

Chapter 20

Environmental Statistics

Summary of Environmental Statistics

This chapter presents information on environmental statistics on annual emissions, consumption of fuel and CO₂ emissions, emissions of greenhouse gases, and emissions related to agriculture activities. This section also provides information on environmental vulnerability indexes.

Table 20.1 Integrated Inventory of Annual Emissions for Palau in 1994

	Carbon Dioxide (Gg CO ₂)	Methane (Gg)	Nitrous Oxide (Gg)	Nitrogen (Kg)	NM VOC (Gg)
Energy	82.11				
Industrial Processes					0.195
Agriculture	3.48		0.02	180.6	0.046
Land-Use Removals	-424.03				
Land-Use Emissions	6.84				
Waste		0.55	<0.01		
Total	-331.6	0.55	0.02	180.6	0.241

Source: First National Communication to the UNFCC (United Nations Framework Convention on Climate Change)

Table 20.2 Apparent Domestic Consumption of Fuel and Associated CO₂ Emissions in 1994

	Apparent Domestic Consumption		CO ₂ Emitted
	Tons	TJ	Gg CO ₂
Gasoline	5966	267.26	18.34
Other Kerosene	316	14.16	1.01
Gas/ Diesel Oil	19388	840.07	61.6
LPG	130	6.18	0.39
Lubricants	267	10.73	0.78
Solid Biomass	53	0.83	0.09

Source: First National Communication to the UNFCC (United Nations Framework Convention on Climate Change)

Table 20.3 Quantities involved and the Associated Emissions of Greenhouse Gases

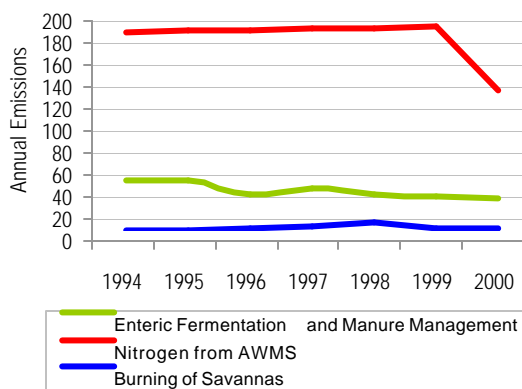
		1994	1995	1996	1997	1998	1999	2000
Soda Ash Use	Amount (t)						17.9	35.8
	CO ₂ (Gg)						0.01	0.01
Asphalt	Amount (t)	600	502	712	427	143.5	635	505.5
	NM VOC (Gg)	0.19	0.16	0.23	0.14	0.05	0.2	0.16
Beer	Amount (hl)					70	244	283
	NM VOC (kg)					2.45	8.54	9.91
Spirits	Amount (hl)	17.03	17.03	42.58	42.58	42.58	58.9	80.73
	NM VOC (kg)	255.45	255.45	638.7	638.7	638.7	883.5	1210.95
Cakes etc.	Amount (t)	160.81	160.81	160.81	160.81	167.14	167.14	196.19
	NM VOC (kg)	160.81	160.81	160.81	160.81	167.14	167.14	196.19
Bread	Amount (t)	307.34	307.34	307.34	307.34	321.54	320.82	320.82
	NM VOC (kg)	2458.72	2458.72	2458.72	2458.72	2572.32	2566.56	2566.56

Source: First National Communication to the UNFCC (United Nations Framework Convention on Climate Change)

Table 20.4 Emissions related to Agricultural Activities

		1994	1995	1996	1997	1998	1999	2000
Enteric Fermentation and Manure Management	Tons Methane	46.02	46.08	33.54	37.76	33.45	31.38	28.79
Nitrogen from AWMS	kg/N/yr	180.6	181.5	182.4	183.3	184.2	186	126.9
Burning of Savannas	Gg Carbon	0.89	0.54	1.19	3.58	7.75	1.79	1.19
Field Burning of Agricultural Residues	Gg Carbon	0.06	0.06	0.02	0.14	0.07	0.12	0.23
Direct N ₂ O Emissions from Agricultural Soils	Gg N ₂ O	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Source: First National Communication to the UNFCC (United Nations Framework Convention on Climate Change)

Figure 20.1 Emissions Related to Agricultural Activities: 1994 to 2000**Table 20.5 CO₂ Emissions from the Energy Sector in Comparison with the Rest of the World**

Country / Region	Population	CO ₂ Emissions from Energy Sector	1990 Petroleum Consumption Expressed as Equivalent CO ₂ Emissions	CO ₂ Emissions per Capita for Energy Sector	% of Global Emissions	% of Global Population
	(In thousands) ¹	(MT CO ₂) ²	(MT CO ₂) ³	(tones of CO ₂ per capita) ⁴		
Palau	17	0.082	0.083	4.69	0.0004	0.0003
Pacific Islands	7100	6.82		0.96	0.0301	0.123
OECD	1092300	12117.05		11.09	54	19
World	5624400	22620.46		4.02		

1 Data sourced from SPREP (1999) and IEA (1998)

2 Data sourced from Palau Inventory, Hay and Sems (1999) and IEA (1998)

3 Data sourced from Johnston (1995)

4 Data sourced from Palau Inventory and Hay and Sems (1999)

Environmental Vulnerability Index

EVI Indicator 2: Number of days over the last five years during which the maximum recorded wind speed (2 sec wind gusts) is greater than 20% higher than the average maximum wind speed for that month. (Use 30-year average for each month as reference points and data to be accumulated over all reference climate stations and be divided by the number of stations)

Average Maximum Monthly Wind Speeds (30 Years)		No. of days during which the maximum wind speed >20% HIGHER than the average maximum for that month.					
		1994	1995	1996	1997	1998	1999
January	6.5	1.0	6.0	3.0	0.0	11.0	0.0
February	6.6	3.0	2.0	2.0	9.0	6.0	0.0
March	6.2	3.0	3.0	3.0	1.0	6.0	0.0
April	6.0	1.0	2.0	2.0	1.0	2.0	1.0
May	5.4	3.0	4.0	0.0	0.0	8.0	0.0
June	5.2	4.0	3.0	3.0	4.0	5.0	0.0
July	5.6	5.0	1.0	3.0	8.0	0.0	1.0
August	5.9	4.0	1.0	2.0	8.0	0.0	1.0
September	6.3	13.0	6.0	7.0	2.0	2.0	0.0
October	5.0	0.0	3.0	0.0	0.0	13.0	0.0
November	5.4	0.0	1.0	3.0	0.0	7.0	0.0
December	5.9	1.0	6.0	8.0	0.0	5.0	0.0

Source: National Weather Service, Republic of Palau

EVI Indicator 3: Number of months over the last five years during which rainfall is greater than 20% lower than 30 year average for that month (over all reference climate stations/ number of climate stations)

Average Monthly Rainfall (30 years) 1974-2003		No. of months during which rainfall was greater than 20% LOWER than the average rainfall for that month	
January	10.97	1994	7
February	8.80	1995	4
March	8.56	1996	6
April	9.24	1997	10
May	12.75	1998	8
June	16.55	1999	8
July	17.08		
August	15.04		
September	12.31		
October	13.12		
November	11.27		
December	12.57		

Source: National Weather Service, Republic of Palau

Environmental Vulnerability Index

EVI Indicator 4: Number of months over the last five years during which rainfall is greater than 20% higher than 30 year average for that month (over all reference climate stations/ number of climate stations)

Average Monthly Rainfall (30 years) 1974-2003		No. of months during which rainfall was greater than 20% LOWER than the average rainfall for that month	
January	10.97	1994	5
February	8.80	1995	8
March	8.56	1996	6
April	9.24	1997	2
May	12.75	1998	4
June	16.55	1999	4
July	17.08		
August	15.04		
September	12.31		
October	13.12		
November	11.27		
December	12.57		

Source: National Weather Service, Republic of Palau

EVI Indicator 5: Number of Days over the last five years in which the maximum temperature was greater than 5°C higher than the mean monthly maximum (reference mean is from the 30 year average) (over all reference stations/ number of climate stations)

Average Maximum Monthly Temperature (30 Years)		No. of days during which the maximum temperature > 5°C HIGHER than the average maximum for that month.					
		1994	1995	1996	1997	1998	1999
January	87.6	23	23	23	21	23	23
February	87.5	22	20	16	15	24	25
March	88.3	21	15	22	15	30	24
April	88.8	23	26	17	27	28	23
May	89.1	15	21	19	26	25	21
June	88.1	7	22	19	19	19	18
July	87.5	7	26	23	17	30	22
August	87.5	13	27	29	12	30	20
September	88.0	1	13	18	13	25	19
October	88.3	23	13	21	27	26	28
November	89.0	21	15	15	26	17	21
December	88.4	19	19	15	27	27	23

Source: National Weather Service, Republic of Palau