



Environment Statistics METADATA

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POPULATION AND HOUSEHOLDS

PH 1: Number of Households by Type of Dwelling

Rationale	
Concept and Definition	<p>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.</p> <p>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.</p>
Method of Computation/ Measurement	A census count or household survey in which the proportion is estimated.
Indicator Relevance	Measurement of living conditions
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) para. 1.448 and 2.422
Comments	

PH 2: Number of Households by Type of Tenure

Rationale	
Concept and Definition	<p>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:</p> <ol style="list-style-type: none"> 1. Member of household owns housing unit 2. Member of household rents all or a part of housing unit <ol style="list-style-type: none"> 2.1 Member of household rents all or a part of housing unit as a main tenant 2.2 Member of household rents a part of housing unit as a subtenant 3. Occupied free of rent 4. Other arrangement
Method of Computation/ Measurement	A census count or household survey in which the proportion is estimated.
Indicator Relevance	Measurement of living conditions
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) para. 2.536
Comments	

PH 3: Number of Households by Type of Materials of Outer Walls

Rationale	
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. The types distinguished (brick, concrete, wood, adobe and so on) will depend upon the materials most frequently used in the country concerned and on their significance from the point of view of permanency of construction or assessment of durability.
Method of Computation/ Measurement	A census count or household survey in which the proportion is estimated.
Indicator Relevance	Measurement of living conditions
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) para. 5.525
Comments	

PH 4: Number of Households by Type of Material Used for Roofing

Rationale	
Concept and Definition	The type of material used for roofing refers to the construction material used for roof. Only the predominant material is enumerated and, in the case of a roof, it may be tile, concrete, metal sheets, palm, straw, bamboo or similar vegetation material, mud, plastic sheets and so forth.
Method of Computation/ Measurement	A census count or household survey in which the proportion is estimated.
Indicator Relevance	Provides information about the structural composition and as an indicator of housing that might endanger the health and safety of the occupants. Also provides information about changing housing conditions, typhoon and earthquake readiness, etc.
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) para. 5.528
Comments	

PH 5: Households by Number of Bedrooms

Rationale	
Concept and Definition	<p>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.</p> <p>A bedroom is defined as a room equipped with a bed and used for night rest.</p> <p>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.</p> <p>Average Number of Bedrooms per Household is the ratio of the total number of bedrooms to the total number of households.</p> <p>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.</p> <p>Average number of persons per Bedroom refers to the estimated number of persons occupying a bedroom.</p>
Method of Computation/ Measurement	<p>Average Household Size = $\frac{\text{Total Population}}{\text{Total Number of Households}}$</p> <p>Average Number of Bedrooms per Household = $\frac{\text{Total Number of Bedrooms}}{\text{Total Number of Households}}$</p> <p>Average Number of Persons per Bedroom = $\frac{\text{Average Household Size}}{\text{Average Number of Bedrooms per Household}}$</p>

Indicator Relevance	Provides the basis for estimating the amount of living and sleeping space in the housing unit. Used in combination with number of occupants to provide a measure of crowding. Builders and planners use this information to find out how much additional housing is needed to relieve crowded housing conditions.
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) paras. 2.472 and 2.475. Bholanath, T. 2005, "Methodology for filling major gaps in Environmental Indicators and Statistics.", CARICOM Workshop on Social/Gender and Environment Statistics, Nassau, Bahamas
Comments	

PH 6: Number of Households by Size of Households

Rationale	
Concept and Definition	In the context of household, size refers to the number of persons residing in private households. <i>See PH1 for definition of Household</i>
Method of Computation/ Measurement	A census count or household survey in which the proportion is estimated.
Indicator Relevance	
Data Sources	Census offices/National Statistics Offices.
Data Assessment	
Source of Metadata	United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2 (2008) para. 5.528
Comments	

TOURISM

TO 1(a): Tourist Arrivals by Type of Arrival and Number of Tourist Nights Spent

Rationale	
Concepts and Definitions	<p>A visitor is a traveller 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. (IRTS 2008 para. 2.9)</p> <p>Tourist (or overnight visitor): 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.)</p> <p>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.</p> <p>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.</p> <p>The average length of stay for a number of holiday trips is calculated by dividing the total number of nights spent by the total number of tourism trips. Tourism trips are trips taken by visitors (<i>see definition of visitors</i>). A domestic or an outbound tourism trip refers to the travel of a visitor from the time of leaving his/her usual residence until he/she returns. An inbound tourism trip refers to the travel of a visitor from the time of arriving in a country to the time of leaving. The term tourism visit refers to a stay in a place visited during a tourism trip.</p> <p>Observing tourism trips and visits is not the same as observing visitors, as an individual might make more than one trip or visit during the period of observing visitors, as an individual might make more than one trip or visit during the period of observation.</p>

Method of Computation/ Measurement	<p>Data for this indicator is obtained through the analysis of 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.</p> <p>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.</p> <p>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.</p>
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	2008 International Recommendations for Tourism Statistics (IRTS) for United Nations World Tourism Organization and United Nations Statistics Division
Comments	

TO 1(b): Tourist Intensity Rate, Tourism Density Ratio and Tourist Penetration Ratio

Rationale	
Concept and Definition	<p>Tourist Intensity Rate (TIR) measures the level of tourist arrivals in relation to the country's area and population size. It serves to show countries with particularly high tourism concentration, and consequently potential impact both for the economy as well as the socio-cultural and natural environment. (<i>Harrison, D. (ed) (1992) 'Tourism and the Less Developed Countries', Wiley: UK</i>)</p> <p>Tourism Density Ratio: This ratio attempts to show the density of tourists in the country at any one time on average. Its value is limited by the fact that tourists flows are seasonal and tourism activity tends to be concentrated in specific geographic areas (tourist zones).</p> <p>Tourist Penetration Ratio: Quantifies the average number of tourist 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.</p>
Method of Computation/ Measurement	<p>Tourist Intensity Rate = $\frac{\text{Number of visitors}}{1,000 \text{ population/km}^2}$</p> <p>Tourist Density Ratio = $\frac{\text{Average Length of stay} * \text{number of visitors}}{365 * \text{midyear population estimates}}$</p> <p>Tourist Penetration Ratio = $\frac{\text{Average Length of stay} * \text{number of visitors}}{365 * \text{area in square kilometers}}$</p>
Indicator Relevance	
Data Sources	

Data Assessment	
Source of Metadata	Caribbean Tourism Organization. Sustainable Tourism Development in the Caribbean: Identifying Measurements Instruments. UN Statistics Division: Workshop on Environment Statistics for CARICOM Member Countries. Belize City, August 9th, 2000 pp. 8
Comments	

TO 2: Number of Hotels Classified by Size, Beds and Rooms by Year

Rationale	
Concepts and Definitions	<p>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.</p> <p>Hotels: Hotels and similar establishments are typified as being arranged in rooms, in number exceeding a specified minimum; as coming under a common management; as providing certain services including room service, daily bed-making and cleaning of sanitary facilities; as grouped in classes and categories according to the facilities and services provided; and as not falling in the category of specialised establishments. 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

Method of Computation/ Measurement	Room Occupancy Rate = $\frac{\text{Number of occupied rooms}}{\text{Number of rooms available for use}} \times 100$
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	Caribbean Tourism Statistical Report 2002-2003 (2004) pg. 299 Eurostat, Statistical Office of the European Communities website at http://epp.eurostat.ec.europa.eu/portal/page/portal/tourism/introduction [last accessed: September 4th 2012]
Comments	

TO 3: Visitor Expenditure

Rationale	
Concept and Definition	<p>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:</p> <ul style="list-style-type: none"> • International and domestic tourism expenditure; • Expenditures on same-day visits and overnight stays; and, • Expenditure on accommodations, meals and drinks, shopping, entertainment, etc. <p>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.</p> <p>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.</p>
Method of Computation/ Measurement	<p style="text-align: center;">Types of Expenditures</p> <p>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.</p> <p>Domestic tourism expenditures are defined as expenditures incurred as a direct result of resident visitors travelling within their own country of residence.</p>

	Expenditures on same-day visits/overnight stays are defined as the expenditures of visitors who spend less than twenty-four hours in the country being visited.
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	Eurostat, Statistical Office of the European Communities website
Comments	

TO 4: Tourist Arrivals by Type of Accommodation

Rationale	
Concept and Definition	<p>Tourist Arrivals include all stay-over (or overnight) visitors. It does not, however, include same-day visitors such as 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:</p> <ul style="list-style-type: none"> - 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.
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	Tourism Statistical Report 2002-2003 (2004) pg. 299
Comments	

TO 5: Tourist Arrivals by Country of Origin

Rationale	
Concept and Definition	<p>Tourist Arrivals include all stay-over (or overnight) visitors. It does not, however, include same-day visitors such as cruise passengers and yacht arrivals.</p> <p>Country of Origin: This is the place/country from which the trip originates. It is usually the same as the place and country of residence. The trip may also start from the place of work or education. This is not relevant for tourism since the place of residence may still be considered as the origin. When people live in another place than their usual residence during the survey period (e.g. short-term migrants and seasonal workers), this place should be taken as the origin. For day trips the place of origin may be the second regular residence of the person although it is useful to distinguish them from trips originating from the first residence.</p> <p>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).</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	Eurostat (1996). Applying the Eurostat Methodological Guidelines In Basic Tourism and Travel Statistics.

Comments	
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ENVIRONMENTAL HEALTH

EH 1: Number of Reported Cases of Environmentally Related Diseases

Rationale	
Concept and Definition	<p>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)</p> <p>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.</p> <p>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). (<i>Prevalence and Incidence. WHO Bulletin , 1966; 35:783-784</i>).</p> <p>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 (<i>Prevalence and Incidence. WHO Bulletin, 1966, 35: 783-784</i>).</p> <p>REPORTED CASES refers to the number of cases reported/registered in a specific year, for a given country, territory, or geographic area.</p>

<p>Method of Computation/ Measurement</p>	<p>Types of Environmentally Related Diseases</p> <p>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. <i>(Please refer to the Center for Disease Control website at http://www.cdc.gov/ncidod/dvrd/revb/gastro/faq.htm.)</i></p> <p>Typhoid: Typhoid fever is a bacterial infection caused by ingesting contaminated food or water. Symptoms are characterized by headaches, nausea and loss of appetite.</p> <p>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. <i>(Please refer to the World Health Organization's website at http://www.who.int/topics/malaria/en/)</i></p> <p>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.</p> <p>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. <i>(Please refer to the World Health Organization's website at http://www.who.int/topics/cholera/en/)</i></p> <p>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. <i>(PAHO/WHO Epidemiological Bulletin, Vol. 22 No. 4, December 2000)</i></p>
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	<p>Poisoning: 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. 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.</p> <p>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 diarrhea leads to fluid loss, and may be life-threatening, particularly in young children and people who are malnourished or have impaired immunity. <i>(Please refer to the World Health Organization's website at http://www.who.int/topics/diarrhoea/en/)</i></p> <p>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. <i>(Please refer to the World Health Organization's website at http://www.who.int/topics/respiratory_tract_diseases/en/ [last accessed: June 15th 2009])</i></p> <p>Other: Other refers to any other environmentally related diseases not previously mentioned.</p>
Indicator Relevance	
Data Sources	
Data Assessment	

Source of Metadata	<i>World Health Organization's website at http://www.who.int/</i>
Comments	

EH 3: Number of Households by Type of Sanitation Facilities

Rationale	
Concept and Definition	<p>A sanitary facility is a unit for disposal of human excreta which isolates faeces from contact with people, animals, crops and water sources.</p> <p>The number of households by sanitation facilities describes the types of toilet facilities available to households.</p>
Method of Computation/ Measurement	<ol style="list-style-type: none"> 1. WC linked to sewer is a flush or water closet, which fills from a piped water supply and empties into a sewerage disposal system. 2. WC linked to septic tank/ soak away is similar in some ways to (WC linked to sewer). The system is also water borne but is not linked to sewer. Instead, it empties into a septic tank or soak-away. 3. Pit latrine ventilated and elevated/ Ventilated Improved Pit (VIP) is not a water borne system and is almost invariably located in yards or plot of land occupied by households. The pit latrine is both ventilated and elevated. 4. Pit Latrine ventilated and <u>not</u> elevated is not a water borne system and is almost invariably located in yards or plot of land occupied by households. The pit latrine is ventilated but not elevated. 5. Pit latrine not ventilated is not a water borne system and is almost invariably located in yards or plot of land occupied by households. The pit latrine is not ventilated. 6. Other is some other than those listed above. This category is used only after trying to get one of the above responses through examples. 7. None may refer to situations where members of the household use public facilities or bush/field or any other unacceptable facility. 8. Don't know: no other response obtained.

Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	CARICOM Common Census methodologies for the country's 2010 Population and Housing Census
Comments	

EH 2: Number of Households by Type of Water Supply

Rationale	
Concept and Definition	<p>Water Supply refers to the water available to a community or region and the source and delivery system of that water.</p> <p>The number of households by type of water supply describes the main source of water available to households.</p>
Method of Computation/ Measurement	<ol style="list-style-type: none"> 1. Public piped into dwelling refers to the water received by the household from a public source, which is piped into the dwelling. 2. Public standpipe outside the unit applies when water is available to the household from a standpipe in the street or other areas of public access. 3. Public piped into yard occurs when the household receives running water from a public source through a pipe in the yard or compound on which the dwelling stands. 4. Private piped into dwelling refers to the water received by the household from a private source, and then piped into the dwelling. For example, a household, through its own private arrangement, might pump water from a river or pond through pipes directly into the dwelling unit. Other similar situations also apply, such as when water is piped to dwelling from private catchments (rain water). 5. Truck Borne (not piped into dwelling) occurs when a truck transports and sells water by means of a tanker truck. 6. Private catchments (not piped) occurs where the water supply to the household is not piped but is from private storage facilities such as vats, drums or any other receptacle. Under these arrangements, rainwater collection may be the primary source of supply. 7. River/stream/creek/pond/spring occurs when the main source of water used by household is directly from a river, creek, pond, etc.

Indicator Relevance	Used by public health officials for the bearing of these items on problems of water-borne disease and of pollution. Also used by local public works officials in estimating prospective need for water facilities.
Data Sources	
Data Assessment	
Source of Metadata	CARICOM Common Census methodologies for the country's 2010 Population and Housing Census
Comments	

NATURAL DISASTERS

ND 1: Natural Disasters by Year

Rationale	
Concept and Definition	<p>A disaster 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.</p> <p>(Please refer to International Strategy for Disaster Reduction’s website at http://www.unisdr.org/disaster-statistics/introduction.htm.)</p> <p>A natural disaster is a physical natural event that kills people or overwhelms local capacity for damage control or recovery. (Please refer to Erlingsson, U, 2000-02 “Mapping of Natural Hazards in Nicaragua” at http://www.hydroconsult.se/nicahazards.html)</p> <p>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.</p> <p>Killed: Persons confirmed as dead and persons missing and presumed dead.</p> <p>Injured: People suffering from physical injuries, trauma or an illness requiring medical treatment as a direct result of a disaster.</p> <p>Homeless: These are persons who are in need of immediate assistance in the form of shelter as a consequence of a disaster.</p> <p>Affected: People requiring immediate assistance during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance.</p> <p>Total affected: The sum of people that have been injured, affected and left homeless after a disaster.</p> <p>Estimated damage: The economic impact of a disaster usually consists of direct (e.g. damage to infrastructure, crops, housing) and indirect (e.g. loss of revenues, unemployment, market destabilisation) consequences</p>

	on the local economy. http://www.emdat.be/glossary/9
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	International Agreed Glossary of Basic Terms Related to Disaster Management (1992) UN-DHA, IDNDR, Geneva
Comments	

ENERGY AND MINERALS

EM 1: Energy Consumption by Type and Year

Rationale	
Concept and Definition	<p>Energy consumption refers to all the energy used for heat, power, and electricity generation, regardless of where the energy was produced.</p> <p>Solid fuels include hard coal, lignite, peat, patent fuel, lignite briquettes, peat briquettes, coke and bituminous sands.</p> <p>Liquid fuels include crude oil, natural gas liquids, plant condensate, gasoline, petroleum products, jet fuel, kerosene, liquefied petroleum gas, refinery gas, feedstock, naphtha, lubricants, gas/diesel oils and residual (heavy) fuel oils and bitumen.</p> <p>Gaseous fuels include natural gas and other petroleum gases, such as gasworks gas, coke oven gas and blast furnace gas.</p> <p>Primary electricity refers to electricity generated by non-combustible energy sources and includes electrical energy of geothermal, hydro, nuclear, tide, wind, wave/ocean and solar origin.</p> <p>Traditional fuels include estimates of the consumption of charcoal, fuel wood and bagasse.</p> <ul style="list-style-type: none"> • 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.
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	

Data Assessment	
Source of Metadata	Energy Statistics: Definitions, Units of Measure, and Conversion Factors (see http://unstats.un.org/unsd/publication/SeriesF/SeriesF_44E.pdf [last accessed: September 5th 2012]).
Comments	

EM 2: Number of Households by Type of Fuel Used for Cooking

Rationale	
Concept and Definition	<p>Fuel is defined as combustible matter used to maintain fire, such as coal, wood, oil, or gas, in order to create heat or power.</p> <p>Fuel used for cooking refers to the fuel used predominantly for the preparation of principal meals.</p> <p>The number of households by type of fuel used for cooking describes the types of fuels that households use for cooking.</p>
Method of Computation/ Measurement	<p>Types of Cooking Fuel</p> <p>Charcoal (Coal) is a solid residue that consists mainly of carbon and is obtained by the destructive distillation of wood in the absence of air.</p> <p>Wood refers to all wood in the rough that is used for fuel.</p> <p>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.</p> <p>Kerosene is medium oil that is distilled between 150°C and 300°C. 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.</p> <p>Electricity is an electric current used as a source of power.</p> <p>Other refers to types of cooking fuel not mentioned above.</p>
Indicator Relevance	Used as a measure of the level of living and to determine the adequacy of household facilities. Fuel for cooking important for energy usage and air pollution studies, identifying areas where sudden increases in load on utility companies may be anticipated, and projecting future demand and need for additional facilities.

Data Sources	
Data Assessment	
Source of Metadata	<p>Energy Statistics: Definitions, Units of Measure, and Conversion Factors (see http://unstats.un.org/unsd/publication/SeriesF/SeriesF_44E.pdf [last accessed: September 5th 2012]).</p> <p>CARICOM Common Census methodologies for the country's 2010 Population and Housing Census</p>
Comments	

EM 3: Number of Households by Type of Fuel Used for Lighting

Rationale	
Concept and Definition	<p>Type of lighting refers to the source of lighting predominantly used by occupants of a housing unit.</p> <p>The number of households by type of lighting describes the types of fuels that members of households use for lighting.</p>
Method of Computation/ Measurement	<p>Types of Fuel Used for Lighting</p> <p>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.</p> <p>Kerosene is medium oil that is distilled between 150°C and 300°C. 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.</p> <p>Electricity is an electric current used as a source of power.</p> <p>Other is other types of lighting fuel not so far mentioned.</p>
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	<p>Energy Statistics: Definitions, Units of Measure, and Conversion Factors (see http://unstats.un.org/unsd/publication/SeriesF/SeriesF_44E.pdf [last accessed: September 5th 2012]).</p> <p>CARICOM Common Census methodologies for the country's 2010 Population and Housing Census</p>

Comments	

EM 4: Mineral Production by Type

Rationale	
Concept and Definition	<p>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.</p> <p>Types of Minerals</p> <p>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.</p> <p>Silver is a lustrous, white, ductile, malleable, metallic element, occurring both uncombined and in ores, such as argentite.</p> <p>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.</p> <p>Bauxite is the principal ore of aluminium, composed mainly of hydrous aluminium oxides and aluminium hydroxides.</p> <p>Sand/Gravel is small loose grains of worn or disintegrated rock or an unconsolidated mixture of rock fragments and pebbles.</p> <p>Limestone is a common sedimentary rock consisting mostly of calcium carbonate, CaCO₃. It is used as a building stone and in the manufacture of lime, carbon dioxide, and cement.</p> <p>Salt is a crystalline compound, sodium chloride, NaCl, which occurs as a mineral.</p> <p>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.</p> <p>Crushed Stone is a concretioned earthy or mineral matter (rock) that is quarried and worked into a specific size and shape for a particular</p>

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 ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), 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 $\text{CaMg}(\text{CO}_3)_2$, 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.

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.

Natural gas comprises gases, occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane.

	Other refers to some other type of mineral not so far mentioned.
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

EM 5: Mineral Reserves by Type

Rationale	
Concept and Definition	<p>A 'Mineral Reserve' is the economically mineable part of a measured or indicated mineral resource. It is inclusive of diluting materials and allows for losses that may occur when the material is mined.</p> <p>A 'Mineral Resource' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust (a deposit) in such form and quantity that there are reasonable prospects for eventual economic extraction.</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

LAND USE AND AGRICULTURE

LA 1: Land Use

Rationale	
Concept and Definition	<p>Land use refers to the functional division of land for different human purposes or economic activities. <i>(Please refer to the OECD's Glossary of Statistical Terms website at http://stats.oecd.org/glossary/)</i></p> <p>Land Types</p> <p>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.</p> <ul style="list-style-type: none"> - 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. <p>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</p>

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/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	The definitions used are predominantly sourced from the Standard International Statistical Classification for Land Use adopted by the United Nations Economic Commission for Europe (UNECE). The definitions of 'Forest' and 'Other wooded land' are sourced from the Global Forest Resources Assessment (FRA) published by the FAO.
Comments	

LA 2: Use of Fertilizers by Type and Year

Rationale	
Concept and Definition	<p>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).</p> <p>Use of fertilizers by type and year refers to the yearly extent of fertilizer use in agriculture per unit of agricultural land area.</p> <p>Types of Fertilizers</p> <p>Nitrogenous fertilizers refer to the nitrogen content of commercial inorganic fertilizers.</p> <p>Phosphate fertilizers refer to commercial phosphoric acid (P₂O₅) and cover the P₂O₅ of super-phosphates, ammonium phosphate and basic slag.</p> <p>Potash fertilizers refer to the potassium oxide (K₂O) content of commercial potash, muriate, nitrate and sulphate of potash, manure salts, kainite and nitrate of soda potash.</p> <p>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.</p> <p>Common HS codes for Fertilizers</p> <p>HEADING DESCRIPTION OF GOODS</p>

	<p>31.02 Mineral or chemical fertilizers, nitrogenous.</p> <p>31.03 Mineral or chemical fertilizers, phosphatic.</p> <p>31.04 Mineral or chemical fertilizers, potassic.</p> <p>31.05 Mineral or chemical fertilizers containing two of three of the fertilizing elements nitrogen, phosphorus and potassium; other fertilizers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 kg.</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	The CARICOM Environment in Figures 2002, Caribbean Community Secretariat, United Nations (2003)
Comments	

LA 3: Use of Pesticides by Type and Year

Rationale	
Concept and Definition	<p>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.</p> <p>Use of pesticides by type and year refers to the type and quantity of pesticides used in (or sold to) the agricultural sector.</p>
Method of Computation/ Measurement	<p>Types of Pesticides</p> <p>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.</p> <p>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.</p> <p>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</p>

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 treatments 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.

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 behavior 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.

Pesticides (trade) – refer to insecticides, fungicides, herbicides, disinfectants and others covered by the Harmonised Coding System (HS) code 3808.

Common HS codes for Pesticides

HEADING	DESCRIPTION OF GOODS
3808.91.00	Insecticides
3808.92.00	Fungicides
3808.93.10	Herbicides
3808.93.30	Plant growth regulators
3808.99.10	Rodenticides, put up in forms or packings for retail sale or as preparations or articles
3808.99.20	Other rodenticides

Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	FAO
Comments	

COASTAL AND MARINE RESOURCES

CMR 1: Total and Protected Marine Area

Rationale	
Concept and Definition	<p>A Marine Protected Area (MPA) is “any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment”.</p> <p>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.</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	<p>IUCN 1988. Resolution 17.38 of the 17th General Assembly of the IUCN. IUCN; Gland; Switzerland and Cambridge; UK</p> <p>Greater Wellington Regional Council’s website at http://www.gw.govt.nz/story1210.cfm</p>
Comments	

CMR 2: Fish Landings by Type and Boat Days

Rationale	
Concept and Definition	<p>Fish landings are the part of the fish catch that is put ashore.</p> <p><i>(Please refer to the European Environmental Agency's website at http://glossary.eea.europa.eu/terminology/concept_html?term=fish%20landing [last accessed: June 19th 2009]).</i></p> <p>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).</p> <p><i>(Please refer to the FAO Fisheries Glossary at http://www.fao.org/fi/glossary/default.asp [last accessed: June 19th 2009])</i></p> <p>To catch: to undertake any activity that results in taking fish (sensu lato) out of its environment dead or alive. To bringing fish on board a vessel dead or alive.</p> <p><i>Modified from FAO (1998): Guidelines for the routine collection of capture fishery data. FAO Fish. Tech. Pap, 382: 113 p.</i></p> <p>Catch: The total number (or weight) of fish caught by fishing operations.</p> <p>Catch should include all fish killed by the act of fishing, not just those landed.</p> <p><i>Restrepo V. (1999): Annotated Glossary of Terms in Executive Summary Reports of the International Commission for the Conservation of Atlantic Tunas' Standing Committee on Research and Statistics (SCRS). ICCAT.</i></p> <p>The catch is usually expressed in terms of wet weight. It refers sometimes to the total amount caught, and sometimes only to the amount landed. The catches which are not landed are called discards.</p> <p><i>Cooke, J.G. (1984), Glossary of technical terms. In Exploitation of Marine Communities, R.M. May (ed), Springer-Verlag</i></p>

Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

CMR 3: Population of Coastal Area

Rationale	
Concept and Definition	<p>Population of coastal areas is the percent of the total population living within one hundred kilometres of the coastline. A country might also consider percentage of population in the low elevation coastal zone (<10 meters elevation) or percentage of population in river deltas.</p> <p><i>Please refer to</i> http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets.pdf</p> <p>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.</p> <p><i>(Please refer to European Environment Agency's website at</i> http://glossary.eea.europa.eu/EEAGlossary/C/coastal_area.)</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	<p>http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets.pdf</p> <p><i>European Environment Agency's website at</i> http://glossary.eea.europa.eu/EEAGlossary/C/coastal_area.</p>
Comments	

BIODIVERSITY

BIO 1: Protected Area as a Percentage of Total Territorial Area (or Proportion of terrestrial and marine areas protected)

Rationale	
Concept and Definition	<p>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.)</p> <p>A protected area includes six categories, which are:</p> <ul style="list-style-type: none"> - 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 <p>(Please refer to http://www.iucn.org/about/union/commissions/wcpa/wcpa_overview/ [last accessed: June 19th 2009])</p>
Method of Computation/ Measurement	<p>The indicator is expressed as the ratio of Total Protected Area over Total Territorial Area.</p> <p>Numerator: Total Protected Area = Total Terrestrial Protected Area + Total Marine Protected Area.</p> <p>Denominator: Total Territorial Area = Total (terrestrial/surface) Area + Total Territorial Waters (up to 12 nautical miles) where Total (terrestrial/surface) area = Total Land Area + Land under Inland Waters (rivers and lakes).</p> <p>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</p>

	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	
Data Sources	
Data Assessment	
Source of Metadata	http://www.iucn.org
Comments	

FOREST

FOR 1: Protected Forest Area as a Percentage of Total Land Area

Rationale	
Concept and Definition	<p>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.)</p> <p>A protected area includes six categories, which are:</p> <ul style="list-style-type: none"> - 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 <p>(Please refer to http://www.iucn.org/about/union/commissions/wcpa/wcpa_overview/ [last accessed: June 19th 2009].)</p> <p>Forest is land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 per cent, 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 cent and a tree height of 5 metres. It also includes temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate. <i>Global Forest Resources Assessment 2000 (FRA 2000)</i></p> <p>Protected forest area as a percentage of total land area is the area of protected 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).</p>

Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	www.iucn.org www.fao.org
Comments	

AIR

AIR 1: Emissions of Sulphur Dioxide (SO₂)

Rationale	
Concept and Definition	<p>Sulphur dioxide, or SO₂, belongs to the family of sulphur oxide gases (SO_x). These gases dissolve easily in water. Sulphur is prevalent in all raw materials, including crude oil, coal, and ore that contains common metals like aluminium, copper, zinc, lead, and iron. SO_x gases are formed when fuel-containing sulphur, such as coal and oil, is burned, and when gasoline is extracted from oil, or metals are extracted from ore. SO₂ 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.</p>
Method of Computation/ Measurement	<p>Definitions of selectable source categories</p> <p>Emission sources The classification of emission sources used in this questionnaire is based on the Revised IPCC 1996 Guidelines for National Greenhouse Gas Inventories.</p> <p>Total emissions Emissions from human activities in the country. Please note that emissions from international aviation and maritime transport are excluded.</p> <p>Energy activities [Production and Use] This category comprises 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.</p> <p>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. CO₂ emission from the combustion of biomass is excluded. This variable corresponds to IPCC category 1A.</p> <p>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</p>

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.

	<p>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.</p> <p>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.</p>
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

AIR 2: Emissions of Nitrogen Oxides (NO_x)

Rationale	
Concept and Definition	<p>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.</p> <p>Nitrogen oxides are indirect greenhouse gases. They have been the target of environmental policies for their role in forming ozone (O₃), as well for their direct acidification effects. Fuel combustion activities are the most significant anthropogenic source of NO_x. Within fuel combustion, the most important sources are the energy industries and mobile sources.</p> <p><i>Definitions of selectable source categories (See Indicator AIR 1)</i></p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

AIR 3: Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs)

Rationale	
Concept and Definition	<p>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.</p> <p>Non-methane volatile organic compounds emissions from anthropogenic activities are primarily comprised of total emissions from the use of fuels for energy purposes, evaporative emissions during industrial processes and non-industrial use of organic solvents.</p> <p><i>Definitions of selectable source categories (See Indicator AIR 1)</i></p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	

AIR 4: Emissions of Carbon Dioxide (CO₂)

Rationale	
Concept and Definition	<p>Carbon dioxide (CO₂) 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.</p> <p>Carbon dioxide (CO₂) is the most common greenhouse gas produced by anthropogenic activities, accounting for about 60 per cent of the increase in radiative forcing since preindustrial times (IPCC, 1992). By far the largest source of CO₂ emissions is from the oxidation of carbon when fossil fuels are burned, which accounts for 70-90 per cent of total anthropogenic CO₂ emissions. When fuels are burned, most carbon is emitted as CO₂ immediately during the combustion process. Some carbon is released as CO, CH₄, or non-methane hydrocarbons, which oxidise to CO₂ in the atmosphere within a period from a few days to 10-11 years.</p> <p><i>Definitions of selectable source categories (See Indicator AIR 1)</i></p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	<p><i>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)</i></p> <p><i>United Nations. Glossary of Environment Statistics. Series F, No. 67 (United Nations publication, Sales No. E.96.XVII.12).</i></p> <p>http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref1.pdf</p>

Comments	
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AIR 5: Emissions of Methane (CH₄)

Rationale	
Concept and Definition	<p>This is the total anthropogenic methane (CH₄) emissions from the sectors energy, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste. Natural emissions are not accounted for in this indicator. The unit of measurement is tonnes CH₄ per year. CH₄ is a powerful greenhouse gas whose levels have already doubled. The main purpose of this indicator is to monitor total anthropogenic CH₄ emissions.</p> <p>The indicator is linked to the indicators of other greenhouse gases. Furthermore, the indicator is linked with those in the area of Ozone Depletion. CH₄ emissions are believed to affect stratospheric ozone depletion. Moreover, ozone is also a greenhouse gas, and therefore changes in stratospheric ozone should be considered in assessing climate change.</p> <p>The main sources of CH₄ are agriculture (mainly flooded rice paddies and livestock), waste dumps, coal mining and natural gas production and transportation. CH₄ is besides a direct greenhouse gas also a precursor of tropospheric ozone and stratospheric water vapour.</p> <p>The radiative forcing capacity (RF) is the amount of energy per unit area per unit time, absorbed by the greenhouse gas, that would otherwise be lost to space.</p> <p><i>Definitions of selectable source categories (See Indicator AIR 1)</i></p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	

Data Assessment	
Source of Metadata	
Comments	

AIR 6: Emissions of Nitrous Oxide (N₂O)

Rationale	
Concept and Definition	<p>Total anthropogenic nitrous oxide (N₂O) emissions from the sectors energy, industrial processes, solvent and other product use, agriculture, land use change and forestry, and waste. Natural emissions are not accounted for in this indicator. The unit of measurement is tonnes N₂O 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 N₂O, N₂O emissions can reach the stratosphere and affect the destruction of the ozone layer.</p> <p>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 N₂O 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.</p> <p>The radiative forcing capacity (RF) is the amount of energy per unit area per unit time, absorbed by the greenhouse gas, that would otherwise be lost to space.</p> <p><i>Definitions of selectable source categories (See Indicator AIR 1)</i></p>
Method of Computation/ Measurement	<p>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.</p>
Indicator Relevance	
Data Sources	

Data Assessment	
Source of Metadata	
Comments	

AIR 7: Emissions of Lead (Pb)

Rationale	
Concept and Definition	<p>Pure lead is a silvery-white metal that oxidizes and turns bluish-gray when exposed to air. Lead is primarily used in the manufacture of lead-acid batteries, lead alloys, lead oxides in pigments, glass, lead cable coating, and a variety of lead products including ammunition and radiation shielding. Lead is emitted into the atmosphere from mining and smelting; from its use as a feedstock in the production of lead alloys, lead compounds and other lead-containing products; from mobile sources; and from combustion sources. The major sources of Pb emissions have historically been motor vehicles and industrial sources.</p>
Method of Computation/ Measurement	
Indicator Relevance	
Data Sources	
Data Assessment	
Source of Metadata	
Comments	