (a) a one-person household, defined as an arrangement in which one person makes provisions for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; and (b) a multi-person household, defined as a group of two or more persons living together who make common provisions for food or other essentials for living. The persons in the group may pool their incomes and have a common budget. They may be related or unrelated or a combination of both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1998)*

Water Supply refers to the water available to a community or region and the source and delivery system of that water.

The number of households by type of water supply describes the main source of water available to households.

Types of Water Supply

Piped into dwelling refers to the water supply received by a household from a private source that is piped into the dwelling unit through water pipes within the walls that constitute a dwelling.

Piped into yard: This describes a situation where the household receives running water from a public source through a pipe in the yard or compound on which the dwelling stands.

Public piped into dwelling describes a situation where running water from a public source is piped directly into the dwelling unit.

Private catchments: not piped occurs where the water supply to the household is from a private source within the premises and is not piped into the dwelling.

Private catchments: piped occurs where the water supply to the household is from a private source piped into the dwelling unit.

Public standpipe: This describes a situation where water is available to the household from a standpipe in the street or elsewhere, but not in the compound on which the dwelling stands.

Public well or tank applies when the water available to the dwelling unit is from a protected well or tank built by the public authorities or community-based, non-governmental organizations.

Other refers to any source other than those listed above (e.g. river, stream, spring, creek, etc).

Method of Computation

The number of households by type of water supply is classified from data obtained from Member States/Associate Members according to the categories: Piped into dwelling, Piped into yard, Public piped into dwelling, Private catchments: not piped, Private catchments: piped, Public catchments: piped, Public standpipe, Public well or tank and Other as defined above.

Indicator Relevance

The number of households by type of water supply provides a measure of the number of households that have access to safe water. Accessibility to safe water is of fundamental significance to reducing the risk and frequency of the spread of environmental diseases, especially in infants and the elderly who are more prone to picking up these diseases.

Data Assessment

It was assumed that the concepts of a household and of water supply are in accordance with the international definition and is harmonized across the region since no definitions were provided by the reporting Member States/Associate Members.

The degree of harmonisation for this indicator is difficult to assess since definitions were not provided by reporting Member States and Associate Members.

Data Sources

Please refer to **Appendix 1.3.3 (a)** for the sources of the data on the number of households by type of water supply of Member States and Associate Members.

Evaluation

Table 3.3 (a) indicated that 607,530 households (37.3 per cent) of the total of 1,629,116 households in the Region had public water supply which was *piped into dwelling*. When added to households with private water supply *piped into dwelling* (303,913 households) this represented a combined

percentage of 56 percent. Among Member States, St. Kitts and Nevis and Barbados reported the highest number of households at 91.7 per cent and 90.9 per cent with water supply *piped into dwelling*. Among Associate Members, Bermuda recorded 95.9 percent of households which had water supply *piped into dwelling*.

Improved drinking water sources as defined by the United Nations include household connection, public standpipe, Borehole, protected dug well, protected spring and rainwater collection. Unimproved drinking water sources include unprotected well, unprotected spring, rivers or ponds, vendor-provided water, bottled water and tanker/truck water. Guyana and Belize recorded percentages of unimproved drinking water sources above 25 percent.

Table 3.3(a) Number of Households by Type of Water Supply: 2000 Round of Census

Country	Year	Piped into dwelling	Piped into yard	Public Piped into dwelling	Private catchments		Public standpipe	Public well or tank	Other	Total
					Not piped	Piped				
AG	2001	13,438	2,054	98	0	780	3,750	0	330	20,450
BS	2000	76,841	1,866	0	2,877	0	4,794	589	775	87,742
BB	2000	75,494	4,636	0	1,592	0	614	8	682	83,026
BZ	2000	15,548	8,828	0	14,190	0	0	0	13,379	51,945
DM	2001	11,495	2,615	0	516	0	6,109	277	1,347	22,359
GY	2000	0	61,638	46,984	5,549	0	8,331	4,792	55,315	182,609
JM	2001	46,830	122,133	342,723	74,445	0	78,467	0	83,728	748,326
MS	2001	13	222	1,987	1	2	75	3	26	2,329
KN	2001	295	1,887	12,196	70	98	843	48	243	15,680
LC	2001	26,308	8,259	0	508	0	3,636	140	3,847	42,698
VC	2001	521	5,167	15,826	864	1,599	4,438	158	1,689	30,262
TT	2000	13,561	26,777	183,966	25,341	0	29,057	0	25,169	303,871
TOTAL MEMBER STATES		280,344	246,082	603,780	125,953	2,479	140,114	6,015	186,530	1,591,297
ASSOCIATE MEMBERS										
AI	2001	1,965	203	0	1,251	0	59	26	226	3,730
VG	2001	2,320	244	3,750	241	1,356	8	60	407	8,386
TC	2001	1,584	n.a.	0	4,927	0	. . .	434	309	7,254
TOTAL ASSOCIATE MEMBERS		23,568	790	3,750	6,578	1,356	67	520	1,190	37,819
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		303,912	246,872	607,530	132,531	3,835	140,181	6,535	187,720	1,629,116

Table 3.3 (b) Percentage distribution of Households by Type of Water Supply: 2000 Round of Census

Country	Year	Piped into dwelling	Piped into yard	Public Piped into dwelling	Private catchments		Public standpipe	Public well or tank	Other	Total
					Not piped	Piped				
AG	2001	65.7	10.0	0.5	0.0	3.8	18.3	0.0	1.6	100.0
BS	2000	87.6	2.1	0.0	3.3	0.0	5.5	0.7	0.9	100.0
BB	2000	90.9	5.6	0.0	1.9	0.0	0.7	0.0	0.8	100.0
BZ	2000	29.9	17.0	0.0	27.3	0.0	0.0	0.0	25.8	100.0
DM	2001	51.4	11.7	0.0	2.3	0.0	27.3	1.2	6.0	100.0
GY	2000	0.0	33.8	25.7	3.0	0.0	4.6	2.6	30.3	100.0
JM	2001	6.3	16.3	45.8	9.9	0.0	10.5	0.0	11.2	100.0
MS	2001	0.6	9.5	85.3	0.0	0.1	3.2	0.1	1.1	100.0
KN	2001	1.9	12.0	77.8	0.4	0.6	5.4	0.3	1.5	100.0
LC	2001	61.6	19.3	0.0	1.2	0.0	8.5	0.3	9.0	100.0
VC	2001	1.7	17.1	52.3	2.9	5.3	14.7	0.5	5.6	100.0
TT	2000	4.5	8.8	60.5	8.3	0.0	9.6	0.0	8.3	100.0
TOTAL MEMBER STATES		17.6	15.5	37.9	7.9	0.2	8.8	0.4	11.7	100.0
ASSOCIATE MEMBERS										
AI	2001	52.7	5.4	0.0	33.5	0.0	1.6	0.7	6.1	100.0
VG	2001	27.7	2.9	44.7	2.9	16.2	0.1	0.7	4.9	100.0
TC	2001	21.8	0.0	0.0	67.9	0.0	0.0	6.0	4.3	100.0
TOTAL ASSOCIATE MEMBERS		62.3	2.1	9.9	17.4	3.6	0.2	1.4	3.1	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		18.7	15.2	37.3	8.1	0.2	8.6	0.4	11.5	100.0

CHART 3.3.1(A): PERCENTAGE DISTRIBUTIONSOF HOUSEHOLDS BY TYPE OF WATER SUPPLY

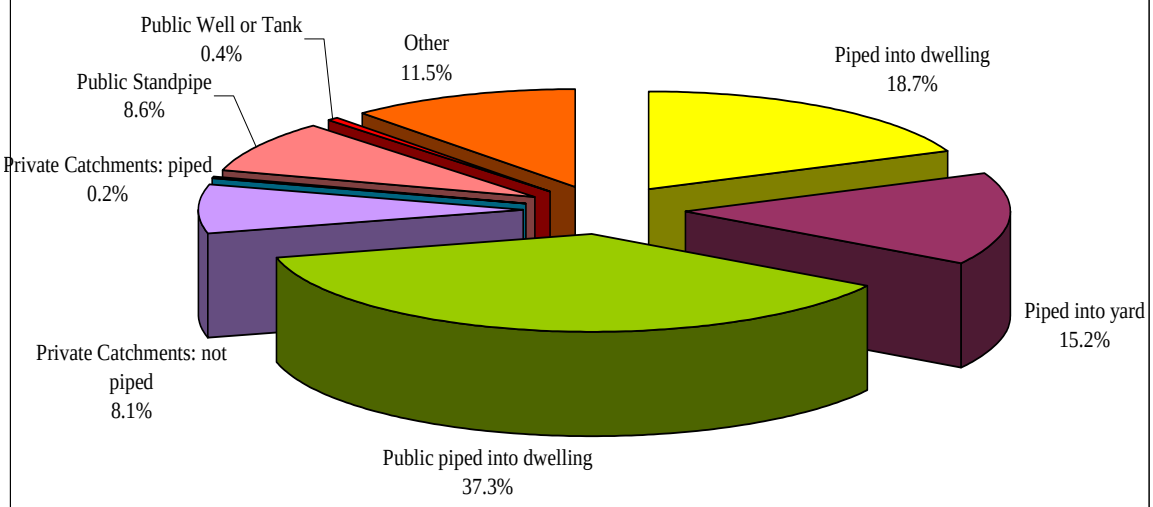


CHART 3.3.1(B): PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY TYPE OF WATER SUPPLY AND MEMBER STATE/ASSOCIATE MEMBER

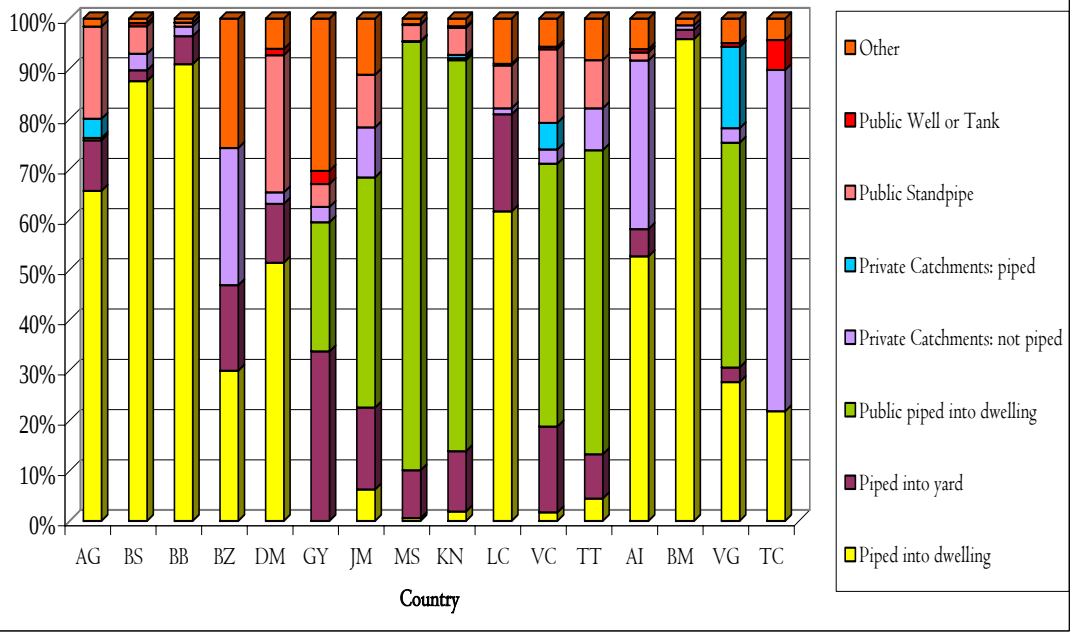
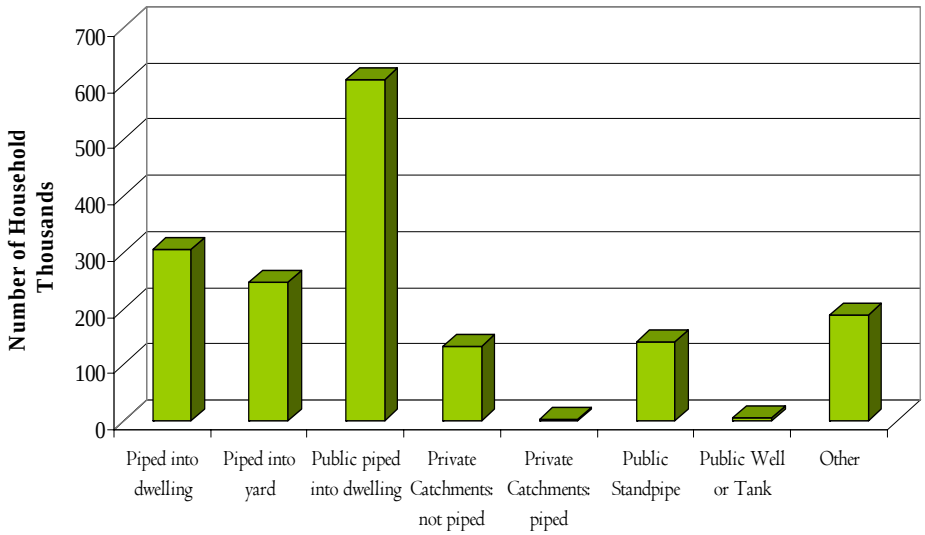


CHART 3.3.2: HOUSEHOLDS BY TYPE OF WATER SUPPLY



Appendix 1.3
Sources of Data on Environmental Health

1.3.1 (a): Sources of Data for Table 3.1 - Number of Reported Cases and Incidence of Environmentally Related Diseases: 1998 - 2004

Country	Data Source
THE BAHAMAS	Items 1-5, 10: Department of Public Health; Items 6-9: Public Hospitals Authority- Kean Information System (Princess Margaret Hospital and Rand Memorial Hospital discharge data)
BELIZE	The Epidemiology Unit, Ministry of Health
DOMINCA	Ministry of Health
GRENADA	Central Statistical Office
ST VINCENT AND THE GRENADINES	Statistical Office
SURINAME	Bureau of Public Health
TRINIDAD AND TOBAGO	Central Statistics Office
BERMUDA	Inpatient discharges
TURKS AND CAICOS	Primary Health Care Department and Medical Department, Ministry of Health

1.3.1 (b): Notes for Table 3.1 - Number of Reported Cases and Incidence of Environmentally Related Diseases: 1998 - 2004

Country	Notes
GRENADA	Total: Total amount of cases for that given year
BERMUDA	ICN-9-CM classification was used. In order to provide accurate data, a detailed description of the diagnosis must be provided.
SURINAME	(a) Telephone calls. (b) Hospital surveillance (confirmed). (c) Hospital. (d) Confirmed cases. (e) Suspected cases.
TURKS AND CAICOS	Malaria refers to imported cases of malaria. Poisoning refers to cases of poisoning from food borne diseases. Diarrhoea is included in gastroenteritis. Respiratory diseases refers to acute infections <5 yrs. Data not collected at the source by sex.

1.3.2 (a): Source of Data for Table 3.2 - Number of Households by Type of Sanitation: 2000 Round of Census

Country	Data Source
ANTIGUA AND BARBUDA	Basic Table Volumes
THE BAHAMAS	Population and Housing Census, 2000 Round
BARBADOS	2000 Population and Housing Census, Volume1, Barbados Statistical Service
BELIZE	Population and Housing Census, 2000 Round
DOMINCA	Central Statistical Office and 2001Population and Housing Census
GUYANA	Basic Table Volumes
JAMAICA	Population Census Country Report 2001. Volume 1. Statistical Institute of Jamaica
MONTSERRAT	Basic Table Volumes
ST. KITTS AND NEVIS	Basic Table Volumes
SAINT LUCIA	Population and Housing Census 2001
ST VINCENT AND THE GRENADINES	Basic Table Volumes
TRINIDAD AND TOBAGO	Population and Housing Census 2000 Round
ANGUILLA	Population and Housing Census 2000 Round
BRITISH VIRGIN ISLANDS	Basic Table Volumes
TURKS AND CAICOS	TCI Standard of Living Assessment Report, 1999; Preliminary Population and Housing Census Report 2001

1.3.2 (b): Notes for Table 3.2 - Number of Households by Type of Sanitation: 2000 Round of Census

Country	Notes
BELIZE	Don't Know is included in Not Stated
JAMAICA	Not Stated includes "availability and type not reported". For each category of sanitation facility, "shared" and "not shared" were combined
TRINIDAD AND TOBAGO	Other includes not stated

1.3.3 (a): Sources of Data for Table 3.3 - Number of Households by Type of Water Supply: 2000 Round of Census

Country	Data Source
ANTIGUA AND BARBUDA	Basic Table Volumes
THE BAHAMAS	Population and Housing Census, 2000 Round
BARBADOS	2000 Population and Housing Census, Volume1, Barbados Statistical Service
BELIZE	Central Statistical Office
DOMINCA	Central Statistical Office and 2001Population and Housing Census
GUYANA	Basic Table Volumes
JAMAICA	Population Census Country Report. Volume 1. Statistical Institute of Jamaica
MONTSERRAT	Basic Table Volumes
ST. KITTS AND NEVIS	Basic Table Volumes
SAINT LUCIA	Population and Housing Census 2001
ST VINCENT AND THE GRENADINES	Basic Table Volumes
TRINIDAD AND TOBAGO	Population and Housing Census, 2000 Round
ANGUILLA	Population and Housing Census, 2000 Round
BRITISH VIRGIN ISLANDS	Basic Table Volumes
TURKS AND CAICOS	TCI Standard of Living Assessment Report, 1999; Preliminary Population and Housing Census Report 2001

1.3.3 (b): Notes for Table 3.3 - Number of Households by Type of Water Supply: 2000 Round of Census

Country	Notes
THE BAHAMAS	Other includes not stated. Rain water is included in piped into dwelling, but can be either piped into dwelling or into yard.
BARBADOS	Other includes not stated. Private catchments, not piped refer to friend/relative's pipe. Piped into dwelling is disaggregated by Public or Private Piped into dwelling. Public piped is the government water system and private piped is the individual household private water system. Public Piped = 48962 and private piped = 26796. The cumulative is given.
BELIZE	Other includes not stated
DOMINCA	Other includes not stated. Urban connections (Roseau + Environs) = 8977
GUYANA	Public Piped into Dwelling = public piped into dwelling + private piped into dwelling
SAINT LUCIA	Other includes not stated
ST VINCENT AND THE GRENADINES	Other includes private catchment piped
TRINIDAD AND TOBAGO	Other includes truck borne and not stated
ANGUILLA	Other includes not stated
BERMUDA	This question was discontinued after the 1980 Population and Housing Census as 96% of private dwelling units had piped water. Other includes not stated.
TURKS AND CAICOS	Other includes not stated.

ND1: NATURAL DISASTERS BY YEAR

PH

Concept and Definition

A *disaste*r is a situation or event, which overwhelms local capacity, necessitating a request to the national or international level for external assistance or an unforeseen and often sudden event that causes great damage, destruction and human suffering. (*Please refer to International Strategy for Disaster Reduction's website at http://www.unisdr.org/disaster-statistics/introduction.htm.*)

*A natural disaste*r is a physical natural event that kills people or overwhelms local capacity for damage control or recovery. Natural disasters include avalanches, floods, hurricanes, tropical storms, earthquakes, cyclones, torrential rains, volcanic eruptions, typhoons, droughts, landslides, mudslides, fires, blizzards and tsumanis, to name a few.

Categories

Dead refers to persons confirmed dead and persons missing and presumed dead.

Injured refers to people suffering from physical injuries, trauma or an illness requiring medical treatment as a direct result of a disaster.

Missing: A person is considered missing when someone reports to the police that they are not resonably aware of the whereabouts of the missing person since the disaster struck.

Homeless: These are persons who are in need of immediate assistance in the form of shelter as a consequence of a disaster.

Total population affected: This refers to people that require immediate assistance (require basic survival needs such as food, water, shelter, sanitation and immediate medical assistance) during a period of emergency. People who live in areas where an infectious disease is introduced are also included in the total population affected.

Damages refer to the economic impacts that disasters usually have on the local economy. The consequences of the disaster may be either direct (damage to infrastrucutre, crops, housing, etc) or indirect (loss of revenues, unemployment, market destabilisation, etc).

Method of Computation

The date that the disaster started establishes the date when the disaster occurred. For sudden-impact disasters, the date that the disaster started is the onset date, while for gradually developing disasters, the date that the disaster started is the date of the first call for national or international assistance. The *starting date* for disasters that develop over time is gathered from scientific and governmental sources.

The *disaster type* describes the disaster according to a pre-defined classification scheme. The *disaster type* may be classified as sudden onset (such as earthquakes and floods) or long-term onset (such as drought). In addition, two or more disasters may be related or other disasters may occur as a consequence of a primary event. In cases such as these, each disaster is counted and recorded individually.

The *total population affected* covers all casualties, as well as individuals whose basic requirements for food, shelter, water, sanitation and medical attention are adversely affected.

Damages refer to the value of all damages and economic losses directly related to the occurrence of a disaster. There is no standard procedure for determining the global figure for the economic impacts of a disaster, but the host government, the United Nations and other major non-governmental organizations quantify the loses using methodologies that have been developed specifically for their domain.

Indicator Relevance

Natural disasters cause loss of life; disruption of economic activities and urban productivity; major resettlement of populations; and environmental change, such as loss of fertile agricultural land and water contaminations. In addition, the growing vulnerability of populations (population pressures on land, increasing urbanization and risky land use, marginalization of populations, civil unrest, etc) implies that the impacts of disaster events are becoming greater. At the same time, decreasing national and donor budgets to the prevention of natural disasters reflect the need for better planning, preparedness and coordination.

The value of this indicator is a function of the different factors that define the risk of death and damage, that is, the frequency of events; the size of the population and capital in the affected area; and the capacity of the local population and government to prevent or respond to future disasters. The indicator, natural disasters by year, also lends itself for use in development assessment that takes into account the yearly changes in the aforementioned areas.

Data Assessment

It is assumed that the concept of a natural disaster is in accordance with the international definition and is harmonized across the region since no definitions or concepts were provided by the reporting countries.

Of the eighteen (18) Member States and Associate Members in the Community who submitted data, only nine (9), provided data for this indicator. Those nine (9), countries were the Bahamas, Belize, Dominica, Guyana, Jamaica, Saint Lucia, Trinidad and Tobago, Bermuda and Turks and Caicos Islands. The data provided by these countries for this indicator were sparse and contained numerous gaps.

Usually, when two or more disasters are related or other disasters occur as a consequence of a primary event, each disaster is counted and recorded individually. Dominica deviated reported three concurrent hurricanes in 1995 as one natural disaster.

Data Sources

Data for this indicator were obtained from the Central Statistical Offices of the individual Member States and Associate Members. Details are given in **Appendix 2.4.1**.

Evaluation

Table 4.1 shows the natural disasters occurring in the Region by year and type and other variables. Data was reported for seven (7) Member States and two Associate Members. The most common type of disasters occurring in the Region were *Hurricanes* and *flooding*.

Among Member States Jamaica reported ten (10) events since 1991 of which flooding and earthquakes were most common. A tropical storm in 1994 affected 4 families and flooding in 1995 affected 416 families while torrential rains in 1998 left 3 persons dead. Flooding damages were estimated at US$24.87 million in 1991, US$7.07 million in 1995, US$3.21 million in 1993 while an earthquake in 1993, a tropical storm in 1994 and torrential rains in 1998 caused an estimated total of US$7.03 million in damages.

Trinidad and Tobago also with ten (10) events reported eight (8) floods, one (1) earthquake and one (1) Hurricane. Floods occurred in 1990, 1991, 1993, 1996, 1999, 2000, 2002 and 2004 leaving eighteen (18) casualties among which sixteen (16) persons died and two (2) persons were injured. Damages from the floods were an estimated US$ 43.8 million throughout the period with the heaviest damage estimated at US$ 31.9 million in 2004. The earthquake in 1997 caused US$ 2.88 million in damages with no reported casualties while the Hurricane in 2004 affected 1,000 persons of which 22 persons were left homeless and one fatality. Damages from this hurricane were estimated to be US$ 43.8 million.

Nine (9) disasters were reported for Saint Lucia including three Tropical Waves in 1996, 1998 and 2003, two Tropical Storms in 1994 and 2003, two hurricanes which occurred in 1994 and 2004 and two landslides. The highest reported casualties were, 125 families homeless after the Tropical storm in 2002 followed by 102 families homeless after the 1999 Landslide, 49 families homeless after the 1999 Landslide, 3 families homeless and 1 fatality following the 1998 Tropical Wave. Natural disasters caused an estimated US$ 107.73 million in damages with the highest (US$ 85.19 million) reported in 1994 after the tropical storm.

The Bahamas reported seven (7) hurricanes disasters from 1992 to 2004 which left six (6) persons dead, four (4) in 1992, one (1) in 1999 and another in 2004. Affected persons by flooding, power outage or general inconvenience totalled 1,143,862 ranging from 16,443 persons after Hurricane Lili in October 1996 to 303,611 following Hurricane Floyd in

September 1999. Damages were estimated following Hurricanes Frances and Jeanne in 2004 at US$ 200 million, Frances was reportedly the most expensive.

Dominica reported six (6) natural disasters including four (4) Hurricanes in 1979, 1989, 1995 and 1999, one (1) tropical storm in 1994 and one (1) Earthquake/Landslide in 2004. The Hurricane in 1979 caused devastation to 75,000 persons leaving 60,000 homeless, 3,000 injured and 42 dead and an estimated US$32.15 million in damages. Three (3) hurricanes in 1995 left one fatality and US$135.56 million in damages while the hurricane in 1999 displaced 602 persons and caused US$11.48 million in damages. The Earthquake/Landslide in 2004 left 19,527 persons homeless and caused an estimated US$33.33 million worth of damages. On the Central American continent, Belize reported Hurricane Keith in 2000 and Hurricane Iris in 2001 where a total of 93,289 persons were affected and damages estimated at US$380 million. Among the casualties of Hurricane Mitch were 3,279 homeless and ten (10) dead while Hurricane Iris left five (5) persons injured and twenty-three (23) persons dead. Guyana reported one (1) flood in 2005 which left 34 persons dead and 354,718 persons affected.

During the period 1960 to 2004, Associate Member Turks and Caicos Islands reported seven (7) disasters which included four (4) Tropical storms occurring in 1995, 2001, 2003 and 2004 and three (3) Hurricanes in 1960, 1985 and 2004. Bermuda reported one (1) disaster, Hurricane Fabian in 2003 which affected 50,000 persons, leaving 4 persons dead and causing an estimated 300 US$ million in damages.

Table 4.1 - Natural Disasters by year: 1960 – 2005

Country	Year	Disasters			Total casualties					Total population affected (number)	Affected persons by flooding, power outage, or general inconvenience	Damage (US$ million)
		Type of disaster	Name of disaster	Date started	Total	Dead	Injured	Missing	Homeless			
BS												
	1992	Hurricane	Andrew	17-Aug	. . .	4	. . .	0	. . .	. . .	192,596	. . .
	1995	Hurricane	Erin	31-Jul	. . .	0	. . .	0	. . .	. . .	60,203	. . .
	1996	Hurricane	Lili	18-Oct	. . .	0	. . .	0	. . .	. . .	16,443	. . .
	1999	Hurricane	Floyd	13-Sep	. . .	1	. . .	0	. . .	. . .	303,611	. . .
	2001	Hurricane	Michelle	4-Nov	. . .	0	. . .	0	. . .	. . .	227,567	. . .
	2004	Hurricane	Frances	1-Sep	. . .	1	. . .	0	. . .	. . .	283,278	150,000,000.00
	2004	Hurricane	Jeanne	25-Sep	. . .	0	. . .	0	. . .	. . .	60,164	50,000,000.00
BZ												
	2000	Hurricane	Mitch	28/05/2000	3,289	10	. . .	. . .	3,279	57,400	. . .	280.00
	2001	Hurricane	Iris	8/10/2001	28	23	5	0	0	35,889	. . .	99.50
DM												
	1979	Hurricane	. . .	29/8/79	63,042	42	3,000	. . .	60,000	75,000	. . .	32.15
	1989	Hurricane	. . .	17/09/89	. . .	. . .	. . .	. . .	. . .	. . .	. . .	25.56
	1994	Tropical Storm	. . .	. . . 27/8/95 05/9/95	. . .	. . .	. . .	. . .	. . .	. . .	. . .	11.11
	1995	Hurricane	. . .	18/9/95	. . .	1	. . .	. . .	. . .	...	. . .	135.56
	1999	Hurricane	. . .	18-19/11/99	. . .	. . .	. . .	. . .	. . .	602	. . .	11.48
	2004	Earthquake/ Landslide	. . .	21/11/04	. . .	0	. . .	0	. . .	19,527	. . .	33.33
GY												
	2005	Floods	. . .	16-Jan	. . .	34	. . .	. . .	. . .	354,718	. . .	. . .
JM												
	1991	Flooding	. . .	. . .	. . .	0	. . .	. . .	. . .	. . .	. . .	24.87
	1992	Earthquake	. . .	. . .	. . .	0	. . .	. . .	. . .	. . .	. . .	. . .
	1993	Flooding	. . .	. . .	. . .	0	. . .	. . .	. . .	. . .	. . .	3.21
	1993	Earthquake	. . .	. . .	. . .	0	. . .	. . .	. . .	. . .	. . .	0.62
	1994	Tropical storms	. . .	. . .	. . .	0	. . .	. . .	4 families	. . .	. . .	0.11
	1995	Flooding	. . .	. . .	. . .	0	. . .	. . .	416 families	. . .	. . .	7.07
	1996	Flooding	. . .	Nov	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1996	Landslides	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1996	Earthquakes	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1998	Torrential rains	. . .	. . .	. . .	3	. . .	. . .	. . .	0	. . .	6.30

Table 4.1 Contd. Natural Disasters by year: 1960 – 2005

Country	Year	Disasters			Total casualties					Total population affected (number)	Affected persons by flooding, power outage, or general inconvenience	Damage (US$ million)
		Type of disaster	Name of disaster	Date started	Total	Dead	Injured	Missing	Homeless			
LC												
	1994	Tropical Storm	. . .	9-Dec	. . .	3	. . .	. . .	. . .	. . .	. . .	85.19
	1996	Tropical Wave	. . .	26-Oct	. . .	0	. . .	. . .	. . .	. . .	. . .	4.44
	1998	Landslide	. . .	14-Oct	49	0	. . .	. . .	49	. . .	. . .	. . .
	1998	Tropical Wave	. . .	21-Oct	. . .	1	. . .	. . .	3 families	. . .	. . .	0.23
	1999	Landslip	. . .	Sep-99	. . .	0	. . .	. . .	102 families	. . .	. . .	0.37
	1999	Hurricane	. . .	9-Nov	. . .	0	. . .	. . .	. . .	. . .	. . .	6.26
	2002	Tropical Storm	. . .	22-Sep	. . .	0	. . .	. . .	125	. . .	. . .	7.52
	2003	Tropical Wave	. . .	7-Jul	. . .	0	. . .	. . .	0	. . .	. . .	1.14
	2004	Hurricane	. . .	9-Sep	. . .	0	. . .	. . .	0	. . .	. . .	2.59
TT												
	1990	Flood	. . .	12/15/90	2	2	. . .	. . .	. . .	. . .	. . .	1.65
	1991	Flood	. . .	3/8/91	1	1	. . .	. . .	. . .	. . .	. . .	. . .
	1993	Flood	. . .	5/10/93	6	6	. . .	. . .	. . .	. . .	. . .	. . .
	1996	Flood	. . .	07/23/96	3	3	. . .	. . .	. . .	. . .	. . .	. . .
	1997	Earthquake	. . .	04/22/97	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2.88
	1999	Flood	. . .	08/16/99	1	1	. . .	. . .	. . .	. . .	. . .	. . .
	2000	Flood	. . .	11/26/00	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2002	Flood	. . .	5/11/02	. . .	. . .	. . .	. . .	. . .	. . .	. . .	10.30
	2004	Hurricane	. . .	7/11/04	23	1	. . .	. . .	22	1000	. . .	4.90
	2004	Flood	. . .	12/11/04	5	3	2	. . .	. . .	. . .	. . .	31.89
ASSOCIATE MEMBERS												
BM												
	2003	Hurricane	Fabian	05/09/ 03	4	4	. . .	. . .	. . .	50000	. . .	300.00
TC												
	1960	Hurricane	Donna	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1985	Hurricane	Kate	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1995	Tropical Storm	Erin	. . .	0	0	0	0	0	0	. . .	. . .
	2001	Tropical Storm	Dean	Aug	0	0	0	0	0	0	. . .	. . .
	2003	Tropical Storm	Mindy	Oct	0	0	0	0	0	0	. . .	. . .
	2004	Hurricane	Frances	Sep	0	0	0	0	0	0	. . .	. . .
	2004	Tropical Storm	Jeanne	Sep	0	0	0	0	0	0	. . .	. . .

Appendix 1
Exchange Rates

1.4.1 National Currency Per United States Dollar

COUNTRY	NATIONAL CURRENCY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
THE BAHAMAS	Bahamas Dollar - B$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BARBADOS	Barbados Dollar - Bd$	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
BELIZE	Belize Dollar - BZ$	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
GUYANA	Guyana Dollar - G$	48.26	118.54	124.95	126.85	138.89	141.85	140.05	141.93	150.46	177.07
JAMAICA	Jamaica Dollar - J$	7.18	12.76	22.89	25.58	33.16	35.35	36.88	35.48	36.52	39.18
SURINAME	Suriname Guilder - Sf	1.79	1.79	1.79	74.12	201.05	412.00	406.00	406.00	406.00	995.00
TRINIDAD AND TOBAGO	Trinidad & Tobago Dollar - TT$	4.25	4.25	4.25	5.34	5.87	5.89	5.99	6.25	6.28	6.27
OECS COUNTRIES	EC$	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70

1.4.1 Contd. National Currency Per United States Dollar partitions

COUNTRY	NATIONAL CURRENCY	2000	2001	2002	2003	2004	2005	2006
THE BAHAMAS	Bahamas Dollar - B$	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BARBADOS	Barbados Dollar - Bd$	2.00	2.00	2.00	2.00	2.00	2.00	2.00
BELIZE	Belize Dollar - BZ$	2.00	2.00	2.00	2.00	2.00	2.00	2.00
GUYANA	Guyana Dollar - G$	181.01	187.11	190.60	195.34	199.79	199.88	201.09
JAMAICA	Jamaica Dollar - J$	43.19	46.10	48.07	58.24	60.99	61.99	65.87
SURINAME	Suriname Guilder - Sf	1339.20	2200.00	2349.98	2628.33	2733.58	2.73	2.74
TRINIDAD & TOBAGO	Trinidad & Tobago Dollar - TT$	6.28	6.20	6.21	6.26	6.27	6.27	6.28
OECS COUNTRIES	EC$	2.70	2.70	2.70	2.70	2.70	2.70	2.70

Notes:

Guyana:	1991-2002 are average annual Market Exchange mid-rates.
Jamaica:	Mid rates calculated from the Purchases and Sales rates
Trinidad and Tobago:	TT/US rates are mid-rates (average of buying and selling rates)

Sources:

Guyana:	1991-2002 Statistical Bulletin (BOG)
Jamaica:	Statistical Digest, Dec 94, Sep 95, Dec 96, Dec 97, Dec 98, Nov 99, May 2000, Jan 2003(BOJ)
Trinidad and Tobago:	1980-1985: Central Bank of Trinidad and Tobago 1986-1998: The Balance of Payments of Trinidad & Tobago, 1991, 1998 (Central Bank of T&T) 1999-2001 www.central-bank.org.tt 2002 www.central-bank.org.tt (TT Dollar Exchanges Rates) Annual Economic Survey 2004
Jamaica:	Bank Of Jamaica Website, http://www.boj.org.jm/exchange_rates_annual.php

Appendix 2.4
Sources and Notes of Data on Natural Disasters

2.4.1 (a) Sources of Data for Table 4.1 - Natural Disasters by Year: 1960 - 2005

Country	Data Source
THE BAHAMAS	Bahamas Department of Meteorology and Department of Statistics
BELIZE	Land Information Centre and Ministry of Natural Resources
DOMINCA	Disaster Coordinating Unit and OECS Macro-socio Economic Assessment
GUYANA	Bureau of Statistics
JAMAICA	Statistical Institute of Jamaica
SAINT LUCIA	National Emergency Management Office
TRINIDAD AND TOBAGO	Central Statistical Office
BERMUDA	Department of Statistics
TURKS AND CAICOS	Hurricane Command Centre

2.4.1 (b) Notes for Table 4.1 - Natural Disasters by Year: 1960 - 2005

Country	Notes
DOMINCA	A combined assessment was done for the landslide and earthquake in 2004 since the occurrence was about the same time.
BERMUDA	Total population affected represents only persons in households who lost electricity.

EM1: ENERGY CONSUMPTION BY TYPE AND YEAR

H

Concepts and Definitions

Energy consumption refers to all the energy used for heat, power, and electricity generation, regardless of where the energy was produced. Energy which is consumed for non-fuel purposes is not included in the energy consumed.

Types of Fuels

Solid fuels include hard coal, lignite, peat, patent fuel, lignite briquettes, peat briquettes, coke and bituminous sands.

Liquid fuels include crude oil, natural gas liquids, plant condensate, gasoline, petroleum products, jet fuel, kerosene, liquefied petroleum gas, refinery gas, feedstock, naphtha, lubricants and bitumen.

Gaseous fuels include natural gas and other petroleum gases, such as gasworks gas, coke oven gas and blast furnace gas.

Primary electricity refers to electricity generated by noncombustible energy sources and includes electrical energy of geothermal, hydro, nuclear, tide, wine, wave/ocean and solar origin.

Traditional fuels include estimates of the consumption of charcoal, fuel wood and bagasse.

- *Charcoal* is solid residue consisting mainly of carbon and obtained by the destructive distillation of wood in the absence of air.
- *Fuel wood* is all wood in the rough that is used for fuel purposes.
- *Bagasse* is the cellulosic residue left after sugar is extracted from sugar cane.

Source (World Resources 1998-99)

Method of Computation

The data on energy consumption refer to the apparent energy consumption of the population. The data is derived using the formula:

Energy consumption = energy production + energy imports – energy exports – bunkers +/- stock changes

Indicator Relevance

Energy use is a key aspect of consumption and production. Traditionally, energy has been regarded as the engine of economic progress. However, its production, consumption, and

by-products have resulted in major impacts on the environment. Energy consumption by year and type, therefore, gives an indication of the amount and types of fuel used in a year which allows for crucial estimations of the environmental impacts.

Moreover, energy consumption by type and year gives an indication of the amount of fossil fuels used in any given year. This is important since consumption of fossil fuels is a major contributor to global warming and air pollution. Fossil fuel resources should be conserved to support long term development and to reduce the negative environmental impacts. Consumption of fossil fuels can be reduced by regulating energy prices, which will internalise environmental and social costs, manage demand, encourage the development of alternative renewable energy sources, and hence, reduce the negative environmental impacts resulting from the consumption of fossil fuels.

Fuel consumption is highly dependent on urban land use density and the fuel efficiency of the vehicle fleet. Increasing fuel consumption may be the consequence of suburbanization of the work force, increasing income and car ownership, and reduction of passenger numbers per vehicle. This indicator, energy consumption by type and year, also provides, therefore, indirect information about urban congestion and contamination of land and water.

Data Assessment

The concept of energy consumption by type and year is harmonized across the region since all reporting Member States followed the internationally recommended definition of energy consumption.

Of the fourteen Member States who usually provide data, only seven provided data for this indicator and the data provided were sparse with very little detail. In addition, none of the Associate Members of the Community provided data for this indicator.

Data Sources

Please refer **Appendix 1.5.1** for the sources of the data on the energy consumption of Member States/Associate Members by type and year.

Evaluation

The Bahamas, Dominica and Jamaica reported consumption of *liquid fuels*. In 1990, The Bahamas reported 1.8 million barrels of fuel compared to 3.7 million barrels in 2003. Consumption of *liquid fuels* grew for the years 1998 (2.5 million barrels), 1999 (2.8 million barrels) and 2000 (3.6 million barrels) but declined in 2001 to 3.4 million barrels and increased thereafter to 3.6 million barrels in 2002 and further to 3.7 million barrels in 2003.

In Dominica 27.3 thousands of cubic metres of *liquid fuels* (*Kerosene*, *Diesel* and *Gasoline*) were consumed in 1990 compared to 98 thousand cubic metres in 2004. 1.8 thousand cubic metres of *liquid fuels* was reported in 1995, a very significant increase as

compared to the period 1999 to 2003, when average consumption was recorded at 43 thousand cubic metres.

Jamaica reported 22.8 million barrels of fuel in 1998 as compared to the provisional estimate of 26.2 million barrels in 2004. The average consumption of *liquid fuels* for this Member State during the period 1998 to 2004 stood at 24.2 million barrels of fuel with the largest quantity consumed in 2005 (25.5 million barrels).

Gaseous Fluids: An analysis of *Gaseous Fluids* in ***Table 5.1*** for reporting countries, Dominica and Grenada, reveals that in 1995, Dominica consumed 1.3 million kilograms of gaseous fuels compared to 1.9 million kilograms in 2004. The highest consumption for Dominica was recorded in 1999 at 2.7 million kilogram with an average consumption of 2.0 million kilogram for the years 1990, 1995, 1998 to 2004. For Grenada, a reported consumption of 26.7 Imperial gallons of gaseous fuels for 2002 compared to 27.8 Imperial gallons in the following year representing an increase of 4 per cent.

Primary Electricity: Eight (8) Member States and Associate Members reported on the consumption of *primary electricity*, all of which showed increases in usage over the period for which data was submitted. The Bahamas reported 770 million kilowatts per hour consumption in 1990 compared to 1.5 billion kilowatts per hour in 2003, a 94.8 percent increase in consumption over the period. Belize reported 153 thousands mega watts per hour in 1995 compared to 308 thousand mega watts in 2003, an increase of 101.3 per cent, over the period. Dominica reported 30.7 million kilowatts per hour in 1990 compared to 66.4 million kilowatts per hour in 2004, an increase of 116.3 per cent. Grenada reported 105.2 thousand tonnes consumption in 1999. Compared to 2004, the consumption of primary electricity increased in Grenada by 19.3 per cent to 125.5 thousand tonnes. Jamaica reported 2.0 million megawatts per pour consumption in 1995 which increased by 48.8 per cent to 3.0 million megawatts per hour in 2004, based on the provisional estimate submitted. Saint Lucia reported 196.6 million kilowatts per hour consumption in 1995 compared to 308.5 million kilowatts per hour in 2004, an increase of 56.9 per cent. St Vincent and the Grenadines reported 42.3 million kilowatts per hour consumption in 1990 compared to 106.5 million kilo watts per hour in 2004 to an increase of more that one and a half times or 152 per cent. Bermuda was the only Associate Member that submitted data for this indicator. In 1999 this country reported 522 million kilowatts consumption compared to 590 million kilo watt in 2003, an increase of 12.9 per cent.

For traditional fuels Belize and Jamaica were the only two countries to submit data. Belize submitted data for 2002 in the use of *fuelwood* and *bagasse* Jamaica reported 224 thousands of barrels oil equivalent of charcoal consumption in 2000 compared to 196 thousands of barrel oil equivalent, a drop of 14.3 per cent in 2004, based on the provisional estimate provided. The data showed that the consumption fluctuated, increasing in 2001 and 2002 when compared to 2000 followed by a decrease consumption in 2003 and 2004. The consumption of *fuelwood* reported also fluctuated for the period of data presented showing an increase from 2000 to 2001 and 2002 followed by a decrease in 2002, 2003 and 2004. In 2000 Jamaica reported 681 thousands

of barrel oil equivalent consumption of *fuel wood* compared to 585 thousands of barrel oil equivalent in 2004, a provisional estimate. The consumption of *bagasse*, the other traditional fuel reported on, increased in 2001 compared to 2000 followed by a decrease in 2002 and 2003 which then rose in 2004, based on a provisional estimate. In 2000 650 thousands of barrel of oil equivalent were consumed compared to 695 in 2004, provisional estimate.

Table 5.1 - Energy consumption by type and year: 1990, 1995, 1998-2004

Country	Year	Solid Fuels	Liquid Fuels	Gaseous Fuels	Primary electricity	Traditional fuels		
						Charcoal	Fuelwood	Bagasse
BS			'000 barrels		MWh			
	1990	. . .	1,775	. . .	770,000	n/a	n/a	n/a
	1995	. . .	2,698	. . .	949,000	n/a	n/a	n/a
	1998	. . .	2,486	. . .	1,130,000	n/a	n/a	n/a
	1999	. . .	2,776	. . .	1,219,000	n/a	n/a	n/a
	2000	. . .	3,618	. . .	1,281,000	n/a	n/a	n/a
	2001	. . .	3,460	. . .	1,343,000	n/a	n/a	n/a
	2002	. . .	3,598	. . .	1,399,000	n/a	n/a	n/a
	2003	. . .	3,661	. . .	1,462,000	n/a	n/a	n/a
BZ					MWh	tonne	m^3	tonne
	1995	. . .	. . .	. . .	152,931	. . .	. . .	. . .
	1998	. . .	. . .	. . .	186,731	. . .	. . .	. . .
	1999	. . .	. . .	. . .	198,799	. . .	. . .	. . .
	2000	. . .	. . .	. . .	229,352	. . .	. . .	. . .
	2001	. . .	. . .	. . .	256,715	. . .	. . .	. . .
	2002	. . .	. . .	. . .	278,946	. . .	118,244	286,127
	2003	. . .	. . .	. . .	307,553	. . .	. . .	. . .
DM			m^3	'000 kgs	MWh			
	1990	. . .	27,322	1,295	30,697	. . .	. . .	. . .
	1995	. . .	1,830,163	1,567	45,125	. . .	. . .	. . .
	1998	. . .	. . .	2,133	57,294	. . .	. . .	. . .
	1999	. . .	42,060	2,699	60,594	. . .	. . .	. . .
	2000	. . .	46,181	2,318	62,005	. . .	. . .	. . .
	2001	. . .	43,775	2,040	63,914	. . .	. . .	. . .
	2002	. . .	38,751	2,300	64,194	. . .	. . .	. . .
	2003	. . .	45,305	2,147	62,735	. . .	. . .	. . .
	2004	. . .	97,968	1,940	66,419	. . .	. . .	. . .
GD				Imperial gallons	tonne			
	1999	. . .	. . .	. . .	105,210	. . .	. . .	. . .
	2000	. . .	. . .	. . .	113,348	. . .	. . .	. . .
	2001	. . .	. . .	. . .	123,918	. . .	. . .	. . .
	2002	. . .	. . .	26,676	129,214	. . .	. . .	. . .
	2003	. . .	. . .	27,765	138,292	. . .	. . .	. . .
	2004	. . .	. . .	. . .	125,511	. . .	. . .	. . .
JM			'000 barrels [a/]		MWh	'000 boe	'000 boe	'000 boe
	1995	...	...	...	1,998,000	...	...	...
	1998	...	22,797	...	...	...	...	...
	1999	...	23,423	...	2,576,200	...	...	...
	2000	...	23,824	...	2,738,900	224	681	650
	2001	...	23,766	...	2,793,300	227	694	726
	2002	...	24,790	...	2,896,500	230	650	663
	2003	...	25,500	...	2,998,300	207	650	600
	2004p	...	25,180	...	2,974,000	196	585	695
LC					MWh			
	1995	. . .	. . .	. . .	196,574	. . .	. . .	. . .
	1998	. . .	. . .	. . .	235,881	. . .	. . .	. . .
	1999	. . .	. . .	. . .	256,195	. . .	. . .	. . .
	2000	. . .	. . .	. . .	276,745	. . .	. . .	. . .
	2001	. . .	. . .	. . .	286,539	. . .	. . .	. . .
	2002	. . .	. . .	. . .	285,713	. . .	. . .	. . .
	2003	. . .	. . .	. . .	298,983	. . .	. . .	. . .
	2004	. . .	. . .	. . .	308,540	. . .	. . .	. . .

Table 5.1 - Energy consumption by type and year: 1990, 1995, 1998-2004

Country	Year	Solid Fuels	Liquid Fuels	Gaseous Fuels	Primary electricity	Traditional fuels		
						Charcoal	Fuelwood	Bagasse
VC					**MWh**			
	1990	. . .	. . .	. . .	**42,269**	. . .	. . .	. . .
	1995	. . .	. . .	. . .	**62,141**	. . .	. . .	. . .
	1998	. . .	. . .	. . .	**74,598**	. . .	. . .	. . .
	1999	. . .	. . .	. . .	**77,900**	. . .	. . .	. . .
	2000	. . .	. . .	. . .	**82,049**	. . .	. . .	. . .
	2001	. . .	. . .	. . .	**86,604**	. . .	. . .	. . .
	2002	. . .	. . .	. . .	**89,824**	. . .	. . .	. . .
	2003	. . .	. . .	. . .	**95,430**	. . .	. . .	. . .
	2004	. . .	. . .	. . .	**106,523**	. . .	. . .	. . .
ASSOCIATE MEMBERS								
BM					**MWh**			
	1999	. . .	. . .	. . .	**522,470**	. . .	. . .	. . .
	2000	. . .	. . .	. . .	**535,335**	. . .	. . .	. . .
	2001	. . .	. . .	. . .	**553,920**	. . .	. . .	. . .
	2002	. . .	. . .	. . .	**574,726**	. . .	. . .	. . .
	2003	. . .	. . .	. . .	**590,032**	. . .	. . .	. . .

EM2: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY

Number of Households by Type of Fuel used for cooking
Proportion of population using solid fuels

H

Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

Concepts and Definitions

The household is defined as follows: (a) a one-person household, defined as an arrangement in which one person makes provisions for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; and (b) a multi-person household, defined as a group of two or more persons living together who make common provisions for food or other essentials for living. The persons in the group may pool their incomes and have a common budget. They may be related or unrelated or a combination of both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1998).)*

Fuel is defined as combustible matter used to maintain fire, such as coal, wood, oil, or gas, in order to create heat or power.

Fuel used for cooking refers to the fuel used predominantly for the preparation of principal meals.

*The number of households by type of fuel used for cookin*g describes the types of fuels that households use for cooking.

Types of Cooking Fuel

Charcoal is a solid residue that consists mainly of carbon and is obtained by the destructive distillation of wood in the absence of air.

Wood refers to all wood in the rough that is used for fuel.

Liquefied Petroleum Gas (LPG)/Gas is a combination of hydrocarbons (propane, butane and ethane) which are gaseous under conditions of normal temperature and pressure, but are liquefied by compression or cooling to facilitate storage, handling and transportation.

Kerosene is medium oil that is distilled between 150ºC and 300ºC. It is used as an illuminant and as a fuel and is often referred to as burning oil, vaporizing oil, power kerosene or illuminating oil.

Electricity is an electric current used as a source of power.

Other refers to types of cooking fuel not mentioned above.

Method of Computation

The number of households by type of fuel used for cooking is classified from data obtained from Member States/Associate Members according to the categories: None, Charcoal, Wood, LPG/Gas, Kerosene, Electricity, Not Stated and Other.

Indicator Relevance

The proportion of households using solid fuels is one of the indicators for monitoring the Millennium Development Goals. There are important linkages between household solid fuel use, indoor air pollution, deforestation, soil erosion and greenhouse gas emissions. The type of fuel and its participation in cooking tasks are important predictors of exposure to indoor air pollution.

Data Assessment

The number of households by type of fuel used for cooking was obtained from data submitted by Member States/Associate Members. All reporting countries followed the internationally recommended concept of fuel used for cooking. This indicator is, therefore, regionally and internationally conceptually harmonized.

Data Sources

Please refer to **Appendix 1.5.2** for the sources of the data on the number of households in Member States/Associate Members by type of fuel used for cooking.

Evaluation

Tables 5.2(a) and **5.2(b)** present the number of households by type of fuel used for cooking for the 2000 Round of Census in Member States. The number of households for the thirteen Member States shown, amounted to ***1.7*** million of which *LPG/Gas* (78.3 per cent) was the preferred type of fuel used for cooking. Other significant types of fuel used in Member States were, *Wood* (6.3 per cent), *Kerosene* (5.4 per cent) and *Charcoal* (4.2 per cent) and *Electricity* (3.1 per cent). Three Associate Members consisting 19,370 households, reported *77.8* per cent of households using *LPG/Gas* as the main type of fuel used for cooking followed by Electricity (18.9 per cent).

Six Member States and two Associate Members reported *LPG/Gas* usage above 90 percent with Antigua and Barbuda and Montserrat reporting

Table 5.2 (a) Number of Households by Type of Fuel used for Cooking: 2000 Round of Census

Country	Year	Charcoal	Wood	LPG/Gas	Kerosene	Electricity	None	Not Stated	Other	Total
AG	2001	318	88	19,612	34	135			263	20,450
BS	2000	293	388	65,126	898	19,563			1,474	87,742
BB	2000	72		65,172	1,883	2,491		2,257	11,151	83,026
DM	2001	3,510		18,054	308	67			420	22,359
GD	2001	943	1,319	30,611	205	61			337	33,476
GY	2002	1,143	23,982	71,660	82,158	2,600		110	956	182,609
JM	2001	36,148	80,686	597,578	3,009	11,958			18,947	748,326
MS	2001	38	41	2,207	3	11			29	2,329
KN	2001	159	233	14,521	140	393			234	15,680
LC	2001	5,702		40,055	94	189			1,084	47,124
VC	2001	1,182	917	27,318	128	317			400	30,262
SR	2004	19,941		97,166	916	993		3,329	1,118	123,463
TT	2000	2,237		282,408	1,555	13,219	1,710	2,435	307	303,871
TOTAL MEMBER STATES		71,686	107,654	1,331,488	91,331	51,997	1,710	8,131	36,720	1,700,717
ASSOCIATE MEMBERS										
AI	2001	51		3,469	3	45		127	35	3,730
VG	2001	21	6	7,894	5	403			57	8,386
TC	2001	217	0	3,712	112	3,213		0	0	7,254
TOTAL ASSOCIATE MEMBERS		289	6	15,075	120	3,661	0	127	92	19,370
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		71,975	107,660	1,346,563	91,451	55,658	1,710	8,258	36,812	1,720,087

Table 5.2 (b) Percentage Distribution of Households by Type of Fuel used for Cooking: 2000 Round of Census

Country	Year	Charcoal	Wood	LPG/Gas	Kerosene	Electricity	None	Not Stated	Other	Total
AG	2001	1.6	0.4	95.9	0.2	0.7	0.0	0.0	1.3	100.0
BS	2000	0.3	0.4	74.2	1.0	22.3	0.0	0.0	1.7	100.0
BB	2000	0.1	0.0	78.5	2.3	3.0	0.0	2.7	13.4	100.0
DM	2001	15.7	0.0	80.7	1.4	0.3	0.0	0.0	1.9	100.0
GD	2001	2.8	3.9	91.4	0.6	0.2	0.0	0.0	1.0	100.0
GY	2002	0.6	13.1	39.2	45.0	1.4	0.0	0.1	0.5	100.0
JM	2001	4.8	10.8	79.9	0.4	1.6	0.0	0.0	2.5	100.0
MS	2001	1.6	1.8	94.8	0.1	0.5	0.0	0.0	1.2	100.0
KN	2001	1.0	1.5	92.6	0.9	2.5	0.0	0.0	1.5	100.0
LC	2001	12.1	0.0	85.0	0.2	0.4	0.0	0.0	2.3	100.0
VC	2001	3.9	3.0	90.3	0.4	1.0	0.0	0.0	1.3	100.0
SR	2004	16.2	0.0	78.7	0.7	0.8	0.0	2.7	0.9	100.0
TT	2000	0.7	0.0	92.9	0.5	4.4	0.6	0.8	0.1	100.0
TOTAL MEMBER STATES		4.2	6.3	78.3	5.4	3.1	0.1	0.5	2.2	100.0
ASSOCIATE MEMBERS										
AI	2001	1.4	0.0	93.0	0.1	1.2	0.0	3.4	0.9	100.0
VG	2001	0.3	0.1	94.1	0.1	4.8	0.0	0.0	0.7	100.0
TC	2001	3.0	0.0	51.2	1.5	44.3	0.0	0.0	0.0	100.0
TOTAL ASSOCIATE MEMBERS		1.5	0.0	77.8	0.6	18.9	0.0	0.7	0.5	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		4.2	6.3	78.3	5.3	3.2	0.1	0.5	2.1	100.0

CHART 5.2.1(A): PERCENT DISTRIBUTIONS OF HOUSEHOLDS BY TYPE OF FUEL USED FOR COOKING

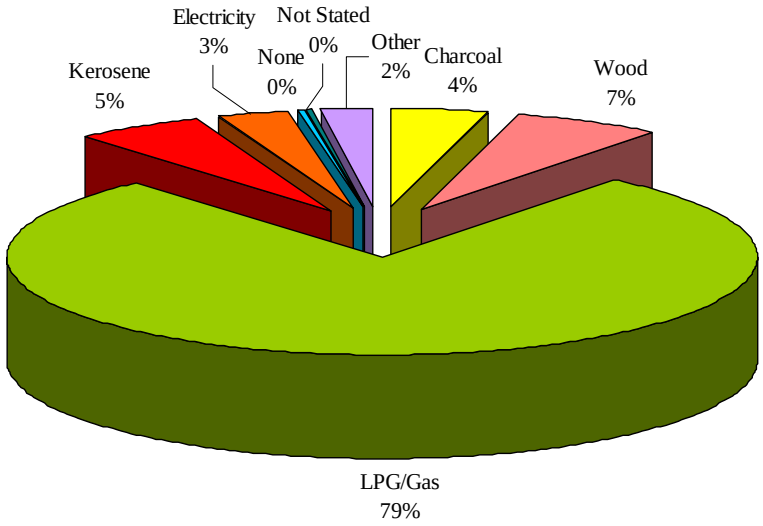


CHART 5.2.1(B): PERCENT DISTIBUTIONS OF HOUSEHOLDS BY TYPE OF FUEL USED FOR COOKING AND MEMBER STATE/ASSOCIATE MEMBER

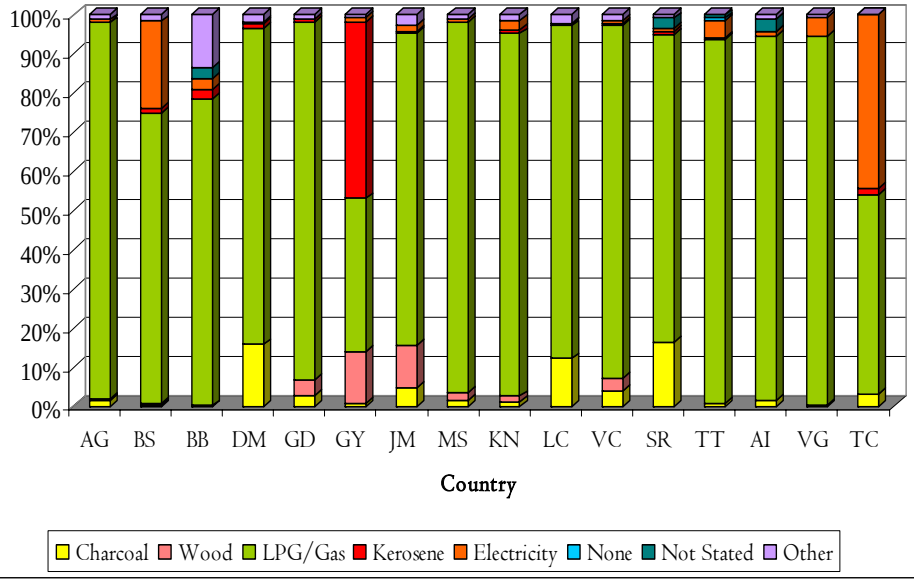
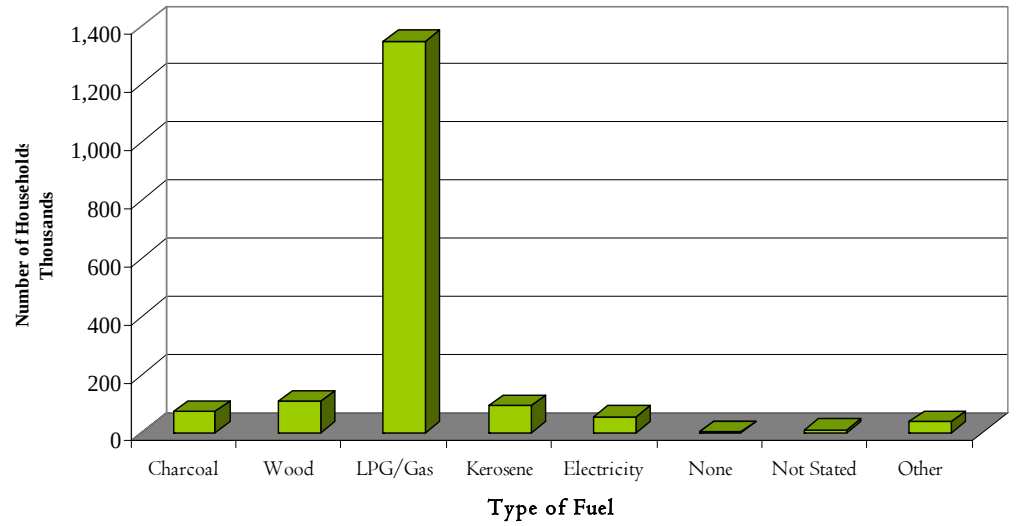


CHART 5.2.2: NUMBER OF HOUSEHOLDS BY TYPE OF FUEL USED FOR COOKING



EM3: NUMBER OF HOUSEHOLDS BY TYPE OF FUEL USED FOR LIGHTING

H

Concepts and Definitions

The household is defined as follows: (a) a one-person household, defined as an arrangement in which one person makes provisions for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; and (b) a multi-person household, defined as a group of two or more persons living together who make common provisions for food or other essentials for living. The persons in the group may pool their incomes and have a common budget. They may be related or unrelated or a combination of both related and unrelated. (*Please refer to the United Nations Principles and Recommendations for Population and Housing Censuses, Revision 1 (1998).)*

Type of lighting refers to the source of lighting predonminantly used by occupants of a housing unit.

The number of households by type of lighting describes the types of fuels that members of households use for lighting.

Types of Fuel Used for Lighting

Gas is a combination of hydrocarbons (propane, butane and ethane) which are gaseous under conditions of normal temperature and pressure, but are liquefied by compression or cooling to facilitate storage, handling and transportation.

Kerosene is medium oil that is distilled between 150ºC and 300ºC. It is used as an illuminant and as a fuel and is often referred to as burning oil, vaporizing oil, power kerosene or illuminating oil.

Electricity is an electric current used as a source of power.

Other is other types of lighting fuel not so far mentioned.

Method of Computation

Data for this indicator were obtained from Member States/Associate Members according to the categories: Gas, Kerosene, Electricity, Not Stated and Other as defined under concepts and definitions.

Indicator Relevance

Household lighting energy use is increasing due to the construction of larger homes and the installation of more light

fittings per home. Most homes could probably reduce the amount of energy they use for lighting by 50 percent or more. The average household's energy use is responsible for about eight tonnes of carbon dioxide (CO2), the main greenhouse gas, per year

Data Assessment

The number of households by type of fuel used for lighting was obtained from data submitted by Member States/Associate Members. All reporting countries followed the internationally recommended concept of fuel used for lighting. This indicator is, therefore, regionally and internationally conceptually harmonized.

Data Sources

Please refer to **Appendix 1.5.3** for the sources of the data on the number of households in Member States/Associate Members by type of fuel used for lighting.

Evaluation

In the Region, *Electricity* provided lighting to 86.7 percent of the 1.6 million households who reported to be users of electricity (***Table 5.3 (a)***. *Kerosene* followed with 165,301 or 10.3 percent of households reporting use of this type of fuel for lighting. The percentage use of *electricity* was higher for Associate Member States which reported 96.8 percent of households as compared to 86.6 percent of households for Member States. Among Associate States, The Virgin Islands 99.2 percent of households reportedly used *electricity* as the main type of fuel used for lighting whilst among member states 96.5 percent of Barbados housolds used this type of fuel for lighting. Guyana reported the lowest proportion of households using *electricity* as the main source of lighting although this Member State reported the highest proportion of households using *kerosene* as their main source of lighting. A mere 0.8 percent of households in the Region used *Gas* for lighting although Guyana reported 5.4 percent of households using this type of fuel as the main source of lighting.

Table 5.3 (a) Households by Type of Fuel used for lighting: 2000 Round of Census

Country	Year	Gas	Kerosene	Electricity	Other	Not Stated	Total All Households
AG	2001	61	564	19,236	421	168	20,450
BS	2000	837	0	84,115	2,790	0	87,742
BB	2000	69	1,807	80,126	465	559	83,026
BZ	2000	1,068	6,859	42,417	1,488	113	51,945
DM	2001	58	1,764	19,237	1,300	0	22,359
GD	2001	58	3,720	28,885	813	0	33,476
GY	2002	9,821	44,301	124,874	3,411	202	182,609
JM	2001	0	79,066	651,405	17,855	0	748,326
MS	2001	0	24	2,233	46	26	2,329
KN	2001	54	655	14,665	177	129	15,680
VC	2001	71	3,877	24,940	1,113	261	30,262
TT	2000	711	22,392	277,413	1,546	1,809	303,871
TOTAL MEMBER STATES		12,808	165,029	1,369,546	31,425	3,267	1,582,075
ASSOCIATE MEMBERS							
AI	2001	1	95	3,491	33	110	3,730
VG	2001	30	11	8,320	18	7	8,386
TC	2001	21	167	6,938	128	0	7,254
TOTAL ASSOCIATE MEMBERS		42	272	18,760	179	117	19,370
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		12,850	165,301	1,388,306	31,604	3,384	1,601,445

Table 5.3 (b) Percentage distribution of Households by Type of Fuel used for lighting: 2000 Round of Census

Country	Year	Gas	Kerosene	Electricity	Other	Not Stated	Total All Households
AG	2001	0.3	2.8	94.1	2.1	0.8	100.0
BS	2000	1.0	0.0	95.9	3.2	0.0	100.0
BB	2000	0.1	2.2	96.5	0.6	0.7	100.0
BZ	2000	2.1	13.2	81.7	2.9	0.2	100.0
DM	2001	0.3	7.9	86.0	5.8	0.0	100.0
GD	2001	0.2	11.1	86.3	2.4	0.0	100.0
GY	2002	5.4	24.3	68.4	1.9	0.1	100.0
JM	2001	0.0	10.6	87.0	2.4	0.0	100.0
MS	2001	0.0	1.0	95.9	2.0	1.1	100.0
KN	2001	0.3	4.2	93.5	1.1	0.8	100.0
VC	2001	0.2	12.8	82.4	3.7	0.9	100.0
TT	2000	0.2	7.4	91.3	0.5	0.6	100.0
TOTAL MEMBER STATES		0.8	10.4	86.6	2.0	0.2	100.0
ASSOCIATE MEMBERS							
AI	2001	0.0	2.5	93.6	0.9	2.9	100.0
VG	2001	0.4	0.1	99.2	0.2	0.1	100.0
TC	2001	0.3	2.3	95.6	1.8	0.0	100.0
TOTAL ASSOCIATE MEMBERS		0.3	1.4	96.8	0.9	0.6	100.0
TOTAL MEMBER STATES AND ASSOCIATE MEMBERS		0.8	10.3	86.7	2.0	0.2	100.0

CHART 5.3.1(A): PERCENT DISTRIBUTIONS OF HOUSEHOLDS BY TYPE OF FUEL USED FOR LIGHTING

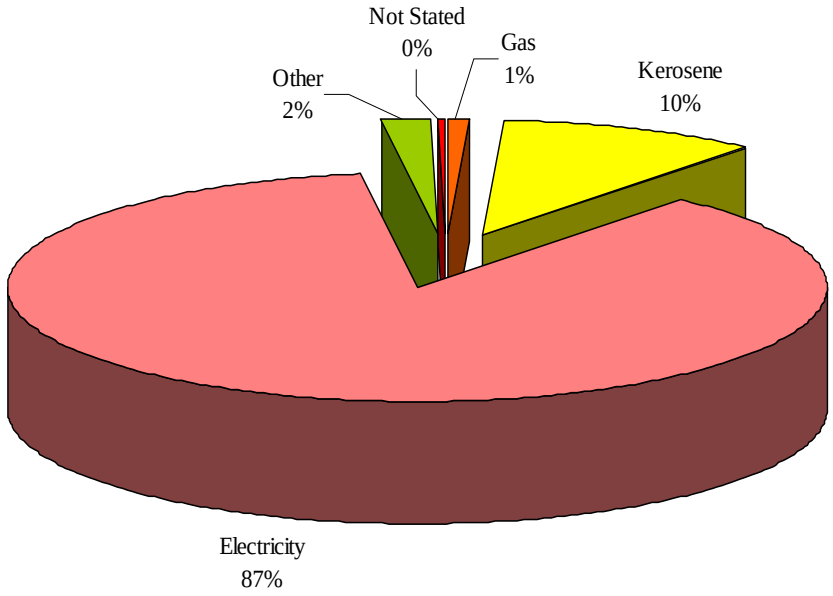


CHART 5.3.1(B): PERCENT DISTRIBUTIONS OF HOUSEHOLDS BY TYPE OF FUEL USED FOR LIGHTING AND MEMBER STATE/ASSOCIATE MEMBER

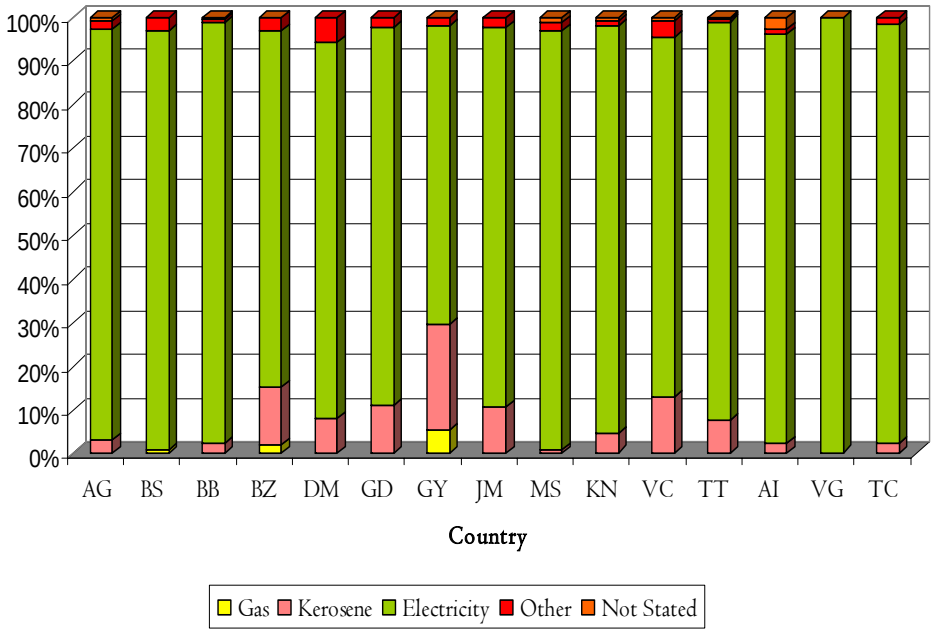
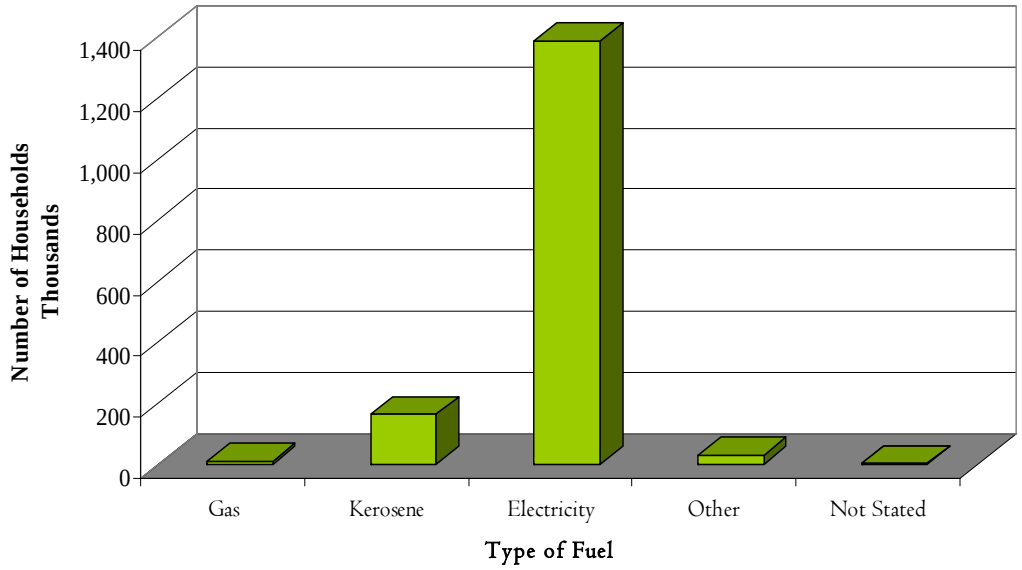


CHART 5.3.2: NUMBER OF HOUSEHOLDS BY TYPE OF FUEL USED FOR LIGHTING



EM4: MINERAL PRODUCTION BY TYPE

H

Concepts and Definitions

A mineral is defined as any of a class of substances occurring in nature, usually comprising inorganic substances, as quartz or feldspar, of definite chemical composition and usually of definite crystalline structure. They, however, sometimes also include rocks formed by these substances, as well as certain natural products of organic origin, such as asphalt or coal.

Types of Minerals

Gold is a soft, yellow, corrosion-resistant element. It is the most malleable and ductile metal, occurring in veins and alluvial deposits and recovered by mining or by panning or sluicing. A good thermal and electrical conductor, gold is generally alloyed to increase its strength, and it is used as an international monetary standard, in jewellery, for decoration, and as a plated coating on a wide variety of electrical and mechanical components.

Silver is a lustrous, white, ductile, malleable, metallic element, occurring both uncombined and in ores, such as argentite. It has the highest thermal and electrical conductivity of the metals.

Aluminium is a silvery-white, ductile, metallic element and is the most abundant in the earth's crust. It is found in combination, chiefly in bauxite. Having good conductive and thermal properties, it is used to form many hard, light, corrosion-resistant alloys.

Bauxite is the principal ore of aluminium, composed mainly of hydrous aluminium oxides and aluminium hydroxides.

Sand/Gravel is small loose grains of worn or disintegrated rock or an unconsolidated mixture of rock fragments and pebbles.

Limestone is a common sedimentary rock consisting mostly of calcium carbonate, $CaCO_3$. It is used as a building stone and in the manufacture of lime, carbon dioxide, and cement.

Salt is a crystalline compound, sodium chloride, NaCl, which occurs as a mineral.

Clay is a fine-grained, firm, earthy material that is plastic when wet and hardens when heated. It consists primarily of hydrated silicates of aluminium and is widely used in making bricks, tiles, and pottery.

Crushed Stone is a concreted earthy or mineral matter (rock) that is quarried and worked into a specific size and shape for a particular purpose.

A *diamond* is an extremely hard, highly refractive crystalline form of carbon that is usually colourless and is used as a gemstone and in abrasives, cutting tools, and other applications.

Gypsum, hydrated calcium sulphate ($CaSO_4 \cdot 2H2O$), is a very common mineral occurring in crystals and in masses. It is soft enough to be scratched by the fingernail and is used to make plaster of Paris, as an ornamental material and as a fertilizer.

Anhydrite is a colourless, white, grey, blue, or lilac mineral of anhydrous calcium sulphate ($CaSO_4$), occurring as layers in gypsum deposits.

Marble is a metamorphic rock formed by alteration of limestone or dolomite, often irregularly coloured by impurities, and used especially in architecture and sculpture.

Silica Sand is the dioxide form of silicon, SiO_2, occurring especially as quartz sand, flint, and agate. It is usually used in the form of its prepared white powder chiefly in the manufacture of glass, water glass, ceramics, and abrasives.

Stone is the hard, mineral substance of which rock consists.

Clay/Fill is a fine-grained, firm earthy material that is plastic when wet and hardens when heated. It consists primarily of hydrated silicates of aluminium and is widely used for making bricks, tiles, and pottery.

Lime sand & Silt are sedimentary materials consisting of very fine particles intermediate in size between sand and clay.

Dolomite, essentially $CaMg(CO_3)_2$, is a white or light-coloured mineral that is used in fertilizers, as a furnace refractory, and as a construction and ceramic material.

Limestone (Marble Grade) is a common sedimentary rock that consists mostly of calcium carbonate, $CaCO_3$. It is used as a building stone and in the manufacture of lime, carbon dioxide, and cement.

Other refers to some other type of mineral not so far mentioned.

Method of Computation

Mineral production by type is classified from data obtained from Member States/Associate Members according to the categories: Gold, Silver, Aluminium, Bauxite, Sand/Gravel, Limestone, Salt, Clay, Crushed Stone, Diamond, Gypsum & Anhydrite, Marble, Silica Sand, Stone, Clay/Fill, Lime sand & Silt, Pridge sand, Dolomite, Limestone (Marble Grade) and Other as defined in the forgoing section.

Indicator Relevance

Unsustainable exploitation of minerals will cause depletion in the long term, which can ultimately have a great impact on the economy of a country. The activities associated with mineral production, such as explosions, drilling and smelting, are a major source of air, water and soil pollution caused by the discharges of mineral wastes or mine tailings. For example, aluminium and iron production accounts for over 5% of anthropogenic GHG emissions worldwide. Alumina production is also associated with emission of dust and corrosive materials and creation of large amounts of alkaline mud ("red mud"). Dust and caustic soda contamination are also significant environmental concerns associated with the refining process. The biggest problem of smelting operations (processing alumina into aluminium) is fluoride emissions. In addition, these activities can also cause loss of habitats of wildlife. *(Trends in Consumption and Production: Selected Minerals "Discussion Paper of the United Nations Department of Economic and Social Affairs.")*

Data Assessment

This indicator, mineral production by type, is regionally and internationally conceptually harmonized since the internationally recommended definition for a mineral was followed.

The data provided for this indicator was sparse: seven Member States provided data. Those seven Member States were the Bahamas, Belize, Dominica, Grenada, Guyana, Jamaica and Suriname. None of the Associate Members of the Community provided data.

Data Sources

Please refer to **Appendix 1.5.4** for the sources of the data on mineral production by type in Member States/Associate Members.

Evaluation

It can be seen from the data provided in **Table 5.4** below that mineral production is concentrated in Guyana, Jamaica, Belize and Suriname. Guyana reported the largest quantities of *Gold* produced in the region which ranged from 1.2 million tonnes in 1990 to 14.5 million tonnes in 1997 and was the only country to report the production of silver. Guyana also reported production of *clay*, *crushed stone* and *diamonds*. Suriname produced an average of 4,064 x 1,000Mt *bauxite* for the period 1990 to 2004, while Jamaica reportedly produced an average of 12.3 Mt of *bauxite* for the period 1990 to 2004. Suriname also reported average production of 1,977 x 1,000Mt of Aluminium for the years 2000 to 2004. Other production of minerals for Jamaica includes *Gypsum and anhydrite*, *Marble*, *Silica sand* and *Limestone*. Four Member States reported production of *Sand* and *Gravel* with the highest being reported by Jamaica averaging over 1.9 million tonnes from 1990 to 2004. The Bahamas was the only member state which reported the production of *salt* that can be described as fluctuating since 1990 along with the production of *Aragonite*. Mineral production in Belize included increasing production of *clays*, *sand* and *gravel*, stone and *Pridgesand* and fluctuations in the production of *limestone*, *dolomite* and *limestone marble*.

Table 5.4- Mineral Production by Type: 1990 - 2004

Country	Year	Gold	Silver	Aluminium	Bauxite	Sand and Gravel	Limestone
BZ						**yds^3**	**yds^3**
	1995	. . .	. . .	. . .	. . .	66,857	182,462
	1998	. . .	. . .	. . .	. . .	254,266	189,258
	1999	. . .	. . .	. . .	. . .	100,821	213,154
	2000	. . .	. . .	. . .	. . .	190,160	350,114
	2001	. . .	. . .	. . .	. . .	215,477	549,716
	2002	. . .	. . .	. . .	. . .	142,451	170,716
	2003	. . .	. . .	. . .	. . .	369,362	423,464
	2004	. . .	. . .	. . .	. . .	211,922	274,790
DM						**tonnes**	
	1995	. . .	. . .	. . .	. . .	*101,479	. . .
	1998	. . .	. . .	. . .	. . .	201,571	. . .
	1999	. . .	. . .	. . .	. . .	444,634	. . .
	2000	. . .	. . .	. . .	. . .	608,750	. . .
	2001	. . .	. . .	. . .	. . .	672,993	. . .
	2002	. . .	. . .	. . .	. . .	597,529	. . .
	2003	. . .	. . .	. . .	. . .	598,643	. . .
	2004	. . .	. . .	. . .	. . .	*399,143	. . .
GD						**yds^3**	
	1998	. . .	. . .	. . .	. . .	17,862	. . .
	1999	. . .	. . .	. . .	. . .	186	. . .
	2000	. . .	. . .	. . .	. . .	13,237	. . .
	2001	. . .	. . .	. . .	. . .	14,101	. . .
	2002	. . .	. . .	. . .	. . .	39,393	. . .
	2003	. . .	. . .	. . .	. . .	116	. . .
GY		**kg**	**tonnes**	**tonnes**			
	1990	1,204	0.05	1,423,058	. . .	. . .	. . .
	1991	1,844	0.09	1,345,727	. . .	. . .	. . .
	1992	2,475	0.12	895,196	. . .	. . .	. . .
	1993	9,635	0.48	2,093,899	. . .	. . .	. . .
	1994	11,678	0.58	1,991,132	. . .	. . .	. . .
	1995	9,005	0.45	2,028,080	. . .	. . .	. . .
	1996	12,007	0.60	2,475,459	. . .	. . .	. . .
	1997	14,571	0.73	2,470,895	. . .	. . .	. . .
	1998	14,146	0.71	2,267,368	. . .	. . .	. . .
	1999	12,905	0.65	2,359,272	. . .	. . .	. . .
	2000	13,527	0.66	2,689,451	. . .	. . .	. . .
JM		**kg**			**tonnes**	**tonnes**	**tonnes**
	1990	. . .	. . .	. . .	11.0	0.9	5.5
	1995	. . .	. . .	. . .	11.0	1.8	7.3
	1998	. . .	. . .	. . .	13.0	1.8	7.1
	1999	. . .	. . .	. . .	12.0	2.1	7.8
	2000	. . .	. . .	. . .	11.1	2.1	8.1
	2001	227	. . .	. . .	12.4	2.2	8.9
	2002	. . .	. . .	. . .	13.1	2.2	9.2
	2003	. . .	. . .	. . .	13.4	2.3	9.9
	2004	. . .	. . .	. . .	13.3	2.4	8.4
SR					**tonne***		
	2000	. . .	. . .	. . .	3,659.0	. . .	. . .
	2001	. . .	. . .	. . .	4,334.0	. . .	. . .
	2002	. . .	. . .	1,902	3,999.0	. . .	. . .
	2003	. . .	. . .	2,004	4,111.0	. . .	. . .
	2004	. . .	. . .	2,025	4,217.0	. . .	. . .

Table 5.4 Cont'd. Mineral Production by Type: 1990 - 2004

Country	Year	Salt	Aragonite	Clay	Crushed Stone	Diamonds	Gypsum & Anhydrite	Marble	Silica Sand	Stone
BS		tonnes	tonnes							
	1990	754,499	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1995	1,579,323	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1998	1,226,981	13,611	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	1999	879,163	6,587	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2000	1,021,921	17,596	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2001	1,267,496	5,311	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2002	1,074,355	73	. . .	. . .	. . .	. . .	. . .	. . .	. . .
	2003	1,245,447	8,933	. . .	. . .	. . .	. . .	. . .	. . .	. . .
BZ										yds^3
	1995	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	291
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	894
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2,613
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	6,877
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	24,027
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	18,116
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	21,077
GY				tons	tons	$x10^3$ metric carats				
	1990	. . .	. . .	2,000	49,000	15.3	. . .	. . .	. . .	. . .
	1991	. . .	. . .	2,000	55,000	29.3	. . .	. . .	. . .	. . .
	1992	. . .	. . .	6,000	73,000	46.0	. . .	. . .	. . .	. . .
	1993	. . .	. . .	406	110,000	50.9	. . .	. . .	. . .	. . .
	1994	. . .	. . .	. . .	150,000	36.8	. . .	. . .	. . .	. . .
	1995	. . .	. . .	. . .	. . .	52.4	. . .	. . .	. . .	. . .
	1996	. . .	. . .	. . .	. . .	46.7	. . .	. . .	. . .	. . .
	1997	. . .	. . .	360	90,000	36.5	. . .	. . .	. . .	. . .
	1998	. . .	. . .	. . .	214,000	35.3	. . .	. . .	. . .	. . .
	1999	. . .	. . .	. . .	. . .	52.6	. . .	. . .	. . .	. . .
	2000	. . .	. . .	. . .	. . .	83.9	. . .	. . .	. . .	. . .
JM							'000 tonnes	'000 tonnes	'000 tonnes	
	1990	. . .	. . .	. . .	. . .	. . .	82.2	4.0	16.6	. . .
	1995	. . .	. . .	. . .	. . .	. . .	208.0	2.8	16.3	. . .
	1998	. . .	. . .	. . .	. . .	. . .	154.5	0.8	6.1	. . .
	1999	. . .	. . .	. . .	. . .	. . .	236.0	0.4	9.4	. . .
	2000	. . .	. . .	. . .	. . .	. . .	330.0	0.1	6.7	. . .
	2001	. . .	. . .	. . .	. . .	. . .	320.3	0.1	8.2	. . .
	2002	. . .	. . .	. . .	. . .	. . .	164.9	0.2	9.4	. . .
	2003	. . .	. . .	. . .	. . .	. . .	249.0	0.2	12.8	. . .
	2004	. . .	. . .	. . .	. . .	. . .	283.0	0.1	11.2	. . .

		Clay/ Fill	Limesand & Silt	Pridgesand	Dolomite	Limestone Marble Grade
BZ		yds^3	yds^3	yds^3	tonnes	ft^2
	1998	122,312	113,656	. . .	3,198	. . .
	1999	74,645	282,512	25,489	5,740	. . .
	2000	339,015	104,273	15,612	5,272	. . .
	2001	303,451	334,888	30,185	4,525	38,000
	2002	265,181	124,092	50,000	5,500	45,000
	2003	224,948	106,962	40,064	6,319	25,000
	2004	311,449	327,031	36,312	3,288	. . .

EM5: MINERAL RESERVES BY TYPE

H

Concepts and Definitions

A mineral is defined as any of a class of substances occurring in nature, usually comprising inorganic substances, as quartz or feldspar, of definite chemical composition and usually of definite crystal structure. They, however, sometimes also include rocks formed by these substances, as well as certain natural products of organic origin, such as asphalt or coal.

A mineral reserve is the economically mineable material derived from a measured mineral resource. It is inclusive of diluting materials and allows for losses that may occur when the material is mined.

Minerals

Gold is a soft, yellow, corrosion-resistant element. It is the most malleable and ductile metal, occurring in veins and alluvial deposits and recovered by mining or by panning or sluicing. A good thermal and electrical conductor, gold is generally alloyed to increase its strength, and it is used as an international monetary standard, in jewellery, for decoration, and as a plated coating on a wide variety of electrical and mechanical components.

Silver is a lustrous, white, ductile, malleable, metallic element, occurring both uncombined and in ores, such as argentite. It has the highest thermal and electrical conductivity of the metals.

Iron is a silvery-white, lustrous, malleable, ductile, magnetic, metallic element occurring abundantly in combined forms, notably in hematite, limonite, magnetite, and taconite

Bauxite is the principal ore of aluminium, composed mainly of hydrous aluminium oxides and aluminium hydroxides.

Nickel is a silvery, hard, ductile and ferromagnetic metallic element used in alloys, in corrosion-resistant surfaces, batteries and for electroplating.

Sand/Gravel is small loose grains of worn or disintegrated rock or an unconsolidated mixture of rock fragments and pebbles.

Limestone is a common sedimentary rock that consists mostly of calcium carbonate, $CaCO_3$. It is used as a building stone and in the manufacture of lime, carbon dioxide, and cement.

Salt is a crystalline compound, sodium chloride, NaCl, which occurs as a mineral.

Crude Oil is unrefined petroleum, which is a thick, flammable, yellow-to-black mixture of gaseous, liquid, and solid hydrocarbons that occurs naturally beneath the earth's surface.

Gypsum, hydrated calcium sulphate ($CaSO_4 \cdot 2H2O$), is a very common mineral occurring in crystals and in masses. It is soft enough to be scratched by the fingernail and is used to make plaster of Paris, as an ornamental material and as a fertilizer.

Anhydrite is a colourless, white, grey, blue, or lilac mineral of anhydrous calcium sulphate ($CaSO_4$), occurring as layers in gypsum deposits.

Marble is a metamorphic rock formed by alteration of limestone or dolomite, often irregularly coloured by impurities, and used especially in architecture and sculpture.

Silica Sand is the dioxide form of silicon, SiO_2, occurring especially as quartz sand, flint, and agate. It is usually used in the form of its prepared white powder chiefly in the manufacture of glass, water glass, ceramics, and abrasives.

Not Stated refers to minerals that have not been so far mentioned and that were not specified in the questionnaires.

Method of Computation

Data for this indicator was obtained from Member States/Associate Members according to the categories: Gold, Silver, Iron, Bauxite, Nickel, Sand & Gravel, Limestone, Salt, Crude Oil, Gypsum & Anhydrite, Marble, Silica Sand and Not Stated.

Indicator Relevance

The purpose of the indicator is to measure the availability of mineral resources.

Mineral reserves estimates, particularly in terms of years remaining at current rates of extraction, are crucial for the assessment of sustainable development. The factors for estimating the availability of non-renewable resources are exhaustibility, uncertainty and economic supply as a function of price and technology. The conservation of energy and the increased use of recycling materials can result in reducing mineral exploitation.

Data Assessment

The internationally recommended definition of a mineral reserve was followed and so, this indicator is regionally and internationally conceptually harmonized.

Only three of the Member States provided data for this indicator. Those three countries are Grenada, Guyana and Jamaica. None of the Associate Members provided data. The data for this indicator is, therefore, sparse and with little detail.

Data Sources

Please refer to **Appendix 1.5.5** for the sources of the data on mineral reserves by type in Member States/Associate Members.

Evaluation

Data on mineral reserves for three Member States are supplied in **Table 5.5** below. In Guyana mineral reserves of *bauxite* was 1,200 x 106 million tonnes in 1996 whereas Grenada reported its reserves of *sand and gravel* experiencing major fluctuations from 17,862 cubic yards in 1998 to 186 cubic yards in 1999 then increasing to 13,237 cubic yards in 2000 with further increases in 2001 (14,101 cubic yards) and 2002 (39,393 cubic yards) with a high decline in 2003 to 116 cubic yards. The Table below also shows data for Jamaica whose reserves of *Gold* were 986 in 2002. The data for Jamaica also shows reserves of *Bauxite* at 2,500 tonnes in 1990 and 2002, *limestone*, sand and gravel, gypsum and Anhydrite, marble and silica sand.

Table 5.5 - Mineral Reserves by Type: 1998 - 2003

Country	Year	Gold	Bauxite	Sand & Gravel	Limestone	Gypsum & Anhydrite	Marble	Silica Sand
GD				yds^3				
	1998	. . .	. . .	17,862	. . .	. . .	. . .	. . .
	1999	. . .	. . .	186	. . .	. . .	. . .	. . .
	2000	. . .	. . .	13,237	. . .	. . .	. . .	. . .
	2001	. . .	. . .	14,101	. . .	. . .	. . .	. . .
	2002	. . .	. . .	39,393	. . .	. . .	. . .	. . .
	2003	. . .	. . .	116	. . .	. . .	. . .	. . .
GY			tonnes					
	1996	. . .	1,200,000,000	. . .	. . .	. . .	. . .	. . .
JM		kg	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
	1990	. . .	2,500	. . .	. . .	. . .	. . .	. . .
	2002	986	2,500	2.4	3,100,450	85	355	2.1

Appendix 1.5
Sources of Data on Energy and Minerals

1.5.1 (a): Sources of Data for Table 5.1 - Energy Consumption by Type and Year: 1990, 1995, 1998 - 2004

Country	Data Source
THE BAHAMAS	Bahamas Electricity Company
BELIZE	Land Information Centre/ Ministry of Natural Resources
DOMINICA	Central Statistical Office and Dominica Electricity Services
GRENADA	National Statistical Office
JAMAICA	Jamaica Public Service Company, Ministry of Commerce, Science & Technology
SAINT LUCIA	Saint Lucia Electricity Services Limited
ST. VINCENT AND THE GRENADINES	St. Vincent Electricity Services
BERMUDA	Department of Statistics: Facts and Figures

1.5.1 (b): Notes for Table 5.1 - Energy Consumption by Type and Year: 1990, 1995, 1998 - 2004

Country	Notes
THE BAHAMAS	The increase in kWh sold and the corresponding fuel consumption is a direct reflection of Bahamas Electricity Company's use of higher efficiency machinery, which uses lower grade and less fuel. n/a refer to not applicable or not in use at any measurable scale.
DOMINICA	Liquids are Kerosene, Diesel and Gasoline. Gases are Butane and Propane.
JAMAICA	a/: Import of liquid fuels p: provisional data boe: barrel oil equivalent

1.5.2 (a): Sources of Data for Table 5.2 - Number of Households by Type of Fuel Used for Cooking: 2000 Round of Census

Country	Data Source
ANTIGUA AND BARBUDA	Basic Table Volume
THE BAHAMAS	Population and Housing Census, 2000 Round
BARBADOS	Basic Table Volume
BELIZE	Population and Housing Census, 2000 Round
DOMINICA	Population and Housing Census, Central Statistics Office
GRENADA	Population and Housing Census 2001
GUYANA	Basic Table Volume
JAMAICA	Population Census 2001
MONTSERRAT	Basic Table Volume
ST. KITTS AND NEVIS	Basic Table Volume
SAINT LUCIA	Population and Housing Census, 2000 Round
ST VINCENT AND THE GRENADINES	Basic Table Volume
SURINAME	Population and Housing Census, 2000 Round
TRINIDAD AND TOBAGO	Central Statistical Office/2000 Population and Housing Census
ANGUILLA	Basic Table Volume
BRITISH VIRGIN ISLANDS	Basic Table Volume
TURKS AND CAICOS	TCI 2001 Population & Housing Census, Statistical Office

1.5.2 (b): Notes for Table 5.3 - Number of Households by Type of Fuel Used for Cooking: 2000 Round of Census

Country	Notes
THE BAHAMAS	Other includes not stated
BARBADOS	Charcoal = wood/charcoal. Other includes natural gas, solar and other.
DOMINICA	Other includes not stated. Charcoal = coal/wood
GRENADA	Other includes not stated
GUYANA	Charcoal = coal
JAMAICA	Other includes not stated
SAINT LUCIA	Other includes not stated. Charcoal = coal/wood
ST VINCENT AND THE GRENADINES	Other includes not stated
TRINIDAD AND TOBAGO	Charcoal = coal/wood
ANGUILLA	Charcoal = charcoal/wood
TURKS AND CAICOS	Charcoal = coal/wood

1.5.3 (a): Sources of Data for Table 5.3 - Number of Households by Type of Fuel Used For Lighting: 2000 Round of Census

Country	Data Source
ANTIGUA AND BARBUDA	Basic Table Volume
THE BAHAMAS	Population and Housing Census, 2000 Round
BARBADOS	Basic Table Volume
BELIZE	Basic Table Volume
DOMINICA	Population and Housing Census, Central Statistical Offices
GRENADA	Population and Housing Census 2001
GUYANA	Basic Table Volume
JAMAICA	Population and Housing Census 2001
MONTSERRAT	Basic Table Volume
ST. KITTS AND NEVIS	Basic Table Volume
ST VINCENT AND THE GRENADINES	Basic Table Volume
TRINIDAD AND TOBAGO	Central Statistical Office/2000 Population and Housing Census
ANGUILLA	Basic Table Volume
BRITISH VIRGIN ISLANDS	Basic Table Volume
TURKS AND CAICOS	TCI 2001 Population and Housing Census, Statistical Office

1.5.3 (b): Notes for Table 5.3 - Number of Households by Type of Fuel Used for Lighting: 2000 Round of Census

Country	Notes
ANTIGUA AND BARBUDA	Not stated includes none.
THE BAHAMAS	Other includes not stated
BARBADOS	Other includes batteries and other.
DOMINICA	1981 data for kerosene lighting was mainly due to Hurricane David's devastating effects on electrical power.
GUYANA	Other includes generator/inverter and other.
GRENADA	Other includes not stated
JAMAICA	Other includes not stated
MONTSERRAT	Not stated = none.
ST VINCENT AND THE GRENADINES	Other includes not stated. Not stated = none.
ANGUILLA	Other = other + none
BRITISH VIRGIN ISLANDS	Not stated = none.

1.5.4 (a): Sources of Data for Table 5.4 - Mineral Production by Type: 1990 - 2004

Country	Data Source
THE BAHAMAS	Department of Statistics
BELIZE	Land Information Centre/ Ministry of Natural Resources
DOMINICA	Central Statistical Office
GRENADA	Central Statistical Office
GUYANA	Guyana Geology and Mines Commission
JAMAICA	Mines & Geology Division, Jamaica Bauxite Institute
SURINAME	General Bureau of Statistics

1.5.4 (b): Notes for Table 5.4 - Mineral Production by Type: 1990 – 2004

Country	Notes
THE BAHAMAS	Other refers to Aragonite.
DOMINICA	*: only export data available. There are no reserves or production of gold, silver, iron, aluminium, nickel, limestone, salt and crude oil.

1.5.5 (a): Sources of Data for Table 5.5 - Mineral Reserves by Type: 1998 - 2003

Country	Data Source
GRENADA	National Statistical Office.
GUYANA	Guyana Geology and Mines Commission
JAMAICA	Mines & Geology Division, Jamaica Bauxite Institute

1.5.5 (b): Notes for Table 5.5 - Mineral Reserves by Type: 1998 - 2003

Country	Notes
JAMAICA	It is difficult to arrive at a value for reserves of sand and gravel as there is replenishment in river beds and plains after heavy rainfall. There are no reserves or production of gold, silver, iron, aluminium, nickel, limestone, salt and crude oil.

REFERENCES

1. United Nations Statistics Division, Energy Statistics: Definitions, Units of Measure and Conversion Factors

2. A joint publication by the World Resources Institute, the United Nation's Environment Programme, the United Nations Development Programme, and The World Bank, World Resources 1998-99: Environmental change and human health

LA1: LAND USE

H

Concepts and Definitions

Land use refers to the functional division of land for different human purposes or economic activities. (*Please refer to the OECD's Glossary of Statistical Terms website at* http://stats.oecd.org/glossary/)

Land Types

Agricultural land includes land under scattered farm buildings, yards and their annexes and permanently uncultivated land, such as uncultivated patches, banks, footpaths, ditches, headlands and shoulders.

- *Arable land* refers to all land generally under rotation whether for temporary crops or meadows or left fallow.

- *Land under permanent crops* signifies land used for crops occupying it for a long period of time and which do not have to be planted for several years after each harvest. Land under trees and shrubs producing flowers, such as roses and jasmine, is so classified, as are nurseries (except those for forest trees); permanent meadows and pastures are excluded.

- *Fallow and other agricultural land* is arable land not under rotation that is set at rest for a period of time ranging from one to five years before it is cultivated again. It includes land usually under permanent crops, meadows or pastures, which is not being used for that purpose for a period of at least one year. Arable land which is normally used for the cultivation of temporary crops but which is temporarily used for grazing is included. Also included are scattered farm buildings, that is, isolated buildings not belonging to closed villages or similar rural localities.

- *Land under permanent meadows and pastures* means land used permanently (that is, for five years and more) for herbaceous forage crops. Permanent meadows and pastures on which trees and shrubs are grown are included in this category only if the growing of forage crop is the most important use of the area.

Forest and other wooded land includes forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas within the forest; forest in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest; and windbreaks and shelterbelts of trees with an area of more than half a hectare and a width of more than twenty metres. Rubberwood plantations and cork oak stands are included but land predominantly used for agricultural practices are excluded.

- *Land under forest* refers to land under natural or planted stands of trees, whether productive or not. This category includes land from which forests have been cleared but that will be reforested in the foreseeable future, but it excludes woodland or forest used only for recreation purposes.

- *Other wooded land* refers to land either with a tree crown cover of five to ten per cent of trees able to reach a height of five metres at maturity; or a crown cover of more than ten per cent of trees not able to reach a height of five metres at maturity and shrub or bush cover.

Built-up and related land refers to land under houses, roads, mines and quarries, and other facilities, including their auxiliary spaces, deliberately installed for the pursuit of human activities. Land under closed villages or similar rural localities and open land closely related to these activities, such as waste tips, derelict land in built-up areas, junk yards, city parks and gardens, etc, are included in this category. Land occupied by scattered farm buildings, yards and their annexes are excluded.

Wet open land refers to non-wooded sites either partially, temporarily or permanently water-logged, the water of which may be fresh, brackish or saline, on blanket or raised peatlands. The water may be either stagnant or running, and is usually shallow, especially if it is saline.

Dry open land with special vegetation cover refers to non-wooded land that is covered by low (less than two metres high) vegetation.

Open land without, or with insignificant, vegetation cover refers to non-built-up land whose surface is either not covered at all by vegetation or scarcely covered by some vegetation.

Waters relate to the part of the national territory to be reported which is covered by surface waters. The national territory to be reported is defined as the surface enclosed by all inland borders and, if applicable, the normal base-line on the seaward side.

Total area is the total area of the country, including area under inland and tidal water bodies but excluding uninhabited islands.

Total land area is the total area excluding area under inland water bodies (major rivers, lakes, etc).

Method of Computation

Data on land use was compiled from questionnaires distributed to Member States/Associate Members through UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

Land use is one of the most direct ways to examine changes in environmental quality. Changes measured over various time periods can indicate the extent to which man has modified the basic land resource of a country for agriculture, sylviculture, industry, commercial establishments, human settlements, transport, recreation, waste disposal and other uses. The data for this indictor are intended to provide a general overview of the trends in land use that have occurred over the past years and to provide more specific information on present uses of land.

Information on land use change is also critical for integrated and sustainable land use planning. Such information is useful in identifying opportunities to protect land uses or to promote future allocation aimed at providing the greatest sustainable benefits for people.

Changes in arable and permanent crop land and wooded areas give important information about a country's endowment in agricultural and forest resources, both from an economic and an environmental perspective. Environmentally, unsustainable land use is an important factor in erosion and desertification. It may also pose a threat to ecosystems and lead to natural habitat loss and landscape changes. Landscape changes which lead, for example, to inappropriate farming and grazing practices or to environmentally insensitive construction or mining activities are significant from a sustainability viewpoint. This indicator acts as a measure for the more specific environmental and natural resource changes significant to sustainable development.

Population growth is driving a rapid increase in the demand for food and fibre. At the same time, rising population density in rural areas diminishes the farm size. Small farmers are forced to extend cultivation to new areas, which are fragile and not suitable for cultivation. Crop intensification, which has contributed significantly to agricultural growth in recent years, can ease the pressure on cultivating new lands but farm practices adopted for raising yields (such as when expanding into new areas) can also, in some situations, result in damaging the environment. Changes in land use over time or between various components may show increased or decreased pressure on agricultural land.

Data Assessment

It is assumed that the concept of land use is in accordance with the international definition and is harmonized across the region.

Only seven (7) of the eighteen (18) Member States and Associate Members in the Community provided data for this indicator. Those seven (7), countries were the Belize, Dominica, Guyana, Jamaica, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago. The data provided by these countries for this indicator were sparse and contained numerous gaps.

Data Sources

Please refer to **Appendix 2.6.1 (a)** for the sources of the data on land use of Member States and Associatre Members.

Evaluation

Seven Member States reported data on Land Use as presented in Table 6.1 below. Belize reported a total land area of 21,383 squared kilometres and 392 squared kilometres of water which gives a total area of 22,966 squared kilometres in 1990[1]. Agriculture land represented 2,168 squared kilometres or 9 per cent of total area, Forest and other wooden land was 16437 or 72 per cent and Other Land (Built-up land, wet open land, Dry open land with special vegetation cover and Open land without, or with insignificant, vegetation cover) totalling 2,778 or 12 per cent of total area. Forest and other wooden land covered 168,789 squared kilometres of the total area in Guyana in 2000. Dominica reported a total land area of 750 squared kilometres throughout the period. Of this land used for Agricultural purposes fluctuated, declining from 190 squared kilometres in 1970 and 1980 to 180 squared kilometres in 1990 and further to 138 squared kilometres in 1995 then increasing to 210 squared kilometres in 2000. Agriculture land consisted arable land, which declined from 70 squared kilometres in 1970 and 1980 to 50 squared kilometres in 1990, 1995 and 2000, land under permanent crops which saw increases from 100 squared kilometres in 1970 and 1980 to 110 squared kilometres in 1990 then to 119 in 1995 finally to 140 in 2000. In 1995, Dominica reported data for fallow and other Agriculture land (13 squared kilometres) and land under permanent meadows and pastures (7 squared kilometres). In Dominica, Forest and other wooden land remained fixed at 500 squared kilometres throughout the period and data was reported as consisting 460 squared kilometres Land under forest and 21 squared kilometres of other wooden land in 1995. Jamaica reported total area of 10,990 squared kilometres consisting 10,830 squared kilometres land area and 160 squared kilometres waters. Agriculture land declined from 4,241 squared kilometres in 1978 to 4,026 squared kilometres in 1996 but varied among competing uses decreasing for land under permanent crops (2,308 squared kilometres in 1978 to 1,776 squared kilometres in 1996) and increasing for Fallow and Other Agricultural land (from 808 squared kilometres to 956 squared kilometres) and Land under permanent meadows and pastures (1125 squared kilometres to 1294 squared kilometres). Jamaica's data on Forest and wooden land revealed declines for all uses which included Land under forest (moving from 2,874 in 1989 squared kilometres to 2,839 squared kilometres in 1998) and Other wooden land (declining from 1337 squared kilometres in 1978 to 421 squared kilometres in 1989 finally to 420 in 1998). Data was also received for wet open land, 24 squared kilometres in 1989 and 23 squared kilometres in 1998, and land with special vegetation cover, 121 squared kilometres for both years.

Suriname's total area was 163,820 squared kilometres consisting 156,550 squared kilometres land area and 7,270 squared kilometres of waters. Total agriculture land remained fixed at 1,060 squared kilometres whereas its components, Arable land and Land under permanent crops declined from 1980 to 2000 with fluctuations experienced between years. Forest and wooden land fluctuated from 149,400 squared kilometres in 1980 to 148,900 squared kilometres in 1985 then to 150,940 squared kilometres in 1995.

[1] Data extracted from the 1989/92 land use study of Belize, with the exception of the value for forest and other wooded land which comes from a revised land use study in 1996/1998.

Trinidad and Tobago's total land area was given as 5,130 squared kilometres. Agriculture land increased from 1,100 squared kilometres in 1970 to 1,330 squared kilometres in 2000 with increases for arable land by 32 per cent from 570 squared kilometres in 1970 to 750squared kilometres in 2000 and Land under permanent crops by 9 per cent from 430 squared kilometres in 1970 to 470squared kilometres in 2000. Total Forest and other wooden land declined from 2,400 squared kilometres in 1970 to 2,350 squared kilometres in 1990.

Total Land area of St. Vincent and the Grenadines is reportedly 390 squared kilometres. Agricultural land increased during the period from 110 squared kilometres in 1970 to 160 squared kilometres in 2000 while forest and other wooden land remained fixed at 140 squared kilometres.

Table 6.1 – Land Use : 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

Unit = km^2

Country	Year	Agricultural land					Forest and other wooded land		
		Arable land	Land under permanent crops	Land under permanent meadows and pastures	Fallow and other agricultural land	Total	Land under forest	Other wooded land	Total
BZ									
	1990	...	...	...	...	2,168	...	...	16,437
DM									
	1970	70	100	...	...	190	...	...	500
	1980	70	100	...	...	190	...	...	500
	1990	50	110	...	...	180	500	-	500
	1995	50	119	7	13	138	460	21	500
	2000	50	140	...	...	210	460	...	...
GY									
	2000	...	...	...	...	...	...	...	168,789
JM									
	1978	-	2,308	1,125	808	4,241	...	1,337	...
	1989	...	...	...	...	...	2,874	421	3,295
	1996	-	1,776	1,294	956	4,026	...	...	...
	1998	...	...	...	...	...	2,839	420	3,259
VC									
	1970	60	40	...	...	110	...	...	140
	1980	50	50	...	...	120	...	...	140
	1990	50	70	...	...	140	70	...	140
	2000	70	70	...	...	160	60	...	...
	2002	11	30	13	18	72	77	50	127
SR									
	1980	670	110	...	...	1,060	...	...	149,400
	1985	...	...	...	...	...	...	...	148,900
	1990	550	150	...	...	1,060	...	...	...
	1995	650	100	...	...	1,060	...	...	150,940
	1999	...	...	...	...	...	...	...	...
	2000	440	80	...	...	1,060	...	...	...
TT									
	1970	570	430	...	...	1,100	...	...	2,400
	1980	700	460	...	...	1,270	...	...	2,300
	1990	740	460	...	...	1,310	2,810	...	2,350
	2000	750	470	...	...	1,330	2,590	...	...
	2002	208	155	39	13	576	...	...	368

Table 6.1 Contd. Land Use : 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

Unit = km^2

Country	Year	Built-up and related land	Wet open land	Dry open land with special vegetation cover	Open land with/ without insignificant, vegetation cover	Total land area	Waters	Total area of the country
BZ								
	1990	84	2,686	...	8	21,383	392	22,966
DM								
	1970	...	...	...	...	750	-	750
	1980	...	...	...	...	750	-	750
	1990	...	...	...	...	750	-	750
	1995	...	...	...	...	750	-	750
	2000	...	...	...	...	750	-	750
GY								
	2000	...	...	...	...	...	...	...
JM								
	1978	...	...	...	...	10,830	160	10,990
	1989	...	24	121	...	10,830	160	10,990
	1996	...	...	...	...	10,830	160	10,990
	1998	...	23	121	...	10,830	160	10,990
VC								
	1970	...	...	...	...	390	-	390
	1980	...	...	...	...	390	-	390
	1990	...	...	...	...	390	-	390
	2000	...	...	...	...	390	-	390
	2002	191	-	-	-	390	-	390
SR								
	1980	...	...	...	...	156,550	7,270	163,820
	1985	...	...	...	...	156,550	7,270	163,820
	1990	...	...	...	...	156,550	7,270	163,820
	1995	...	...	...	...	156,550	7,270	163,820
	1999	...	...	...	...	156,550	7,270	163,820
	2000	...	...	...	...	156,550	7,270	163,820
TT								
	1970	...	...	...	...	5,130	-	5,130
	1980	...	...	...	...	5,130	-	5,130
	1990	...	...	...	...	5,130	-	5,130
	2000	...	...	...	...	5,130	-	5,130
	2002	...	...	...	...	...	...	...

Table 6.1 (b) Percentage distribution of Land Use : 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

(Percent)

Country	Year	Agricultural land					Forest and other wooded land		
		Arable land	Land under permanent crops	Land under permanent meadows and pastures	Fallow and other agricultural land	Total	Land under forest	Other wooded land	Total
BZ									
	1990	...	...	...	...	9.4	...	...	71.6
DM									
	1970	9.3	13.3	...	...	25.3	...	...	66.7
	1980	9.3	13.3	...	...	25.3	...	...	66.7
	1990	6.7	14.7	...	...	24.0	66.7	-	66.7
	1995	6.7	15.9	0.9	1.7	18.4	61.3	2.8	66.7
	2000	6.7	18.7	...	...	28.0	61.3	...	...
GY									
	2000	...	...	...	...	...	...	...	...
JM									
	1978	-	21.0	10.2	7.4	38.6	...	12.2	...
	1989	...	...	...	...	...	26.1	3.8	30.0
	1996	-	16.2	11.8	8.7	36.6	...	...	...
	1998	...	...	...	...	...	25.8	3.8	29.6
VC									
	1970	15.4	10.3	...	...	28.2	...	...	35.9
	1980	12.8	12.8	...	...	30.8	...	...	35.9
	1990	12.8	17.9	...	...	35.9	17.9	...	35.9
	2000	17.9	17.9	...	...	41.0	15.4	...	...
	2002	2.8	7.7	3.3	4.6	18.5	19.7	12.8	32.6
SR									
	1980	0.4	0.1	...	...	0.6	...	...	91.2
	1985	...	...	...	...	...	...	...	90.9
	1990	0.3	0.1	...	...	0.6	...	...	...
	1995	0.4	0.1	...	...	0.6	...	...	92.1
	1999	...	...	...	...	...	...	...	...
	2000	0.3	0.0	...	...	0.6	...	...	...
TT									
	1970	11.1	8.4	...	...	21.4	...	...	46.8
	1980	13.6	9.0	...	...	24.8	...	...	44.8
	1990	14.4	9.0	...	...	25.5	54.8	...	45.8
	2000	14.6	9.2	...	...	25.9	50.5	...	...
	2002	...	...	...	...	...	...	...	...

Table 6.1 (b) Contd. Percentage distribution of Land Use : 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

(Percent)

Country	Year	Built-up and related land	Wet open land	Dry open land with special vegetation cover	Open land with/ without insignificant, vegetation cover	Total land area	Waters	Total area of the country
BZ								
	1990	0.4	11.7	...	0.0	93.1	1.7	100.0
DM								
	1970	...	...	...	...	100.0	-	100.0
	1980	...	...	...	...	100.0	-	100.0
	1990	...	...	...	...	100.0	-	100.0
	1995	...	...	...	...	100.0	-	100.0
	2000	...	...	...	...	100.0	-	100.0
GY								
	2000	...	...	...	...	...	...	100.0
JM								
	1978	...	...	...	...	98.5	1.5	100.0
	1989	...	0.2	1.1	...	98.5	1.5	100.0
	1996	...	...	...	...	98.5	1.5	100.0
	1998	...	0.2	1.1	...	98.5	1.5	100.0
VC								
	1970	...	...	...	...	100.0	-	100.0
	1980	...	...	...	...	100.0	-	100.0
	1990	...	...	...	...	100.0	-	100.0
	2000	...	...	...	...	100.0	-	100.0
	2002	49.0	-	-	-	100.0	-	100.0
SR								
	1980	...	...	...	...	95.6	4.4	100.0
	1985	...	...	...	...	95.6	4.4	100.0
	1990	...	...	...	...	95.6	4.4	100.0
	1995	...	...	...	...	95.6	4.4	100.0
	1999	...	...	...	...	95.6	4.4	100.0
	2000	...	...	...	...	95.6	4.4	100.0
TT								
	1970	...	...	...	...	100.0	-	100.0
	1980	...	...	...	...	100.0	-	100.0
	1990	...	...	...	...	100.0	-	100.0
	2000	...	...	...	...	100.0	-	100.0
	2002	0.4	11.7	...	0.0	93.1	1.7	100.0

LA2: USE OF FERTILIZERS BY TYPE AND YEAR

H

Concepts and Definitions

Fertilizers are compounds given to plants to promote growth. They are usually applied either via the soil, for uptake by plant roots, or by foliar feeding, for uptake through leaves. Fertilizers can be organic (composed of organic matter), or inorganic (made of simple, inorganic chemicals or minerals). They can be naturally occurring compounds such as peat or mineral deposits, or manufactured through natural processes (such as composting) or chemical processes (such as the Haber process).

Use of fertilizers by type and year refers to the yearly extent of fertilizer use in agriculture per unit of agricultural land area.

Types of Fertilizers

Nitrogenous fertilizers refer to the nitrogen content of commercial inorganic fertilizers.

Phosphate fertilizers refer to commercial phosphoric acid (P_2O_5) and cover the P_2O_5 of super-phosphates, ammonium phosphate and basic slag.

Potash fertilizers refer to the potassium oxide (K_2O) content of commercial potash, muriate, nitrate and sulphate of potash, manure salts, kainite and nitrate of soda potash.

NPK Mix: NPK is an acronym for nitrogen, phosphorus and potassium: the three nutrients that compose a complete fertilizer. They are also the three nutrients plants extract from soil in the greatest quantity and are available in synthetic, organic, and mineral forms.

Method of Computation

Data on fertilizers are compiled from industry and non-traditional sources. For developing countries, data generally refer to domestic disappearance based on imported products.

Indicator Relevance

The challenge for agriculture is to increase food production in a sustainable way. The use of mineral fertilizers in agriculture to increase cropping power simultaneously increases environmental hazards, such as water and soil pollution, and has toxic effects on other environmental components, interfering with the natural balance of soil micro flora. High levels of nitrate and nitrite in drinking water are a hazard to human health. The actual environmental effects, however, will depend on pollution abatement practices, soil and plant types, and meteorological conditions. Use of fertilizers by type and year makes it possible to assess the fertilizer load on the environment (the accumulation of fertilizers in

the soil, the resulting pollution of surface and groundwater, and the movement of fertilizers through tropic chains and other parts of the environment).

Data Assessment

Data on the use of fertilizers was submitted by five Member States and two Associate Members. All reporting Member States/Associate Members followed the internationally recommended definition for the use of fertilizers. This indicator is therefore conceptually harmonized among these countries. Data on the annual imports of fertilizers were used for all countries except Belize where production data was used, since no data on actual use are available.

Data Sources

Please refer to **Appendix 2.6.2 (a)** for the sources of the data on the use of fertilizers by type and year of Member States and Associate Members.

Evaluation

Data on the use of fertilizers can be seen in **Table 6.2** below for five Member States and two associated Member States. Jamaica, the Bahamas and Belize recorded the most fertilizer use with Nitrogenous fertilizers and Potash fertilizers being the most used for reporting Member States followed closely by NPK Mix. Comparing 1998 with the latest year available, all countries with the exception of Jamaica registered declines in the use of Fertilizers with moderate fluctuations in the intervening years. Among Member States, in 1998 the use of fertilizers ranged from a low of 3 tonnes in Anguilla to a high of 51,303 in Jamaica. Among the countries that reported in 2003, the Anguilla once again showed the lowest quantity of 0.3 tonnes and again the highest use of fertilizers was found in Jamaica.

Table 6.2 Use of fertilizers by type and year: 1990,1995,1998-2004

(Tonne)

Country	Year	Nitrogenous fertilizers	Phosphate fertilizers	Potash fertilizers	NPK MIX	Total
BS						
	1995	0	838	0	0	838
	1998	6,446	45	25,317	0	31,808
	1999	4,363	280	24,129	0	28,772
	2000	5,461	608	7,905	0	13,974
	2001	1,390	364	20,044	0	21,798
	2002	7,213	409	25,042	0	32,664
	2003	3,582	87	21,342	0	25,011
BZ						
	1998	6,428	4,498	3,219	6,098	20,243
	1999	11,226	6,290	3,199	6,327	27,042
	2000	8,019	4,637	4,674	3,678	21,008
	2001	7,712	5,876	3,816	2,827	20,231
	2002	5,675	7,730	2,921	6,304	22,630
	2003	7,704	5,945	3,293	8,022	24,964
	2004	6,367	5,421	3,286	7,677	22,750
DM						
	1990	54	0	2	8,526	8,582
	1995	21	23	0	7,089	7,133
	1999	29	0	0	4,202	4,231
	2000	28	0	0	3,062	3,090
	2001	27	0	0	2,501	2,528
	2002	92	0	22	1,003	1,117
	2003	33	0	0	1,863	1,896
	2004	116	0	1	3,014	3,131
JM						
	1990	13,016	14	400	6,442	19,872
	1995	19,042	224	13,026	23,340	55,632
	1998	25,345	81	10,675	15,202	51,303
	1999	23,313	0	17,080	12,340	52,733
	2000	27,241	63	13,264	11,754	52,322
	2001	16,323	4	10,754	20,774	47,855
	2002	21,877	1	8,222	14,440	44,540
	2003	26,543	21	12,845	13,230	52,639
	2004	24,927	11	17,068	15,702	57,708
VC						
	1998	1	2	0	5,432	5,435
	1999	10	3	1	4,851	4,865
	2000	8	0	1	5,488	5,496
	2001	3	0	0	2,450	2,453
	2002	1	0	15	3,956	3,972
	2003	14	0	0	3,576	3,590
	2004	1	1	40	3,805	3,846
ASSOCIATE MEMBERS						
AI						
	1998	0.27	0.08	2.39	0.00	2.74
	1999	0.19	2.67	9.95	0.00	12.80
	2000	8.23	0.18	0.13	0.00	8.54
	2001	0.06	0.00	0.00	0.00	0.06
	2002	0.00	4.93	0.28	0.00	5.21
	2003	0.27	0.00	0.00	0.00	0.27
	2004	0.00	0.03	0.01	0.00	0.03

LA3: USE OF PESTICIDES BY TYPE AND YEAR

H

Concepts and Definitions

A *pesticide* is any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term pesticide also includes substances intended for use as a plant growth regulator, defoliant, desiccant (agent for thinning fruit or preventing the premature fall of fruit), and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.

*Use of pesticides by type and yea*r refers to the type and quantity of pesticides used in (or sold to) the agricultural sector.

Types of Pesticides

Insecticides are agents of chemical or biological origin that control insects. Control may result from killing the insect or otherwise preventing it from engaging in behaviours deemed destructive. Insecticides may be natural or manmade and include chlorinated hydrocarbons, organo-phosphates, carbonates-insecticides, pyrethroids, and botanical and biological products. Examples include Chlordane and DDT.

Herbicides are used to kill unwanted plants. Selective herbicides kill specific targets while leaving the desired crop relatively unharmed. Some selective herbicides act by interfering with the growth of the weed and are often based on plant hormones. Nonselective herbicides, on the other hand, kill all plant material with which they come into contact. Herbicides include phenoxy hormone products, triazines, amides, carbonates-herbicides, dinitroanilines, urea derivates, sulfonyl urea, bipiridils and uracil.

Fungicides are chemical compounds used to prevent the spread of fungi or plants in gardens and crops, which can cause serious damage resulting in loss of yield and thus profit. Fungicides can either be contact or systemic. A contact fungicide kills fungi when sprayed on its surface; a systemic fungicide has to be absorbed by the plant.

Bactericides destroy, suppress or prevent the spread of bacteria. Examples are swimming pool chemicals containing chlorine, and products used to control black spot (bacterial blight) on garden plants or in orchards. Disinfectants for household and industrial use are excluded and are not considered pesticides

*Seed treatment*s are chemical or biological substances or physical processes applied to seeds or seedlings. They help to protect the seeds and assure optimum emergence of the plant or crop. Application of a chemical to seeds is a very well-targeted method of reducing pest and disease attacks on the growing plant.

Fungicides, bactericides and seed treatments include inorganic, dithiocarbamates, benzimidazoles, triazoles, diazoles, diazines and morpholines.

Plant growth regulators are substances or mixture of substances intended, through physiological action, to accelerate or retard the rate of growth or maturation, or otherwise alter the behaviour of plants or their produce. Additionally, plant regulators are characterized by their low rates of application (high application rates of the same compounds often are considered herbicidal).

Rodenticides are pesticides used specifically for controlling rodents, such as mice and rats, and include anti-coagulants.

Other refers to pesticides not so far mentioned.

Method of Computation

Data on pesticide use are usually derived from sales or "domestic disappearance" and expressed as active ingredients. Information on types of active ingredients in use, seasonal doses, rate of application, and variability on use for different crops and regions were used to derive the data for this indicator.

Indicator Relevance

This indicator serves as a measure of the use and amount of pesticides in agriculture. The major challenge for agriculture is to increase food production in a sustainable way. One important aspect of this challenge is the use of agricultural pesticides, which add persistent organic chemicals to ecosystems. Pesticides can be persistent, mobile, and toxic in soil, water, and air, and can impact humans and wildlife through the food chain. They tend to accumulate in the soil and in biota, and residues may reach surface and groundwater through leaching. Humans can be exposed to pesticides through food.

Persistent pesticides can cause adverse environmental effects. Exaggerated use may result from government subsidies and/or failure of pesticide users to internalise health-related costs. Better knowledge of used amounts helps activities aiming at a reduction of the consumption of pesticides to a level strictly adjusted to the actual situation of the farm land. In that way, the toxic emissions from pesticides can be kept at a minimum level.

Data Assessment

Data on the use of pesticide was submitted by five Member States and two Associate Members although data for Bermuda was reported in dollars as quantities were unavailable. All reporting

Member States and Associate Members followed the internationally recommended definition for the use of pesticide. This indicator is therefore conceptually harmonized among these countries. Data on imports of pesticides were used, since no data on actual use are available. This means that there may be stocks from one year to the next, and it is likely that the actual use shows less variation than the data provided

Data Sources

Please refer to **Appendix 2.6.3 (a)** for the sources of the data on the use of pesticides by type and year of Member States and Associate Members.

Evaluation

The data presented in **Table 6.3** below on the use of pesticide by type and year reveals that pesticide use has fluctuated greatly in most Member States and has declined in The Bahamas and Dominica. *Insecticides*, *herbicides* and *fungicides*, *bactericides* and *seed treatments* were the principal forms of pesticides used in the CARICOM Region. Jamaica reported considerable use of pesticide averaging 2,231 tonnes for the period 1998 to 2003 followed by Belize which averaged 1,237 tonnes for the period 1998 to 2004. Total pesticide use for reporting countries increased by 20 per cent from 4,772 tonnes in 1998 to 5,740 tonnes in 2003. *Insecticides* use in the region averaged 42 per cent of total pesticide use in 1998 and 2003.

Table 6.3 Use of Pesticides by type and year: 1990, 1995, 1998 - 2004

Country	Year	Insecticides	Herbicides	Fungicides, bactericides and seed treatments	Plant growth regulators	Rodenticides	Others (including mineral oils)	TOTAL
BS								
	1998	628	62	281	26	8	66	1,071
	1999	552	34	365	22	20	46	1,040
	2000	806	40	285	29	11	14	1,185
	2001	574	33	261	33	16	3	921
	2002	674	96	102	40	16	10	938
	2003	617	72	61	34	15	4	803
BZ								
	1995	269	337	330	0	0	0	936
	1998	290	372	222	0	0	0	884
	1999	186	379	206	0	0	0	771
	2000	712	447	155	0	0	0	1,314
	2001	557	392	209	0	0	0	1,158
	2002	1,096	409	315	0	0	0	1,820
	2003	698	428	348	0	0	0	1,474
	2004	494	662	225	0	0	0	1,381
DM								
	1990	253	196	25	0	5	0	480
	1995	289	195	35	0	9	0	527
	1998	204	101	5	0	6	0	316
	1999	221	128	37	0	10	0	395
	2000	334	104	89	0	8	0	536
	2001	104	77	70	0	5	0	256
	2002	106	68	6	0	5	0	185
	2003	93	69	5	0	6	0	174
	2004	63	93	2	0	5	0	164
JM								
	1990*	656	489	275	0	26	9	1,454
	1995	426	657	1,439	45	22	1	2,590
	1998	602	649	390	38	54	2	1,735
	1999	682	928	868	11	56	7	2,551
	2000	699	755	729	30	138	9	2,360
	2001	683	864	302	126	25	35	2,035
	2002	620	810	356	225	69	8	2,088
	2003	626	934	856	121	73	7	2,618
VC								
	1998	300	116	241	0	4	5	666
	1999	284	287	384	0	3	1	959
	2000	324	126	290	1	4	1	746
	2001	155	85	126	0	6	0	373
	2002	207	135	269	1	4	0	616
	2003	235	91	122	5	8	1	463
	2004	378	184	150	0	5	14	731
SR (kg)								
	2000	378	...	...	...	...	...	...
	2001	262	...	...	...	...	...	...
	2003	503	...	...	...	...	...	...
	2004	483	...	...	...	...	...	...
ASSOCIATE MEMBERS								
AI								
	1998	52	0	1	0	2	45	100
	1999	31	1	0	0	2	41	74
	2000	35	0	0	0	2	61	98
	2001	52	1	1	2	2	74	132
	2002	82	2	0	1	1	81	167
	2003	154	2	1	0	1	51	208
	2004	57	8	6	0	1	55	127

Appendix 1.6
Conversion Table

Metric	to	Imperial
62 UK tons		63 tonnes
2205 pounds		1 tonne
2.25 pounds		1 kilogram

Appendix 2.6
Sources of Data on Land Use and Agriculture

2.6.1 (a): Source of Data for Table 6.1 – Land Use: 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

Country	Data Source
Belize	1989/1992 Land Use Study of Belize
Dominica	Central Statistical Office
Guyana	Bureau of Statistics
Jamaica	Statistical Institute of Jamaica
St. Vincent and the Grenadines	Statistical Office
Suriname	General Bureau of Statistics
Trinidad and Tobago	Ministry of Agriculture

2.6.1 (b): Notes for Table 6.1 – Land Use: 1970, 1978, 1980, 1985, 1990, 1995 - 1996, 1999 - 2000, 2002

Country	Notes
Belize	Data from the 1989/1992 land use study of Belize, with the exception of the value for forest and other wooded land which come from a revised land study in 1996/ 1998. *: Total land area and waters do not add to the total area of Belize, because it does not account for all water bodies found in mainland Belize and cloud cover.
Dominica	Data for 1995 is based on the agricultural study. 1970 and 1980 data for agricultural land are FAO Unofficial figures. 1990 and 200 data for agricultural land are FAO Estimates. 1970 and 1980 total forest and other wooded land data are FAO estimates. The 1990 total forest and other wooded land data is an unofficial FAO figure.
St. Vincent and the Grenadines	1970, 1980, 1990 and 2000 agricultural land data are FAO estimates. 1990 total forest and wooded land data is also an FAO estimate. 1980 total forest and other wooded land data is an unofficial FAO figure.
Trinidad and Tobago	The data provided only represents lands managed for agricultural use. These lands are state leased and are zones for agricultural production by the Town and Country Planning Division. The total land under agricultural production is greater than the figures provided and are outside the scope of the Land Administration Division's databases. The national soil maps may provide some information regarding total land capability but the monitoring of actual land use are not within the division's jurisdiction. *: Forest and wooded areas are classified together as part of food crops and agro forestry. Because of multi-cropping practices, no distinction can be made. The area of 368.32 squared kilometres for forest is part of the total agricultural lands. 1970, 1980, 1990 and 2000 agricultural land data are FAO estimates. 1970, 1980 and 1990 total forest and other wooded land are unofficial FAO figures.

2.6.2 (a): Sources of Data for Table 6.2 - Use of Fertilizers by Type and Year: 1990, 1995, 1998 - 2004

Country	Data Source
The Bahamas	Trade Section, Department of Statistics
Belize	Environmental Statistical Unit/Ministry of Natural Resources and Environment
Dominica	Central Statistical Office
Jamaica	Statistical Institute of Jamaica
St. Vincent and the Grenadines	Statistical Office
Anguilla	Customs Office

2.6.2 (b): Notes for Table 6.2 - Use of Fertilizers by Type and Year: 1990, 1995, 1998 - 2004

Country	Notes
Belize	Information refers to fertilizer production by fertilizer companies in Belize.
Dominica	Data refer to annual imports.
Jamaica	This data represents the total imports. Some fertilizers are also exported.
St. Vincent and the Grenadines	These figures represent imports of fertilizer.
Anguilla	This data is the imports of the mentioned fertilizers and not the usage. It is, therefore, assumed that all imports are consumed within the specific year.

2.6.3 (a): Sources of Data for Table 6.3 - Use of Pesticides by Type and Year: 1990, 1995, 1998 - 2004

Country	Data Source
The Bahamas	Trade Section, Department of Statistics
Belize	Central Statistical Office: Trade Data
Dominica	Central Statistical Office
Jamaica	Statistical Institute of Jamaica
St. Vincent and the Grenadines	Statistical Office
Suriname	General Bureau of Statistics
Anguilla	Customs Office

2.6.3 (b): Notes for Table 6.3 - Use of Pesticides by Type and Year: 1990, 1995, 1998 - 2004

Country	Notes
Belize	Information provided is based on imports.
Dominica	Data refer to annual imports.
Jamaica	*: Rodenticides include anti-sprouting products, plant growth regulators, and similar products in 1990.
St. Vincent and the Grenadines	The figures represent imports of pesticides.
Suriname	General Bureau of Statistics
Anguilla	This data is the imports of the abovementioned pesticides and not the usage. It is, therefore, assumed that all imports are consumed within the specific year.

MR1: TOTAL AND PROTECTED MARINE AREA

DK

Concepts and Definitions

Marine Protected Area is any area of intertidal or subtidal terrain together with its overlying water and associated flora, fauna, historical and cultural features, which have been reserved by law or other effective means to protect part or all of the enclosed environment. (*Please refer to the World Conservation Union's website at http://www.iucn.org/places/medoffice/documentos/Rapport_final_AMP_en.pdf*.)

A *Marine area* is defined as the foreshore, seabed, coastal water, and air space above the water (i) of which the seaward boundary is the outer limits of the territorial sea; and (ii) of which the landward boundary is the line of mean high water springs, except that where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of one kilometre upstream from the mouth of the river or the point upstream that is calculated by multiplying the width of the river mouth by 5. (*Please refer to the Greater Wellington Regional Council's website at http://www.gw.govt.nz/story1210.cfm*.)

Method of Computation

Data for this indicator, total and protected marine area, were obtained from Member States and Associate Members and classified according to the categories defined above.

Indicator Relevance

Marine protected areas (MPAs) are used as management tools to protect, maintain, or restore natural and cultural resources in coastal and marine waters. New MPAs are designated worldwide every year, and it is becoming more and more difficult to make a current analysis of the coverage offered by MPAs. Nevertheless, inventories are necessary for effective planning, and regional MPA databases are becoming more common. MPAs have different shapes, sizes, and management characteristics, and have been established for different purposes.

In the CARICOM region a significant number of the MPAs, particularly in the insular states, have been established as fisheries management tools, with the recognition of their utility as tourism attractions. MPAs are often unique ecosystems that make them attractive to tourists, for scuba diving, sight seeing and other activities. Without proper management, however, tourists can quickly degrade the very resources that they have travelled to see. Although there are an increasing number of MPAs in the CARICOM region, the amount of tourists visiting the region is also growing; hence the carrying capacities of the existing MPAs may be soon exceeded by the numbers of tourists utilizing them.

Data Assessment

Data for this indicator were collected for six Member States and two Associate Members. The six Member States were the Bahamas, Belize, Dominica, Jamaica, Saint Lucia, and St. Vincent and the Grenadines. The Associate Members were Bermuda and The Turks and Caicos Islands.

Data was requested for five years: 1970, 1980, 1990, 2000 and 2004. For the Member States, only the Bahamas provided data for all the years requested—Jamaica and Saint Lucia provided data for 2000 alone, Belize and Dominica provided data for 2000 and 2004 and St. Vincent and the Grenadines provided data for 1990, 2000 and 2004. Like the Bahamas, both reporting Associate Members provided data for all the years requested.

It should be noted that the protected area for The Turks and Caicos Islands was legally/formally established in 1992. As such, 1970, 1980 and 1990 data points are not applicable for protected marine area.

No definition was provided for this indicator from reporting Member States/Associate Members. It is therefore impossible to assess the degree of harmonisation for this indicator.

Data Sources

Please refer to **Appendix 3.7.1 (a)** for the sources of the data on the total and protected marine areas of Member States and Associate Members.

Evaluation

The data in **Table 7.**1 were compiled for six member States and two Associate Members on total and protected Marine Area for the period 1970 to 2004. Most Member States reported small percentage of protected total marine area with the exception of Jamaica with almost 82 per cent of the total marine of 1,815 squared kilometres protected in 2000. Bermuda reported the largest marine area at 428,738 squared kilometres of which 0.7 per cent was protected in 2004 with the total protected marine area increasing by 0.04 per cent since 1970. Belize and Turks and Caicos Islands reported the second and third largest proportions of marine protected area of total marine area for the years 2000 and 2004 at 10.4 per cent and 10.3 per cent respectively with total areas of 23,654 squared kilometres and 7,200 squared kilometres respectively. The Bahamas with total marine area of 266,666 squared kilometres reported increases in the total protected area from 4.67 squared kilometres in 1970 to 4.77 squared kilometres for the period 1980 to 2004 finally to 16.75 squared kilometres in 2004 representing an increase of almost 16 per cent. Total protected marine area for Saint Vincent and the Grenadines remained at 83 squared kilometres out of a total area of 27,500 squared kilometres for the period 1990 to 2004. Dominica reported a total protected area of 10.72 squared kilometres for 2000 and 2004 while Saint Lucia reported the number of marine protected areas at 24 squared kilometres.

Table 7.1 Total and protected marine area: 1970, 1980, 1990, 2000, 2004

Unit = km^2

Country	Year	Marine Area	
		Total	Protected
BS			
	1970	**266,667**	**4.67**
	1980	**266,667**	**4.77**
	1990	**266,667**	**4.77**
	2000	**266,667**	**4.77**
	2004	**266,667**	**16.75**
BZ			
	2000	**23,655**	**2,452**
	2004	**23,655**	**2,452**
DM			
	2000	**. . .**	**10.72**
	2004	**. . .**	**10.72**
JM			
	2000	**1,815**	**1,483**
LC			
	2000*	**24**	**. . .**
VC			
	1990	**27,500**	**83**
	2000	**27,500**	**83**
	2004	**27,500**	**83**
ASSOCIATE MEMBERS			
BM			
	1970	**428,738**	**135**
	1980	**428,738**	**288**
	1990	**428,738**	**315**
	2000	**428,738**	**321**
	2004	**428,738**	**321**
TC			
	1970	**7,200**	**0**
	1980	**7,200**	**0**
	1990	**7,200**	**0**
	2000	**7,200**	**741**
	2004	**7,200**	**741**

MR2: FISH LANDINGS BY TYPE AND BOAT DAYS

DK

Concepts and Definitions

Fish landings are the part of the fish catch that is put ashore. (*Please refer to the European Environmental Agency's website at http://glossary.eea.Europa.eu/ EAGlossary/F/fish_landing.*)

A *boat day* is a measure of fishing effort (e.g. example, ten vessels in a fishery, each fishing for fifty days, would have expended five hundred boat-days of effort).
(*Please refer to the Ocean Atlas's website at http://www.oceansatlas.com/ world_ fisheries_ and_aquaculture/html/glos/terms/637.htm.*)

Molluscs include freshwater molluscs, oysters, mussels, scallops, clams, abalones, and cephalopods.

Crustaceans include, among others, freshwater crustaceans, crabs, lobsters, shrimps, and prawns.

Method of Computation

Data for this indicator were obtained from Member States/Associate Members and were classified according the categories: Finfish, Fish Fillet, Tilapia, Lobster Head Meat, Lobster Tail, Whole Lobster, Conch, Stone Crab Claws, Grouper Roe, White Farmed Shrimp, Pink Sea Shrimp, Squid, Turtle, King Crab Claws, Post Larvae Shrimp, Farm Lobster, Whole Fish and Other.

Indicator Relevance

The biggest impact that fishing has on the environment is the removal of individuals from the population. Fish landing statistics do not, however, take into account those organisms that are caught but not landed—discards. These may be commercially valuable target species that are discarded for regulatory or marketing reasons, or non-target species. Most discarded species, especially fish and marine mammals, do not survive. Landing statistics, therefore, underestimate the total catch of fishing vessels and, thus, the impact on the environment. Despite this underestimation, however, fish landing statistics assessed against the state of the stock and its ability to recover do give an estimate of the environmental impacts of fishing that would have not been otherwise possible if landing statistics were not available.

Data Assessment

Data for this indicator were provided by eight Member States and two Associate Members: Bahamas, Belize, Dominica, Guyana, Jamaica, Saint Lucia, St. Vincent and the Grenadines, Suriname, Bermuda and The Turks and Caicos Islands. Despite this,

however, there is very little detailed data for this indicator.

None of the reporting countries provided definitions used in the collection of this indicator and therefore it is impossible to assess the degree of harmonisation within the Region.

Data Sources

Please refer to **Appendix 3.7.1 (a)** for the sources of the data on the fish landing by type and boat days of Member States and Associate Members.

Evaluation

Data in **Table 7.2** on Fish landings by type and boat days is presented below. It was difficult to compare fish landing given the vast differences in the species groups represented for the different time periods therefore data was further classified into five categories; Fish, crustaceans, molluscs, marine mammals and other to allow better comparison. The actual data reported is presented in **Appendix 1.7**. It can be seen from the table presented below that reported fish landings were highest for Guyana, Suriname and Belize in the Region. Crustaceans which include Lobsters, Shrimp and crabs increased in popularity in most Member States although fish landings remained high. Data on number of boat days spent and total catch was captured for one Member State and one Associate Member State and this does not therefore allow for much comparison.

Table 7.2 Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish landings by type					Fish landings by Boat days	
		Fish	Crustacean	Molluscs	Other	Total Quantity (tonnes)	Number of boats days spent	Total catch (tonnes)
BS								
	1990	1,340	1,935	335	. . .	3,610	12,333	1,334
	1995	1,271	2,636	589	. . .	4,496	16,534	1,146
	1998	1,610	2,621	670	. . .	4,902	17,818	1,814
	1999	1,439	2,783	472	. . .	4,694	13,505	1,530
	2000	1,332	3,050	668	. . .	5,050	12,838	1,390
	2001	1,534	2,282	658	. . .	4,473	13,940	1,530
	2002	1,597	3,422	523	. . .	5,542	13,354	1,474
	2003	1,604	3,508	620	. . .	5,731	14,501	1,568
	2004	1,397	3,079	580	. . .	5,055	10,930	954
BZ								
	1995	325	2,035	302	. . .	2,662	. . .	. . .
	1998	244	4,819	14	. . .	5,077	. . .	. . .
	1999	222	8,018	16	. . .	8,256	. . .	. . .
	2000	138	9,221	9	. . .	9,368	. . .	. . .
	2001	123	10,446	580	. . .	11,149	. . .	. . .
	2002	613	1,754	462	. . .	2,830	. . .	. . .

Table 7.2 Contd. Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish landings by type					Fish landings by Boat days	
		Fish	Crustacean	Molluscs	Other	Total Quantity (tonnes)	Number of boats days spent	Total catch (tonnes)
DM								
	2000	...	...	...	...	495	...	495
	2001	297	...	...	...	525	...	525
	2002	338	...	...	...	641	...	641
	2003	196	...	...	...	404	...	404
	2004	250	...	...	...	403	...	403
GY								
	1997	37,600	123,818	...	...	...	...	...
	1998	39,541	30,143	...	...	...	...	...
	1999	35,257	14,386	...	...	...	...	...
	2000	30,277	19,328	...	...	...	...	...
	2001	26,892	25,250	...	...	...	...	...
	2002	25,186	22,058	...	...	...	...	...
	2003	33,724	22,584	...	...	...	...	...
JM								
	1997	5,592	...	1,805	...	7,747	...	...
LC								
	1990	457	4	4	97	562	...	562
	1995	576	13	15	407	1,011	...	1,011
	1998	1159	20	42	304	1,525	...	1,525
	1999	1295	23	90	421	1,829	...	1,829
	2000	1443	25	40	352	1,860	...	1,860
	2001	1455	36	41	435	1,967	...	1,967
	2002	1206	58	31	317	1,612	...	1,612
	2003	1096	23	60	349	1,528	...	1,528
	2004	1102	11	46	362	1,520	32,041*	1,520
SR								
	2000	8,871	1,529	...	...	...	...	...
	2001	12,202	1,700	...	...	...	...	...
	2002	10,937	2,000	...	...	...	...	...
	2003	12,000	1,900	...	...	...	...	...
	2004	18,647	1,530	...	...	...	...	...
ASSOCIATE MEMBERS								
BM								
	1995	440	5	...	48	493	...	446
	1998	406	14	...	65	485	...	420
	1999	403	21	...	43	467	...	424
	2000	331	12	...	45	387	...	343
	2001	292	13	...	23	328	...	305
	2002	361	15	...	46	421	...	376
	2003	319	18	...	44	381	...	337
	2004	347	14	...	41	402	...	361
TC								
	1990	15	328	424	...	767	8,215	767
	1995	1	284	953	...	1,238	10,097	1,238
	1998	...	315	645	...	941	7,271	941
	1999	1	187	737	...	925	6,714	925
	2000	1	291	817	...	1,109	8,321	1,109
	2001	4	323	725	...	1,052	8,848	1,052
	2002	3	182	655	...	840	7,085	840
	2003	...	278	720	...	998	5,460	998
	2004	...	388	680	...	1,057	8,449	1,057

MR3: POPULATION OF COASTAL AREAS

DK

Concepts and Definitions

Population of coastal areas is the percent of the total population living within one hundred kilometres of the coastline.

A *coastal area* is the part of the land affected by its proximity to the sea, and that part of the sea affected by its proximity to the land as the extent to which man's land-based activities have a measurable influence on water chemistry and marine ecology. (*Please refer to European Environment Agency's website at* http://glossary.eea.europa.eu/EEAGlossary/C/coastal_area.)

Method of Computation

Data for this indicator were collected from Member States and Associate Members according to the categories: population in coastal areas and number of families in coastal areas.

Indicator Relevance

The natural environment of coastal areas, which includes wetlands, estuaries, mangroves and coral reefs, is degraded by agricultural and urban development, industrial facilities, port and road construction, dredging and filling, tourism and aquaculture. Natural landscapes and habitats are altered, overwhelmed and destroyed to accommodate the growing coastal population. Dam construction, even far inland, can alter water flow patterns that support important fisheries, as well as cut off the supply of sediment necessary to maintain deltas and coastlines. As more people gravitate towards the coast, increasing volumes of waste, particularly sewage, are produced and sluiced out into coastal waters, which then causes eutrophication and endanger public health. This indicator, therefore, acts as a measure of population growth in coastal areas to provide an estimation of the pressures on the environment that will arise as a result of habitation of the coast.

Data Assessment

Data for this indicator were obtained from two Member States and two Associate Members. The two Member States were Dominica and Suriname and the two Associate Members, Bermuda and Turks and Caicos.

Data were requested for six years: 1980, 1985, 1990, 1995, 2001 and 2004. Dominica and Suriname only provided data for one of the years: Dominica for 2001 and Suriname for 2004. Bermuda provided data for two of the requested years: 1980 and 1990, and also provided data for 2000. Like Bermuda, Turks and Caicos provided data for 2000, but they also provided data for all of the requested years save 2001.

It is impossible to assess the degree of harmonisation of this indicator within the Region since none of the reporting countries provided definitions used in the collection of this indicator.

Data Sources

Please refer to **Appendix 3.7.1 (a)** for the sources of the data on the total and protected marine areas of Member States and Associate Members.

Evaluation

Table 7.3 presents data on the number of families and the population of coastal area in reporting Member States Dominica and Suriname and two Associate Members Bermuda and Turks and Caicos Islands. The data shows that in Dominica 15,500 persons and 5,105 families lived in coastal areas in 2001 whilst Suriname reported a total of 458,822 persons lived on the coast in 2004.

During the three decades, the total population living in coastal areas in Bermuda increased from 54,050 persons in 1980 to 58,460 persons in 1990 and finally to 62,059 in 2000. Bermuda also reported an increase in the number of families inhabiting coastal areas from 22,430 in 1990 to 25,148 in 2000. Associate Member State, Turks and Caicos Islands reported 100 per cent of the population inhabited coastal area in the years 1980, 1985, 1990, 1995, 2000 and 2004.

Table 7.3 - Number of families and Population of coastal area : 1980, 1985, 1990, 1995, 2000 - 2001, 2004

Country	Year	Population in coastal areas	Number of families in coastal areas
DM			
	2001	**15,500**	**5,105**
SR			
	2004	**458,822**	**. . .**
ASSOCIATE MEMBERS			
BM			
	1980	**54,050**	**. . .**
	1990	**58,460**	**22,430**
	2000	**62,059**	**25,148**
TC			
	1980*	**100**	**. . .**
	1985*	**100**	**. . .**
	1990*	**100**	**. . .**
	1995*	**100**	**. . .**
	2000*	**100**	**. . .**
	2004*	**100**	**. . .**

Table 7.2 Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish Landings by Type								
		Crustacean	Molluscs	Scalefish	Finfish	Fish Fillet		Dolphinfish	Wahoo	Flyingfish
		mT	mT	mT	Tonnes	mT	Tonnes	mT	mT	mT
BS										
	1990	1,935	335	1,340	...	...	...	...	...	...
	1995	2,636	589	1,271	...	...	...	...	...	...
	1998	2,621	670	1,610	...	...	...	...	...	...
	1999	2,783	472	1,439	...	...	...	...	...	...
	2000	3,050	668	1,332	...	...	...	...	...	...
	2001	2,282	658	1,534	...	...	...	...	...	...
	2002	3,422	523	1,597	...	...	...	...	...	...
	2003	3,508	620	1,604	...	...	...	...	...	...
	2004	3,079	580	1,397	...	...	...	...	...	...
BZ										
	1995	...	...	...	280,762	...	43,386	...	...	...
	1998	...	...	...	193,757	...	50,408	...	...	...
	1999	...	...	...	183,110	...	38,666	...	...	...
	2000	...	...	...	109,575	...	28,205	...	...	...
	2001	...	...	...	...	...	41,498	...	...	...
	2002	...	...	...	526,912	...	86,191	...	...	...
GY										
	1997	...	...	...	...	37,600	...	...	...	...
	1998	...	...	...	...	39,541	...	...	...	...
	1999	...	...	...	...	35,257	...	...	...	...
	2000	...	...	...	...	30,277	...	...	...	...
	2001	...	...	...	...	26,892	...	...	...	...
	2002	...	...	...	...	25,186	...	...	...	...
	2003	...	...	...	...	33,724	...	...	...	...
JM										
	1997	...	...	...	4,476	...	...	...	...	...
LC										
	1990	...	...	...	...	...	...	240	55	34
	1995	...	...	...	...	...	...	200	20	50
	1998	...	...	...	...	...	...	271	250	234
	1999	...	...	...	...	...	...	588	310	67
	2000	...	...	...	...	...	...	555	243	99
	2001	...	...	...	...	...	...	427	214	323
	2002	...	...	...	...	...	...	373	246	170
	2003	...	...	...	...	...	...	304	170	74
	2004	...	...	...	...	...	...	376	238	11
SR										
	2000	...	...	...	...	8,871	...	...	...	...
	2001	...	...	...	...	12,202	...	...	...	...
	2002	...	...	...	...	10,937	...	...	...	...
	2003	...	...	...	...	12,000	...	...	...	...
	2004	...	...	...	...	18,647	...	...	...	...

Table 7.2 Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish Landings by Type									
		Snapper	Jacks	Shark	Tunas	Lobster Head Meat	Lobster Tail		Whole Lobster	Lobster	Queen Conch
		mT	mT	mT	mT	Tonnes	Tonnes	mT	Tonnes	mT	mT
BZ											
	1995	...	...	...	...	30,842	508,408	392	324,336	...	...
	1998	...	...	...	...	36,861	516,279	251	556,713	...	...
	1999	...	...	...	...	47,968	609,523	298	309,377	...	...
	2000	...	...	...	...	50,637	555,254	275	513,469	...	...
	2001	...	...	...	...	45,150	432,884	217	0	...	...
	2002	...	...	...	...	12,877	477,904	288	66,420	...	...
	2003	...	...	...	...	...	...	271	...	...	...
	2004	...	...	...	...	...	...	278	...	...	...
LC											
	1990	0	...	1	127	...	...	...	4	...	...
	1995	0	...	6	300	...	...	...	13	...	...
	1998	0	...	9	395	...	...	...	20	...	...
	1999	0	...	6	324	...	...	...	23	...	...
	2000	68	...	5	473	...	...	...	25	...	...
	2001	82	...	5	404	...	...	...	36	...	...
	2002	132	...	66	219	...	...	...	58	...	...
	2003	57	...	5	486	...	...	...	23	...	...
	2004	39	...	20	419	...	...	...	11	...	...
ASSOCIATE MEMBERS											
BM											
	1995	41.4	94.2	17.7	199.5	...	...	...	...	5.2	...
	1998	31.8	53.0	9.8	221.1	...	...	...	...	13.5	...
	1999	31.8	58.6	10.9	218.2	...	...	...	...	21.0	...
	2000	38.2	47.9	6.7	166.1	...	...	...	...	12.0	...
	2001	34.7	45.4	5.4	131.8	...	...	...	...	12.9	...
	2002	38.5	58.4	5.2	177.3	...	...	...	...	14.6	...
	2003	34.0	45.5	7.5	178.0	...	...	...	...	18.2	...
	2004	22.8	53.7	6.4	209.6	...	...	...	...	14.1	...
TC											
	1990	...	...	...	...	...	...	...	...	328.2	423.7
	1995	...	...	...	...	...	...	...	...	283.9	952.5
	1998	...	...	...	...	...	...	...	...	315.4	645.4
	1999	...	...	...	...	...	...	...	...	186.8	736.6
	2000	...	...	...	...	...	...	...	...	291.2	816.9
	2001	...	...	...	...	...	...	...	...	323.3	725.3
	2002	...	...	...	...	...	...	...	...	181.6	655.3
	2003	...	...	...	...	...	...	...	...	278.3	719.9
	2004	...	...	...	...	...	...	...	...	387.5	680.4

Table 7.2 Fish landings by type: 1990, 1995 - 2004

Country	Year	Fish Landings by Type									
		Conch		Stone Crab Claws	Grouper Roe	Bait	White Farmed Shrimp	Farmed Shrimp	Pink Sea Shrimp	Shrimp	Squid
		Tonnes	mT	Tonnes	Tonnes	mT	Tonnes	mT	Tonnes	mT	Tonnes
BZ											
	1995	301,951	137	13,137	882	...	1,048,431	768	107,956	79	213
	1998	13,535	253	0	74	...	3,620,151	1,871	89,185	40	172
	1999	16,164	140	0	352	...	6,974,120	3,170	76,616	35	214
	2000	8,671	233	0	0	...	8,002,118	3,630	99,285	45	555
	2001	579,561	263	4,258	0	...	9,812,135	4,451	151,750	69	0
	2002	462,421	187	7,482	321	...	1,083,158	4,345	106,312	121	0
	2003	...	241	...	...	...	...	11,134	...	52	...
	2004	...	282	...	...	...	...	11,042	...	74	...
GY											
	1997	...	...	...	...	...	123,818	...	...	...	...
	1998	...	...	...	...	...	30,143	...	...	...	...
	1999	...	...	...	...	...	14,386	...	...	...	...
	2000	...	...	...	...	...	19,328	...	...	...	...
	2001	...	...	...	...	...	25,250	...	...	...	...
	2002	...	...	...	...	...	22,058	...	...	...	...
	2003	...	...	...	...	...	22,584	...	...	...	...
JM											
	1997	...	1,805	...	...	...	...	...	...	...	...
LC											
	1990	...	4	...	...	...	...	...	...	...	...
	1995	...	15	...	...	...	...	...	...	...	...
	1998	...	42	...	...	...	...	...	...	...	...
	1999	...	90	...	...	...	...	...	...	...	...
	2000	...	40	...	...	...	...	...	...	...	...
	2001	...	41	...	...	...	...	...	...	...	...
	2002	...	31	...	...	...	...	...	...	...	...
	2003	...	60	...	...	...	...	...	...	...	...
	2004	...	46	...	...	...	...	...	...	...	...
ASSOCIATE MEMBERS											
BM											
	1995	...	...	...	46.7	47.9	...	...	...	...	...
	1998	...	...	...	47.2	65.0	...	...	...	...	...
	1999	...	...	...	54.0	43.0	...	...	...	...	...
	2000	...	...	...	43.2	44.9	...	...	...	...	...
	2001	...	...	...	49.7	23.3	...	...	...	...	...
	2002	...	...	...	57.0	45.9	...	...	...	...	...
	2003	...	...	...	36.2	43.6	...	...	...	...	...
	2004	...	...	...	38.7	41.0	...	...	...	...	...

Table 7.2 Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish Landings by Type									
		King Crab Claws	Whole Fish		Coastal Pelagic Fishery	Offshore/ large Pelagic Fishery	Pelagic Fish	Reef Fishery	Other	Total Quantity	
		Tonnes	Tonnes	mT	mT	mT	mT	Tonnes	mT	Tonnes	mT
BS											
	1990	...	...	...	...	...	...	...	...	...	3,610
	1995	...	...	...	...	...	...	...	...	...	4,496
	1998	...	...	...	...	...	...	...	...	...	4,902
	1999	...	...	...	...	...	...	...	...	...	4,694
	2000	...	...	...	...	...	...	...	...	...	5,050
	2001	...	...	...	...	...	...	...	...	...	4,473
	2002	...	...	...	...	...	...	...	...	...	5,542
	2003	...	...	...	...	...	...	...	...	...	5,731
	2004	...	...	...	...	...	...	...	...	...	5,055
BZ											
	1995	2,104	0	147.4	...	...	...	...	7.4	2,662,408	1,530
	1998	0	0	110.7	...	...	...	...	6.1	5,077,135	2,532
	1999	0	0	100.7	...	...	...	...	7.7	8,256,110	3,752
	2000	0	0	62.5	...	...	...	...	4.2	9,367,769	4,249
	2001	0	81,528	55.8	...	...	...	...	1.8	11,148,764	5,057
	2002	0	0	83.0	...	...	...	...	1.4	2,829,998	5,025
	2003	...	...	34.5	...	...	...	...	0.9	...	11,734
	2004	...	...	26.7	...	...	...	...	3.3	...	11,706
DM											
	2000	...	...	...	...	...	...	...	...	495	...
	2001	...	...	...	172	297	...	56	56	525	...
	2002	...	...	...	303	338	...	...	0	641	...
	2003	...	...	...	169	196	...	39	39	404	...
	2004	...	...	...	108	250	...	45	45	403	...
GY											
	1997	...	...	...	...	...	...	...	...	...	...
	1998	...	...	...	...	...	...	...	...	...	...
	1999	...	...	...	...	...	...	...	41,251	...	...
	2000	...	...	...	...	...	...	...	24,201	...	...
	2001	...	...	...	...	...	...	...	25,245	...	...
	2002	...	...	...	...	...	...	...	25,187	...	...
	2003	...	...	...	...	...	...	...	33,723	...	...
	2004	...	...	...	...	...	...	...	36,692	...	...
JM											
	1997	...	...	...	...	...	1,116	...	...	...	7,747
LC											
	1990	...	...	...	...	...	...	...	97	562	...
	1995	...	...	...	...	...	...	...	407	1,011	...
	1998	...	...	...	...	...	...	...	304	1,525	...
	1999	...	...	...	...	...	...	...	421	1,829	...
	2000	...	...	...	...	...	...	...	352	1,860	...
	2001	...	...	...	...	...	...	...	435	1,967	...
	2002	...	...	...	...	...	...	...	317	1,612	...
	2003	...	...	...	...	...	...	...	349	1,528	...
	2004	...	...	...	...	...	...	...	362	1,520	...

Table 7.2 Fish landings by type and by Boat days: 1990, 1995 - 2004

Country	Year	Fish Landings by Type									
		King Crab Claws	Whole Fish		Coastal Pelagic Fishery	Offshore/ large Pelagic Fishery	Pelagic Fish	Reef Fishery	Other	Total Quantity	
		Tonnes	Tonnes	mT	mT	mT	mT	Tonnes	mT	Tonnes	mT
ASSOCIATE MEMBERS											
BM											
	1995	. . .	. . .	. . .	. . .	. . .	. . .	. . .	40.8	. . .	493.4
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	43.5	. . .	485.0
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	29.2	. . .	466.8
	2000	. . .	. . .	. . .	. . .	. . .	. . .	. . .	28.5	. . .	387.4
	2001	. . .	. . .	. . .	. . .	. . .	. . .	. . .	25.0	. . .	328.1
	2002	. . .	. . .	. . .	. . .	. . .	. . .	. . .	24.6	. . .	421.5
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	18.0	. . .	381.0
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	15.9	. . .	402.2
TC											
	1990	. . .	. . .	. . .	. . .	. . .	. . .	15.0	. . .	766.9	. . .
	1995	. . .	. . .	. . .	. . .	. . .	. . .	1.1	. . .	1,237.5	. . .
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	940.8	. . .
	1999	. . .	. . .	. . .	. . .	. . .	. . .	1.1	. . .	924.5	. . .
	2000	. . .	. . .	. . .	. . .	. . .	. . .	0.6	. . .	1,108.7	. . .
	2001	. . .	. . .	. . .	. . .	. . .	. . .	3.5	. . .	1,052.1	. . .
	2002	. . .	. . .	. . .	. . .	. . .	. . .	2.7	. . .	839.6	. . .
	2003	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	998.2	. . .
	2004	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1,057.0	. . .

Appendix 2.7
Conversion Table

Metric	to	Imperial
2 hectares (ha)		5 acres
1 km^2 (squared kilometres)		250 acres
8 km^2 (squared kilometres)		3 square miles (mi^2)

Appendix 3.7
Sources of Data on Coastal and Marine Resources

3.7.1(a): Sources of Data for Table 7.1 - Total and Protected Marine Area: 1970, 1980, 1990, 2000, 2004

Country	Data Source
THE BAHAMAS	Bahamas National Trust
BELIZE	Land Information Centre
DOMINCA	Fisheries Division, Ministry of Agriculture
JAMAICA	National Environment and Planning Agency
SAINT LUCIA	Department of Fisheries, Ministry of Agriculture, Forestry and Fisheries
ST VINCENT AND THE GRENADINES	Department of Statistics
BERMUDA	Bermuda Biodiversity Country Study
THE TURKS AND CAICOS ISLANDS	Department of Environment and Coastal Resources

3.7.1(b): Notes for Table 7.1 - Total and Protected Marine Area: 1970, 1980, 1990, 2000, 2004

Country	Notes
BELIZE	Area is GIS area and not the area on the legal statutory instrument.
DOMINCA	Only Two Marine Reserves. Cabrits National Park (Marine Section): 1054 acres and Soufriere/Scott's Head Marine Reserve: 6.5 km²
SAINT LUCIA	* - Area of protected marine area not available. Number of marine protected areas given.
ST VINCENT AND THE GRENADINES	Protected Marine Areas are only in coastal areas, less that five miles from shore. Protected marine areas enacted in 1987. Total marine areas declared according to Law of the Sea Convention.
BERMUDA	The Exclusive Economic Zone around Bermuda was declared in 1996. This gives Bermuda jurisdiction over an area of about 125,000 square nautical miles. This area was declared a marine mammal preserve in 2000.
THE TURKS AND CAICOS ISLANDS	The protected marine area for 2000 and 2004 correspond to 19 Marine National Parks. The protected area was legally/formally established in 1992 hence 1970, 1980, and 1990 data points are not applicable for protected marine area.

3.7.2(a): Sources of Data for Table 7.2: Fish Landings by Type and Boat Days: 1990, 1995 – 2004

Country	Data Source
THE BAHAMAS	Department of Fisheries
BELIZE	Statistical Records, Belize Fisheries Department, Ministry of Agriculture and Fisheries
DOMINCA	Fisheries Division
GUYANA	Bureau of Statistics
JAMAICA	Fisheries Division
SAINT LUCIA	Department of Fisheries, Ministry of Agriculture, Forestry and Fisheries
SURINAME	General Bureau of Statistics
BERMUDA	Department of Statistics.
THE TURKS AND CAICOS ISLANDS	Department of Environmental and Coastal Resources

3.7.2(b): Notes for Table 7.2 - Fish Landings by Type and Boat Days: 1990, 1995 – 2004

Country	Notes
THE BAHAMAS	Fish landings by boat do not reflect total Bahamas landing. These are the landing collected by our data collectors. Conch = Queen Conch. Stone Crab includes spiny lobster. Grouper Roe refers to groupers, jacks, snappers, grunts, etc.
DOMINCA	Whole fish = fish landings at a coastal pelagic fishery and an offshore/large pelagic fishery. Other refers to reef fish
GUYANA	Fin-fish is derived from fin-fish production data. White farmed shrimp refers to shrimp and is derived from shrimp production data. Other refers to all other kinds of fish landings.
JAMAICA	All data represents marine capture by type. Whole fish = tilapia. White Farmed Shrimp = Shrimp
SAINT LUCIA	* - Number of boat days spent not available. Total number of fishing trips conducted given. Other = dolphin fish + wahoo + flying fish + snapper + shark + tuna + other
SURINAME	General Bureau of Statistics
BERMUDA	Department of Statistics collected quantity information in lbs and converted into mT. Other includes jacks, snappers, miscellaneous, tuna and sharks.
THE TURKS AND CAICOS ISLANDS	The figures in the quantity lines reflect total catch, that is, the quantity sold to the fish processors but exclude any direct sales to local restaurants and hotels. Fluctuations in catch levels are presumed to be resultant of over-fishing in combination with independent factors such as climate change. Conch = Queen Conch: Catch levelled at the current quote or Total Allowable Catch (TAC) level of approximately 1,657,876 (752 mT.). Other refers to various reef fish which include species such as groupers, snappers and large pelagic.

3.7.3(a): Source of Data for Table 7.3 - Population of Coastal Areas: 1980, 1985, 1990, 1995, 2000 – 2001, 2004

Country	Data Source
DOMINCA	Population and Housing Census, 2000 Round
SURINAME	Preliminary Census 2004 Figures
BERMUDA	Population and Housing Census, 2000 Round
THE TURKS AND CAICOS ISLANDS	Department of Environmental & Coastal Resources

3.7.3(b): Notes for Table 7.3 - Population of Coastal Areas: 1980, 1985, 1990, 1995, 2000 – 2001, 2004

Country	Notes
BERMUDA	Data represent total households and total population in Bermuda. Bermuda measures 1 mile at its widest point. Based on the standard definition of coastal area, the entire island is considered coastal.
THE TURKS AND CAICOS ISLANDS	* - Figures are percentages.

BIO1: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY

Protected Area as a Percentage of Total Area
Ratio of area protected to maintain biological diversity to surface area

PH

Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

Concept and Definition

A *protected area* is defined as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal and effective means. (Legal or effective means refers to the objectives of the Act under which an area is designated and implies security of tenure, generally revoked only by a state or national parliamentary process; or areas covered by a legally adopted plan of management.)

A protected area includes six categories, which are:
- Category I(a): Strict Nature Reserve
- Category I(b): Wilderness Area
- Category II: National Park
- Category III: National Monument
- Category IV: Habitat/Species Management Area
- Category V: Protected Landscape/Seascape
- Category VI: Managed Resource Protected Area

(*Please refer to the World Conservation Union's website at www.iucn.org/themes/wcpa/wpc2003/pdfs/ou tputs/pascat/pascatrev_info3.pdf.)*

Method of Computation

Total Area = Total Terrestrial Area + Total Marine Area

Protected areas, both terrestrial and marine, are totalled and expressed as a percentage of the total surface area of the country. The total surface area of the country includes the terrestrial area plus any territorial sea area (up to 12 nautical miles).

The usefulness of the indicator depends on clearly distinguishing totally protected areas and partially protected areas, since they have very different, albeit complementary, functions. This is done by calculating the combined area of totally protected areas of one thousand hectares or more and the combined area of all partially protected areas,

regardless of size. The percentage of the total land and marine area occupied by each group is then calculated to provide the total protected area.

Indicator Relevance

Biodiversity of natural and man-made ecosystems has its own intrinsic value whose maintenance is essential for the state of the ecosystems, human life and sustainable development. The main threats to biodiversity relate to the destruction and/or fragmentation of ecosystems due to human activities (such as massive deforestations, expansions in agricultural activities and fishing, urbanisation, and transportation networks) and to natural activities (such as climatic variations).

Protected areas are an essential tool for ecosystem conservation, with functions going well beyond the conservation of biological diversity. As such, they are one of the building blocks of sustainable development. As such, this indicator represents the extent to which areas important for conserving biodiversity, cultural heritage, scientific research (including baseline monitoring), recreation, natural resource maintenance, and other values, are protected from incompatible uses. It shows how much of each major ecosystem is dedicated to maintaining its diversity and integrity.

However, the effectiveness of this indicator is limited by two problems. First, it represents de jure, not de facto protection. It does not indicate the quality of management or whether the areas are in fact protected from incompatible uses. Secondly, the indicator does not show how representative the protected areas are of the country's ecological diversity. This is a significant deficiency since a large proportion of some ecosystems may be protected to the neglect of others.

Data Assessment

Nine Member States and three Associate Members provided data for this indicator. The Member States were the Bahamas, Belize, Dominica, Guyana, Jamaica, St. Lucia, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago while the Associate Members were Anguilla, Bermuda and Turks and Caicos. The data provided was reasonably dense and detailed.

For the protected area, Belize reported protected land area while Trinidad and Tobago reported the protected forest area. In addition, Trinidad and Tobago reported protected forest area as a percentage of total land area for protected area as a percentage of total area. All data from St. Vincent and the Grenadines refer only to areas of the sea. Instead of providing data for the current protected areas, Suriname provided the total area of current protected areas and proposed protected areas. For the total area, the Bahamas reported only the total land area. All of the other reporting countries reported data that was in strict accordance with the international concept of a protected area. As a result of these differences in the data provided by the Member States and Associate Members, this indicator is partially harmonized.

Data Sources

Please see **Appendix 2.8.1** for the sources of the data on protected area as a percentage of total area of Member States and Associate Members. Notes to the tables are also provided.

Evaluation

Nine Member States and three Associate Members reported data for this indicator which is shown in **Table 8.1** below. Among Member States, Belize reported the highest proportion of protected area, which fluctuated between 1995 and 2004, increasing from 7,290 (31.7 per cent) in 1995, to 7,974 (34.7 per cent) in 1998 and further to 8,046 (35.0 per cent) in 2000 and finally to 8,246 (35.9 per cent) in 2001 and registered a small decline in 2004 to 7,930 (34.5 per cent). This was followed by Trinidad and Tobago with 25.6 per cent of its total area of 5,128 squared kilometres protected for the period 1970 to 2004. Dominica's protected area as a percent of total area of 750 squared kilometres increased for the period 1970 to 2004 from 0.1 per cent (4.1 squared kilometres) in 1970 to 23.1 per cent in 2004 moving from 0.1 per cent in 1970 to 17.1 percent in 1980, then to 17.3 percent in 1990 and 1995, further to 18.7 percent in 1998 and 1999 and finally to 23.1 percent from 2000 to 2004. The Bahamas recorded increases in the proportion of protected area from 8.6 percent in 1970 to 19 percent in 2007 an increase of 10.4 percent. Suriname's protected area as a percent of total area of 163,820 squared kilometres was 13 percent from 2000 to 2002 and 14 percent in 2003 and 2004. The total protected area as a percent of total land area for Jamaica in 1999 and 2002 was unchanged at 12.8 percent of the total land area of 11,425 squared kilometres. The remaining Member states were Guyana, reporting 2 percent of its total area (216,000 squared kilometres) protected in 2004, Saint Vincent and the Grenadines with a total protected area of 83 squared kilometres during the period 1990 to 2004 representing 0.3 percent of the total area of 27,500 squared kilometres and Saint Lucia whose total protected area represented 0.2 percent of the total area which was 616.4 squared kilometres.

Two Associate Member States reported high percentages of protected areas as a percent of total area and these were Bermuda and Turks and Caicos Islands. Bermuda, whose total area was 55 squared kilometres, reported 15 percent of its total area as protected whilst Turks and Caicos Islands reported 83.2 percent for the period 1995 to 2002 and 83.7 percent for 2003 and 2004 of its total area of 948.2 squared kilometres protected. The remaining Associate Member State, Anguilla recorded protected area as 0.05 squared kilometres, which represents 0.1 percent of its total area of 91 squared kilometres for the years 2002 to 2004.

Table 8.1 - Protected Area as a percentage of Total Area: 1970, 1980, 1990, 1995, 1998 - 2004

Unit: km^2

Country	Year	Total Area	Protected Area	Protected Area as a % of Total Area
BS				
	1970	13,940	1,199	8.6
	1980	13,940	1,217	8.7
	1990	13,940	1,217	8.7
	1995	13,940	1,300	9.3
	1998	13,940	1,300	9.3
	1999	13,940	1,300	9.3
	2000	13,940	1,300	9.3
	2001	13,940	1,300	9.3
	2002	13,940	2,651	19.0
	2003	13,940	2,651	19.0
	2004	13,940	2,651	19.0
	2005	13,940	2,651	19.0
	2006	13,940	2,651	19.0
	2007	13,940	2,651	19.0
BZ				
	1970	22,966	…	…
	1980	22,966	…	…
	1990	22,966	…	…
	1995	22,966	7,290	31.7
	1998	22,966	7,974	34.7
	1999	22,966	…	…
	2000	22,966	8,046	35.0
	2001	22,966	8,246	35.9
	2002	22,966	…	…
	2003	22,966	…	…
	2004	22,966	7,930	34.5
DM				
	1970	750	4	0.6
	1980	750	128	17.1
	1990	750	129	17.3
	1995	750	129	17.3
	1998	750	140	18.7
	1999	750	140	18.7
	2000	750	174	23.1
	2001	750	174	23.1
	2002	750	174	23.1
	2003	750	174	23.1
	2004	750	174	23.1
GY				
	2004	216,000	4,245	2.0
JM				
	1999	11,425	1,462	12.8
	2002	11,425	1,462	12.8
LC				
	2004	616	2	0.2

Table 8.1 - Protected Area as a percentage of Total Area: 1970, 1980, 1990, 1995, 1998 - 2004

Unit: km^2

Country	Year	Total Area	Protected Area	Protected Area as a % of Total Area
VC				
	1990	27,500	83	0.3
	1995	27,500	83	0.3
	1998	27,500	83	0.3
	1999	27,500	83	0.3
	2000	27,500	83	0.3
	2001	27,500	83	0.3
	2002	27,500	83	0.3
	2003	27,500	83	0.3
	2004	27,500	83	0.3
SR				
	2000	163,820	20,850	13.0
	2001	163,820	20,850	13.0
	2002	163,820	20,850	13.0
	2003	163,820	22,665a	14.0
	2004	163,820	22,665a	14.0
TT				
	1970	5,128	1,314	25.6
	1980	5,129	1,314	25.6
	1990	5,130	1,314	25.6
	1995	5,131	1,314	25.6
	1998	5,132	1,314	25.6
	1999	5,133	1,314	25.6
	2000	5,134	1,314	25.6
	2001	5,135	1,314	25.6
	2002	5,136	1,314	25.6
	2003	5,137	1,314	25.6
	2004	5,138	1,314	25.6
ASSOCIATE MEMBERS				
AI				
	2002	91	0.1	0.1
	2003	91	0.1	0.1
	2004	91	0.1	0.1
BM				
	1970	55	…	…
	1980	55	…	…
	1990	55	…	…
	1995	55	…	…
	1998	55	…	…
	1999	55	…	…
	2000	55	15	26.8
	2001	55	15	26.8
	2002	55	15	26.8
	2003	55	15	26.8
	2004	55	15	26.8
TC				
	1970	948	-	-
	1980	948	-	-
	1990	948	-	-
	1995	948	792	83.5
	1998	948	792	83.5
	1999	948	792	83.5
	2000	948	792	83.5
	2001	948	792	83.5
	2002	948	792	83.5
	2003	948	794	83.7
	2004	948	794	83.7

Appendix 1.8
Conversion Table

Metric	to	Imperial
2 hectares (ha)		5 acres
1 square kilometre (km^2)		250 acres
8 square kilometres (km^2)		3 square miles (mi^2)

Appendix 2.8
Sources of Data on Protected Areas

2.8.1: Sources of Data for Table 8.1 - Protected Area As A Percentage of Total Area: 1970, 1980, 1990, 1995, 1998 - 2004

Country	Data Source
THE BAHAMAS	Bahamas National Trust
BELIZE	Land Information Centre, Ministry of Natural Resources and the Environment
DOMINCA	Fisheries and Forestry Division, Ministry of Agriculture
GUYANA	Bureau of Statistics
JAMAICA	National Environment and Planning Agency and UNEP
SAINT LUCIA	Saint Lucia National Trust
ST. VINCENT AND THE GRENADINES	Fisheries Division
SURINAME	Institute for Forest Management and Control
TRINIDAD AND TOBAGO	Central Statistical Office
ANGUILLA	Anguilla Statistics Department
BERMUDA	Department of Statistics
TURKS AND CAICOS	Department of Environmental and Coastal Resources

Appendix 3.8
Notes to the Data on Protected Areas

3.8.1: Notes for Table 8.1 - Protected Area As A Percentage of Total Area: 1970, 1980, 1990, 1995, 1998 - 2004

Country	Notes
BELIZE	Protected Area has been modified to PROTECTED LAND AREA. It refers to protected areas in Belize which includes land area and inland waters but excludes sea protected areas. Protected Sea Area (which refers to MARINE RESERVES) is also available and is excluded from Protected Land Area. The data has been classified in this manner because using one figure for protected land and marine areas creates a false figure for protected area as a % of total area. It is quite high (over 45%). The area used in the calculations are GIS areas and not the area stipulated on the legal statutory instruments. Although the area on the Statutory Instruments are the legal one, the GIS area is more accurate.
JAMAICA	Total land area = 10,990.5km^2. Total land and sea area is from UNEP
ST. VINCENT AND THE GRENADINES	The figures presented represent areas of sea only
SURINAME	a - Protected areas and Proposed Protected Areas
TRINIDAD AND TOBAGO	The protected area data submitted is the protected forest area. Data submitted for Protected Area as a Percentage of Total Area refers to protected forest area as a percentage of total land area.
ANGUILLA	There is no legal framework in Anguilla for naming an area as a protected area. However, the government has vested these areas to the National Trust to be protected.
BERMUDA	By definition the marine protected areas fall into this category as well. Total land protected area is 1473ha (14.73 km^2) and marine protected area is 32095ha (320.95 km^2) giving a total area of 335.68km^2. Seeing that 14.73 km^2 of the 55kmsq is protected area, then this will be subtracted to give a total area of 375.95km^2 (335.68+55=390.68 km^2-14.73km^2=375.95 km^2)

FOR1: MDG 8: ENSURE ENVIRONMENTAL SUSTAINABILITY
Protected Forest Area as a percentage of Total Land Area

H

Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

Concept and Definition

A *protected area* is defined as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal and effective means. (Legal or effective means refer to the objectives of the Act under which an area is designated and implies security of tenure, generally revoked only by a state or national parliamentary process; or areas covered by a legally adopted plan of management.)

A protected area includes six categories, which are:
- Category I(a): Strict Nature Reserve
- Category I(b): Wilderness Area
- Category II: National Park
- Category III: National Monument
- Category IV: Habitat/Species Management Area
- Category V: Protected Landscape/Seascape
- Category VI: Managed Resource Protected Area

(*Please refer to the World Conservation Union's website at www.iucn.org/themes/wcpa/wpc2003/pdfs/ou tputs/pascat/pascatrev_info3.pdf.)*

Forest is land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use but does include areas under reforestation that have not yet reached, but are expected to reach, a canopy cover of 10 per centand a tree height of 5m. It also includes temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate.

Protected forest area as a percentage of total land area is the area of forest as a share of total land area, where land area is the total country area excluding the area of inland water bodies (major rivers, lakes and water reservoirs).

(*Please refer to the United Nations Statistics Division: Millenium Development Goal Indicators website at http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=25.)*

Method of Computation

Forest area data are obtained by sampling ground surveys, cadastral surveys, remote sensing, or a combination of these.

The forest area is calculated as the sum of plantations and natural forest areas with tree crown cover equal to and more than 10 percent.

Protected Forest Area as a Percentage of Total Land Area =

$$\frac{\text{Protected Forest Area}}{\text{Total Land Area}} \times 100$$

Indicator Relevance

Forests serve multiple ecological, socioeconomic, and cultural roles in many countries. They are among the most diverse and widespread ecosystems of the world. Forests provide many significant resources and functions including: wood products, recreational opportunities, habitat for wildlife, water and soil conservation, and a filter for pollutants. They support employment, traditional uses, and biodiversity. There is general concern, however, over the human impact on forest health and the natural processes of forest growth and regeneration. Protected forest area as a percentage of total land area measures the societal response to protect biodiversity and landscapes through the creation of representative reserves of various forest ecosystems.

This indicator represents only one element of a sound forest conservation policy aimed at sustainable development and measures the part of the total forest area which has been delineated for protection purposes. It includes areas established to protect wildlife, special ecosystems, and soil and water resources. The higher the protected forest area as a percentage of total land area, the better the performance of the country in protecting and conserving its forest resources.

It should be noted, however, that the indicator is limited to forest ecosystems only. It does not provide information on the ecological value of the protected areas. A country can set aside large areas of forests with a low importance for biological diversity and continue to unsustainably harvest high valuable non-protected forests. The indicator says nothing about the effectiveness of the protection; either from the viewpoint of ecological representivity or management and law enforcement. Ideally, the protected forest area should cover representative examples of all existing forest ecosystems, with the area appropriate to their rarity or uniqueness.
(*Please refer to the United Nations Methodological Sheets at http://esl.jrc.it/envind /un_meths /UN_ME109.htm.)*

Data Assessment

Internationally recommended definition was provided for this indicator by reporting countries none of which indicated that they had deviated from the international definition of a forest. This indicator is conceptually harmonized.

The comparability of the data is, nonetheless, affected since for 2003 and 2004, Suriname reported data that represented protected and proposed protected forest areas instead of data of protected forest area only.

Data Sources

Data for the indicator was collected from Member States and Associate Members. Please see **Appendix 2.9.1** for details, along with notes to the table.

Evaluation

Table 9.1 present the total forest area, protected forest area, protected forest area as a per cent of total forest area and the Total Forest as a per cent of total land area of reporting CARICOM Member States. Total forest area was found to be greater in the non-island Member States Guyana (168,789 squared kilometres), Suriname (148,000 squared kilometres) and Belize (15,867 squared kilometres). Among island States, Jamaica reported the largest *forest area* which declined by 35 per cent from 5,316 squared kilometres in 1980 to 3,439 squared kilometres in 1989 and further by 1 per cent to 3,402 squared kilometres in 1996. Trinidad and Tobago reported an increase in *Total Forest Area* from 2,300 squared kilometres in 1995 to 2,637 squared kilometres for the period 1996-2004. In the remaining Member States, St. Vincent and the Grenadines reported declines in the forest population from 185 squared kilometres in 1990 to 121 squared kilometres in 2004 representing a decline of 34.6 per cent, Saint Lucia reported 75 squared kilometres of total forest area in 2002 and Dominica reported 60 squared kilometres of forest area for the period 1980 to 2004 increasing from 4 squared kilometres in1970.

Comparability of this data is greatly affected by the sparse reporting by Member States and Associate Member States with eight countries reporting out of the nine countries submitting data for protected forest area. Overall St. Vincent and the Grenadines had the highest proportion of its forest population protected (130 squared kilometres) with its percentage fluctuating between 70 per cent and 100 percent. This also represented 38.22 per cent of protected forest area as a per cent of Land area. Trinidad and Tobago followed with an increase from 1,504 squared kilometres or 65.4 per cent of total forest area to 1,961 squared kilometres or 75 per cent of total forest area. The protected forest area as a per cent of Land area in this Member State increased from 29.3 per cent in 1995 to 38.6 per cent for the period 1996 to 2004. Saint Lucia reported 33 squared kilometres or 44.26 per cent of its total forest area as protected which also represents 0.1 per cent of its total land area in 2002. 1,193 squared kilometres or 35.1 per cent of Jamaica's total forest area was protected. This also represents 10.9 per cent of Jamaica's total land area. Belize reported protected forest area as a per cent of total forest area as 25.7 per cent in 1998 and protected forest area as a per cent of total land area fluctuating from 18.8 per cent in 1995 to 17.7 per cent for the period 1996 to 1998 increasing slightly to 17.9 per cent in 2001 then increasing by 6.7 percent to 19.1 per cent in 2001 and finally decreasing to 16.9 per cent in 2004. Dominica reported its protected forested area as a per cent of total

land area in 1970 at 0.6 per cent and this increased to 7.95 per cent during the period 1980 to 2004.

Suriname's protected forest area remained fixed throughout the period 1990-2004 (20,850 squared kilometres or 14 per cent of total forest area) although 2003 and 2004 included 1,815 squared kilometres of proposed protected forest area which increased protected forest area as a per cent of total forest area by 1 percent. Suriname's protected forest area as a per cent of total land area was 13 per cent from 1990 to 2002 and 14 per cent in 2003 and 2004. Of the total 68,789 squared kilometres forest area of Guyana, 2.17 per cent (3,662 squared kilometres) has protected forest cover.

Table 9.1 Forest Area: 1970, 1980, 1989 - 1990, 1995, 1998 - 2004

Country	Year	Total forest area	Protected forest area	Protected forest area as a per cent of Total forest area	Protected forest area as a per cent of Total land area
BZ					
	1995	. . .	4,319	. . .	18.80
	1996/1998	15,867	4,074	25.70	17.70
	2000	. . .	4,111	. . .	17.90
	2001	. . .	4,378	. . .	19.10
	2004	. . .	3,885	. . .	16.90
DM					
	1970	4	. . .	. . .	0.55
	1980	60	. . .	. . .	7.95
	1990	60	. . .	. . .	7.95
	1995	60	. . .	. . .	7.95
	1998	60	. . .	. . .	7.95
	1999	60	. . .	. . .	7.95
	2000	60	. . .	. . .	7.95
	2001	60	. . .	. . .	7.95
	2002	60	. . .	. . .	7.95
	2003	60	. . .	. . .	7.95
	2004	60	. . .	. . .	7.95
GY					
	2001	168,789	3,662	2.17	1.70
JM					
	1980	5,316	. . .	. . .	. . .
	1989	3,439	. . .	. . .	. . .
	1998	3,402	1,193	35.07	10.90
LC					
	2002	75	33	44.26	0.05
VC					
	1990	185	130	70.36	38.22
	1995	155	130	83.91	38.22
	1998	143	130	91.47	38.22
	2000	138	130	94.29	38.22
	2001	134	130	97.30	38.22
	2002	130	130	100.51	38.22
	2003	126	130	103.94	38.22
	2004	121	130	107.61	38.22
SR					
	1990	148,000	20,850	14.00	13.00
	1995	148,000	20,850	14.00	13.00
	1998	148,000	20,850	14.00	13.00
	1999	148,000	20,850	14.00	13.00
	2000	148,000	20,850	14.00	13.00
	2001	148,000	20,850	14.00	13.00
	2002	148,000	20,850	14.00	13.00
	2003	148,000	22,665a	15.00	14.00
	2004	148,000	22,665a	15.00	14.00
TT					
	1995	2,300	1,504	65.39	29.33
	1998	2,637	1,981	75.12	38.63
	1999	2,637	1,981	75.12	38.63
	2000	2,637	1,981	75.12	38.63
	2001	2,637	1,981	75.12	38.63
	2002	2,637	1,981	75.12	38.63
	2003	2,637	1,981	75.12	38.63
	2004	2,637	1,981	75.12	38.63

Appendix 1.9
Conversion Table

Metric	to	Imperial
2 hectares (ha)		5 acres
1 square kilometre (squared kilometres)		250 acres
8 square kilometres (squared kilometres)		3 square miles (mi^2)

Appendix 2.9
Sources and Notes of Data on Protected Area as a Percentage of Total Land Area

2.9.1 (a): Sources of Data for Table 9.1 - Protected Forest Area as a Percentage of Total Land Area: 1970, 1980, 1989 – 1990, 1995, 1998 - 2004

Country	Data Source
Belize	Environmental Statistics Unit, Ministry of Natural Resources
Dominica	Forestry Parks and Wildlife Division
Guyana	Guyana Forestry Commission
Jamaica	Forestry Department
Saint Lucia	Forestry Department, Ministry of Agriculture, Forestry and Fisheries
St. Vincent and the Grenadines	Forestry Department
Suriname	Institute for Forest Management and Control
Trinidad and Tobago	Forestry Division

2.9.1 (b): Notes for Table 9.1 - Protected Forest Area as a Percentage of Total Land Area: 1970, 1980, 1989 – 1990, 1995, 1998 - 2004

Country	Notes
Belize	*: 1998 data refers to a study conducted in 1996/1998
Guyana	Protected Areas: Forest by Environmental Protection Agency 2001. Total forest area refers to forest cover.
St. Vincent and the Grenadines	The data relates only to mainland St. Vincent and do not include private forest below 1000 ft. a.s.i. It is also based on linear regression around 1990 figures
Suriname	a: protected areas and proposed protected areas.

AIR1: EMISSIONS OF SULFUR DIOXIDE (SO_2)

H

Concept and Definition

Sulfur dioxide, or SO_2, belongs to the family of sulfur oxide gases (SOx). These gases dissolve easily in water. Sulfur is prevalent in all raw materials, including crude oil, coal, and ore that contains common metals like aluminium, copper, zinc, lead, and iron. SOx gases are formed when fuel-containing sulfur, such as coal and oil, is burned, and when gasoline is extracted from oil, or metals are extracted from ore. SO_2 dissolves in water vapour to form acid, and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and their environment.

Over 65% of SO_2 released to the air, or more than 13 million tons per year, comes from electric utilities, especially those that burn coal. Other sources of SO_2 are industrial facilities that derive their products from raw materials like metallic ore, coal, and crude oil, or that burn coal or oil to produce process heat. Examples are petroleum refineries, cement manufacturing, and metal processing facilities. Also, locomotives, large ships, and some nonroad diesel equipment currently burn high sulfur fuel and release SO_2 emissions to the air in large quantities. *Source URL: http://www.epa.gov/air/urbanair /so2/what1.html*

Method of Computation

Air emissions data are usually estimated according to international methodologies on the basis of national statistics on energy balances, industrial and agricultural production, waste management and land use, etc. The most accepted and well-known methodologies are the revised 1996 Guidelines of the Intergovernmental Panel for Climate Change (IPCC) (see http://www.ipcc-nggip .iges.or.jp /public/gl/invs4.htm) which is the basis for reporting to the United Nations Framework Convention for Climate Change (UNFCCC) (see: *http://unfccc.int/ index.html*). These are linked to the UNECE EMEP/CORINAIR Atmospheric Inventory Guidebook (see *http://reports.eea.eu.int/EMEPCORINAIR3/en/tab_abstract_RLR*).

Sulphur dioxide emissions are measured (and regulated, where appropriate) for a number of activities, for example electricity production stations and large industrial installations. For those activities for which direct measurements are not directly available, it is possible to estimate emissions by considering the amount of fuel consumed, together with emission factors related to particular combustion processes. In order, however, to determine the appropriate emission factor for these activities it is imperative to have relevant statistical data related to the fuel characteristics, and machinery specifications, taking into account the effects of various control techniques (e.g. disulphurisation units etc.). It must be noted that detailed methodologies (such as the CORINAIR programme) already exist for the estimation of SO_2 emissions from all anthropogenic activities. The unit of measurement is Kt SO_2 per year.

Indicator Relevance

Sulphur dioxide emissions are partly responsible for acid depositions on the surface and the occurrence of winter smog episodes. In addition, the oxidisation of SO_2 has also been found to contribute to visibility degradation due to high concentrations of aerosol sulphates in the atmosphere.

Data Assessment

All reporting Member States followed the internationally recommended definitions for emissions of Sulfur dioxide. This indicator is, therefore, regionally and internationally conceptually harmonized.

Only two of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.10.1 (a)** for the original sources of the data, as specified by the UNSD, on air for Member States and Associate Members.

Evaluation

Table 10.1 shows estimated SO_2 emissions for Jamaica in 1994 and for Trinidad and Tobago in 1990 and 1996. The data shows that *Manufacturing industries and construction* in Jamaica accounted for 63 per cent of total emissions reported for *energy activities and industrial processes* only, with a further 30 per cent coming from *fuel use* in energy industries. Emissions from *road transport* registered 2.1 thousand tonnes or 2 per cent of total emissions while *other fuel combustion* was estimated at 3.59 thousand tonnes. Jamaica also reported *total fugitive emissions* from fuels at 0.61 thousand tonnes.

Total SO_2 emissions in Trinidad and Tobago in 1990 and 1996 were 8.7 and 8.6 thousand tonnes respectively. According to the Environmental Management Authority of Trinidad and Tobago, *industrial processes* accounted for 3 per cent of total reported emissions while *energy activities* (fuel combustion in energy industries, industry, and transport, plus industrial processes) represented 97 per cent of the total sulphur dioxide emissions in 1990. The per cent share of *industrial processes* in total emissions declined to 2 per cent in 1996. The *transport industry* accounted for 71 per cent of total emissions reported for *energy activities* in 1996 followed by the *Energy Industry* (20 per cent) and *Manufacturing industries and construction* (8 per cent).

Table 10.1(a) - Emissions of Sulfur Dioxide (SO_2)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM													a
	1994	0.24				30.12	63.04	2.10	3.59	98.85	0.61	99.46	99.7
TT													
	1990 [a]	0.2				. . .	. . .	. . .	. . .	8.5	0.0	8.5	8.7
		e				c d	d	d		c	c	d	b
	1996	0.2				1.7	0.7	6.0	0.0	8.4	0.0	8.4	8.6

Table 10.1(b) - Percentage Distribution of Emissions of Sulfur Dioxide (SO_2)

(Per cent)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM													a
	1994	0.24				30.21	63.23	2.11	3.60	99.15	0.61	99.76	100.00
TT													
	1990 [a]	2.81				. . .	. . .	. . .	. . .	97.19	0.00	97.19	100.00
		e				c d	d	d		c	c	d	b
	1996	2.33				19.77	8.14	69.77	0.00	97.67	0.00	97.67	100.00

AIR2: EMISSIONS OF NITROGEN OXIDES (NO_X)

H

Concept and Definition

Nitrogen oxides, or NO_x, is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO2) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NO_x are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. NO_x can also be formed naturally.

Method of Computation

Local authorities perform regular inspections in order to determine the conformity of a number of works and activities with environmental regulations. In this context, NO_x emissions are measured (and regulated, where appropriate) for a number of activities, for example electricity production stations and large industrial installations. For those activities for which measurements are not directly available, it is possible to estimate emissions by considering the amount of fuel consumed (both fossil fuels and biomass) together with emission factors related to particular combustion processes. The total annual amount of nitrogen oxides emissions must be derived for all economic activities, and particularly energy production and transformation, industry, transportation and domestic and tertiary sectors. The unit of measurement is Kt NO_x per year.

Indicator Relevance

The purpose of this indicator is to identify the activities mostly responsible for the release of nitrogen oxides into the atmosphere. Nitrogen oxides emitted into the atmosphere can be transported over large distances and can be deposited at the surface often hundreds or thousands of kilometres away from the site of the source. They are partly responsible for a series of problems, including acidification and increased concentration of photo-oxidants in the atmosphere that result in the occurrence of photochemical smog episodes. Nitrogen oxides are also associated with both respiratory morbidity and mortality in humans.

Data Assessment

All reporting Member States followed the internationally recommended definitions for emissions of Nitrogen oxides. This indicator is, therefore, regionally and internationally conceptually harmonized.

Only three of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of directly from Member States and Associate Members.

Please refer to **Appendix 2.10.1 (a)** for the original sources of the data, as specified by the UNSD, on air for Member States and Associate Members.

Evaluation

Table 10.2 provides data on emissions of *Nitrogen Oxides (NO_x)* for Jamaica, Suriname and Trinidad and Tobago. Suriname's total reported *Nitrogen Oxides* emissions declined by 49 per cent from 1975 to 1999, decreasing from 20.1 thousand tonnes in 1975 to 10.3 thousand tonnes in 1999. Suriname's data also reveals that following an initial drop in emissions by 66 per cent for the five year period 1980 to 1985, emissions increased stealthily towards the end of the period. Data reported for Jamaica in 1994 reveals that road transport contributed to 39 per cent of total emissions from energy activities followed by emissions from manufacturing industries which contributed 35 per cent of total emissions while energy industries and other fuel combustion contributed to 19 per cent and 6 per cent of total emissions respectively. Trinidad and Tobago registered annual emissions of Nitrogen Oxides at 37.2 thousand tonnes comprising 97 per cent emissions from energy activities.

Table 10.2 - Emissions of Nitrogen Oxides (NO_x)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM													
	1994	0				5.94	10.83	12.20	1.91	30.88	0.04	30.92	a 30.92
SR													
	1975	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	20.1
	1980	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	25.0
	1985	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	8.6
	1990	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	8.9
	1995	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	9.9
	1998	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	10.2
	1999	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	10.3
TT													
	1990 [a]	0.1	0.0	0.4	0.6	0.0	0.0	0.0	0.4	35.1	1.0	36.1	37.2
	1996 [b]	0.0				12.9	2.5	25.6					

AIR3: EMISSIONS OF NON-METHANE VOLATILE ORGANIC COMPOUNDS (NMVOCS)

H

Concept and Definition

Non-methane volatile organic compounds (NM-VOCs) are a group of solvent-like organic compounds that easily evaporate at normal temperatures. They are produced mainly in fuel combustion and in processes that use solvents or solvent-based products such as painting, metal degreasing etc. Several of these chemicals are harmful to human health if inhaled, ingested, drunk or get in contact with skin. NM-VOCs are significant precursors to ground level ozone formation. NM-VOCs are the sum of all hydrocarbon air pollutants except methane.

Non-methane volatile organic compounds emissions from anthropogenic activities are primarily comprised by total emissions from the use of fuels for energy purposes, evaporative emissions during industrial processes and non-industrial use of organic solvents.

Method of Computation

The total annual amount of non-methane volatile organic compounds emissions must be derived for all economic activities, and particularly energy-related activities, industrial processes and non-industrial use of organic solvents. The unit of measurement is Kt of NMVOCs per year.

Indicator Relevance

The purpose of this indicator is to identify the activities mostly responsible for the release of volatile organic compounds into the atmosphere. The annual NMVOC emissions are directly related to the amount of biomass and fossil fuels used for energy production, the amount of solid and liquid fossil fuels that is produced, transported, distributed and stored, and the quantity of organic solvents used for non-industrial purposes.

Data Assessment

All reporting Member States followed the internationally recommended definitions for emissions of Non-methane volatile organic compounds (NM-VOCs). This indicator is, therefore, regionally and internationally conceptually harmonized.

Only two of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for

this indicator was collected from the UNSD instead of directly from Member States and Associate Members.

Please refer to **Appendix 3.10.1 (a)** for the original sources of the data, as specified by the UNSD, on air for Member States and Associate Members.

Evaluation

Data on Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs) for Jamaica and Trinidad and Tobago are provided in Table 10.3 below. Estimations for Jamaica for 1994 are presented for energy activities and industrial processes only and reveals that road transport contributes to 39 per cent of total emissions followed by manufacturing industries which contributed 35 per cent of total emissions. Energy industries contribute to 19 per cent of total emissions in this Member State while other fuel combustion contributes to 6 per cent of total emissions of NM-VOCs. Total emissions of NM-VOCs for Trinidad and Tobago in 1996 was estimated at 93.1 thousand tonnes of which energy activities accounted for 66 per cent of emissions while Industrial processes accounted for 34 per cent.

Table 10.3 - Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM	1994	0				5.94	10.83	12.20	1.91	30.88	0.04	30.92	a 30.92
TT	1990 [a]	32.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.9	33.2	61.1	93.1

AIR4: EMISSIONS OF CARBON DIOXIDE (CO_2)

H

Concept and Definition

Carbon dioxide (CO_2) is a colourless, odourless and non-poisonous gas formed by combustion of carbon and in the respiration of living organisms and is considered a greenhouse gas.
United Nations. United Nations Framework Convention on Climate Change (A/AC.237/18 (Part II)/Add.1 and Corr.1). Opened for signature at Rio de Janeiro on 4 June 1992. (Section C)
United Nations. Glossary of Environment Statistics. Series F, No. 67 (United Nations publication, Sales No. E.96.XVII.12).

Method of Computation

Total anthropogenic carbon dioxide (CO_2) emissions from the sectors energy, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste (as defined by IPCC [1]). Since CO_2 removals are also accounted for, this indicator concerns net emissions. Natural emissions are not accounted for. The unit of measurement is tonnes CO_2 per year.

Indicator Relevance

The scientific community acknowledges that atmospheric concentrations of CO_2 have continued to increase, and that "the balance of evidence suggests a discernible human influence on global climate". Future climate change is expected to have major impacts on e.g. agriculture, water resources, ecosystems and human health. The indicator is linked to the indicators of other greenhouse gases. Furthermore, the indicator is linked to those in the area of Ozone Depletion. Ozone is a greenhouse gas, and therefore changes in stratospheric ozone should be considered in assessing climate change. Moreover, greenhouse gases are believed to affect stratospheric ozone depletion. These effects include both positive and negative effects. See the methodology sheet for CO_2 in the Ozone Depletion section (OD-4).

Data Assessment

All reporting Member States followed the internationally recommended definitions for emissions of Carbon dioxide (CO_2). This indicator is, therefore, regionally and internationally conceptually harmonized.

Only two of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator with countries reporting data for select categories only.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for

this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 4.10.1 (a)** for the original sources of the data, as specified by the UNSD, on air for Member States and Associate Members.

Evaluation

Three CARICOM Member States reported Emissions of Carbon Dioxide (CO_2). Suriname reported data in three year gaps revealing average emissions of 1.9 1000 metric Tons for the period 1989 to 1997. Estimates of CO_2 emissions for Jamaica in 1994 for energy activities and industrial processes only revealed that emissions from energy activities totalled 8.2 mio tonnes comprising the combustion of fuels from various activities while Industrial processes totalled 0.4 mio tonnes. 50 per cent of emissions caused by the burning of fossil fuels resulted from activities in manufacturing industries and construction while activities in energy industries accounted for 27 per cent. Road transport and other fuel combustion accounted for the remaining 23 per cent. CO_2 emissions for Trinidad and Tobago were reported for 1990, 1996 and 2000. Data for 1990 were reported for energy activities from fuel combustion which totalled 9.9 mio tonnes and industrial processes totalling 5.1 mio tonnes. In 1996 a figure of 3.7 mio tonnes was reported for energy activities within energy industries. Trinidad and Tobago emissions caused by the burning of fossil for the year 2000 was reportedly 11.7 mio tonnes of which manufacturing industries and construction accounted for 68 per cent, energy industries accounted for 18 per cent, road transport for 12 per cent and other fuel combustion accounted for the remaining 2 per cent.

Table 10.4 - Emissions of Carbon Dioxide (CO_2)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM													
	1994	0.4				2.25	4.11	1.26	0.59	8.20	0.00	8.20	0
SR													
	1981	...	...	...	...	...	...	...	...	...	...	...	2,030
	1983	...	...	...	...	...	...	...	...	...	...	...	1,376
	1985	...	...	...	...	...	...	...	...	...	...	...	1,596
	1987	...	...	...	...	...	...	...	...	...	...	...	1,762
	1989	...	...	...	...	...	...	...	...	...	...	...	1,857
	1991	...	...	...	...	...	...	...	...	...	...	...	2,100
	1993	...	...	...	...	...	...	...	...	...	...	...	2,125
	1995	...	...	...	...	...	...	...	...	...	...	...	2,147
	1997	...	...	...	...	...	...	...	...	...	...	...	2,110
TT													
	1990[a]	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	9.9	15.0
	1996[b]	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2000[c]	0.0	0.0	0.0	0.0	2.1	8.0	1.4	0.2	11.7	0.0	0.0	11.7[d]

AIR5: EMISSIONS OF METHANE (CH_4) CC-2

H

Concept and Definition

Total anthropogenic methane (CH_4) emissions from the sectors energy, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste (as defined by IPCC [4]). Natural emissions are not accounted for in this indicator. The unit of measurement is tonnes CH_4 per year. CH_4 is a powerful greenhouse gas whose levels have already doubled. The main purpose of this indicator is to monitor total anthropogenic CH_4 emissions.

The indicator is linked to the indicators of other greenhouse gases. Furthermore, the indicator is linked with those in the area of Ozone Depletion. CH_4 emissions are believed to affect stratospheric ozone depletion. Linkages to other pressure indicators of the methodology sheet for CH_4 in the Ozone Depletion section (OD-8). Moreover, ozone is also a greenhouse gas, and therefore changes in stratospheric ozone should be considered in assessing climate change.

The main sources of CH_4 are agriculture (mainly flooded rice paddies and livestock), waste dumps, coal mining and natural gas production and transportation. CH_4 is besides a direct greenhouse gas also a precursor of tropospheric ozone and stratospheric water vapour.

Method of Computation

The 1996 "Guidelines for National Greenhouse Gas Inventories" have been formally adopted by the IPCC as the international method to estimate emissions.

Indicator Relevance

Although total CH_4 emissions are relatively small compared with total CO_2 emissions, the radiative forcing capacity of CH_4 is relatively large. The Global Warming Potential for CH_4 amounts to 21 assuming a 100 year time horizon [5].

Data Assessment

All reporting Member States followed the internationally recommended definitions for emissions of methane (CH_4). This indicator is, therefore, regionally and internationally conceptually harmonized.

Only Jamaica and Trinidad and Tobago reported data on this indicator of the reporting eighteen Member States/Associate Members of the Community.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected through the UNSD.

Please refer to **Appendix 5.10.1 (a)** for the original sources of the data, as specified by the UNSD, on air for Member States and Associate Members.

Evaluation

Due to the limited availability of quantitative data, no analysis will be presented.

Table 10.5 - Emissions of Methane (CH_4)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM	1994	0				0.1	0.1	0.4	0.1	0.7	0.0	0.7	0
TT	1990 [a]	0.8	0.0	6.3	24.2	0.0	0.0	0.0	0.0	1.4	0.1	1.4	32.8

AIR6: EMISSIONS OF NITROUS OXIDE (N_2O) CC-3

H

Concept and Definition

Total anthropogenic nitrous oxide (N_2O) emissions from the sectors energy, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste (as defined by the IPCC [7]). Natural emissions are not accounted for in this indicator. The unit of measurement is tonnes N_2O per year. The indicator is linked to the indicators of other greenhouse gases. Furthermore, the indicator is linked with those in the area of Ozone Depletion. Due to the long lifetime of N_2O, N_2O emissions can reach the stratosphere and affect the destruction of the ozone layer, see the methodology sheet for N_2O in the Ozone Depletion section (OD-9).

Moreover, ozone is also a greenhouse gas, and therefore changes in stratospheric ozone should be considered in assessing climate change. The main sources of anthropogenic N_2O are intensive agriculture using high levels of fertilisers, and a number of industrial processes. Natural sources are poorly quantified, but are probably twice as large as anthropogenic sources. Natural emissions are not accounted for in this indicator.

Method of Computation

The 1996 "Guidelines for National Greenhouse Gas Inventories" have been formally adopted by the IPCC as the international method to estimate emissions of Nitrous Oxide.

Indicator Relevance

N_2O is one of the major greenhouse gases. The main purpose of this indicator is to monitor total anthropogenic N_2O emissions. Although total N_2O emissions are relatively small in comparison with total CO_2 emissions, the radiative forcing capacity of N_2O is relatively large. The Global Warming Potential for N_2O amounts to 310, assuming a 100 years time horizon [8].

Data Assessment

All reporting Member States followed the internationally recommended definitions for air and emissions of nitrous oxide (N_2O). This indicator is, therefore, regionally and internationally conceptually harmonized.

Jamaica and Trinidad and Tobago were the only member states to provide data on this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected through the UNSD.

Please refer to **Appendix 6.10.1 (a)** for the original sources of the data, as specified by the UNSD, on waste of Member States and Associate Members.

Evaluation

Due to the limited availability of quantitative data, no analysis will be presented.

Table 10.6 - Emissions of Nitrous Oxide (N_2O)

(1000 t)

Country	Year	Industrial processes	Solvent use	Agriculture	Other sources of emissions	Energy activities							TOTAL emissions
						Energy industries	Manufacturing industries and construction	Transport	Other fuel combustion	Total fuel combustion	Total fugitive emissions from fuels	TOTAL Energy activities	
JM	1994	0				0.02	0.03	0.01	0.05	0.11	0.00	0.11	0
TT	1990 [a]	0.0	0.0	0.4	0.6	0.0	0.0	0.0	0.4	35.1	1.0	36.1	37.2

AIR7: TOTAL EMISSIONS OF LEAD (Pb) AND CONSUMPTION OF LEADED PETROL

H

Concept and Definition

Total consumption of gasoline and diesel oil by all categories of road vehicles i.e. passenger vehicles, light duty vehicles, trucks, lorries, buses and motorcycles, must be recorded on an annual basis. The unit of measurement is Kt of gasoline and diesel oil per year. The quantity of petroleum products consumed for road transportation is directly related to the vehicle ownership rate and gives an indication of the driving habits as well as the economic evolution for any country. As an observation, it can be noted that public transport means are used to a larger extend in the developing than in the developed countries around the world.

Measurement

Total amounts of gasoline and diesel oil used for road transportation are readily available from local as well as regional and international organisations (e.g. IEA, EUROSTAT). These fuel quantities have to be disaggregated into specific amounts for each vehicle category. This can be achieved by considering the composition of the vehicles fleet (categories must be identified by age and technology used) and specific consumption rates. Further information must also be selected referring to driving patterns and specifically to the mileage for the transportation of both persons and goods within the boundaries of the country.

Indicator Relevance

The road transportation sector is one of the major contributors of emissions of air pollutants in the atmosphere, such as NO_x, NMVOC (combustion and fugitive emissions), CO_2 and other compounds. The main purpose of this indicator is to identify and monitor fuel efficiency levels of all road vehicle categories.

In the last few years, it has become apparent that present consumption patterns can not be sustained in the long term. Recently, the automobile industry in collaboration with local governments - under a series of (voluntary) agreements - has taken a number of steps towards the improvement of fuel efficiency of all new road vehicles in the market. Furthermore, fuel switching is also currently being promoted with the use of liquefied petroleum gas and natural gas as alternative fuels for buses and/or passenger vehicles.

Data Assessment

All reporting Member States followed the internationally recommended definitions for the consumption of leaded petrol. This indicator is, therefore, regionally and internationally conceptually harmonized.

Jamaica and Trinidad and Tobago were the only member states to provide data on this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 7.10.1 (a)** for the original sources of the data, as specified by the UNSD, on waste of Member States and Associate Members.

Evaluation

Jamaica's total consumption of leaded petrol declined for the period 1995 to 2001 more so from 1997 whilst its consumption of lead-free petrol increased for the same period. This is as a result Jamaica's policy to phase out leaded petrol on the island since 1997. This caused an initial 17 per cent decline in consumption of lead petrol from 1997 to 1998 and a 31 per cent increase in the consumption of lead-free petrol. Trinidad and Tobago's emissions of lead from mobile sources totalled 0.05 thousand tonnes while emissions of lead from stationary sources totalled 0.02 thousand tonnes in 1996.

Table 10.7 - Emissions of Lead (Pb) and Consumption of Leaded Petrol

Country	Year	Total mobile sources	Total stationary sources	Total emissions	Total consumption of leaded petrol	Total consumption of lead-free petrol
JM (1000 barrels)						
	1995	. . .	. . .	. . .	**1862.2**	**1150.6**
	1996	. . .	. . .	. . .	**1982.1**	**1578.3**
	1997	. . .	. . .	. . .	**1901.2**	**1828.3**
	1998	. . .	. . .	. . .	**1581.8**	**2397.0**
	1999	. . .	. . .	. . .	**1296.8**	**2793.0**
	2000	. . .	. . .	. . .	**374.0**	**3790.5**
	2001	. . .	. . .	. . .	**4.8**	**4162.8**
	2002[p]	. . .	. . .	. . .	**0.0**	**4523.3**
TT (1000 t)						
	1996[a]	**0.1**	**0.0**	**0.1**		

Addendum

Air emissions predominantly arise from the combustion of fossil fuels, mainly from transport activities, power plants, refineries and other kinds of fuel combustion activities. These activities generate a large variety of air pollutants of which carbon dioxide (CO_2), sulfur dioxide (SO_2), nitrogen oxides (NOx) and non-methane volatile organic compounds (NM-VOCs) are among the most significant ones. Industrial processes and agriculture also contribute to the emissions of the above-mentioned pollutants as well as to emissions of other greenhouse gases such as nitrous oxide (N_2O) and methane (CH_4). Transport and the metal industry are the main sources of lead (Pb) emissions. Transport and energy production facilities are furthermore the main factors affecting ambient air quality in cities.

DEFINITIONS

Total emissions refer to Emissions from human activities in the country. Please note that emissions from international aviation and maritime transport are excluded.

Energy activities [Production and Use] comprise all emissions related to the production and use of energy in any sectors of the economy and households. It includes emissions from fuel combustion as well as fugitive fuels.This variable corresponds to IPCC category 1.

Fuel combustion*:* Emissions caused by the burning of fossil fuels in any process. It comprises the combustion of fuels in the energy industries, all other industries and transport; it includes small combustion activities such as in commercial, institutional or residential buildings, fuel combustion in agriculture and in all other activities. CO_2 emission from the combustion of biomass is excluded.This variable corresponds to IPCC category 1A.

Energy industries: Emissions from fuel combustion in public electricity and heat production, in petroleum refining, manufacturing of solid fuels and other energy industries. For the purposes of this questionnaire, fugitive emissions from fuels (coal mining, oil and gas fields, venting and flaring etc.) are not allocated to this category. Please note that evaporative emissions from vehicles are included under Transport. This variable corresponds to IPCC category 1A1.

Manufacturing industries and construction**:** Emissions from fuel combustion in manufacturing industries (except coke ovens that are allocated under Energy industries) and construction. If more disaggregated data by industrial activities according to International Standard Industrial Classification of All Economic Activities (ISIC)/Revision 3 are available, please provide them in the Supplementary Information Sheet. This variable corresponds to IPCC category 1A2.

Transport: Emissions from fuel combustion in transport activities such as domestic air transport, road transport, railways, navigation and other transport. Evaporative emissions from vehicles are also included in this category. Please note that emissions from international aviation and marine transport are excluded. If separate data on emissions from road transport are available, please provide them in the Supplementary Information Sheet. This variable corresponds to IPCC category 1A3.

Other fuel combustion: Emissions from fuel combustion in commercial, institutional and residential buildings, agriculture, forestry, fishing and other non-specified fuel combustion (e.g. military). The fishing sector includes domestic inland, coastal and deep-sea fishing. This variable corresponds to the sum of the IPCC categories 1A4 and 1A5.

Fugitive emissions from fuels: Intentional or unintentional releases of gases from anthropogenic activities. In particular, they may arise from the production, processing, transmission, storage and use of fuels, and include emissions from combustion only where it does not support a productive activity (e.g., flaring of natural gases at oil and gas production facilities. The variable corresponds to the sum of the IPCC categories 1B1 and 1B2.

Industrial processes: Emissions from processes such as chemical industry, metal industry, production and use of mineral products and other industries. If more disaggregated data according to ISIC/Rev.3 are available, please provide them in the Supplementary Information Sheet. This variable corresponds to IPCC category 2.

Solvent use: Emissions from paint application, degreasing and dry cleaning, manufacturing and processing of chemical products, and other processes using solvents and other solvent based products. This variable corresponds to IPCC category 3.

Agriculture: Emissions from the breeding of livestock, rice cultivation, field burning of agricultural residues, prescribed burning of savannas and other agricultural activities. This variable corresponds to IPCC category 4.

Other sources of Emissions: Emissions from waste water treatment, waste disposal on land, waste incineration, land-use changes, forestry and other activities which have not been covered above. This variable corresponds to the sum of the IPCC categories 5, 6 and 7.

Non-methane volatile organic compounds (NM-VOCs): A group of solvent-like organic compounds that easily evaporate at normal temperatures. They are produced mainly in fuel combustion and in processes that use solvents or solvent-based products such as painting, metal degreasing etc. Several of these chemicals are harmful to human health if inhaled, ingested, drunk or get in contact with skin. NM-VOCs are significant precursors to ground level ozone formation. NM-VOCs are the sum of all hydrocarbon air pollutants except methane.

Appendix 1.10

1.10.1 (a): Sources of Data for Table 10.1 - Emissions of Sulfur Dioxide (SO_2): 1990, 1994 and 1996

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.2 (b): Notes for Table 10.1 - Emissions of Sulfur Dioxide (SO_2): 1990, 1994 and 1996

Country	Notes
JAMAICA	a - Energy activities and industrial processes only
TRINIDAD AND TOBAGO	a - Source: EMA (2001). Initial National Communication of the Republic of Trinidad and Tobago under the UNFCCC b - Refers to emissions from fuel combustion in energy industries, industry, and transport, plus industrial processes. c - Refers to emissions from fuel combustion in energy industries, industry, and transport only d - Partial estimates delivered using the WHO Rapid Assessment Methodology e - UNSD: Estimate

1.10.2 (a): Sources of Data for Table 10.2 - Emissions of Nitrogen Oxides (NO_x): 1970 - 1999

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
SURINAME	General Bureau of Statistics
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.2 (b): Notes for Table 10.2 - Emissions of Nitrogen Oxides (NO_x): 1970 - 1999

Country	Notes
JAMAICA	a - Energy activities only
SURINAME	General Bureau of Statistics
TRINIDAD AND TOBAGO	Estimates derived from applying the waste load factor from the WHO manual [46]. Municipal waste figures are the annual estimated figures for the three waste sites managed by SWMCOL.

1.10.3 (a): Sources of Data for Table 10.3 - Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs): 1990 and 1994

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.3 (b): Notes for Table 10.3 - Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs): 1990 and 1994

Country	Notes
JAMAICA	a - Energy activities and industrial processes only
TRINIDAD AND TOBAGO	Source: EMA (2001). Initial National Communication of the Republic of Trinidad and Tobago under the UNFCCC

1.10.4 (a): Sources of Data for Table 10.4 - Emissions of Carbon Dioxide (CO_2): 1981, 1983, 1985, 1987 and 1989 - 2000

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.4 (b): Notes for Table 10.4 - Emissions of Carbon Dioxide (CO_2): 1981, 1983, 1985, 1987 and 1989 - 2000

Country	Notes
TRINIDAD AND TOBAGO	a - Source: EMA (2001). Initial National Communication of the Republic of Trinidad and Tobago under the UNFCCC b - Partial estimate delivered using the WHO Rapid Assessment Methodology - Source: UNDP/EMA (1998) Pollutant Inventory Study for Trinidad & Tobago c - Source: 2003 Edition CO_2 Emissions From Fuel Combustion 1971-2001, IEA Statistics d - Emissions from fuel combustion only

1.10.5 (a): Sources of Data for Table 10.5 - Emissions of Methane (CH_4): 1990 and 1994

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.5 (b): Notes for Table 10.5 - Emissions of Methane (CH_4): 1990 and 1994

Country	Notes
TRINIDAD AND TOBAGO	a - Source: EMA (2001). Initial National Communication of the Republic of Trinidad and Tobago under the UNFCCC

1.10.6 (a): Sources of Data for Table 10.6 - Emissions of Nitrous Oxide (N_2O): 1970, 1975, 1980, 1985, 1990 and 1995 - 1999

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.6 (b): Notes for Table 10.6 - Emissions of Nitrous Oxide (N_2O): 1970, 1975, 1980, 1985, 1990, 1995 - 1999

Country	Notes
JAMAICA	p - preliminary data
TRINIDAD AND TOBAGO	Source: EMA (2001). Initial National Communication of the Republic of Trinidad and Tobago under the UNFCCC

1.10.7 (a): Sources of Data for Table 10.7 - Emissions of Lead (Pb): 1995 - 2002

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (Environmental Management Authority)

1.10.7 (b): Notes for Table 10.7 - Emissions of Lead (Pb): 1995 - 2002

Country	Notes
JAMAICA	p - preliminary data
TRINIDAD AND TOBAGO	a - Partial estimates delivered using the WHO Rapid Assessment Methodology - Source: UNDP/EMA (1998) Pollutant Inventory Study for Trinidad and Tobago

WS1: GENERATION OF WASTE BY TYPE AND SECTOR

H

Concept and Definition

Waste refers to materials that are not prime products (i.e. products produced for the market) for which the generator has no further use for his own purpose of production, transformation or consumption, and which he discards, or intends or is required to discard. It excludes residuals directly recycled or reused at the place of generation (i.e. establishment) and waste materials that are directly discharged into ambient water or air.

Sector Classifications:

Agriculture and Forestry comprise the activities of growing crops, raising animals, harvesting timber, and harvesting other plants and animals from a farm or their natural habitats.

Mining and quarrying include the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by underground or surface mining or well operation.

Manufacturing comprises units engaged in the physical or chemical transformation of materials, substances, or components into new products. The materials, substances, or components transformed are raw materials that are products of agriculture, forestry, fishing, mining or quarrying, as well as products of other manufacturing activities.

Energy production includes electricity, gas, steam and hot water supply, which cover the activity of providing electric power, natural gas, and steam supply through a permanent infrastructure (network) of lines, mains and pipes.

Construction includes general construction and special trade construction for buildings and civil engineering, building installation and building completion. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature.

Waste by Type and Sector:

Waste from *Agriculture and Forestry* is all waste from agricultural and forestry activities. Manure used as fertilizer should not be included; only 'surplus' (or excess) manure should be included.

Industrial waste refers to waste from mining and quarrying, manufacturing industries, energy production and construction.

- Waste from *mining and quarrying* refers to all waste from mining and quarrying activities.

- Waste from *manufacturing industries* refers to all waste from manufacturing industries.
- Waste from *energy production* refers to all waste from electricity, gas, steam and hot water supply.
- Waste from *construction* refers to all waste from construction.

Municipal waste includes household waste and similar waste. Municipal waste also includes bulky waste (e.g. white goods, old furniture, mattresses) and yard waste, leaves, grass clippings, street sweepings, the content of litter containers, and market cleansing waste, if it is managed as waste. Waste originating from households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings) is also referred to as municipal waste. On the other hand, waste from municipal sewage network and treatment and municipal construction and demolition waste are not referred to as municipal waste.

Other refers to waste generated from all other economic activities not so far specified.

(*Please refer to the United Nations Environment Statistics 2006 Questionnaire at http://unstats.un.org/unsd/environment/Questionnaires/q2006_waste_english.pdf.)*

Method of Computation

The generation of waste by type and sector was compiled from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

Generation of waste is intimately linked to the level of economic activity in a particular country. It is also an indication of the patterns of consumption of raw materials. A reduction in the volume of waste generated is an indication of changes in consumption patterns with respect to raw materials and of an increase in recycling and reuse. Moreover, data on waste generation over several years can indicate the level of progress the country has made toward waste reduction efforts. It can also indicate potential improvements in process efficiency and productivity. (*Please refer to the Economic Performance Indicator's website at http://www.globalreporting.org/NR/rdonlyre/ F9BECDB8-95BE-4636-9F63-F8D9121900D4/0/G3_IP_ Environment.pdf.*)

In the case of industrial wastes, the generation of waste by type and sector provides a measure of the extent and type of industrialization in a country. The two major concerns in relation to the generation of mining waste are the large volumes that are produced as well as the potential for hazardous substances to be present in the waste stream. Large areas of land are used for depositing mining waste and this activity has the potential to cause environmental pollution if not properly controlled. Construction activity is seen as

a key indicator of growth and prosperity. Due to the very large volume of construction and demolition waste produced, it can use up valuable space in landfills. In addition, if not separated at the source it can contain small amounts of hazardous waste. However, it also has a high resource value and the technology for the separation and recovery of construction and demolition waste is well established, readily accessible and, in general, inexpensive. Most importantly, there is a reuse market for aggregates derived from construction and demolition waste in roads, drainage and other construction projects. *(Please refer to European Topic Centre on Resource and Waste Management's website at http://waste.eionet.europa.eu/waste.)*

Data Assessment

All reporting Member States followed the internationally recommended definitions for waste and types of wastes. This indicator is, therefore, regionally and internationally conceptually harmonized.

Only nine of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator and the data provided was not detailed, perhaps due to the fact that environment statistics is new to the Region.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.11.1 (a)** for the original sources of the data, as specified by the UNSD, on waste for Member States and Associate Members.

Evaluation

Generation of Waste by Type and Sector is presented below in **Table 11.1.** The data shows that in 2005, Antigua and Barbuda reported that waste generated by *other activities* was the largest source of waste generated at 38,220 tonnes or 45.5 per cent of Total waste generated by all sources followed by Industrial activities with 14,450 tonnes or 29.2 per cent of Total waste generated and Municipal waste with 21,250 tonnes (25.3 per cent) of waste generated for the year. Antigua and Barbuda also reported that *Manufacturing industries* and *Construction* contributed to 14,450 tonnes and 10,050 tonnes, respectively, of waste generated by industrial activities in for the year 2005.

Data on waste generation by *Total Industrial activities* reported by Belize for the period 1995 to 2005 shows an increase in the total waste generated from 434,018 tonnes in 1995 to 465,350 tonnes in 2005. The largest amount of waste generated by *Total Industrial activities* was seen in 2003 at 533,236 tonnes for this Member State. Data was also

reported on Municipal waste generated for the years 2000 and 2003 to 2005 where an overall increase in Municipal waste was seen from 140,377 tonnes in 2000 to 229,298 at the end of the period representing an increase of 63 per cent. Data for Dominica also showed an overall increase in the *Total waste generated* during the period 1995 to 1999 increasing from 10,000 tonnes in 1995 to 13,000 tonnes in 1999. Guyana's data on Total waste generation followed the same trend as Dominica increasing throughout the period 1995 to 2000. Total waste generated in 1995 for Guyana was reported at 42,665 tonnes and this increased by 5 per cent to 44,831 tonnes in 1996 and a further by 2.4 per cent in 1997 followed by another increase of 2.4 per cent in 1998. The most significant increase in Total waste generated in Guyana was from 1999 to 2000 where the waste generation increased from 47,287 tonnes to 57,256 and increase of 21.1 per cent.

Estimates of Jamaica's waste generated by selected Industrial activities were reported for the year 1995 and actual Municipal waste generated. The data shows that Mining and quarrying generated a significant amount of waste at 14,000,000 tonnes as compared to Manufacturing industries, Construction and Agriculture and forestry activities which generated 76,000 tonnes, 50 tonnes and 17 tonnes of waste respectively. Municipal waste generated for Jamaica in 1995 was reported at 597,000 tonnes.

St. Vincent and the Grenadines reported waste generation by total Industrial activities at 2,500 tonnes in 2002 of which Construction activities contributed 1,900 tonnes. Municipal waste for St. Vincent and the Grenadines was reported at 37,800 tonnes in 2002 and Total waste generation was 42,500 tonnes.

Data for Trinidad and Tobago showed an increase in Municipal waste generation for the years 1990, 1995 and 1999 to 2005. Municipal waste generated increased by 350,084 tonnes or 163 per cent from 1990 when 214,880 tonnes of waste was generated.

Associate Member Anguilla reported data for the period 2001 to 2005 on Total waste generation. Total waste generation for this Island declined at the beginning of the period from 5,635 in 2001 to 5,395 in 2002 and further to 5,143 in 2003 followed by an increase in 2004 to 5,963 and a greater increase by 36.4 percent to 8,131 in 2005. Data on Municipal waste also revealed a similar trend, declining during the period 2000 to 2003 from 4,358 tonnes to 4,244 tonnes and further to 4,051 tonnes and increasing by the end of the period 2004 (4695 tonnes) and 2005 (5283 tonnes). Data for Bermuda for the years 1999 to 2001 on *Total waste generation* reveals an increase from 1999 where 66,500 tonnes was generated to 68,700 tonnes in 2000 declining by 1.5 per cent to 67,500 tonnes in 2001.

Table 11.1 Generation of Waste by Type and Sector: 1990, 1995 - 2005

Tonne

Country	Year	Agriculture and forestry	Industrial activities					Municipal waste (Tonnes)	Other (Tonnes)	Total waste generation (Tonnes)
			Mining and quarrying	Manufacturing industries	Energy production	Construction	Total Industrial activities			
AG										
	2005	0	0	14,450	0	10,050	24,500	21,250	38,220	83,970
BZ										
	1995	...	...	...	...	...	434,018	...	...	...
	1996	...	...	...	...	...	454,897	...	...	...
	1997	...	...	...	...	...	524,021	...	...	...
	1998	...	...	...	...	...	524,976	...	...	...
	1999	...	...	...	...	...	515,557	...	...	...
	2000	...	...	...	...	...	516,459	140,377	...	656,836
	2001	...	...	...	...	...	496,783	...	...	...
	2002	...	...	...	...	...	533,236	...	...	...
	2003	...	...	...	...	...	524,571	184,551	...	709,122
	2004	...	...	...	...	...	524,829	205,054	...	729,883
	2005	...	...	...	...	...	465,350	229,298	...	694,648
DM										
	1995	...	...	...	...	...	...	...	...	10,000
	1996	...	...	...	...	...	...	...	...	10,000
	1997	...	...	...	...	...	...	...	...	11,000
	1998	...	...	...	...	...	...	...	...	12,000
	1999	...	...	...	...	...	...	...	...	13,000
GY										
	1995	...	...	...	...	...	...	...	...	42,665
	1996	...	...	...	...	...	...	...	...	44,831
	1997	...	...	...	...	...	...	...	...	45,890
	1998	...	...	...	...	...	...	...	...	47,008
	1999	...	...	...	...	...	...	...	...	47,287
	2000	...	...	...	...	...	...	...	...	57,256
JM										
	1995*	17,000	14,000,000	76,000	...	50,000	...	597,000	...	...
VC										
	2002	...	...	...	...	1,900	2,500	37,800	...	42,500
TT										
	1990	...	...	...	...	...	...	214 880	...	...
	1995	17,514	...	...	...	...	...	247 170	...	...
	1999	...	...	...	...	...	...	335 984	...	...
	2000	...	...	...	...	...	...	423 742	...	...
	2001	...	...	...	...	...	...	378 784	...	...
	2002	...	...	...	...	...	...	424 984	...	...
	2003	...	...	...	...	...	...	486 196	...	...
	2004	...	...	...	...	...	...	530 089	...	...
	2005	...	...	...	...	...	...	564 964	...	...
ASSOCIATE MEMBERS										
AI										
	2001	650	...	...	...	...	626	4,358	0	5,635
	2002	612	...	...	...	...	538	4,244	0	5,395
	2003	551	...	...	...	...	541	4,051	0	5,143
	2004	744	...	...	...	...	524	4,695	0	5,963
	2005	1,625	...	...	...	...	1,223	5,283	0	8,131
BM										
	1999	...	...	...	...	...	...	...	66,500	66,500
	2000	...	...	...	...	...	...	...	68,700	68,700
	2001	...	...	...	...	...	...	...	67,500	67,500

WA2: TREATMENT AND DISPOSAL OF MUNICIPAL AND HAZARDOUS WASTE BY TYPE OF METHOD

H

Concept and Definition

Municipal waste includes household waste and similar waste. Municipal waste also includes bulky waste (e.g. white goods, old furniture, mattresses) and yard waste, leaves, grass clippings, street sweepings, the content of litter containers, and market cleansing waste, if it is managed as waste. Waste originating from households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings) is also referred to as municipal waste. On the other hand, waste from municipal sewage network and treatment and municipal construction and demolition waste are not referred to as municipal waste.

Hazardous wastes are wastes or a combination of wastes, which because of its concentration, quantity or physical, chemical or infectious distinctiveness may *inter alia*: (a) cause or significantly contribute to an increase in mortality or increase in serious irreversible or incapacitating illness; or (b) pose a substantial present or potential threat to human health, or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Types of Treatment and Disposal of Waste:

Recycled waste is any waste that goes through the recycling process. Recycling is defined as any reintroduction of waste material in a production process that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product and for different purposes should be included. Recycling within industrial plants, that is, at the place of generation, should be excluded.

Composting is a biological process that submits biodegradable waste to anaerobic or aerobic decomposition and that results in a product that is recovered.

Incineration is the controlled combustion of waste with or without energy recovery.

Landfilled waste includes all waste going to landfills, either directly or after sorting and/or treatment, as well as residues from recovery and disposal operations going to landfills. Landfill is the final placement of waste into or onto the land in a controlled or uncontrolled way. The definition covers both landfill in internal sites (that is, where a generator of waste is carrying out its own waste disposal at the place of generation) and in external sites.

Other waste treatment/disposal refers to any other final treatment or disposal different from recycling (composting), incineration and landfill. Permanent storage of waste is included here.

Method of Computation

Data for this indicator were compiled from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

Although hazardous waste represents a small percentage of all waste generated in the Caribbean, it can present a potential risk to both human health and the environment. Hazardous waste is typically the subject of special legislation and requires special management arrangements to ensure that it is kept separate from and treated differently to non-hazardous waste. The main purpose of the hazardous component of this indicator, therefore, is to represent the amount of hazardous waste having special and controlled treatment. The indicator would provide a measure of the development of the hazardous waste management system, and thereby the actions taken to diminish the threats to human health and the environment.

Different disposal methods have different impacts on the environment and on human health. The breakdown of waste treatment and disposal provided by this indicator gives an indication of the possible environmental impacts by identifying the types of treatment and disposal methods most widely used in the Region. For example, there are numerous potential impacts associated with the landfilling of waste, including the production of leachate and landfill gas, odours, flies, vermin and the use of land. Data showing the amount of waste landfilled will give an indication of the probability of these negative affects occurring and the extent to which they may occur so that preventative actions can be taken.

Data Assessment

This indicator, treatment and disposal of municipal and hazardous waste by type of method, is regionally and internationally conceptually harmonized since all reporting Member States followed the internationally recommended definitions for municipal waste, hazardous waste, and methods of treatment and disposal of municipal and hazardous wastes.

Only seven Member States and three Associate Members of the usual fourteen reporting Member States and four reporting Associate Members provided data for this indicator. The data provided was not detailed, perhaps due to the fact that environment statistics is new to the Region.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.11.2 (a)** for the original sources of the data, as specified by the UNSD, on waste of Member States and Associate Members.

Evaluation

Data on the Treatment and Disposal of *Municipal* and *Hazardous Waste* by type and method are presented for six Member States in **Table 1.2** below. The data reveals that a total of 21,250 tonnes of *Municipal waste* was disposed of in Antigua and Barbuda in the year 2005 using Landfill. Belize also reported data on *Municipal waste* in addition to *Hazardous waste* for the years 1997, 1999, 2000 and 2003 to 2005. The data reported reveals an overall increase in the amount of *Municipal waste* handled from 38,100 tonnes in 1997 to 119,984 tonnes in 2005 representing an increase of 215 per cent. The data reported on Hazardous waste disposed of by Incineration also saw an increase from 691 tonnes to 775 tonnes, an increase of 12.2 per cent. Total waste managed in Belize totalled 70,132 tonnes in 2000. Dominica reported 20,906 tonnes of *Municipal waste* for the period 2001 to 2001 disposed of by Landfill and 627 tonnes of *Hazardous waste* collected in 2002 disposed of by *Landfill*. During 1995 to 2000, Municipal waste in Guyana increased from 60 million tonnes in 1995 to 81 million tonnes in 2000, with steady increases throughout the period and was disposed of mainly by *Landfill.* Data was also reported for Guyana in 2001 and 2002 and revealed an increase in the management of *Municipal waste* from 81,426 tonnes in 2001 to 87,765 tonnes in 2002 representing an increase of 7.8 per cent.

Data for Jamaica on Municipal waste showed a significant decline during the period 1999 to 2004 declining from 945,000 tonnes in 1999 to 718,000 in 2001 and further to 697,000 in 2002 increasing uniformly by 6,000 tonnes in 2003 and 2004. Of the 10,000 tonnes of Hazardous waste managed in 1996, 7,500 tonnes were *incinerated* and 2,500 tonnes were disposed of by *Landfill*. St. Vincent and the Grenadines reported data for the year 2002 which show that 37,800 tonnes of *Municipal waste* was collected of which 32,100 or 85 per cent were disposed of by *Landfill* and 5,700 tonnes were *Recycled/ composted. Hazardous waste* generated in 2002 for St. Vincent and the Grenadines was 0.15 tonnes and this was disposed of by *Landfill.*

Data for Trinidad and Tobago in **Table 11.2** shows a gradual increase in the total Municipal waste collected for the years 1990, 1995 to 1997 and 1999 to 2005. The overall increase in Municipal waste collected for the reporting period was 162.9 per cent from 214,880 tonnes in 1990 to 564,964 tonnes in 2005. Among reporting Associate Members Anguilla, Bermuda and The British Virgin Islands, Bermuda collected and managed the most *Municipal waste* with an average of 67,567 tonnes of waste collected and managed during the three years 1999 (66,500 tonnes), 2000 (68,700 tonnes) and 2001(67,500 tonnes), 89 per cent of which were *incinerated* in 1999 and 97 per cent incinerated in 2000 and 2001. The British Virgin Islands followed with an average 26,698 tonnes of waste collected and managed during the period 1995 to 2005. The data reveals a significant increase in *Municipal waste* from 1995 (11,165 tonnes) to 1999 (25,698 tonnes) by 130 per cent and from 2000 (28,560 tonnes) to 2001 (29,861 tonnes) declining in 2002 by 16 per cent and further in 2003 by 5 per cent, increasing thereafter in 2004 to 33,033 tonnes and finally to 36,697 in 2005. After 1995, more than 70 per cent

of Municipal waste collected in The British Virgin Islands was *incinerated* and the remaining disposed of by *Landfill* up from 39 per cent in 1995. Anguilla reported data for the period 2001 to 2005 which *Municipal waste* collections declining at the beginning of the period from 4,358 tonnes in 2001 to 4,244 tonnes in 2002 and further to 4,051 tonnes in 2003 and increasing towards the end of the period from 4,695 tonnes in 2004 to 4,283 tonnes in 2005. The overall increase in *Municipal waste* collections was 21 per cent all of which were disposed of by *Landfill*.

Table 11.2: Treatment and Disposal of Municipal and Hazardous Waste by type and method: 1990, 1995 - 1997, 1999 - 2005

Country	Year	Municipal waste					Hazardous waste					Total waste managed (Tonnes)
		Recycled/ composted (Tonnes)	Incinerated (Tonnes)	Landfilled (Tonnes)	Other (Tonnes)	Total (Tonnes)	Recycled/ composted (Tonnes)	Incinerated (Tonnes)	Landfilled (Tonnes)	Other (Tonnes)	Total (Tonnes)	
AG												
	2005	0	0	21,250	0	21,250	...	...	...	...	...	...
BZ												
	1997	0	0	38,100	0	38,100	...	...	...	...	...	...
	1999	...	...	...	...	...	0	691	0	0	691	...
	2000	0	0	69,357	0	69,357	0	775	0	0	775	70,132
	2003	0	0	94,920	0	94,920	...	...	...	...	...	...
	2004	0	0	106,568	0	106,568	...	...	...	...	...	...
	2005	0	0	119,984	0	119,984	...	...	...	...	...	...
DM												
	2001	0	0	20,906	0	20,906	...	...	...	...	...	...
	2002	0	0	20,906	0	20,906	...	...	502	...	627	...
	2003	0	0	20,906	0	20,906	...	...	...	...	...	...
	2004	0	0	20,906	0	20,906	...	...	...	...	...	...
	2005	0	0	20,906	0	20,906	...	...	...	...	...	...
GY												
	1995	368	1,320	60,418	...	...	...	...	...	...	...	...
	1996	372	1,152	63,500	...	...	...	...	...	...	...	...
	1997	429	1,200	65,000	...	...	...	...	...	...	...	...
	1998	483	1,272	66,514	...	...	...	...	...	...	...	...
	1999	504	1,338	67,051	...	...	...	...	...	...	...	...
	2000	536	1,285	81,100	...	...	...	...	...	...	...	...
	2001	...	...	...	...	81,426	...	...	...	...	...	...
	2002	...	...	...	...	87,765	...	...	...	...	...	...
JM												
	1996*	...	...	...	...		0	7,500	2,500	0	10,000	...
	1999	...	...	...	...	945,000	...	...	...	...	...	...
	2001	0	0	718,000	0	718,000	...	...	...	...	...	...
	2002	...	...	...	...	697,000	...	...	...	...	...	...
	2003	...	...	...	...	703,000	...	...	...	...	...	...
	2004	...	...	...	...	709,000	...	...	...	...	...	...
VC												
	2002	5,700	0	32,100	0	37,800	0.00	0.00	0.15	0.00	0.15	37,800.15

Table 11.2: Treatment and Disposal of Municipal and Hazardous Waste by type and method: 1990, 1995 - 1997, 1999 - 2005

Country	Year	Municipal waste					Hazardous waste					Total waste managed (Tonnes)
		Recycled/ composted (Tonnes)	Incinerated (Tonnes)	Landfilled (Tonnes)	Other (Tonnes)	Total (Tonnes)	Recycled/ composted (Tonnes)	Incinerated (Tonnes)	Landfilled (Tonnes)	Other (Tonnes)	Total (Tonnes)	
TT												
	1990	...	...	...	...	**214 880**	...	...	...	...	...	...
	1995	...	...	...	...	**247 170**	...	...	...	...	...	...
	1996	...	...	...	...	**259,000**	...	...	...	...	...	...
	1997	...	...	...	...	**296,000**	...	...	...	...	...	...
	1999	...	...	...	...	**335 984**	...	...	...	...	...	...
	2000	...	...	...	...	**423 742**	...	...	...	...	...	...
	2001	...	...	...	...	**378 784**	...	...	...	...	...	...
	2002	...	...	...	...	**424 984**	...	...	...	...	...	...
	2003	...	...	...	...	**486 196**	...	...	...	...	...	...
	2004	...	...	...	...	**530 089**	...	...	...	...	...	...
	2005	...	...	...	...	**564 964**	...	...	...	...	...	...
ASSOCIATE MEMBERS												
AI												
	2001	**0**	**0**	**4358**	**0**	**4358**	...	...	...	...	...	...
	2002	**0**	**0**	**4244**	**0**	**4244**	...	...	...	...	...	...
	2003	**0**	**0**	**4051**	**0**	**4051**	...	...	...	...	...	...
	2004	**0**	**0**	**4695**	**0**	**4695**	...	...	...	...	...	...
	2005	**0**	**0**	**5283**	**0**	**5283**	...	...	...	...	...	...
BM												
	1999	**0**	**59,100**	**0**	**0**	**66,500**	...	...	...	...	...	...
	2000	**0**	**66,700**	**0**	**0**	**68,700**	...	...	...	...	...	...
	2001	**0**	**65,700**	**0**	**0**	**67,500**	...	...	...	...	...	...
VG												
	1995	**0**	**4,409**	**0**	**6,756**	**11,165**	...	...	...	...	...	...
	1999	**0**	**18,618**	**0**	**7,080**	**25,698**	...	...	...	...	...	...
	2000	**0**	**21,731**	**0**	**6,829**	**28,560**	...	...	...	...	...	...
	2001	**0**	**22,461**	**0**	**7,400**	**29,861**	...	...	...	...	...	...
	2002	**0**	**20,481**	**0**	**4,455**	**24,936**	...	...	...	...	...	...
	2003	**0**	**18,712**	**0**	**4,918**	**23,630**	...	...	...	...	...	...
	2004	**0**	**26,506**	**0**	**6,527**	**33,033**	...	...	...	...	...	...
	2005	**0**	**29,452**	**0**	**7,245**	**36,697**	...	...	...	...	...	...

WA3: HAZARDOUS WASTE (IMPORTED/EXPORTED) H

Concept and Definition

Hazardous wastes are wastes that, owing to their toxic, infectious, radioactive or flammable properties, pose a substantial actual or potential hazard to the health of humans and other living organisms and the environment.

Imported/exported hazardous waste is the total amounts of hazardous wastes subject to trans-boundary movements, including a breakdown of specific types of hazardous wastes according to definitions of the Basel Convention. *(Please refer to the United Nations Department of Economic and Social Affairs website at http://www.un.org/esa/sustdev /natlinfo/indicators/indisd/english/chapt20e.htm.*)

Types of Hazardous Waste

Imported hazardous waste is waste that is brought in from a foreign country for treatment and disposal.

Exported hazardous waste is waste that is sent to other countries for treatment and disposal.

Method of Computation

Hazardous waste (imported/exported) was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

This indicator shows the extent to which different categories of hazardous wastes are being exported or imported, as well as the countries involved in the trans-boundary movement. Hazardous waste (imported/exported) also gives an indication of the amount of hazardous wastes being generated in a particular country, of the availability of disposal options in the country of export and import, and of the demand in the country of export or import to recycle and/or use the waste as secondary raw material.

Improper transport of dangerous wastes, particularly to countries that lack the infrastructure and national regulations to handle such waste, can pose harm to both human health and the environment. Treating hazardous wastes as close to the source of generation as possible reduces the need for trans-boundary movements of such wastes and harm to human health and the environment is minimized. In some cases, however, trans-boundary movements may be necessary in order to ensure the environmentally sound treatment and disposal of such wastes.

Data Assessment

Of the eighteen Member States and Associate Members that usually report data, Jamaica was the only country that provided data for this indicator. This may be due to the fact that environment statistics is new to Region.

Jamaica followed the internationally recommended definition for hazardous waste and imported/exported hazardous waste. This indicator is, therefore, harmonized.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.11.3 (a)** for the original source of the data.

Evaluation

Table 11.3 presents data on Hazardous Waste (Imported/Exported) for one Member State, Jamaica, for the year 1999. 469 tonnes of Municipal waste was exported for treatment/disposal in this Member State for the reporting year.

Table 11.3: Hazardous Waste (Imported/Exported): 1999

Country	Year	Hazardous Waste		
		Imported	Exported	Total
JM	1999	. . .	469	. . .

Addendum

Waste is still a new area of environment within the Region. As such, very little detailed quantitative data is available for dissemination and evaluation. Please see below, however, a précis of the waste data that Member States and Associate Members do have available.

Barbados:
Landfilling is the main form of solid waste disposal in Barbados. A survey in 1993 by Stanley Associates found that in any seven day period, 265 tonnes of municipal solid waste were produced at the Mangrove Pond landfill site. Another study has estimated that 130,000 tonnes of waste per capita was generated in 1996. In 1998, 316 derelict vehicles and 7,140 loads of bulky waste were collected for disposal. In addition, 1.44 million gallons of sewage were generated in 1992.

In 1996, 737 tonnes of hazardous waste moved through the Port Authority. Of the 737 tonnes, 43.4 per cent was liquid or solid compounds with the potential to generate acids, alkalis, solvents, pesticides, heavy metals, inks and dyes. The Integrated Solid Waste Management Programme manages hazardous waste in Barbados.

Barbados encounters difficulties in assessing and managing the growing volumes of waste generated by the public and the thousands of tourists that flock the island yearly. These difficulties are evident in the increasing occurrences of littering and illegal dumping. There is also a lack of an integrated approach to collection and disposal of solid and special waste and there is the need for organisational change and a cost recovery mechanism. *(Please refer to the Government of Barbados: State of the Environment Report 2000 pgs 81-85.)*

Belize:
Belize regards solid waste as waste generated by households and the commercial, industrial and construction sectors. Solid waste comprises most of the waste that is disposed of at landfills, dumpsites and incineration plants. The Belize Solid Waste Management Project conducted a study which estimated that the average waste generation rate was 2.1 pounds per person per day, with approximately 40000 tonnes of municipal solid waste being generated per annum.

In 1997, $2.6 million Belize dollars per annum (an average of $22.50 per capita) was spent on municipal waste disposal. Of the total expenditure, 48 per cent was spent on solid waste in Belize City because 51 per cent of the solid waste generated in the country originates there. However, even though Belize City generates more waste than any other city in Belize, San Pedro Town has the highest per capita expenditure on solid waste ($35.00 per capita).

Belize, like many of the other Caribbean countries, is assessing the available and economically viable means available to them to better dispose of the growing amounts of waste that are being generated. Some of these waste disposal means include composting, landfilling, recycling and incineration. Exporting solid waste, as is already done to

Mexico, is also being considered since it is a useful way to get rid of waste and increase the export value in the country.

It should be noted that 60 per cent of the municipal waste generated in Belize is organic waste. As such, if it is properly disposed of, it will be taken care of by the natural processes of decomposition. (*Please refer to the Environmental Statistics for Belize 2000 pgs 53-56*.)

Grenada:
Approximately 100 tonnes of solid waste is generated daily in Grenada. The waste is collected and disposed of at Perseverance in St. George's. The waste collection system covers about 95 per cent of the island. All of the biomedical waste produced is incinerated on the compounds where they are generated or are collected for incineration at the general hospital.

There are two sewage systems on the island that serve 3 per cent of the population. These systems discharge sewage 500 feet into the ocean but the risk of coastal pollution is minimal due to ocean currents that carry outfall effluents away from the land. *(Please refer to Grenada Environmental Statistics pg. 24.)*

Jamaica:
The amount of waste generated in Jamaica is increasing with new technological advancements and consumption patterns. However, like all the Caribbean countries, managing the waste that is generated is a major problem in Jamaica. This manifests itself in the illegal dumping of waste in gullies, rivers and open lots and excessive amounts of littering. In addition, most of the waste disposal sites present in Jamaica are dumps without sanitary treatment, and sewage treatment facilities can only deal with 50per cent of the sewage produced on the island. It should be noted, however, that the municipal waste collection and disposal system has been rationalized and the National Solid Waste Management Authority formed to reduce the occurrence of these practices.

The recycling and reuse of waste is being practiced on a small scale as means to treat and dispose of waste. These treatment and disposal methods are expected to increase over time as more waste exchange programmes are implemented.

In 1996, 597,000 tonnes of collectable waste (waste that is not burnt, deposited on empty lots or thrown into gullies) was generated. It was estimated then that each Jamaican generates 0.6-0.8 kg of solid waste per day. In 1999, waste generation increased to 945,000 tonnes. *(Please refer to the Jamaica Environment 2001: Environment Statistics and State of the Environment Report pgs 10-15.)*

Saint Lucia:
The Saint Lucia Solid Waste Management Authority is responsible for the management of solid waste in Saint Lucia. There are currently two disposal sites in Saint Lucia: the Ciceron Waste Disposal Site and the Vieux Fort Solid Waste Disposal Site. The Ciceron Site is soon to be closed and the Vieux Fort Disposal Site upgraded. A modern disposal site that complies with international standards will be built to replace the Ciceron Site.

The total volume of waste generated in 1998 was 202,045.5 m^3. In 1999, the total volume was 259,884 m^3; in 2000, 298,488m^3 and in 2001, the total volume of waste generated was 275,906 m^3. Preliminary census results show that 88.4 per cent of households use the garbage trucks/skip as the main method of garbage disposal, followed by burning which is used by 5.1 per cent of households and dumping which accounts for the remaining 1.8 per cent of waste disposal. *(Please refer to the Saint Lucia Compendium of Environmental Statistics 2001 pgs 77-78.)*

Suriname:
The amount of waste generated is increasing with technological developments, new consumption patterns and increasing populations. A significant problem in Suriname is the poor waste disposal and uncontrolled disposal of waste in rivers, gullies and open spaces. The insufficient management of the waste produced is a very serious threat to human health and the environment. *(Please refer to Suriname's Environmental Statistics pgs. 30-31.)*

Appendix 1.11
Sources of Waste Data

1.11.1 (a): Sources of Data for Table 11.1 - Generation of Waste by Type and Sector: 1990, 1995 - 2005

Country	Data Source
ANTIGUA AND BARBUDA	National Solid Waste Management Authority
BELIZE	Land Information Centre
DOMINCA	Central Statistical Office
GUYANA	Bureau of Statistics
JAMAICA	Statistical Institute of Jamaica
ST VINCENT AND THE GRENADINES	Central Water and Sewerage Authority
TRINIDAD AND TOBAGO	Solid Waste Management Company Limited (SWMCOL)
ANGUILLA	Anguilla Statistics Department
BERMUDA	Department of Statistics

1.11.1 (b): Notes for Table 11.1 - Generation of Waste by Type and Sector: 1990, 1995 - 2005

Country	Notes
ANTIGUA AND BARBUDA	Data refer to Antigua only. Manufacturing industries reflect the amalgamation of industrial, commercial and institutional waste. Construction reflects the amalgamation of construction and demolition waste. Other includes inter alia medical wastes, ship generated wastes, sewage, street sweepings, bulk wastes and tires.
BELIZE	Industrial Activities = waste generated from sugar, citrus and shrimp industries. Total waste generated is estimated using per capita from urban areas * population
GUYANA	Generated waste does not include construction and demolition waste, etc., while disposal figures may include such waste.
JAMAICA	Other refers to Hotel waste. * means estimate.
TRINIDAD AND TOBAGO	Estimates derived from applying the waste load factor from the WHO manual [46]. Municipal waste figures are the annual estimated figures for the three waste sites managed by SWMCOL.

1.11.2 (a): Sources of Data for Table 11.2 - Treatment and Disposal of Municipal and Hazardous Waste by Type of Method: 1990, 1995 – 1997, 1999 - 2005

Country	Data Source
ANTIGUA & BARBUDA	National Solid Waste Management Authority
BELIZE	Land Information Centre
DOMINCA	Environmental Co-ordinating Council
GUYANA	Mayor and City Council
JAMAICA	Statistical Institute of Jamaica
ST VINCENT AND THE GRENADINES	Central Water and Sewerage Authority
TRINIDAD AND TOBAGO	Solid Waste Management Company Limited (SWMCOL)
ANGUILLA	Anguilla Statistics Department
BERMUDA	Department of Statistics
BRITISH VIRGIN ISLANDS	National Statistics Office

1.11.2 (b): Notes for Table 11.2 - Treatment and Disposal of Municipal and Hazardous Waste by Type of Method: 1990, 1995 – 1997, 1999 - 2005

Country	Notes
ANTIGUA AND BARBUDA	Data refer to Antigua only.
BELIZE	Hazardous waste is waste from hospitals only. Information of municipal waste managed was obtained from municipal collection agencies. 1999: SOURCE: ECLAC, REDESA Environmental Statistics & Indicators Database (BADEIMA)
DOMINCA	All information is derived from a Characterization Study carried out in 2002. No recorded data on solid waste management existed before that time. It must however be noted that even some of this information is a best estimate from projections made in a Consultant's Report in 1995. The Dominica Solid Waste Management Corporation now has a weighbridge and hopes to provide more accurate data in the coming years.
JAMAICA	* means estimate
TRINIDAD AND TOBAGO	Data are from Trinidad and Tobago Solid Waste Management Company Limited (SWMCOL). The landfills managed by SWMCOL collect 85% of solid waste.
BRITISH VIRGIN ISLANDS	Incineration values refer to main island of Tortola only. Other refers to dump site.

1.11.3 (a): Sources of Data for Table 11.3 - Hazardous Waste (Imported/Exported): 1999

Country	Data Source
JAMAICA	Statistical Institute of Jamaica

WT1: RENEWABLE FRESH WATER RESOURCES

H

Concept and Definition

Renewable freshwater (surface and groundwater) resources are replenished by precipitation (less evapotranspiration) falling over the territory of the country that ends up as runoff to rivers and recharge to aquifers (internal flow), and by surface waters and groundwater flowing in from other countries (inflow). Climatic, ecological, economic and other limitations to the availability of these resources for abstraction are reflected in the variable "regular freshwater resources at 95 percent of the time". The data shown in the table are usually based on hydrological/meteorological monitoring and modelling.

Sector Classifications:

Precipitation - Total volume of atmospheric wet precipitation (rain, snow, hail, dew, etc.) falling on the territory of the country over one year, in millions of cubic meters (mio m3).

Actual evapotranspiration - Total actual volume of evaporation from the ground, wetlands and natural water bodies and transpiration of plants. According to the definition of this concept in Hydrology, the evapotranspiration generated by all human interventions is excluded, except unirrigated agriculture and forestry. The 'actual evapotranspiration' is calculated using different types of mathematical models, ranging from very simple algorithms (Budyko, Turn Pyke, etc.) to schemes that represent the hydrological cycle in detail.

Internal flow - Total volume of river run-off and groundwater generated over the period of a year, in natural conditions, exclusively by precipitation into a territory. The internal flow is equal to precipitation less actual evapotranspiration and can be calculated or measured. If the river run-off and groundwater generation are measured separately, transfers between surface and groundwater should be netted out to avoid double counting.

Inflow of surface and groundwaters - Total volume of actual external inflow of rivers and groundwater, coming from neighboring countries. Boundary waters should be divided 50/50 between the two riparian countries, unless other water sharing agreements exist.

Renewable freshwater resources = Internal flow + Actual External Inflow of surface and groundwaters

Outflow of surface and groundwaters - Actual outflow of rivers and groundwater into neighboring countries and/or into the sea

Regular freshwater resources 95% of the time - Portion of the total freshwater resource that can be depended on for annual water development during 19 out of 20 consecutive years, or at least 95 percent of the years included in longer consecutive periods. This item yields information about the average annual long-term availability of freshwater for use in human activities.

Freshwater use refers to the quantity of freshwater that is actually used in a year by end users including water delivered by the water supply industry (ISIC 41), water directly abstracted for own use and water received from other parties. Excludes freshwater returned without use.

Renewable groundwater available for annual abstraction - Recharge less the long term annual average rate of flow required to achieve ecological quality objectives for associated surface water. It takes account of the ecological restrictions imposed to groundwater exploitability; other restrictions based on economic and technical criteria could also be taken into account in terms of accessibility, productivity and maximum production cost deemed acceptable by developers. The theoretical maximum of groundwater available is the recharge.

UNSD/UNEP 2001 and 2004 questionnaires on Environment statistics, Water section

Method of Computation

Renewable Freshwater Resources was compiled from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

This indicator yields information about the average annual long-term availability of fresh water for use in human activities, which is important information for future planning and early warning for any scarcity of water in future. It also helps in taking the proper decision in water management.

Data Assessment

All reporting Member States followed the internationally recommended definitions for waste and types of wastes. This indicator is, therefore, regionally and internationally conceptually harmonized.

Only nine of the reporting eighteen Member States/Associate Members of the Community provided data for this indicator and the data provided was not detailed, perhaps due to the fact that environment statistics is still relatively new to the Region.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of directly from Member States and Associate Members.

Please refer to **Appendix 1.12.1 (a)** for the original sources of the data, as specified by the UNSD, on water for Member States and Associate Members.

Evaluation

Data is presented in **Table 12.1** below for Dominica, Jamaica and Trinidad and Tobago. Dominica reported Total Freshwater use for the year 2005 at 4.3 million cubic meters of which Freshwater use by Households totalled 2.5 million cubic meters representing 58 per cent of total Freshwater us. Actual precipitation for Jamaica in 1990 was 21,212 million cubic meters and water loss due to *evapotranspiration* (Total actual volume of evaporation from the ground, wetlands and natural water bodies and transpiration of plants) was 11,945 million cubic meters resulting in 9,267 million cubic meters of total renewable fresh water resources. *Outflow of surface and ground waters* was reported at 5,576 million cubic meters while *Renewable groundwater available for annual abstraction* was 3,418 million cubic meters and *regular freshwater resources 95% of the time* for Jamaica in 1990 was reported at 665 million cubic meters.

Data for Trinidad and Tobago during the period, 1998 to 2005 revealed fluctuations in the Actual external Inflow of surface and ground waters. Internal flow or the total volume of river run-off and groundwater generated was reported at 6,661 million cubic meters in 1998 and this declined to 5,780 million cubic meters in 1999 followed by an increase in of 13.6 per cent to 2000 million cubic meters after which another decline followed in 2001 to 3,085 million cubic meters and a final increase of 70.7 per cent in 2002. The overall decline of the internal flow was 21 per cent during the period 1998 to 2005. Total renewable fresh water resources equalled internal flow for this Member State.

Table 12.1 Renewable Fresh Water Resources: 1990, 1998 - 2002 and 2005

(mio m^3/y)

Country	Year	Precipitation (1)	Actual evapotranspiration (2)	Internal flow (3)=(1)-(2)	Actual external Inflow of surface and ground waters (4)	Total renewable fresh water resources (5)=(3+4)	Outflow of surface and ground waters	Renewable groundwater available for annual abstraction	Regular freshwater resources 95% of the time	Total Freshwater use	Freshwater use by Households
DM											
	2005									**4.3**	**2.5**
JM											
	1990	**21,212**	**11,945**	**9,267**	**0**	**9,267**	**5,576**	**3,418**	**665**		
TT											
	1998	**12,060**	**5,398**	**6,662**	**n/a**	**6662**	**n/a**	**0**	**0**		
	1999	**11,085**	**5,305**	**5,780**	**n/a**	**5780**	**n/a**	**0**	**0**		
	2000	**11,449**	**4,884**	**6,565**	**n/a**	**6565**	**n/a**	**0**	**0**		
	2001	**8,729**	**5,644**	**3,085**	**n/a**	**3085**	**n/a**	**0**	**0**		
	2002	**10,164**	**4,898**	**5,266**	**n/a**	**5266**	**n/a**	**0**	**0**		

WT2: WATER ABSTRACTION BY SOURCE: 1990, 1995 - 2005

H

Concept and Definition

Water *abstraction* is water removed from any source, either permanently or temporarily, during a specified period of time. It can be unsustainable if it exceeds the renewal of the resource. In addition, issues relating to the quality of water when it eventually returns to streams, rivers and lakes, are also of concern. Water used for cleaning, cooling and irrigation carries with it soluble salts, chemicals, soil particles and biological wastes, which could deteriorate the quality of the water. Given the already limited groundwater supply in most of the Member States of the CARICOM region, the resource should be properly managed and over-abstraction avoided.

The total volume of freshwater available for use is composed of *water abstracted from fresh (surface and ground) water resources* of the country, of water originating from other sources, such as imports of bulk water from other countries or desalinated water from non-fresh water resources, and the reuse of treated waste water (reclaimed water). Water that is returned without use (e.g. mine water) and water exported in bulk to another country are not considered to be available for use and are therefore subtracted from the total. Abstraction of freshwater is broken down by main water abstractor sectors/activities, according to the International Standard Industrial Classification of All Economic Activities, Third Revision (ISIC Rev.3). Please note that water abstracted directly from the atmosphere into storage tanks is not accounted for.

Definitions used in the collection of the indicator:

Fresh surface water is water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. Water abstracted through bank filtration is included under fresh surface water. Sea-water, and transitional waters, such as brackish swamps, lagoons and estuarine areas are considered non-fresh water and are not included here.

Fresh ground water is water which is being held in, and can usually be recovered from, or via, an underground formation. All permanent and temporary deposits of water, both artificially charged and naturally occurring in the subsoil, of sufficient quality for at least seasonal use are included. This category includes phreatic water-bearing strata, as well as deep strata under pressure or not, contained in porous or fractured soils. Ground water includes springs, both concentrated and diffused, which may be subaqueous.

Total water abstraction refers to water removed from any source, either permanently or temporarily, during a specified period of time. Mine water and drainage water are included. Water abstractions from ground water resources in any given time period are defined as the difference between the total amount of water withdrawn from aquifers and the total amount charged artificially or injected into aquifers. The amounts of water artificially charged or injected are attributed to abstractions from that water resource from which they were originally withdrawn. Water used for hydroelectricity generation is an in-situ use and should be excluded.

Total gross fresh water abstraction is the total of fresh surface water and fresh groundwater abstractions over one year within the national territory.

Water returned without use refers to water abstracted from any fresh water source and discharged into fresh waters without use, or before use. Occurs primarily during mining and construction activities. Discharges to the sea are excluded.

Imports of water refer to the total volume of bulk fresh water that is imported from other countries as a commodity through pipelines or on ships. Bottled water is excluded.

Exports of water is the total volume of bulk fresh water that is exported to other countries as a commodity through pipelines or on ships. Bottled water is excluded.

Desalinated water is the total volume of water obtained from desalination processes. (From seawater, brackish water etc.)

Total reuse of fresh water is fresh water that has undergone waste water treatment and is deliverable to a user as reclaimed waste water. This means the direct supply of treated effluent to the user. Excluded is waste water discharged into a watercourse and used again downstream. Recycling within industrial sites is excluded.

Total fresh water available for use = Total gross fresh water abstraction - Water returned without use + Imports of water - Exports of water + Desalinated water + Total reuse of fresh water

Non-fresh water abstraction includes sea water and transitional water, such as brackish swamps, lagoons and estuarine areas.

UNSD/UNEP 2001 and 2004 questionnaires on Environment statistics, Water section

Method of Computation

Data for this indicator were compiled from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above. Water abstraction is measured in millions of m^3 per year.

Indicator Relevance

This indicator measures the overall pressure on the fresh water resources, providing the proportion of water abstracted for all the economic sectors in relation to water resources. It gives an indication of the vulnerability of a country to water shortages and assesses the need for supply /demand adjustments in water management policies.
(http://www.un.org/esa/sustdev/sdissues/ consumption/cpp1224m11.htm)

Data Assessment

All reporting Member States followed the internationally recommended definitions for the indicator water extraction by source and as such it is regionally and internationally conceptually harmonized.

Only of a total of fourteen Member States and Associate Members, five Member States provided data for this indicator.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of directly from Member States and Associate Members.

Please refer to **Appendix 1.12.2 (a)** for the original sources of the data, as specified by the UNSD, on waste of Member States and Associate Members.

Evaluation

Water Abstraction by Source for reporting member States is presented in **Table 12.2** below for Belize, Dominica, Jamaica, St. Vincent and the Grenadines and Trinidad and Tobago. The data on Total fresh surface water abstracted for Belize for the period 1995 to 2000 revealed an overall decline from 1,933 million cubic meters in 1995 to 1,903 in 2000 a decline of 2 per cent. Total fresh ground water abstracted for Belize however, revealed an overall increase for the same period of 14 per cent from 323 million cubic meters in 1995 to 368 million cubic meters in 2000. Total gross fresh water abstraction for this Member State which represents Total of fresh surface water and fresh groundwater abstractions over one year within the national territory increase overall by a minimal 1 per cent with declines reported in 1996 (2,225 million cubic meters), 1997 (2,184 million cubic meters) and 1999 (2,224 million cubic meters) and increases in 1998 (2,249 million cubic meters) and 2000 (2,270 million cubic meters) from 1995 (2,256 million cubic meters). Total reuse of fresh water increased for Belize during the reporting period from 27 million cubic meters in 1995 to 85 million cubic meters in 2000. Total reuse of fresh water as a percentage of total fresh water available for use was 1.2 per cent in 2005 and increased to 3.6 per cent in 2000.

Total fresh surface water abstracted for Dominica in 2005 was 4 million cubic meters and Total gross fresh water abstraction 5.07 million cubic meters with Leakage during

transport reported at 0.4 million cubic meters. **Table 12.2** shows Exports of water for Dominica at 0.03 million cubic meters in 2003 and 0.09 million cubic meters in 2004.
Jamaica reported Total gross fresh water abstraction for the years 1990, 1999 and projected data for 2000. In 1990, total *gross fresh water abstraction* of 913 million cubic meters was reported consisting 63 million cubic meters of fresh surface water and 950 million cubic meters of fresh ground water and in 1999 total *gross fresh water abstraction* of 300 million cubic meters was reported consisting 114 million cubic meters of fresh surface water and 186 million cubic meters of fresh ground water a decline of 613 million cubic meters. In 2000, Jamaica projected Total *gross fresh water abstraction* at 1437 million cubic meters. In 1995, of the total fresh surface water abstracted, 75 per cent was by Agriculture, fishing and forestry activities and 7 per cent by Manufacturing industries, 1 per cent by economic activities and 17 per cent by Households and in 1996 280 million cubic meters of total fresh surface water abstracted was by Households.

St. Vincent and the Grenadines reported data on Total fresh surface water abstracted for 1990 and 1995 to 2005 and Total gross fresh water abstraction. Total gross fresh water abstraction which is the total fresh surface water abstracted increased from the beginning of the period when 7 million cubic meters was recorded to the end of the period where 9 million cubic meters of total fresh surface water was abstracted representing an increase of 21 per cent.

During the period 1999 to 2002, of the total *fresh surface water abstracted* in Trinidad and Tobago a greater per cent was abstracted for *Manufacturing industries activities* (60 per cent in 1999, 55 per cent in 2000, 95 per cent in 2001 and 68 per cent in 2002) than for *Agriculture, fishing and forestry activities* (40 per cent in 1999, 45 per cent in 2000, 5 per cent in 2001 and 32 per cent in 2002). This trend was also seen in data reported on for total *fresh ground water abstracted* when *Manufacturing industries* activities abstracted an average of 94 per cent during the period 1999 to 2002. In 2003, all reported total *fresh surface water* (0.1 million cubic meters) and total *fresh ground water abstracted* (3.0 million cubic meters) was for *Agriculture, fishing and forestry activities*.

Table 12.2 Water Abstraction by Source: 1990, 1995 - 2005

(mio m^3/y)

Country	Year	Total fresh surface water abstracted (1)						
		Public supply (ISIC 41)	Agriculture, fishing and forestry (ISIC 01-05)	Manufacturing industries (ISIC 15-37)	Production of electricity (ISIC 40)	Other economic activities	Households	Total
BZ								
	1995							**1,933**
	1996							**1,895**
	1997							**1,846**
	1998							**1,914**
	1999							**1,889**
	2000							**1,903**
DM								
	2003							
	2004							
	2005						**0**	**4**
JM								
	1990*							**63**
	1995*		**75%**	**7%**		**1%**	**17%**	
	1996						**280**	
	1999							**114**
	2000A							
VC								
	1990							**7**
	1995							**7**
	1996							**8**
	1997							**8**
	1998							**8**
	1999							**8**
	2000							**9**
	2001							**8**
	2002							**9**
	2003							**9**
TT								
	1999	**0**	**6**	**8**	**n/a**	**0**	**0**	**14**
	2000	**0**	**7**	**8**	**n/a**	**0**	**0**	**15**
	2001	**0**	**0**	**6**	**n/a**	**0**	**0**	**6**
	2002	**0**	**4**	**9**	**n/a**	**0**	**0**	**13**
	2003	**0**	**0**	_	**n/a**	**0**	**0**	**0**

Table 12.2 Cont'd. Water Abstraction by Source: 1990, 1995 - 2005

Country	Year	Total fresh ground water abstracted (2)						
		Public supply (ISIC 41)	Agriculture, fishing and forestry (ISIC 01-05)	Manufacturing industries (ISIC 15-37)	Production of electricity (ISIC 40)	Other economic activities	Households	Total
BZ								
	1995							**323**
	1996							**330**
	1997							**338**
	1998							**336**
	1999							**334**
	2000							**368**
DM								
	2003							
	2004							
	2005							
JM								
	1990*							**850**
	1995*							
	1996							
	1999							**186**
	2000A							
VC								
	1990							
	1995							
	1996							
	1997							
	1998							
	1999							
	2000							
	2001							
	2002							
	2003							
TT								
	1999	**0**	**0**	**8**	**n/a**	**0**	**0**	**9**
	2000	**0**	**0**	**10**	**n/a**	**0**	**0**	**10**
	2001	**0**	**1**	**9**	**n/a**	**0**	**0**	**10**
	2002	**0**	**0**	**8**	**n/a**	**0**	**0**	**8**
	2003	**0**	**3**	_	**n/a**	**0**	**0**	**3**

Table 12.2 Cont'd. Water Abstraction by Source: 1990, 1995 - 2005

Country	Year	Total gross fresh water abstraction (3)=(1)+(2)	Water returned without use (4)	Net freshwater abstracted (=3-4)	Imports of water (5)	Exports of water (6)	Desalinated water (7)	Total reuse of fresh water (8)	TOTAL fresh water available for use (9)=(3)-(4)+(5)-(6)+(7)+(8)	Leakage during transport
BZ										
	1995	**2,256**						**27**	**2,283**	
	1996	**2,225**						**29**	**2,254**	
	1997	**2,184**						**45**	**2,229**	
	1998	**2,249**						**52**	**2,302**	
	1999	**2,224**						**61**	**2,284**	
	2000	**2,270**						**85**	**2,355**	
DM										
	2003					**0.03**				
	2004					**0.09**				
	2005	**5.07**	**0.00**	**5.07**						**0.40**
JM										
	1990*	**913**								
	1995*									
	1996									
	1999	**300**								
	2000A	**1,437**								
VC		**A**								
	1990	**7**								
	1995	**7**								
	1996	**8**								
	1997	**8**								
	1998	**8**								
	1999	**8**								
	2000	**9**								
	2001	**0**								
	2002	**0**								
	2003	**0**								
TT										
	1999	**23**								
	2000	**25**								
	2001	**16**								
	2002	**22**								
	2003	**3**								

WT3: WATER USE BY SUPPLY CATEGORY AND ACTIVITIES

H

Concept and Definition

Total water supply is the volume of water supplied for final use, either as public water supply (by economic units belonging to ISIC 41), as self supply (where the abstractor is also the end user), or as other supply (where the abstractor supplies the water to a different end user). Public water supply is broken down by main groups of activities to which the water is supplied according to ISIC rev.3.

The *use* of water is wide and includes many economic activities, such as agriculture and forestry, fishing, manufacturing, hotels and restaurants, as well as households, and for recreation. It is important to know the breakdown of water use according to these different economic activities and households to determine how best to design polices for water resources management. Growing populations, as well as increased economic activities, have caused an increase in the demand for water resources. In the CARICOM region, the tourism industry is a major user of water and sustainable tourism policies and practices can be designed to monitor water use.

Water Supply Category and Activities

Total public water supply is water supplied by economic units engaged in collection, purification and distribution of water (including desalting of sea water to produce water as the principal product of interest, and excluding system operation for agricultural purposes and treatment of waste water solely in order to prevent pollution.) It corresponds to ISIC division 41. Deliveries of water from one public supply undertaking to another are excluded.

Irrigation water refers to water which is applied to soils in order to increase their moisture content and to provide for normal plant growth.

Self-supply is the abstraction of water for one's own final use including water drawn from village wells.

Other supply refers to any supply of water not specified elsewhere in particular, supplies from commercial and industrial establishments, whether marketed or not. This definition also includes the supply of reusable water.

Water losses during transport is the volume of water lost during transport between a point of abstraction and a point of use, and between points of use and reuse.

Total water supply refers to the delivery of water to users and abstraction for one's own final use. Total water supply excludes water used in hydropower generation. (Total public water supply + Self-supply + Other supply)
UNSD/UNEP 2001 and 2004 questionnaires on Environment statistics, Water section

Method of Computation

Water Use by Supply Category and Activities was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

Water is a resource essential to life. A sustainable use of water has to ensure a balance between abstraction and natural rate of recharge, in the long-term and a high level of environmental protection and a secure supply of high quality water for human consumption and economic purposes.

In many areas, groundwater abstraction exceeds recharging rates and the aquifer becomes overexploited. The consequent depletion of underground water resources can have a negative impact on biodiversity and the concerned aquatic ecosystems. At the same time, an unsustainable use of water undermines the basis for further economic development. Water demand varies considerably between regions, depending on natural conditions, economic and demographic structures. Water use for industry and domestic consumption are considerably higher in the developed countries than in the developing ones. In developing countries, water use for agriculture is the main consuming sector and water consumption for domestic purposes is increasing, particularly in newly urbanised agglomerations. *(http://www.un.org/esa/sustdev/sdissues/consumption/cpp1224m11.htm)*

Data Assessment

Four Member States provided data on Water Use by Supply Category and Activities and all countries followed the internationally recommended definition for this indicator. This indicator is, therefore, harmonized.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.12.3 (a)** for the original sources of the data, as specified by the UNSD, on water of Member States and Associate Members.

Evaluation

Data on Water Use by Supply Category and Activities is presented in **Table 12.3** below for Belize, Dominica, Jamaica and Trinidad and Tobago. For the period 1995 to 2000, *Total water supply* in Belize

averaged 1,082 millions of cubic meters per year with *water losses during transport* averaging 1,202 millions of cubic meters per year. Data reported for Dominica for the years 2003 to 2005 showed that *Net freshwater delivered by the water supply industry* averaged 4.1 millions of cubic meters for the three year period. In 2005, Dominica also reported that *water supply to households* 2.8 millions of cubic meters while *total water supply* was 4.67 millions of cubic meters. *Water losses during transport* were 0.4 millions of cubic meters or 8.6 per cent of total water supply. Dominica also reported that 90 per cent of its *population was supplied by water supply industry* in 2005.

Total public water supply for Jamaica was 300.45 millions of cubic meters in 1999, and increased significantly to 42,866 millions of cubic meters in 2000 falling slightly to 41,855 millions of cubic meters in 2001. *Total water supply including self-supply and other sources of supply* was reported at 913 millions of cubic meters in 1990 and was estimated to be 1,437 millions of cubic meters in 2000. In 1996, 85 per cent of Jamaica's population was connected to public water supply.

Trinidad and Tobago's *total public water supply* for the period 1999 to 2002 averaged 302 millions of cubic meters of which *Manufacturing industries* were supplied an average of 32 millions of cubic meters of water and *Agriculture, forestry, fishing* activities 5 millions of cubic meters. *Public water supply* to *households* averaged 140 millions of cubic meters for the period and *Water losses during transport* averaged 216 millions of cubic meters. In 1999, 70 per cent of the population was connected to public water supply and at the end of the period 67 per cent of the population was connected to public water supply.

Table 12.3 Water Use by Supply Category and Activities: 1990, 1995 - 2005

(mio m^3/y)

Country	Year	Total public water supply (ISIC 41) (1)						Self-supply (2)	Other supply (3)	Total water supply (4)= (1)+(2)+(3)	Water losses during transport *	Net freshwater delivered by water supply industry (ISIC 41) (=1-2) (=6+7+8+9+10)	Population connected to public water supply	Population supplied by water supply industry (ISIC 41)
		Economic activities					H/holds							
		Agriculture, forestry, fishing (ISIC 01-05)	Manufacturing industries (ISIC 15-37)	Production and distribution of electricity (ISIC 40)	Other economic activities	Total								
BZ														
	1995									929	1,353			
	1996									919	1,335			
	1997									1,035	1,194			
	1998									1,129	1,173			
	1999									1,181	1,104			
	2000									1,301	1,055			
DM														
	2003											4.05		
	2004											4.02		
	2005						2.8			4.67	0.4	4.27		90
JM														
	1990									913				
	1999					300								
	1996												85	
	2000					42,866				1,437 A				
	2001					41,855								
TT														
	1999	5	31	n/k	n/k	286	134	n/k	n/k	n/k	208		70	70
	2000	5	31	n/k	n/k	298	138	n/k	n/k	n/k	213		69	69
	2001	5	32	n/k	n/k	291	142	n/k	n/k	n/k	219		68	68
	2002	5	32	n/k	n/k	332	146	n/k	n/k	n/k	223		67	67

WT4: WASTE WATER GENERATION

H

Concept and Definition

Total waste water generated is the quantity of water in cubic meters (m3) that is discharged due to being of no further immediate value to the purpose for which it was used or in the pursuit of which it was produced because of its quality, quantity or time of occurrence.

Method of Computation

Waste Water Generation was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

The amount of *waste water generated* is linked to the amount of water used. For industries and households, the major part of the water used (except water that is contained in the product or otherwise irretrievable, water that is lost due to leakage, and evaporation) is returned to the environment as (treated or non-treated) waste water. The table asks for the estimated volume of waste water according to its origin (main economic activities defined by ISIC rev.3, and households), regardless to its pollutant content, its pathways and its destination.

Using water more effectively reduces both the need for high quality water and the amount of wastewater generated. Reducing the water sent to onsite wastewater treatment systems may improve the overall process performance by reducing the hydraulic loading and, in some cases, providing a more stable wastewater flow.

The choice to use water more efficiently reduces water needs and wastewater generation. An important first step to water conservation is to realize how much water various activities use.

Data Assessment

Of the eighteen Member States and Associate Members that usually report data, Trinidad and Tobago was the only country that provided data for this indicator. Data was provided on Household waste water generated only.

Trinidad and Tobago followed the internationally recommended definition on wastewater generated by households. This indicator is, therefore, harmonized.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD.

Please refer to **Appendix 1.12.4 (a)** for the original sources of the data, as specified by the UNSD, on water of Member States and Associate Members.

Evaluation

Table 12.4 below presents data for Trinidad and Tobago for the period 1995 to 2002 on total waste water generated by Households. The data shows that there was an overall decline of 6.3 per cent in total waste water generated by Households from 1995 when 95 million cubic meters was reported to 2002 when 89 million cubic meters of waste water was generated.

Table 12.4: Waste Water Generation: 1995 - 2002

(1000 m^3/d)

Country	Year	Total waste water generated						
		Agriculture, forestry and fishing (ISIC 01-05)	Mining and quarrying (ISIC 10-14)	Manufacturing Industries (ISIC 15-37)	Production and distribution of electricity (ISIC 40)	Construction (ISIC 45)	Other economic activities	Households
TT								
	1995							95,192
	1996							83,259
	1997							72,019
	1998							83,490
	1999							81,745
	2000							80,000
	2001							84,596
	2002							89,183

WT5: WASTE WATER TREATMENT FACILITIES

H

Concept and Definition

The share of the resident population connected to public/urban waste water collecting system, to public/urban waste water treatment and to independent treatment facilities indicate the coverage and level of sanitation. The table also asks for the number and design capacity of waste water treatment plants according to the provided level of treatment to understand the infrastructure available for waste water treatment.

Waste water collection and treatment is often concentrated in urban settlements. The table includes selected variables on water supply and waste water treatment at city level.

Wastewater can be discharged directly into water bodies, or may be treated to remove some of the pollutants before being discharged. This table asks for details (number, design capacity) of the wastewater treatment infrastructure serving the population of the country, and covers urban treatment stations serving a larger population as well as independent treatment stations for a small number of households. The amount and type of pollutants removed will depend on the technical specifications of the wastewater treatment plant.

Water Supply Category and Activities

Population connected to waste water collecting system is the percentage of the resident population connected to the public waste water collecting systems (sewerage). Public waste water collecting systems may deliver waste water to treatment plants or may discharge it without treatment to the environment.

Population connected to waste water treatment is the percentage of the resident population whose waste water is treated at public waste water treatment plants.

Population connected to independent treatment (septic tanks) is the percentage of resident population whose waste water is treated in individual, often private facilities such as septic tanks.

Population not connected to wastewater treatment is the percentage of resident population whose wastewater is neither treated in urban treatment plants nor in independent treatment facilities.

Sewage sludge production (dry matter) is the accumulated settled solids, either moist or mixed, with a liquid component as a result of natural or artificial processes, that have been separated from various types of wastewater during treatment. Data on dry weight should be delivered. If data is only available for wet weight, please fill in the data for wet weight and specify this in a footnote.

Primary urban wastewater treatment refers to the treatment of (urban) wastewater by a physical and/or chemical process involving settlement of suspended solids, or other process in which the Biological Oxygen Demand (BOD5) of the incoming wastewater is reduced by at least 20% before discharge and the total suspended solids of the incoming wastewater are reduced by at least 50%.To avoid double counting, water subjected to more than one type of treatment should be reported under the highest level of treatment only.

Actual occupation (Volume) is the average daily volume of wastewater that treatment plants actually treat.

Method of Computation

Waste Water Treatment Facilities was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

Waste water is a major problem in many countries, especially in developing countries, because of a lack of wastewater treatment facilities or unaffordable technologies. There are three main types of waste water treatment, mechanical which facilitates the sedimentation of the coarsest particles, biological which enables the decomposition of biological matter contained in wastewater, and advanced which enables the removal of water-soluble nutrients and heavy metals.

Data Assessment

Of the eighteen Member States and Associate Members that usually report data, Belize, Dominica and Trinidad and Tobago were the only countries that provided data for this indicator. This may be due to the fact that environment statistics is new to Region.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD.

Please refer to **Appendix 1.12.5 (a)** for the original sources of the data, as specified by the UNSD, on water of Member States and Associate Members.

Evaluation

Table 12.5 below shows data on Waste Water Treatment Facilities for three Member States Belize, Dominica and Trinidad and Tobago. Data for Belize shows that in 1991 15.8 per cent of the population was

connected to the waste water collecting system and this declined slightly to 15.1 per cent in 2000. The data on the percentage of the Population in Belize connected to waste water treatment declining slightly from 16 per cent in 1991 to 15 per cent in 2000. 19 per cent of the Population was connected to independent treatment (septic tanks) facilities as compared to 35 per cent in 2000 representing an increase of 16 per cent. The number of Waste water treatment plants in Belize increased form 4 to 6 plants from 1991 to 2000.

Selected Variables at the City Level show that 41.7 per cent of the city population of 52.7 thousand was connected to waste water collecting system and waste water treatment facility in 1999 and this increased in 2000 out of an increased population of 54.1 thousand to 54.6 per cent. The city level population was further increased in 2002 to 56.7 thousand out of which 40 per cent was connected to waste water collecting system and waste water treatment facility. There were two (2) Waste water treatment plants reported in the city from 1999 to 2000.

Data for Dominica show that 23 per cent of the Population was connected to waste water collecting system and 13 per cent were connected to waste water treatment facility in 2005. The data also shows that in Dominica there was one (1) Primary urban wastewater treatment facility with 2.3 thousand cubic meters of hydraulic load in 2005 and Total Sewage sludge production (dry matter) was 2 tonnes.

Available information for Trinidad and Tobago shows that the total Population connected to a waste water collecting system and waste water treatment facility was 233,283 in 2002. Data also shows that there were 12 Biological treatment facilities from 1990 to 2002 and their Design capacity varied during the period 1995 to 2002 from 95 million cubic meters to 89 million cubic meters in 2002.

Table 12.5: Waste Water Treatment Facilities: 1991, 1995 - 2002

Country	Year	City Population	Population connected to waste water collecting system	Population connected to waste water treatment	Population connected to waste water collecting system	Population connected to waste water treatment	Population connected to independent treatment (septic tanks)	Population not connected to wastewater treatment	Sewage sludge production (dry matter)	Primary urban wastewater treatment		Waste water treatment plants		Design capacity of waste water treatment plants of which: Biological treatment
										Number of plants	Actual occupation (Volume)	of which: Biological treatment	Total	
		1000	% of pop.	% of pop.	Number	Number	% of pop.	% of pop.	1000 t	Number	1000 m3/d	Number	Number	1000 m3/d
BZ														
	1991		15.8	15.8			18.7						4	
	2000		15.1	15.1			34.7						6	
BZ														
	1995	52.5	0.0	0.0									0	
	1996	52.7	0.0	0.0									0	
	1997	55.9	0.0	0.0									0	
	1998	55.8	0.0	0.0									0	
	1999	52.7	41.7	41.7									2	
	2000	54.1	54.6	54.6									2	
	2001	55.4	0.0	0.0									2	
	2002	56.7	40.0	40.0									2	
DM														
	2005		23	13				87	0.002	1	2			
TT														
	1990*											12		
	1995*											12		95,192
	1996											12		83,259
	1997											12		72,019
	1998											12		83,490
	1999											12		81,745
	2000											12		80,000
	2001											12		84,596
	2002				233,283	233,283						12		89,183

WT6: WATER QUALITY OF SELECTED RIVERS

H

Concept and Definition

Information was collected on the water quality of selected rivers, lakes and coastal areas as measured at selected measuring stations. The tables include the most frequently measured parameters of ambient water quality, for which the annual mean concentrations are to be reported, accompanied by information on the selected water body and measuring station. The selection of the water bodies should be based on their national (economic, demographic, geographic, hydrologic) importance and on the quantity and quality of available measurements. The selection of the measuring station should be based on the availability of longer time series of measurements.

Water Supply Category and Activities

Biochemical Oxygen Demand (BOD_5) is the amount of dissolved oxygen required by organisms for the aerobic decomposition of organic matter present in water. This is measured at 20 degrees Celsius for a period of five days. The parameter yields information on the degree of water pollution with organic matter.

Dissolved Oxygen (DO) is the amount of gaseous oxygen (O_2) actually present in water expressed in terms of its presence in the volume of water (milligrams of O_2 per litre).

Chemical Oxygen Demand (COD) is the index of water pollution measuring the mass concentration of oxygen consumed by the chemical breakdown of organic and inorganic matter. This is a measure of potassium permanganate ($KMnO_4$) consumed, calculated in terms of oxygen equivalent.

Total Dissolved Solids (TDS) is the total weight of dissolved mineral constituents in water. Excessive amounts make water unsuitable for drinking or for use in industrial processes.

Total Phosphorus is the sum of phosphorus compounds in water measured in terms of phosphorus. Phosphorus is an element that, while being essential to life as a key limiting nutrient factor, nevertheless contributes - together with nitrogen - to the eutrophication of lakes and other bodies of water.

Total Nitrogen is the sum of inorganic and organic nitrogen compounds (excluding N_2) in water measured in terms of nitrogen. Nitrogen - together with phosphorus - contributes to eutrophication of water bodies.

Faecal Coliform is micro organisms found in the intestinal tract of human beings and animals. Their presence in water indicates faecal pollution rendering water unsuitable for drinking without prior treatment.

Method of Computation

Water Quality of Selected Rivers was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

The quality of water fit for human consumption can be measured via biological, physicochemical and chemical variables. A major cause of the deterioration of *water quality* is the discharge of industrial and household wastes into water bodies. Coastal zones, estuaries and shorelines of large lakes are particularly favoured for the location of highly polluting industries because they appear to be an easy solution for waste disposal.

The contaminants of major concern are toxins such as heavy metals and pesticides, organic matter, nutrient loadings such as fertilizer run-off, deposits from acid precipitation and pathogens such as coliform. Such contamination can lead to, inter alia, eutrophication and the spread of water borne diseases, and can therefore be detrimental to both human health and the health of aquatic ecosystems.

In the CARICOM Member States, a common threat to the water quality is the contamination of supply by human and livestock waste, industry-related pollution, and in some cases, pesticides and other agricultural chemicals. The domestic waste problem may be linked to inefficient waste water treatment plants in the region. In many instances waste is inadequately treated before being discharged into receiving water bodies. The leaching of pollutants into ground water supplies is also a concern in CARICOM Member States, as is, salt water intrusion into ground water supplies. Salt water intrusion into acquifers is a major issue in countries like Barbados which is heavily dependent on its ground water supply.

Pollutants in water bodies in CARICOM Member States come from either point or non point sources. Point sources of pollution include specific agricultural and industrial sites that discharge heavy metals such as lead, zinc, copper, and nutrients like phosphates. Petroleum products and domestic waste, mentioned previously, are also regarded as point source pollutants.

The major non-point sources of pollution in CARICOM Member States are agricultural runoff, storm-water run-off and percolation of contaminated water from solid waste landfills and sewerage systems. Pesticides and fertilisers are some of the deleterious components of contaminated agricultural runoff.

Data Assessment

Of the eighteen Member States and Associate Members that usually report data, Jamaica and Trinidad and Tobago were the only country that provided data for this indicator.

Both Member States followed the internationally recommended definition for the collection of this indicator. This indicator is harmonized.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of from Member States and Associate Members.

Please refer to **Appendix 1.12.6 (a)** for the original sources of the data, as specified by the UNSD, on water of Member States and Associate Members.

Evaluation

The quality of water fit for human consumption can be measured via biological, physicochemical and chemical variables. Most of the water quality studies in the country have been restricted to the Caroni River Basin because it accounts for 30 per cent of the drinking water for the country. The Caroni River was identified as a major source of pollution for the Gulf of Paria, which is located along the west coast. Data is presented for Jamaica and Trinidad and Tobago in **Table 12.6** below.

Table 12.6: Water Quality of Selected Rivers: 1990, 1995 - 1998 and 2000 - 2002

Country	Year	Name of River	Name of Measuring station	Distance to mouth or downstream frontier: Mean	Sampling frequency (/year) Min	Sampling frequency (/year) Max	Sampling depth (m)	Annual average flow m_3/s	Biochemical oxygen demand (BOD_5) mg O_2/l	Dissolved oxygen (DO)	Total dissolved solids (TDS)	Total Suspended Solids (TSS) mg/l	Nitrate (NO_3) mg/l
JM (Wag Water River)	2001								a 0.1 - 9.27				
TT													
	2000 [1]	Maraval River	WASA Maraval Raw	5			0.3						5.9
	2001 [2]	Maraval River	WASA Maraval Raw	5			0.3						4.6
	1997 [3]	Caroni River		20				12.2	10	5	140	32	
	1990 [4]	Caroni River at W.T.P.							3	5			
	1995 [4]	Caroni River at W.T.P.							2	4			
	1996 [4]	Caroni River at W.T.P.							3	2			
	2000 [1]	Caura	WASA Caura Raw	4									1.2
	2001 [2]	Caura	WASA Caura Raw	4									1.9
	2000 [1]	Guanapo	WASA Guanapo Raw	8									1.2
	2001 [2]	Guanapo	WASA Guanapo Raw	8									1.4
	1998 [5 A]	Maracas	Mouth of Maracas Raw	8						5			
	2002	Oropuche River - La Fortune Pluck Road				2	0.5			2		35	
	1990 [4]	North Oropouche at W.T.P.							1.0	8.6			
	1995 [4]	North Oropouche at W.T.P.							0.7	8.2			
	2002 [B]	Godineau River - La Fortune Pluck Road				2	0.5			0		16	

Table 12.6: Water Quality of Selected Rivers: 1990, 1995 - 1998 and 2000 - 2002

Country	Year	Phosphates (PO_4)	Total Ammonia (NA_3)	Chloride (Cl)	pH	Temperature	Conductivity	Turbidity	Salinity	Copper	Zinc (Zn)
		mg/l		mg/l		°C	uS/cm	NTU	%	mg/l	mg/l
JM (Wag Water River)											
	2001										
TT											
	2000 [1]	0.1		23.7	6.9		1	5			0.02
	2001 [2]	0.1		20.4	7.6		1	2			0.00
	1997 [3]				6.9	27	187	86			
	1990 [4]										
	1995 [4]										
	1996 [4]										
	2000 [1]	0.1		11.9	7.5		0.2	5.9			
	2001 [2]			15.2	7.8		0.3	0.4			
	2000 [1]			8.0	8.2		0.2	1.1			
	2001 [2]			9.3	7.8		0.3	0.6			
	1998 [5 A]				6.7	27		11	0.20		
	2002	0.6	0.2							4.0	8.0
	1990 [4]										
	1995 [4]										
	2002 [B]	0.5	0.2							0.7	3.0

Table 12.6: Water Quality of Selected Rivers: 1990, 1995 - 1998 and 2000 - 2002

Country	Year	Total Organic Carbon (TOC)	Total phosphorus	Total nitrogen	Faecal coliform	Faecal coliform	Dissolved Organic Carbon (DOC)	Dissolved and Dispersed Petroleum Hydrocarbon (DDPH)
		mg/l	mg P/l	mg N/l	MPN/100ml**	Counts/100ml	mg/l	mg/l
JM (Wag Water River)			a	a	a			
	2001		0.027 - 0.899	0.003 - 0.447	50 - 1600			
TT								
	2000 [1]	1.1					1	
	2001 [2]	1.33					1	
	1997 [3]		1			2,000		
	1990 [4]				9,260			
	1995 [4]				4,500			
	1996 [4]							
	2000 [1]	0.47					0.9	
	2001 [2]	1.53					0.1	
	2000 [1]	1.1					1.3	
	2001 [2]	1.6					0.8	
	1998 [5 A]					24,000		
	2002							
	1990 [4]				2,839			
	1995 [4]				180			
	2002 [B]							

WT7: WATER QUALITY OF SELECTED COASTAL AREAS H

Concept and Definition

The data include the most frequently measured parameters of ambient water quality, for which the annual mean concentrations are to be reported, accompanied by information on the selected water body and measuring station. The selection of the water bodies should be based on their national (economic, demographic, geographic, hydrologic) importance and on the quantity and quality of available measurements. The selection of the measuring station should be based on the availability of longer time series of measurements.

Water Supply Category and Activities

Biochemical Oxygen Demand (BOD_5) is the amount of dissolved oxygen required by organisms for the aerobic decomposition of organic matter present in water. This is measured at 20 degrees Celsius for a period of five days. The parameter yields information on the degree of water pollution with organic matter.

Dissolved Oxygen (DO) is the amount of gaseous oxygen (O_2) actually present in water expressed in terms of its presence in the volume of water (milligrams of O_2 per litre).

Chemical Oxygen Demand (COD) is the index of water pollution measuring the mass concentration of oxygen consumed by the chemical breakdown of organic and inorganic matter. This is a measure of potassium permanganate (KMnO4) consumed, calculated in terms of oxygen equivalent.

Total Dissolved Solids (TDS) is the total weight of dissolved mineral constituents in water. Excessive amounts make water unsuitable for drinking or for use in industrial processes.

Total Phosphorus is the sum of phosphorus compounds in water measured in terms of phosphorus. Phosphorus is an element that, while being essential to life as a key limiting nutrient factor, nevertheless contributes - together with nitrogen - to the eutrophication of lakes and other bodies of water.

Total Nitrogen is the sum of inorganic and organic nitrogen compounds (excluding N_2) in water measured in terms of nitrogen. Nitrogen - together with phosphorus - contributes to eutrophication of water bodies.

Faecal Coliform is micro organisms found in the intestinal tract of human beings and animals. Their presence in water indicates faecal pollution rendering water unsuitable for drinking without prior treatment.

Method of Computation

Water Quality of Selected Coastal Areas was obtained from questionnaires distributed to Member States/Associate Members through a UNSD/UNEP/CARICOM collaboration according to the categories mentioned above.

Indicator Relevance

See *Water Quality of Selected Rivers* for indicator relevance.

Data Assessment

Trinidad and Tobago was the only Member States that provided data for this indicator. The Member States followed the internationally recommended definition for the collection of this indicator. This indicator is, therefore, harmonized.

Data Sources

In accordance with the decision that the UNSD would provide data on waste, water, land, and air to the CARICOM Secretariat, data for this indicator was collected from the UNSD instead of directly from Member States and Associate Members.

Please refer to **Appendix 1.12.7 (a)** for the original sources of the data, as specified by the UNSD, on water of Member States and Associate Members.

Evaluation

Data for Trinidad and Tobago is presented in **Table 12.7** below on the Water Quality of Selected Coastal Areas for the years 1997, 1998 and 2000.

Table 12.7: Water Quality of Selected Coastal Areas: 1997, 1998 and 2000

Country	Year	Name of the estuary/ coastal location	Name of Measuring station	Depth (m)		Sampling frequency (/year)		Sampling depth (m)	Chlorophyll-a (Chl-a)	Total phosphate (Tpo_4)	Ammonia (NH_3)	Copper
				Mean	Max	Min	Max			mg P/l	mg N/l	mg/l
TT												
	1998 [A 1]	Maracas Bay	In Front of Lifeguard Hut					0.7				
	1997 [B]	Gulf of Paria	# 7 Caroni Swamp	1	1	2	2	1.0	0.001			
	1998 [B]	Gulf of Paria	# 7 Caroni Swamp	1	1	2	2	1.0	0.003			
	1997 [B]	Gulf of Paria	# 8 Caroni River	1	1	2	2	1.0	0.020			
	1998 [B]	Gulf of Paria	# 8 Caroni River	1	1	2	2	1.0	0.007			
	1997 [B]	Gulf of Paria	# 5 Pt. Lisas	1	1	2	2	1.0	0.004			
	1998 [B]	Gulf of Paria	# 5 Pt. Lisas	1	1	2	2	1.0	0.011			
	1997 [B]	Gulf of Paria	#2 Guapo Bay	1	1	2	2	1.0	0.002			
	1998 [B]	Gulf of Paria	#2 Guapo Bay	1	1	2	2	1.0	0.007			
	1997 [B]	Gulf of Paria	#4 Point-a-Pierre	1	1	2	2	1.0	0.004			
	1998 [B]	Gulf of Paria	#4 Point-a-Pierre	1	1	2	2	1.0	0.011			
	1997 [B]	Gulf of Paria	#9 Port-of-Spain	1	1	2	2	1.0	0.001			
	1998 [B]	Gulf of Paria	#9 Port-of-Spain	1	1	2	2	1.0	0.002			
	2000 [B]	Godineau River Mouth		1	1	0	2	1.0		0.2	0.7	4.0

Table 12.7: Water Quality of Selected Coastal Areas: 1997, 1998 and 2000

Country	Year	Zinc	pH	Temperature	Turbidity	Salinity	Dissolved oxygen (DO)	Total phosphorus	Total nitrogen	Faecal coliform	Dissolved and Dispersed Petroleum Hydrocarbon (DDPH)
		mg/l		°C	NTU	%	mg/l	mg P/l	mg N/l	MPN/100ml**	mg/l
TT											
	1998 [A 1]		8	28.5	1.9	26.8	5.2			120	
	1997 [B]							0.030	0.219		0.37
	1998 [B]							0.023	0.302		1.22
	1997 [B]							0.024	0.476		0.87
	1998 [B]							0.044	0.676		7.94
	1997 [B]							–	0.017		0.72
	1998 [B]							0.069	0.807		0.84
	1997 [B]							0.024	0.371		0.37
	1998 [B]							0.043	0.301		6.39
	1997 [B]							0.029	0.231		3.07
	1998 [B]							0.073	0.922		25.85
	1997 [B]							0.026	0.329		0.87
	1998 [B]							0.031	0.271		6.39
	2000 [B]	11.0									

Appendix 1.12
Sources of Water Data

1.12.1 (a): Sources of Data for Table 12.1 - Renewable Fresh Water Resources: 1990, 1998 - 2002 and 2005

Country	Data Source
DOMINCA	Environmental Coordinating Unit
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	Water and Sewerage Authority

1.12.1 (b): Notes for Table 12.1 - Renewable Fresh Water Resources: 1990, 1998 - 2002 and 2005

Country	Notes
DOMINCA	Precipitation figures should be based on representative precipitation measurements from across the country and the country's climatic zones. Do not confuse freshwater consumption with freshwater use, as these terms are different concepts in water statistics. Please see the definitions for more information. Gross freshwater abstracted is water removed from any source, either permanently or temporarily. Includes abstraction by the water supply industry (ISIC 41) and direct abstraction by other activities, and water abstracted but returned without use, such as mine water and drainage water. Water returned without use is water discharged into freshwaters without use, or before use. Occurs primarily during mining and construction activities. Excludes discharges into the sea.
JAMAICA	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply.
TRINIDAD AND TOBAGO	n/a Not Available Info on outflow of surface and ground waters can't be calculated

1.12.2 (a): Sources of Data for Table 12.2 - Water Abstraction by Source: 1990, 1995 – 2005

Country	Data Source
BELIZE	Statistical Institute of Belize
DOMINCA	Environmental Coordinating Unit
JAMAICA	Statistical Institute of Jamaica
ST VINCENT AND THE GRENADINES	Central Water and Sewerage Authority
TRINIDAD AND TOBAGO	Water and Sewerage Authority

1.12.2 (b): Notes for Table 12.2 - Water Abstraction by Source: 1990, 1995 - 2005

Country	Notes
BELIZE	* Units are in million gallons.
DOMINCA	This table covers water abstraction from water bodies (rivers, lakes, groundwater etc.) by the abstractor. Electricity industry excludes water for hydroelectricity generation purposes. Information for this section would have to be collected from the Division of Agriculture, DOMLEC (Electric Utility) and Airport Monitoring Stations to get an accurate figure. However, due to limited time to complete the form, this information cannot be obtained because a database of the information needed does not currently exist due to limited capacity.
JAMAICA	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply. A - Projected. ** 1993 data represents demand for water from all sources.
ST VINCENT AND THE GRENADINES	A Data refer to Fresh surface water.
TRINIDAD AND TOBAGO	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply. Figures shown are reflective of private abstraction only n/a Not available

1.12.3 (a): Sources of Data for Table 12.3 - Water Use by Supply Category and Activities: 1990, 1995 - 2005

Country	Data Source
BELIZE	Statistical Institute of Belize
DOMINCA	Environmental Coordinating Unit
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	Water and Sewerage Authority

1.12.3 (b): Notes for Table 12.3 - Water Use by Supply Category and Activities: 1990, 1995 – 2005

Country	Notes
BELIZE	* This table covers water supplied by water supply industries, whether under public or under private control. It corresponds to what was called public water supply in previous questionnaires. * and other sources as well
DOMINCA	This table covers water abstraction from water bodies (rivers, lakes, groundwater etc.) by the abstractor. Electricity industry excludes water for hydroelectricity generation purposes. Information for this section would have to be collected from the Division of Agriculture, DOMLEC (Electric Utility) and Airport Monitoring Stations to get an accurate figure. However, due to limited time to complete the form, this information cannot be obtained because a database of the information needed does not currently exist due to limited capacity.
JAMAICA	A - Projected.
TRINIDAD AND TOBAGO	1. Total water into supply is based on actual flows recorded at the Water and Sewerage Authority's water treatment plants. 2. A nominal flow for agricultural use was assumed to be 14 Mld. 3. Consumption for Manufacturing industries was derived from actual flows recorded from meters installed. 4. The Domestic Demand was determined as follows (i) The number of domestic connections (A1, A2, A3 and A4) was determined from the Authority's record. (ii) The population served was estimated assuming occupancy of 4.0 capital/household. (iii) Demand was calculated based on levels suggested by London Economics (1) for each year.

1.12.3 (b) cont'd: Notes for Table 12.3 - Water Use by Supply Category and Activities: 1990, 1995 - 2005

Country	Notes
TRINIDAD AND TOBAGO	5. Unaccounted for Water levels of 55% were assumed. This was based on investigations conducted by the Water and Sewerage Authority within District Metered Areas which it has established. 6. % population connected to the public water supply was determined from the population from 4(ii) above, and an estimated total population in 1998 of 1.283 million persons and an annual growth rate of 1.2% 7. Information on the period 1990 to 1998 can be estimated based on previous study done by the Japanese International Consultants Agency (JICA) in 1990 - copy to be located n/k Not known

1.12.4 (a): Sources of Data for Table 12.4 - Waste Water Generation: 1995 – 2002

Country	Data Source
TRINIDAD AND TOBAGO	Water and Sewerage Authority of Trinidad & Tobago

1.12.4 (b): Notes for Table 12.4 - Waste Water Generation: 1995 - 2002

Country	Notes
TRINIDAD AND TOBAGO	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply. * Flows above are measured from domestic sewer systems flowing into the Water and Sewerage Authority owned and operated treatment plants. * Flows are estimated in cubic metres per day. X- Information not available.

1.12.5 (a): Sources of Data for Table 12.5 - Waste Water Treatment Facilities: 1991, 1995 – 2002

Country	Data Source
BELIZE	CSO
DOMINCA	Environmental Coordinating Unit
TRINIDAD AND TOBAGO	Water and Sewerage Authority of Trinidad & Tobago

1.12.5 (b): Notes for Table 12.5 - Waste Water Treatment Facilities: 1991, 1995 - 2002

Country	Notes
BELIZE	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply.
DOMINCA	*To avoid double counting, water subjected to both primary and secondary treatment should be reported under secondary treatment only. Tertiary treatment should be included into secondary treatment.
TRINIDAD AND TOBAGO	*If data are not available for the years stated in each table, please provide the data you might have for other years and add a footnote for the years to which the data apply. x- Information is unknown, the volume is not measured

1.12.6 (a): Sources of Data for Table 12.6 - Water Quality of Selected Rivers: 1990, 1995 - 1998 and 2000 – 2002

Country	Data Source
JAMAICA	Statistical Institute of Jamaica
TRINIDAD AND TOBAGO	EMA (2001). Water Quality Monitoring at some Water Sources in North Trinidad Water and Sewerage Authority EMA (1998). ,Bacteriological Water Quality Monitoring at Maracas Beach, Trinidad IMA

1.12.6 (b): Notes for Table 12.6 - Water Quality of Selected Rivers: 1990, 1995 - 1998 and 2000 – 2002

Country	Notes
JAMAICA	a 2000 to 2002 data for 47 visits to six stations.
TRINIDAD AND TOBAGO	1 Data represents one observation for that year 2 Data represents the average of two observations for that year 3 Data represents the daily value over one month of monitoring (Aug 11 to Sept 10 1997) **MPN/100ml: Most Probable Number per 100 ml Source: EMA (2001). Water Quality Monitoring at some Water Sources in North Trinidad 4 Source : Water and Sewerage Authority 5 Data represents one observation for that year in the wet season A Source: EMA (1998). ,Bacteriological Water Quality Monitoring at Maracas Beach, Trinidad B Source : IMA

1.12.7 (a): Sources of Data for Table 12.7 - Water Quality of Selected Coastal Areas: 1997, 1998 and 2000

Country	Data Source
TRINIDAD AND TOBAGO	EMA (1998) Bacteriological Water Quality Monitoring at Maracas Beach, Trinidad Institute of Marine Affairs

1.12.7 (b): Notes for Table 12.7 - Water Quality of Selected Coastal Areas: 1997, 1998 and 2000

Country	Notes
TRINIDAD AND TOBAGO	A - Source: EMA (1998) Bacteriological Water Quality Monitoring at Maracas Beach, Trinidad B - Institute of Marine Affairs 1 - Data represents one observation for that year in the wet season