



Government of Samoa
Ministry of Natural Resources and Environment

SECOND NATIONAL GREENHOUSE GAS INVENTORY

**Samoa's Greenhouse Gas Emissions:
1994-2007**

Final Report
March 2008

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For further information regarding Samoa's GHG inventory please contact the Climate Change Section:

Ms Anne Rasmussen, Principal Climate Change Officer
anne.rasmussen@mnre.gov.ws

Will McGoldrick, Climate Change Technical Officer
willmcgoldrick@gmail.com



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Prepared and compiled by:

Anne Rasmussen (MNRE)
Will McGoldrick (MNRE)

GHG Inventory Working Group:

Ministry of Natural Resources and Environment
Samoa Customs
Electric Power Corporation
Ministry of Finance
National University of Samoa
Ministry of Works, Transport and Infrastructure
Ministry of Agriculture and Fisheries

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Goldstar Ltd
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1. INTRODUCTION

1.1 Background to the Inventory

This report outlines the latest estimates of Samoa's greenhouse gas (GHG) emissions, covering the years 1994-2007. These emission estimates are the main output from second national GHG inventory, which was coordinated by the Ministry of Natural Resources and Environment (MNRE).

Samoa published its first GHG inventory in 1999, which reported emissions for the years 1994-1997. Work on the second national inventory was initiated under the Second National Communication project, which is funded by the Global Environment Facility through UNDP. The aim of this project is for Samoa to prepare a detailed report on the steps it has taken to implement the UN Framework Convention on Climate Change (UNFCCC).

Samoa's second GHG inventory focussed primarily on emissions for the years 2000 to 2007, but also included a revision of the results from the first GHG inventory to allow a complete assessment of trends in national GHG emissions.

1.2 Purpose of the Inventory

The purpose of the GHG inventory is to quantify Samoa's contribution to the build up of GHGs in the earth's atmosphere, which is the underlying cause of climate change and sea level rise. Although Samoa is a small country, with a population of approximately 180,000 people, the government recognises that all countries must do their bit to cut global GHG emissions. As a developing country Samoa aims to voluntarily cut GHG emissions without placing undue constraints on social or economic development. The GHG inventory helps to monitor progress towards this goal and also provides an indication of where the biggest GHG savings can be made.

1.3 Policy Context

UNFCCC Requirements

Samoa ratified the UNFCCC in 1994, joining the international community's efforts to address climate change. A key commitment for Samoa under the UNFCCC is to regularly prepare a national GHG inventory. Building on the first GHG inventory, Samoa's Second National GHG Inventory fulfils this international obligation.

National Climate Change Policy

Adopted by Cabinet in early 2008, the National Climate Change Policy provides overarching, strategic direction for all of government's climate change initiatives. The policy includes a commitment to regularly monitor and reduce GHG emissions.

National Greenhouse Gas Abatement Strategy (draft)

The Government of Samoa has prepared a draft National Greenhouse Gas Abatement Strategy, outlining a set of actions to reduce emissions over the coming years. This strategy is built on the work of the GHG inventory, and it is hoped that future GHG inventories will show the results of this strategy through a clear reduction on emissions.

1.4 Samoa's Approach to Estimating Emissions

Inventory Coordination

The Climate Change Section of MNRE coordinated the second GHG inventory, with technical assistance and input from a working group made up of key stakeholders from the following organizations: MNRE, Ministry of Finance (Energy Division), Ministry of Works, Transport and Infrastructure, Ministry of Revenue (Customs Department), Ministry of Agriculture and Fisheries, the Electric Power Corporation (EPC) and the National University of Samoa. Various other stakeholders were consulted and also provided data as required.

Preparation of the inventory was divided into three broad stages: (i) initial planning and methodology design, (ii) data compilation, and (iii) emission calculation and reporting.

International Guidelines

For the most part Samoa's second GHG inventory was prepared in accordance with the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* ("*2006 IPCC Guidelines*"). However, for several source categories the *1996 IPCC Guidelines for National Greenhouse Gas Inventories* ("*1996 IPCC Guidelines*") were used, as they better reflected national circumstances. This is a change from Samoa's first GHG inventory, which was prepared using the *1996 IPCC Guidelines*.

National Methodologies

The methodologies used to estimate GHG emissions in Samoa are fully documented in the following document: *Methodologies for Estimating Greenhouse Gas Emissions in Samoa* ("*Methodologies*"). This document explains all the assumptions and data used to calculate the GHG emissions for the second GHG inventory and should provide a good foundation for future inventories. The *Methodologies* are available to download from www.mnre.gov.ws.

Activity Data and Emission Factors Used

All of the estimates presented in this report were calculated using national-level activity data and IPCC default emission factors. Full details of all the activity data and emission factors used (including their source) are documented in the *Methodologies*.

Estimating CO₂ Removals

The approach used to estimate CO₂ removals and emissions from land use and land use change for Samoa's second GHG inventory is fully documented in the *Methodologies*. A brief explanation is also provided in Appendix 2 (below) to provide some clarification on the results presented in this report. In particular, it is important to note that there was very limited data available to accurately estimate how changing land use patterns may be affecting CO₂ emissions and removals. The estimate of CO₂ removals from forests presented in this report are based on 1999 satellite images and expert opinion about the trends in forest area in the years since. The estimates do account for changes in carbon stocks due to logging and fuelwood extraction, but do not account for possible conversions of forest land to grassland or cropland. This can only be done once up-to-date satellite images have been purchased, analysed and compared to the 1999 images. If new images reveal that the overall area of forest has declined then the estimates of CO₂ removals and emissions from this source will need to be revised. There are plans to update Samoa's land use cover data with new satellite images in late 2008. If this goes ahead it will provide a good opportunity to re-assess CO₂ emissions and removals from forests. Until this additional work has been done, the CO₂ removal data presented in this report must be treated with caution.

Revision of Old Data

A revision of the results from the first GHG inventory was undertaken as part of the second GHG inventory. This allowed a full and accurate trend analysis to be prepared for the years 1994-2007. A full explanation of the review process is provided in Appendix 1 of this document.

Uncertainty Assessment

While every attempt has been made to prepare an accurate estimate of Samoa's GHG emissions, there is inevitably some level of uncertainty in the GHG inventory. Key sources of uncertainty include data gaps and inaccuracies, incorrect assumptions, and a reliance on IPCC default emission factors and other parameters, rather than national level data. Other uncertainties will be discovered at a later stage and will have to be rectified during future inventories. It is hoped that over time, with successive inventories, the level of uncertainty will be reduced.

The *2006 IPCC Guidelines* provide a detailed and highly technical approach to quantifying uncertainty within the GHG inventory. Unfortunately, such an approach was largely beyond the scope of Samoa's second GHG inventory. Instead, a qualitative assessment of uncertainty was

prepared for each source of emissions. Details of this uncertainty assessment are presented in the relevant sections of this report.

1.5 Gases Assessed

Samoa's second GHG inventory reports on emissions of the following gases:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Carbon monoxide (CO);
- Nitrogen oxides (NO_x);
- Non-methane volatile organic compounds (NMVOCs);
- Hydrofluorocarbons (HFCs); and
- Sulphur dioxide (SO₂).

Global Warming Potential Values

To compare the relative contribution of each gas to Samoa's overall GHG emissions, most of the results in this report are presented as tonnes of carbon dioxide-equivalent (t CO₂-e).

While the total emissions of some gases are very small, this is not necessarily a true representation of their contribution to global warming. In fact, certain gases are much more effective at trapping heat in the atmosphere than others, due to their chemical composition. The results are converted to CO₂-e emissions to provide a true indication of the contribution of each gas to global warming.

Gas	Global Warming Potential Value
CO ₂	1
CH ₄	21
N ₂ O	310
HFC-23	11,700
HFC-32	650
HFC-125	2,800
HFC-134a	1,300
HFC-143a	3,800

Table 1.1: IPCC global warming potential values (IPCC 1995).

The IPCC has assigned each gas a specific "global warming potential" (GWP) value, which is a measure of its relative strength as a greenhouse gas (see Table 1.1). CO₂ is assigned the GWP of 1, thus providing the benchmark by which all other GWP are assigned. For example, nitrous oxide has a GWP of 310, which means that one tonne of N₂O is equivalent to 310 tonnes of CO₂. One tonne of N₂O can therefore be expressed as 310 t CO₂-e. These GWP values are applied for all of Samoa's GHG inventory findings. Some of the gases covered in Samoa's GHG inventory do not have GWP values and are reported separately.

1.6 Sources of GHG Emissions Covered by the Inventory

The GHG inventory attempts to cover all human sources of GHG emissions. The *2006 IPCC Guidelines* provide a comprehensive overview and categorisation of all potential sources of GHG emissions. Not all of these sources are relevant to Samoa. Furthermore, certain sources are relevant to Samoa but there is insufficient data to include them in the inventory.

The *2006 IPCC Guidelines* group emissions under four key headings: (i) Energy, (ii) Industrial Processes and Product Use, (iii) Agriculture, Forestry and Other Land Use, and (iv) Waste. A detailed assessment of each IPCC category was carried out as part of Samoa's second GHG inventory, including each category's relevance to Samoa and the availability of data required to estimate emissions from these categories. The findings of this assessment are presented in the *Methodologies*.

2. Overview of Samoa's GHG Emissions

2.1 Total Emissions & Removals

In 2007 Samoa's GHG emissions totalled approximately 352,034 tonnes of CO₂-equivalent (t CO₂-e). The GHG inventory also estimated CO₂ removals in forests and on croplands, which totalled -785,067 tonnes in 2007. Full records of Samoa's GHG emissions covering 1994-2007 are provided in appendices 3-4.

Sector	CO ₂	CH ₄	N ₂ O	HFCs	Equiv. CO ₂ Emissions	CO ₂ Removals
	tonnes	tonnes	tonnes	t CO ₂ -e	t CO ₂ -e	Tonnes
Energy	170,981	50	7.5	-	174,350	-
Industrial Processes & Product Use	4,138	-	0.4	5,253	9,507	-
Agriculture, Forestry & Other Land Use	4.55	4,207	152	-	135,366	-785,067
Waste	2,409	1,422	2	-	32,811	-
TOTAL	177,533	5,679	161	5,253	352,034	-785,067

Table 2.1: Samoa's overall GHG emissions and removals (2007).

The energy sector is the main source of GHG emissions, accounting for 50% of the national total (Figure 2.1). This is followed by the Agriculture, Forestry and Other Land Use (AFOLU) sector, which accounts for 38% of emissions. Emissions from the Waste and Industrial Processes and Product Use (IPPU) sectors make up 9% and 3% of total CO₂-e emissions respectively.

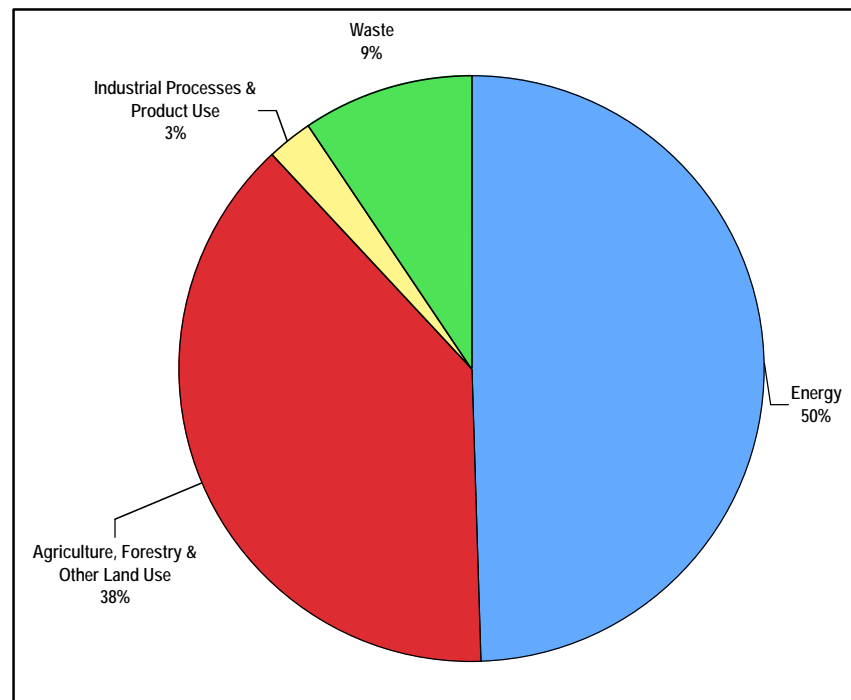


Figure 2.1: Sectoral breakdown in Samoa's total GHG emissions (2007)

The two activities contributing most to Samoa's emissions are road transport and livestock farming, which account for 27% and 25% respectively (Figure 2.2). Electricity generation and other agricultural activities, including N₂O emissions from managed soils, each account for approximately 13% of emissions. Other energy consumption, including fuel used by households and commercial and institutional organizations accounts for 10% of emissions. Wastewater and solid waste disposal (including incineration and open burning) accounted for 7% and 2% respectively. Activities in the IPPU sector contributed 3% of emissions.

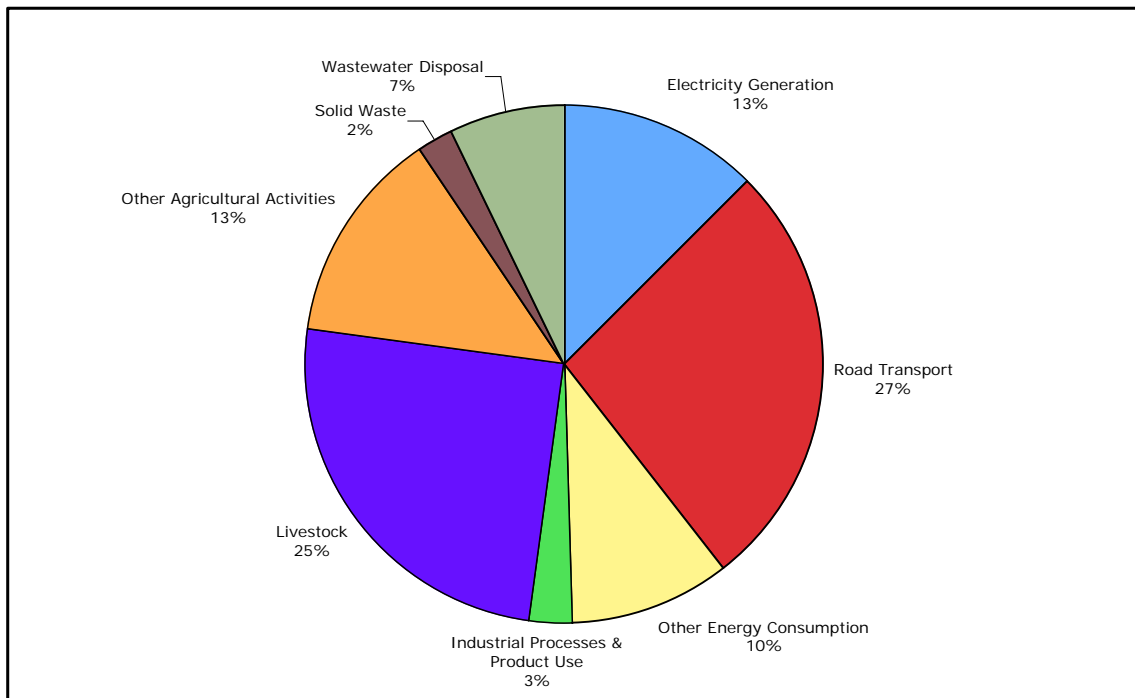


Figure 2.2: Detailed breakdown of Samoa's total GHG emissions (2007)

As shown in Table 2.2, the results of the GHG inventory confirm that 95% of Samoa's emissions come from just six sources. This has important implications for GHG abatement efforts, as it helps to ensure limited resources target areas where they can have the biggest impact.

Rank	Source	Emissions (t CO ₂ -e)	% of total emissions
1	Road Transport	95,105	27%
2	Livestock Farming	88,357	25%
4	N ₂ O from Agricultural Soils	47,005	13%
3	Electricity Generation	44,214	13%
5	Other Energy Consumption	34,141	10%
6	Wastewater	25,438	7%
	TOTAL	335,150	95%

Table 2.2: Top six sources of GHG emissions in Samoa (2007).

2.2 Indirect and Precursor Emissions

The second GHG inventory also recorded indirect and precursor emissions, which are not included in Samoa's aggregate emissions because they do not have global warming potential values. This includes carbon monoxide (CO), oxides of nitrogen (NO_x), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO₂), which are reported separately in Table 2.3.

Sector	CO	NO _x	NMVOCs	SO ₂
	tonnes	tonnes	tonnes	tonnes
Energy	10,140	896	1,729	293
Agriculture, Forestry & Other Land Use	-	-	-	-
Industrial Processes & Product Use	-	-	102	-
Waste	0.21	0.25	-	0.15
Total	10,140	896	1,830	293

Table 2.3: Indirect and precursor GHG emissions, not included in total CO₂-e emissions (2007).

2.3 Trends in Samoa's GHG Emissions: 1994-2007

Samoa's GHG emissions have increased by approximately 113% since the 1994 baseline, when total emissions were approximately 165,633 t CO₂-e. This represents an average annual growth rate of 16%. As can be seen in Figure 2.3, the fastest rate of growth occurred in the AFOLU sector, which also increased its share of total emissions. A minor part of the growth in emissions can also be attributed to the inclusion of IPPU emissions, which were not assessed as part of the first GHG inventory. A full analysis of the trends in each sector is provided in subsequent sections of this report. As already discussed, it is important to note that the results presented here are the revised estimates from the first inventory (1994-1997). A full explanation of the revisions process is given in Appendix 1.

It is important to note that growth in Samoa's GHG emissions is coming off a relatively low baseline. In 1994, when emissions were first recorded, a significant portion of households still had no access to electricity and the economy was largely based on agriculture. Since then, much has changed in Samoa with significant social and economic development. Further discussion of the key drivers of GHG emissions is provided in the subsequent sections of this report.

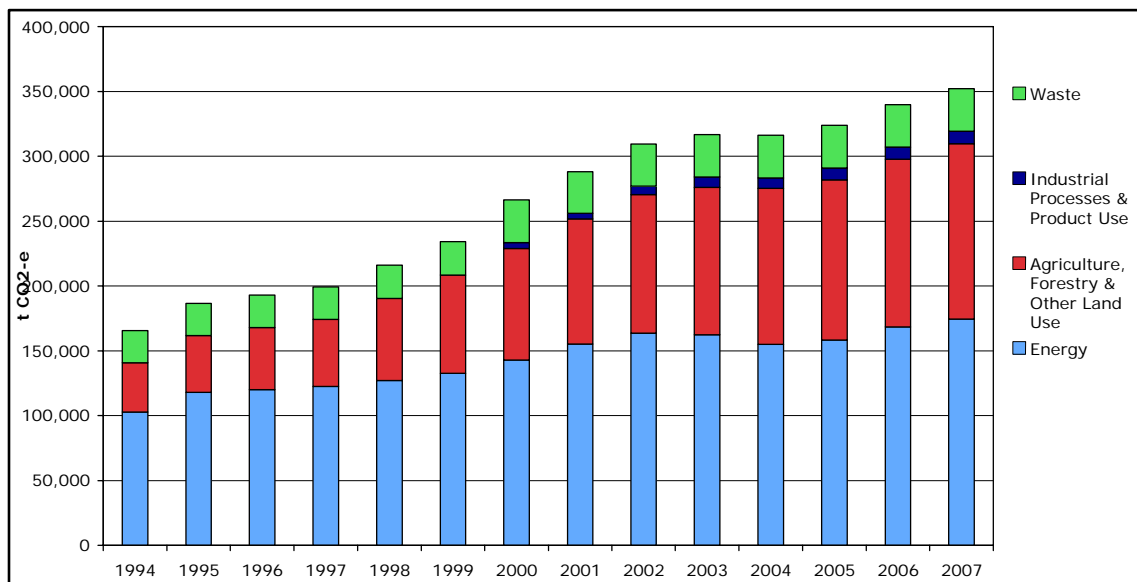


Figure 2.3: Trends in Samoa's GHG emission (1994-2007).

As shown in Figure 2.4, the livestock farming contributed the most to emissions growth in the period 1994-2007, accounting for 36% of total growth. Electricity generation was the next biggest source of growth in emissions, accounting for 19% of total growth. Growth emissions from agriculture, including N₂O emissions from managed soils, pushed total emissions up by 17%. Energy use in the road transport and manufacturing and construction sectors accounted for 14% and 9% of total emissions growth respectively. Meanwhile, total emissions in the IPPU and waste sectors had a smaller impact of overall growth, accounting for 5% and 4% respectively.

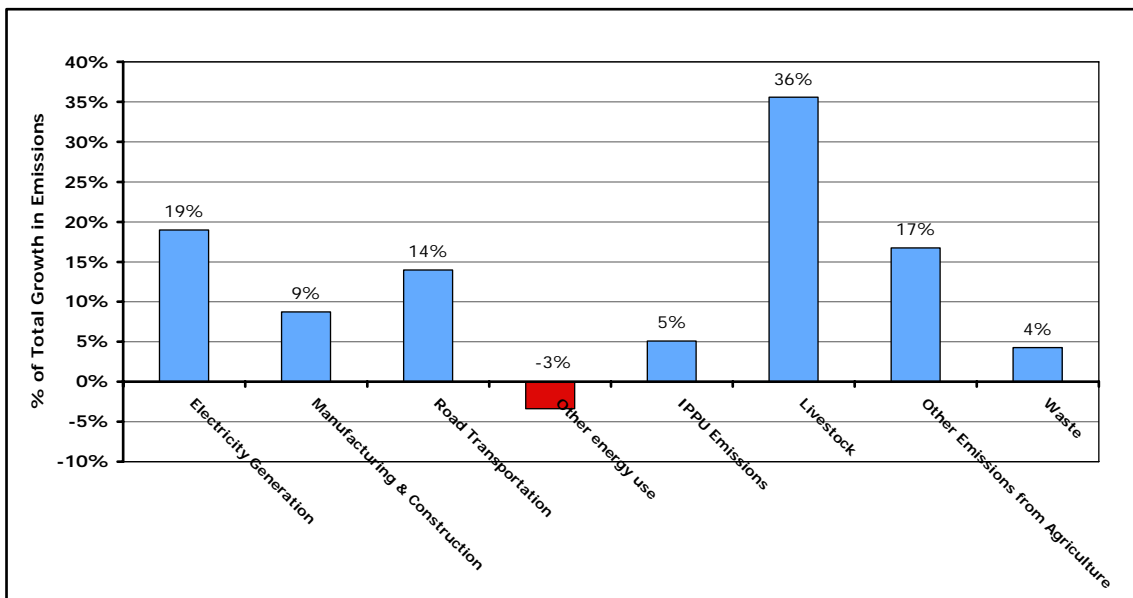


Figure 2.4: Contribution to overall growth in emissions for the period 1994-2007 (% of total growth).

2.4 Emissions by Gas

Carbon dioxide was by far the most important GHG emitted in Samoa in 2007, accounting for 51% of total CO₂-e emissions (Figure 2.5). Methane and nitrous oxide were the next two most significant gases, accounting for 34% and 14% respectively. HFC gases made up approximately 1% of total CO₂-e emissions. Other gases – CO, NO_x, NMVOCs and SO₂ – are not included in Figure 2.5, because they do not have GWP values. However, the results of these other gases are presented in Table 2.2, above.

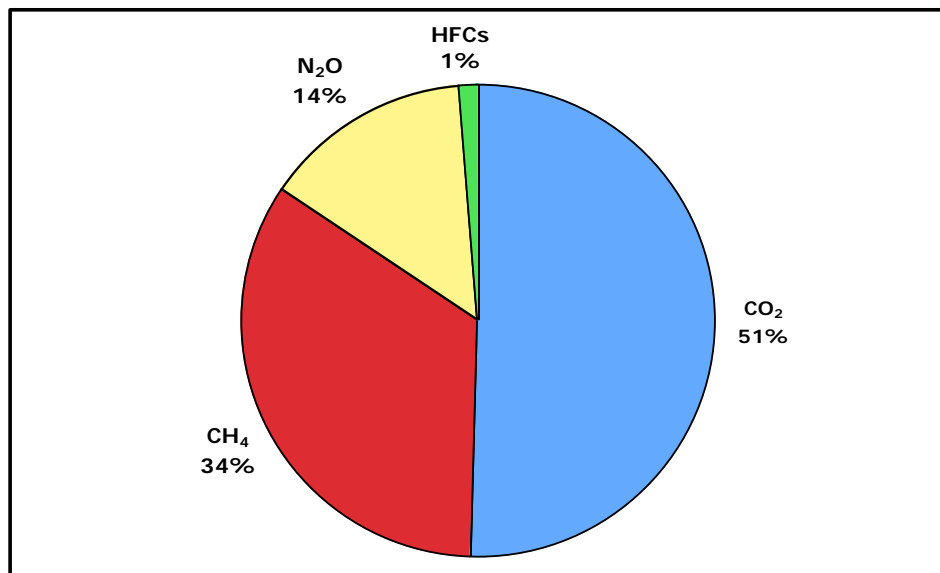


Figure 2.5: Contribution of each GHG to total CO₂-e emissions (2007).

Carbon Dioxide

The energy sector is the main source of CO₂ emissions, accounting for more than 96% of emissions of this gas. Overall emissions of CO₂ increased by approximately 22% in the period 2000-2007 (Table 2.4). Most of this growth occurred in the energy sector, with smaller growth in the IPPU and AFOLU sectors. Emissions of CO₂ from the waste sector declined by approximately 34% during the period 2000-2007, reflecting the shift away from backyard burning of waste.

Sector	2000	2007	% change
Energy	138,728	170,981	23%
Industrial Processes & Product Use	3,707	4,138	12%
Agriculture, Forestry and Other Land Use	3.9	4.5	17%
Waste	3,670	2,409	-34%
Total Emissions	146,109	177,533	22%

Table 2.4: Emissions of CO₂ (tonnes; 2000-2007)

Methane

Livestock farming (reported under the AFOLU sector) is the main source of CH₄ emissions in Samoa, making up approximately 74% of emissions of this gas. As shown in Table 2.5, the waste sector is also a significant source of CH₄ emissions, particularly the disposal of residential wastewater. Samoa's overall emissions of methane increased by 42% in the period 2000-2007 reflecting the increasing number of cattle being farmed in the country. Methane emissions from the energy sector declined by approximately 20% during the same period, as a result of declining biomass use for residential energy needs.

Sector	2000	2007	% change
Energy	62	50	-20%
Industrial Processes and Product Use	0	0	0
Agriculture, Forestry and Other Land Use	2,578	4,207	63%
Waste	1,362	1,422	4%
TOTAL	4,002	5,679	42%

Table 2.5: Emissions of CH₄ (tonnes; 2000-2007)

Nitrous Oxide

As shown in Table 2.6, in 2007 total N₂O emissions reached 161 tonnes, with approximately 94% of these emissions coming from the AFOLU sector. Despite falls in the energy, IPPU and waste sectors, strong growth in livestock farming pushed overall N₂O emissions up by 40% during the period 2000-2007.

Sector	2000	2007	% change
Energy	9	7	-14%
Industrial Processes and Product Use	0.54	0.37	-31%
Agriculture, Forestry and Other Land Use	103	152	48%
Waste	3	2	-35%
Total	115	162	40%

Table 2.6: Emissions of N₂O (tonnes; 2000-2007)

Hydrofluorocarbons

Emissions of HFCs reached 5,253 t CO₂-e in 2007, which represents a 630% increase on 2000 levels when emissions were estimated to be 720 t CO₂-e. The main reason for the growth is the shift to these gases for use in air conditioning and refrigeration equipment to replace ozone depleting substances.

Indirect and Precursor Emissions

The trends in indirect and precursor emissions are summarised in Table 2.7. In the period 2000-2007 emissions of CO and NMVOCs have declined by 17% and 9% respectively, reflecting the shift away from biomass as fuel for cooking. In the same period emissions of NO_x and SO₂ rose by 7% and 3% respectively, as a result of increased fossil fuel usage.

Gas	2000	2007	% Change
CO	12,189	10,140	-17%
NO _x	835	896	7%
NMVOC	2,020	1,830	-9%
SO ₂	287	293	2%

Table 2.7: Trends in indirect and pre-cursor emissions, by gas (tonnes; 2000-2007)

2.5 Samoa's GHG Emissions in Context

While the Government of Samoa is committed to monitoring and, over time, reducing GHG emissions, it is important to acknowledge that Samoa's emissions are a tiny fraction of global emissions. Indeed, according to the Intergovernmental Panel on Climate Change (IPCC, 2007), global GHG emissions reached 49 billion tonnes in 2004, which means that Samoa is responsible for approximately 0.0006% of global GHG emissions.

Another way to assess Samoa's GHG emissions is in per capita terms. In 2007, Samoa's GHG emissions were equivalent to 1.96 t CO₂-e per person. In contrast, the global average rate of per capita emissions is estimated to be 5.6 t CO₂-e. Australia has one of the highest per capita rates of GHG emissions, reported at of 27.6 t CO₂-e in 2005 (Government of Australia, 2007). Yet despite Samoa's relatively low per capita emissions, there is an upward trend, with the rate increasing by 96% in the period 1994-2007 (Figure 2.6).

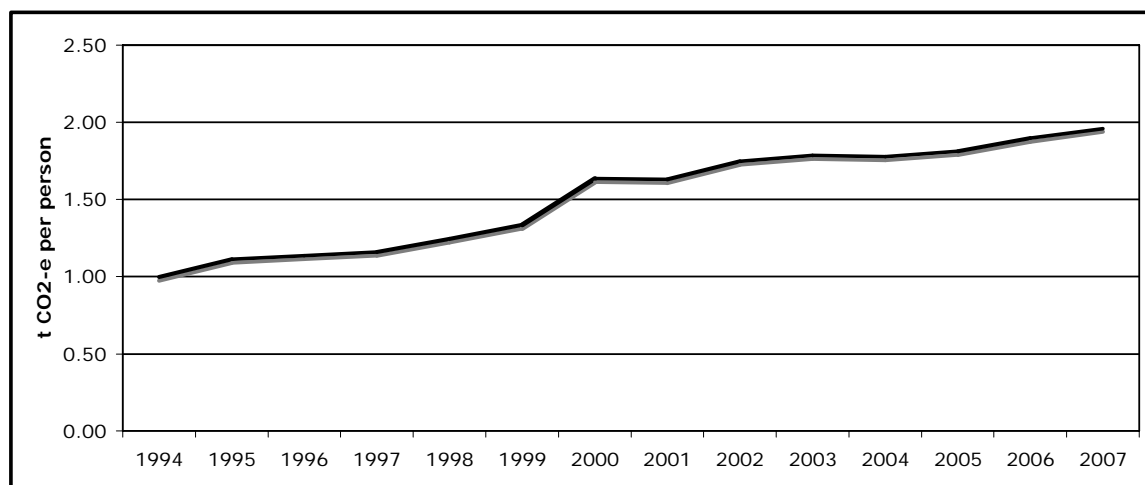


Figure 2.6: Trends in Samoa's per capita GHG emissions.

2.6 Key Gaps and Limitations

The GHG inventory is based on activity data from each of the sectors, including (for example) such things as fuel consumption, livestock numbers and waste generation. While there have been significant improvements in the availability and accuracy of activity data since the first GHG inventory, many limitations remain.

In general, there is a need to increase the level of detail in the activity data. While all sectors have some basic data, the GHG inventory can be strengthened with more detailed information. A good example of this is the energy sector, where there is good high-level data on fuel imports, but only limited detail on end-use. This means that certain assumptions and estimates have to be made,

as well as certain activities being grouped together. Similarly, for the waste sector there is very little data available on the delivery of waste to landfill sites. This means the estimates are based on findings from household waste audits, rather than actual deliveries to landfill.

Perhaps the biggest gap in the GHG inventory is the lack of accurate and reliable data on land use changes in Samoa. The results from the second GHG inventory show that Samoa is a net CO₂ sink, removing more of this gas from the atmosphere than is being released. However, this does not take into account changes in the total area of forests and other land use categories during the inventory period. New satellite images may show that the total area of forest in Samoa has either increased or decreased in recent years. If this is the case, Samoa's GHG inventory estimates will need to be amended to reflect the emissions or removals associated with such a change in forest area.

Another significant source of uncertainty in the estimates for the energy sector is the data used for biomass fuel consumption. There is very little information available on the amount of biomass fuels used in Samoa. Samoa's *Methodologies* provide a detailed account of how biomass energy consumption was estimated for the second GHG inventory.

While the GHG inventory captures all the main sources of emissions, there are several activities that are excluded due to a lack of data. This includes emissions of NMVOCs from asphalt use in road construction, as well as emissions from aerosols, fire equipment and foam blowing agents. Efforts should be made to include these sources in future inventories.

3. Energy Sector

3.1 Sector Overview

In 2007 emissions from the energy sector accounted for approximately 50% (174,350 t CO₂-e) of total GHG emissions, reflecting Samoa's heavy reliance on imported petroleum products to meet its energy requirements. Emissions from energy use increased by approximately 70% in the period 1994-2007 (Table 3.1).

Source	1994	2000	2007	% Change since 1994	% Change since 2000
Electricity Generation	8,820	28,960	44,214	401%	53%
Manufacturing & Construction	-	12,481	16,297	-	31%
Domestic Aviation	62	61	0	-100%	-100%
Road Transportation	68,928	84,230	95,015	38%	13%
Domestic Shipping	2,242	4,223	5,514	146%	31%
Commercial & Institutional	1,165	926	1,389	19%	50%
Residential energy use	11,209	7,474	6,223	-44%	-17%
Fishing	10,403	4,386	5,699	-45%	30%
TOTAL	102,830	142,741	174,350	70%	22%

Table 3.1: GHG emissions from the energy sector in Samoa (t CO₂-e 1994-2007).

As shown in Figure 3.1, road transportation (55%) and electricity generation (25%) are the two biggest sources of GHG emissions in the energy sector. Energy use for manufacturing and construction (9%) is the third biggest contributor to emissions in the energy sector. Energy used by households (excluding electricity), fishing and for shipping each account for 3% of energy sector emissions.

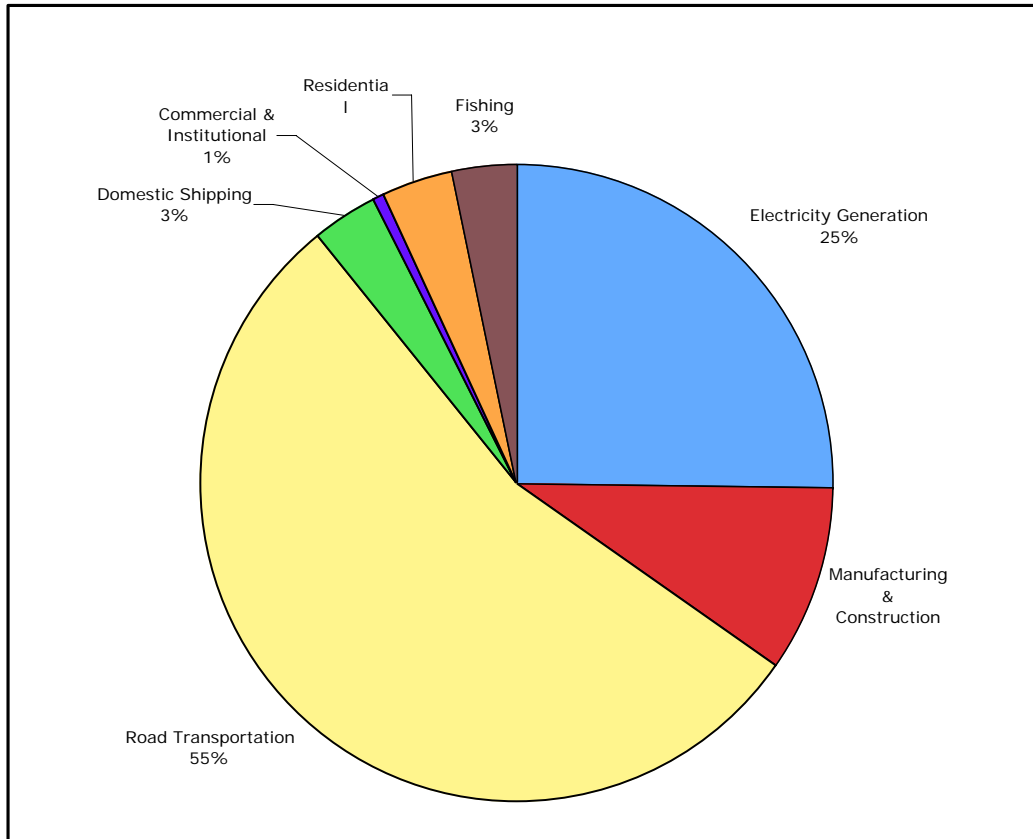


Figure 3.1: Breakdown of energy sector CO₂-e emissions in Samoa (2007).

3.2 Road Transportation

Road transportation is the single biggest source of GHG emissions in Samoa. Emissions from this source climbed from 68,928 t CO₂-e in 1994 to 95,015 t CO₂-e in 2007, which is an increase of approximately 38%. As shown in Figure 3.2, consumption of unleaded petrol (mainly used for smaller passenger vehicles) contributes most to emissions, with diesel accounting for a smaller but growing fraction.

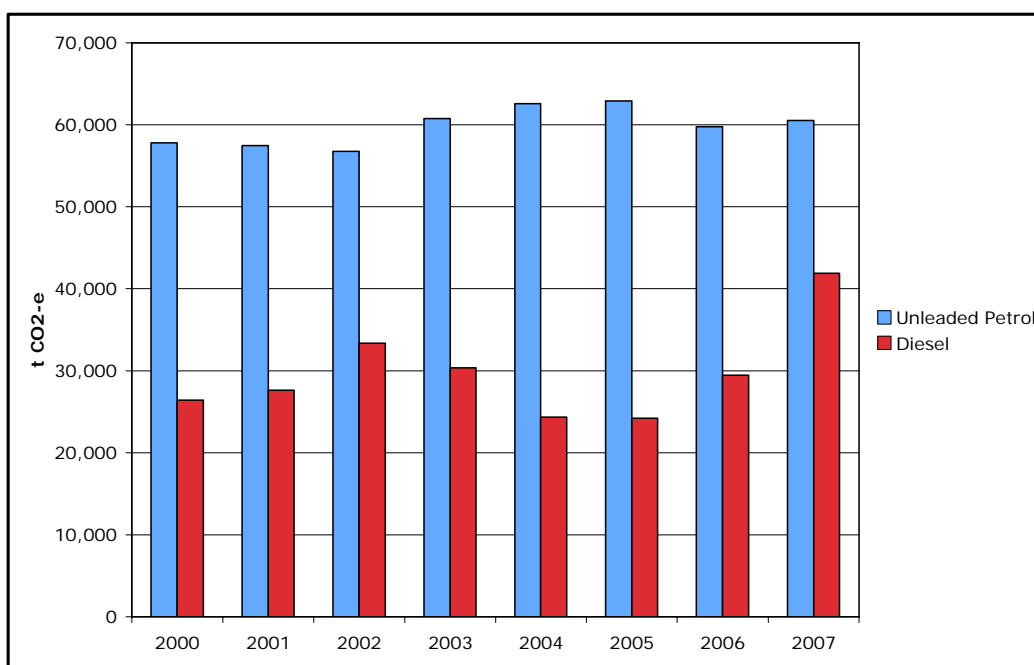


Figure 3.2: GHG emissions from road transportation (gasoline vs diesel)

The growth in emissions from road transport is a consequence of the increasing number of cars and trucks on Samoa's roads, which has driven up demand for petroleum products. The total number of vehicles registered in Samoa has almost doubled since 1994. As illustrated in Table 3.2, there have been particularly big increases in the number of private cars, pick-ups, taxis and trucks.

Year	Pvte Cars	Pick-ups	Trucks	Buses	Taxis	Motorcycles	Tractors	Other	Total
1994	2134	2710	510	209	1057	110	30	729	7480
2000	2017	2173	922	252	1000	80	<i>na</i>	103	9983
2005	4591	3493	1201	333	1798	80	39	3228	14763

Table 3.2: Trends in the number and type of registered vehicles in Samoa (source: IPA, 2005)

3.3 Electricity Generation

In the period 1994-2007 emissions from electricity increased by approximately 401%, rising from 8,820 to 44,214 t CO₂-e (Figure 3.3). A much smaller, but still significant growth was recorded between 2000 and 2007 (57%). Electricity generation's share of total energy emissions increased from 21% in 2000 to 25% in 2007, reflecting the strong growth in emissions from this source relative to other sources from the energy sector.

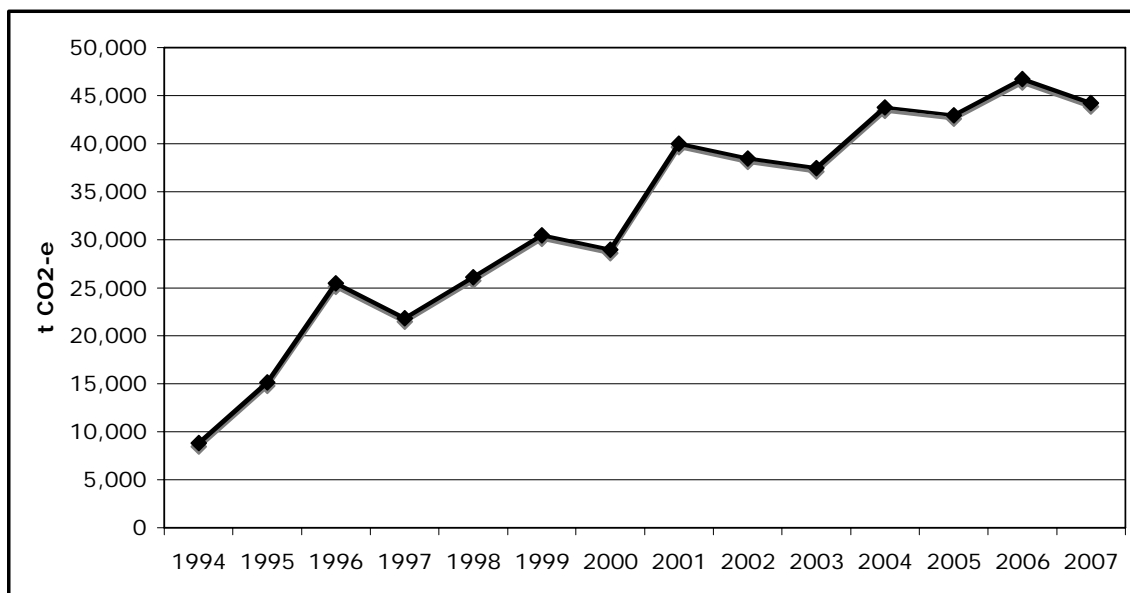


Figure 3.3: GHG emissions from electricity generation (1994-2007)

The significant growth in emissions from the generation of electricity reflects the growing demand for electricity, due in part to the expansion of the national grid and changing socio-economic conditions. Electricity generation rose from 58.82 GWh in 1994 to approximately 111 GWh in 2006. As shown in Figure 3.4, the growing emissions also reflect the declining share of electricity from hydropower. In 1994, approximately 89% of Samoa's electricity was supplied through hydropower schemes. In 2006, this figure had declined to 47%.

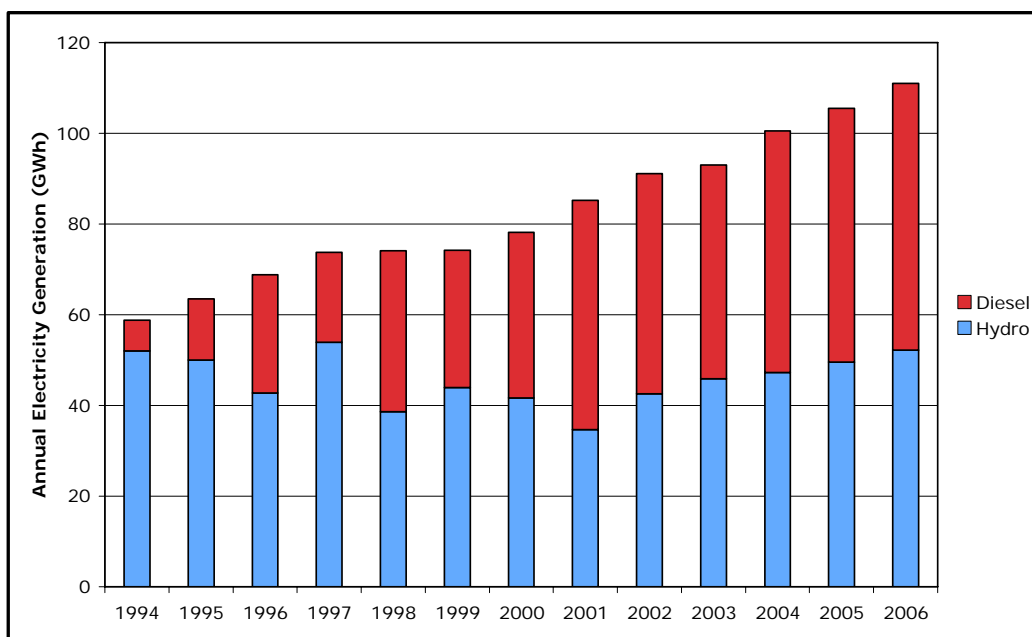


Figure 3.4: Hydro vs diesel electricity generation in Samoa (GWh, 1994-2007). Figures from Wade (2004) and EPC (2006).

3.4 Manufacturing and Construction

Accounting for 9% (16,297 t CO₂-e) of energy sector emissions in 2007, this category covers emissions from Samoa's booming construction sector, predominantly through the use of heavy machinery and equipment. Significant investment in infrastructure and growth in other areas of the economy are the main drivers of fuel consumption in this sector, forcing GHG emissions to rise by approximately 31% since 2000. According to the Ministry of Finance (2007), the construction sector contributed approximately 9% of Samoa's GDP in 2006, with a value of approximately SAT100 million. In contrast, the sector contributed only SAT55 million in 2002, suggesting strong growth in the sector. Prior to 2000 emissions from this sector were included in the other sectors and were not able to be reported separately.

3.5 Residential & Commercial Energy Use

GHG emissions from residential energy use totalled 6,223 t CO₂-e in 2007, accounting for approximately 4% of energy sector emissions. As shown in Figure 3.3, most of these emissions came from the use of kerosene and biomass fuels. A smaller, but increasing fraction came from LPG, with only a minor amount from 2-stroke lubricants. It is important to note that emissions from biomass fuels include CH₄ and N₂O only. CO₂ emissions from biomass fuels are not included in the national inventory because they are accounted for through carbon stock changes assessed in the Agriculture, Forestry and Other Land Use section.

The 'commercial and institutional energy use' category covers emissions from fuel consumption by restaurants, hotels, universities, government agencies and non-industrial businesses. In 2007, emissions from this sector totalled 1,389 t CO₂-e, which is approximately 1% of energy sector emissions. However, this was limited to emissions from LPG use, because there was insufficient data on other fuels used by this sector. Emissions from other fuels used this sector are accounted for under other categories, such as road transportation.

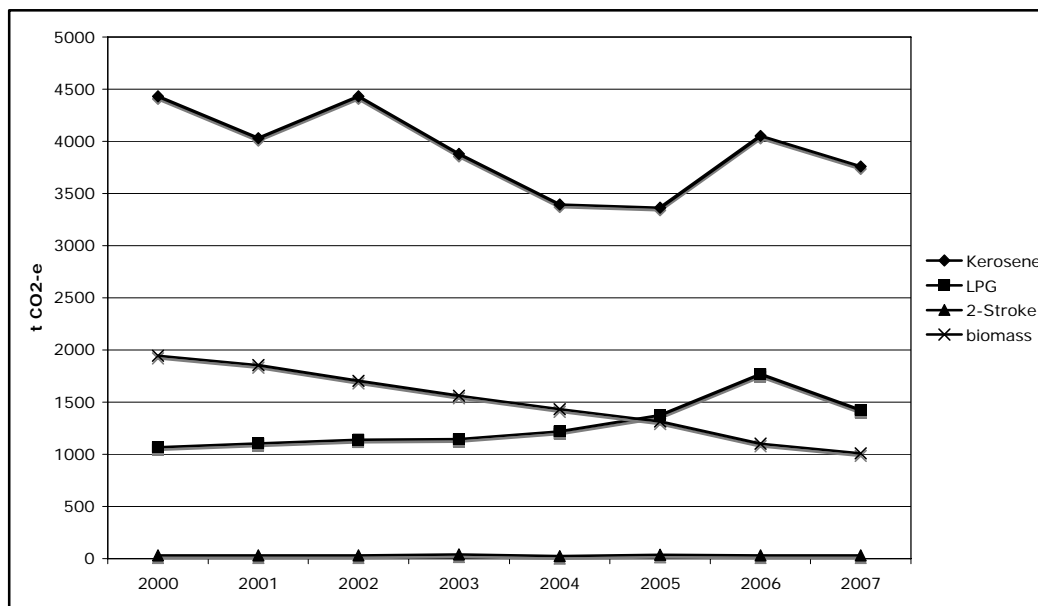


Figure 3.3: Emissions from each fuel used for residential purposes.

3.6 Aviation

Samoa's second national GHG inventory assessed emissions from both international and domestic aviation. However, emissions from overseas flights are classified as "international bunker" emissions and are excluded from Samoa's total emissions. This includes flights between Samoa and other countries, such as American Samoa, New Zealand, Tonga, Australia and the USA. International negotiations have failed to resolve how to assign responsibility for these emissions, which means countries continue to list them as information items only.

Domestic aviation covers flights between Upolu and Savaii, which have become far less common over recent years since the airport was relocated from Fagalii to Faleolo. According to Polynesian Airlines, there are no longer scheduled flights between the two islands. In 2007, there were no emissions from domestic aviation (Table 3.2).

Emissions from international aviation totalled 35,961 t CO₂-e in 2007. This is 70% higher than in 2000, when emissions from international aviation were 21,099 t CO₂-e. While international aviation emissions are not reported in Samoa's national inventory, this increase is cause for concern.

Type of Aviation	Annual Emissions (t CO ₂ -e)							
	2000	2001	2002	2003	2004	2005	2006	2007
Domestic Aviation	61	106	51	53	140	115	72	0
International Aviation	21,099	27,188	27,995	30,841	39,383	35,848	31,027	35,961

Table 3.2: GHG emissions from aviation (2000-2007).

3.7 Fishing & Shipping

Fuel consumed for fishing accounted for 5,699 t CO₂-e in 2007, which was approximately 3% of energy sector emissions. As shown in Figure 3.4, emissions from fishing increased between 2000 and 2007, despite declines in 2004 and 2005. This only accounts for off-shore fishing and is limited to fuel sold from the Apia wharf. Emissions from fuel consumed by other fishing vessels is accounted for under road transportation, as there was no way to distinguish between fuel sold from gas stations for use in vehicles and for maritime purposes.

Emissions from domestic shipping varied slightly during the inventory period, and in 2007 accounted for approximately 3% of energy sector emissions (5,541 t CO₂-e). This includes fuel used by Samoa Shipping Corporation for domestic services. Emissions from fuel sold in Samoa for international shipping are not included in the national totals, but are illustrated in Figure 3.4. Total emissions from international shipping were estimated to be 1,802 t CO₂-e in 2007.

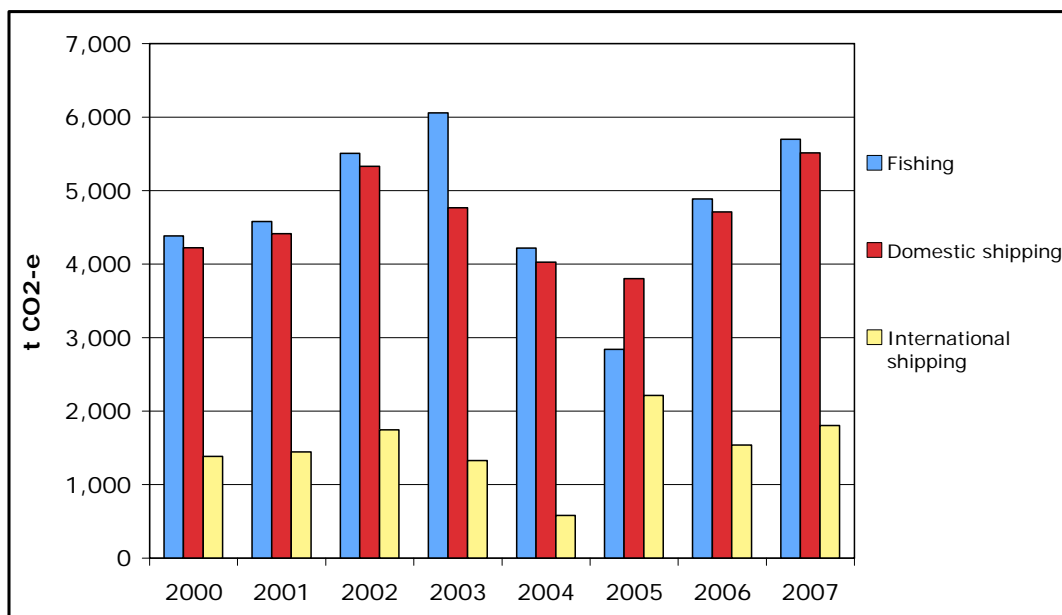


Figure 3.4: GHG emissions from fuel use in fishing, domestic shipping and international shipping (t CO₂-e, 2000-2007).

3.8 Indirect and Pre-cursor Emissions

The energy sector is also a source of other gases, which cannot be reported in CO₂-e. As shown in Table 3.3 carbon monoxide (CO) is the most important of these other gases, with 10,104 t recorded in 2007, mainly from road transportation, as well as the use of biomass fuels for residential and industrial purposes. Emissions of oxides of nitrogen (NO_x) totalled 896 t in 2007 and were predominantly from road transportation. Emissions of non-methane volatile organic compounds (NMVOCs) were estimated at 1,729 t in 2007, while only 293 t of sulphur dioxide was emitted.

Source	CO	NO _x	NMVOCs	SO ₂
Electricity Generation	9	119	3	83
Manufacturing & Construction	2	0	1	31
Road Transportation	7,277	511	1,370	102
Domestic Shipping	73	110	15	10
Commercial and Institutional	0.44	2	0.1	not assessed
Residential energy use	2,701	62	324	56
Fishing	76	91	15	11
Total	10,140	896	1,729	293

Table 3.3: Indirect and precursor emissions from the energy sector (tonnes; 2007).

4. Industrial Processes and Product Use

4.1 Sector Overview

The Industrial Processes and Product Use (IPPU) sector includes emissions of CO₂, N₂O, NMVOCs and HFCs. Emissions of these gases are primarily from the use of products for non-energy and non-agricultural purposes. The key results for the IPPU sector are presented in Table 4.1 with further details provided under the relevant sub-headings, below.

Source	CO ₂	N ₂ O	NMVOCs	HFCs
Lubricant Use	4,138	-	-	-
Solvent Use	-	-	99	-
Refrigeration and Air Conditioning	-	-	-	2.31
N ₂ O Use for Medical Applications	-	0.37	-	-
Food and Beverage Production	-	-	2.84	-
Ammonia Use	-	0.0055	-	-
Total	4,138	0.373	102	2.31

Table 4.1: IPPU emissions in Samoa by gas (tonnes; 2007).

4.2 Lubricant Use

The use of lubricant oils and greases results in small amounts of CO₂ being emitted into the atmosphere, accounting for approximately 2% of total CO₂ emissions in 2007. Emissions from this source varied only slightly during the inventory period, rising from 3,707 t CO₂ in 2000 to 4,138 t CO₂ in 2007. This category was not assessed in the first inventory, which means that a longer-term trend is not available.

4.3 Emissions of NMVOCs from Solvent Use & Beer Production

As shown in Figure 4.1, the two sources of NMVOCs in the IPPU sector are solvent use (i.e. white spirit and paints) and beer production. The use of solvents in paints and white spirit was by far the biggest source of NMVOCs (99 t in 2007), and has increased significantly since 1994 when emissions were only 47 tonnes. This reflects a steady increase in the use of paints in the period 1994-2007.

Emissions of NMVOCs from beer production were very minor, totalling only 2.8 tonnes in 2007, which was up from 1.9 tonnes in 1994 (reflecting a gradual increase in beer production).

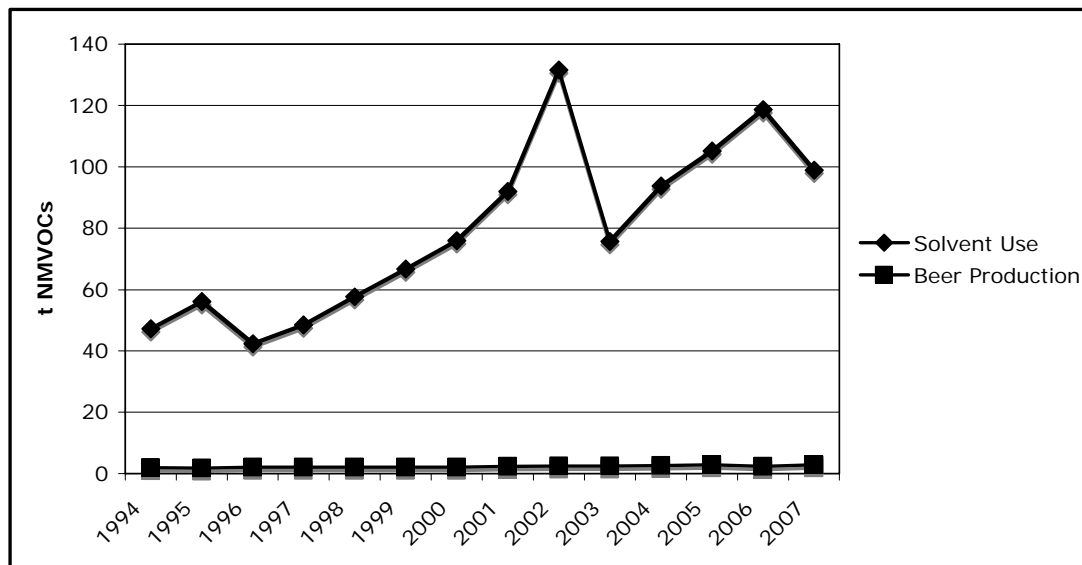


Figure 4.1: Emissions of NMVOCs in the IPPU Sector (1994-2007).

4.4 HFC Emissions from Refrigeration and Air Conditioning

Refrigeration and air conditioning were the only sources of HFC gas emissions recorded in Samoa's GHG inventory. Total HFC emissions in 2007 were 5,253 t CO₂-e, accounting for approximately 1.5% of Samoa's total CO₂-e emissions. As shown in Figure 4.2, emissions of HFC gases grew rapidly during the inventory period, reflecting the increasing use of these gases as substitutes for ozone depleting substances. However, it is important to note that in absolute terms, emissions of HFC gases are very small (see Table 4.1), but become significant when converted to CO₂-e emissions. This is because HFC gases have a high global warming potential. See Section 1 of this report for a discussion on this matter.

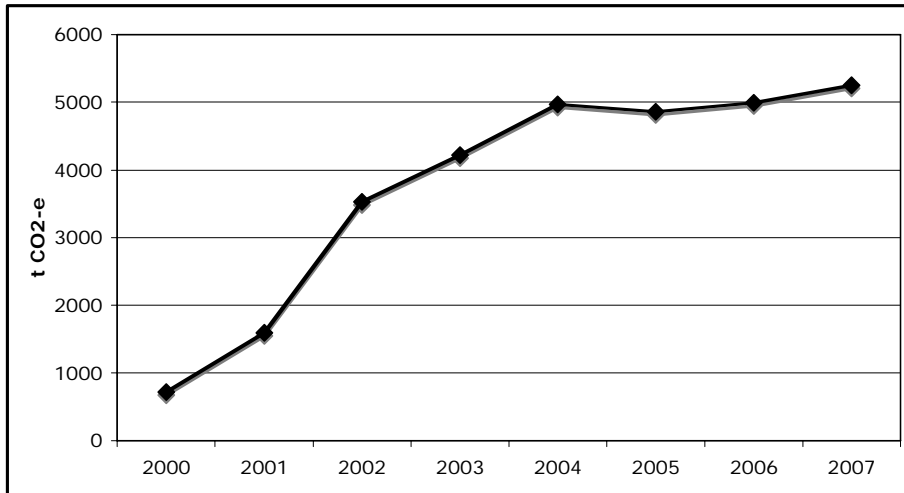


Figure 4.2: HFC gas emissions in Samoa (2000-2007).

4.5 N₂O Emissions

The activities that contributed to N₂O emissions in the IPPU sector are the use of N₂O as an anaesthetic and the use of ammonia as a coolant. However, overall the IPPU sector is a minor source of N₂O emissions in Samoa (116 t CO₂-e in 2007), contributing less than 0.23% of Samoa's total N₂O emissions and only 0.03% of Samoa's total CO₂-e emissions.

5. Agriculture, Forestry and Other Land Use

5.1 Sector Overview

In 2007, emissions from the AFOLU sector totalled 135,366 t CO₂-e, representing 38% of Samoa's total emissions. As shown in Figure 5.1, the main source of emissions from the AFOLU sector is livestock farming, which accounted for 65% of emissions from this sector. Nitrous oxide emissions from the addition of nitrogen to agricultural soils accounted for approximately 35% of AFOLU emissions. Emissions of CO₂ from fertilisers contributed much less than 1% of emissions in this sector.

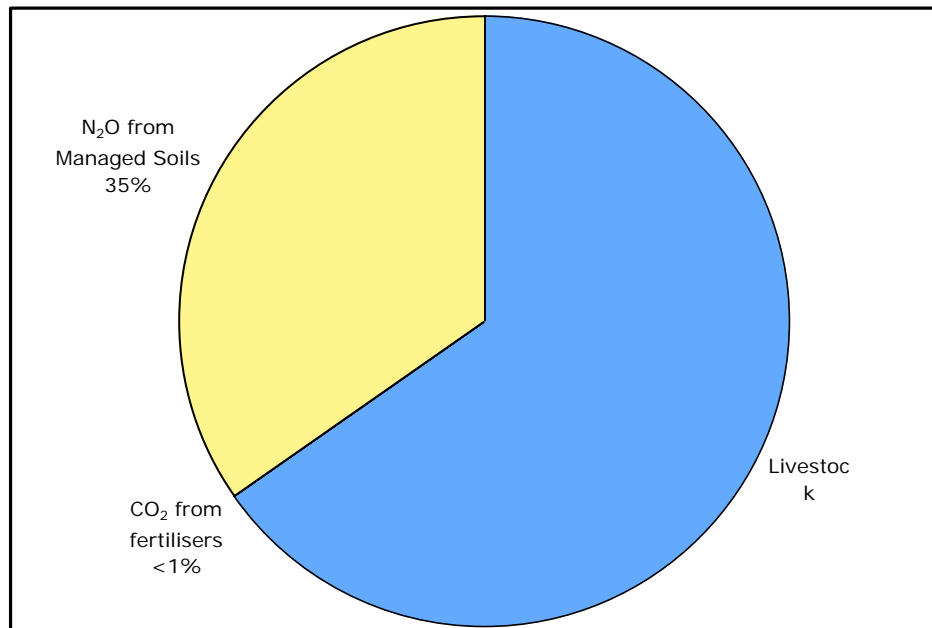


Figure 5.1: Breakdown of AFOLU CO₂-e emissions (2007).

Emissions from the AFOLU sector have increased by approximately 257% since 1994 when emission totalled 37,920 t CO₂-e (Table 5.1).

Source	1994	2000	2007	% Change since 1994	% Change since 2000
Livestock Farming	22,066	54,137	88,357	300%	63%
Fertiliser Use (CO ₂)	Not assessed	3.89	4.55	-	17%
N ₂ O from Managed Soils	15,855	31,866	47,005	196%	48%
TOTAL	37,920	86,006	135,366	257%	57%

Table 5.1: GHG emissions from the AFOLU sector (2007, t CO₂-e)

5.2 Livestock Farming

Livestock farming produces methane emissions from two key sources: from the fermentation of food inside the digestive systems of the animals (enteric fermentation) and from the decomposition of animal manure. Enteric fermentation accounts for the majority of emissions from this source (Figure 5.2). Total emissions from livestock farming reached 88,357 t CO₂-e in 2007, which is a 300% increase since 1994.

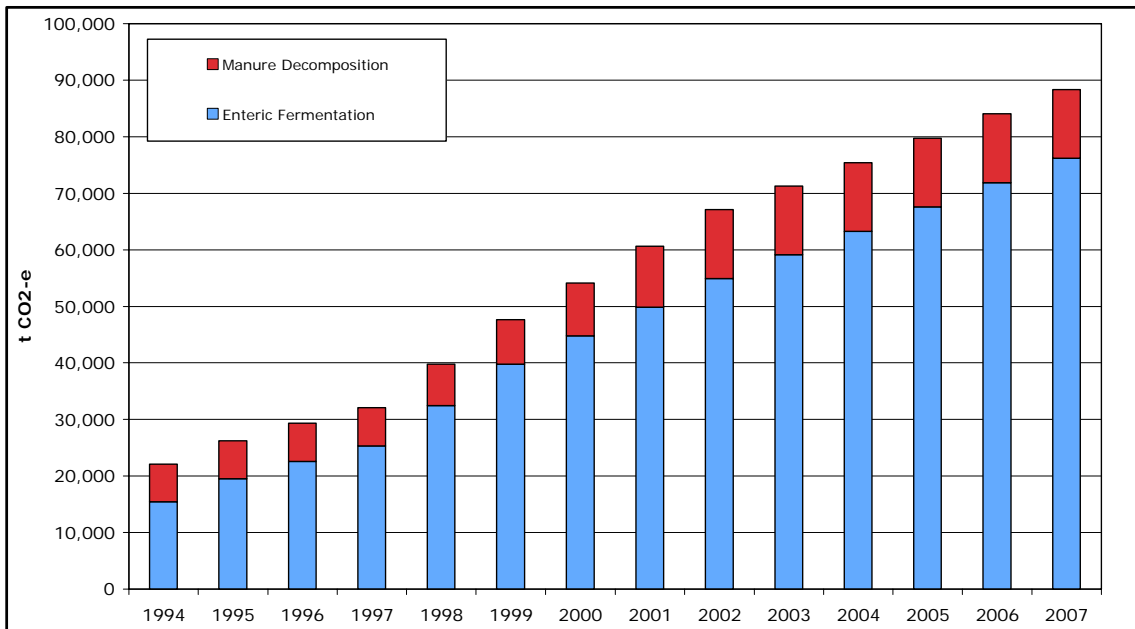


Figure 5.2: Trend in methane emissions from livestock farming, 1994-2007 (t CO₂-e)

The large increase in emissions from livestock farming is mainly attributable to the expansion of cattle farming in Samoa (Figure 5.3). Surveys carried out by the Ministry of Agriculture and Fisheries show that between 1999 and 2005 the number of cattle being farmed in Samoa grew by 74%, from 28,000 to more than 48,500. Although pigs and chickens remain the dominant livestock species in Samoa, cattle produce far more methane than any other species. This is due to the process by which cattle digest their food.

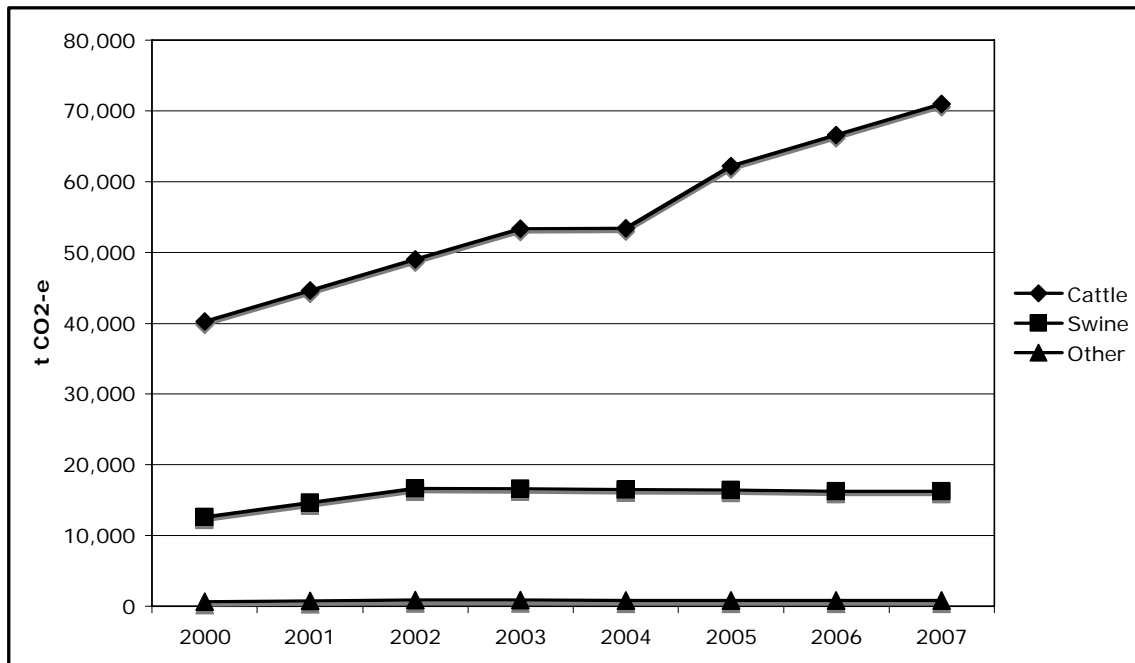


Figure 5.3: Methane emissions by livestock species (1994-2007).

5.3 CO₂ from Fertiliser Use

Lime and urea used by farmers are minor sources of carbon dioxide in Samoa, together accounting for less than 2.5% of total CO₂ emissions in 2007 (approximately 4.5 t CO₂). Emissions from this source were not assessed in the first GHG inventory, but from the results of the second GHG inventory show a 17% increase in emissions in 2007, compared to the year 2000.

5.4 N₂O from Farming

Nitrous oxide emissions from farming account for a significant fraction of Samoa's GHG emissions (35% of AFOLU emissions and 13% of Samoa's total CO₂-e emissions). Once added to land, nitrogen reacts and forms N₂O, which is then released into the atmosphere (either directly or indirectly). As shown in Table 5.2, urine and dung from livestock accounted for more than 99% of N₂O emissions from this source, with the use of nitrogenous fertilisers contributing less than 1% of emissions from this source.

Source of Nitrogen	N ₂ O Emissions (t CO ₂ -e)	%
Synthetic fertilizers	68	0.14%
Livestock urine and dung	46,937	99.86%
Crop residues	not assessed	-
TOTAL	47,005	

Table 5.2: N₂O emissions from the addition of nitrogen to agricultural soils (2007)

In the period 1994-2007 there was a 196% increase in emissions from this source, with emissions rising from 15,855 to 47,005 t CO₂-e (Figure 5.4). This reflects the strong growth in the number of cattle being farmed in Samoa, which has increased the amount of nitrogen being deposited on soils from urine and dung.

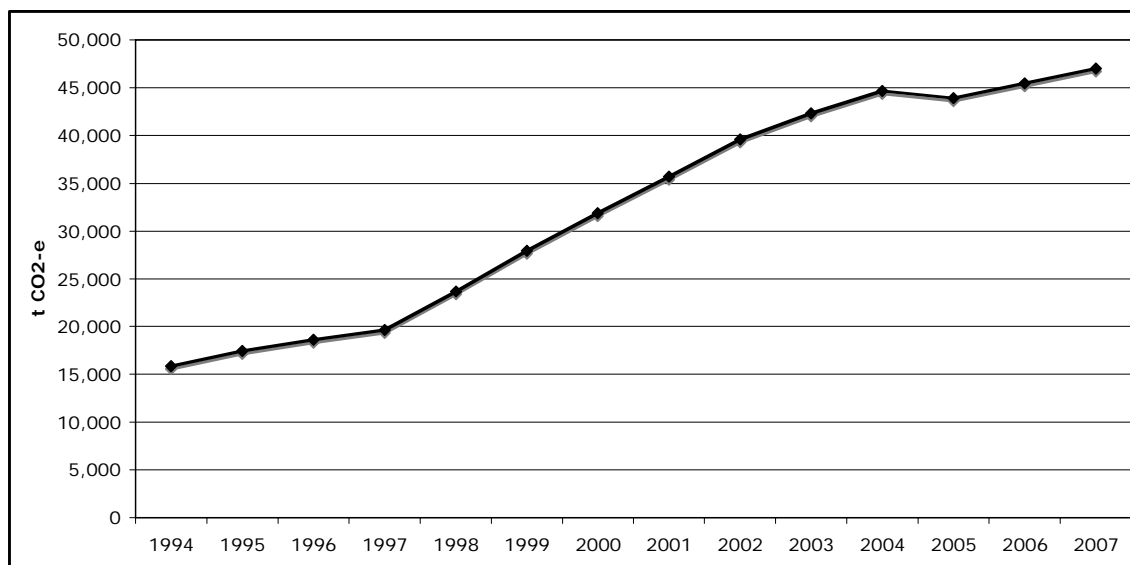


Figure 5.4: Trend in N₂O emissions from the addition of nitrogen to agricultural soils (t CO₂-e, 1994-2007).

5.5 CO₂ Removals

Samoa's GHG inventory also includes estimates of CO₂ removals in forests and croplands. As discussed in Section 1 (above) there is significant uncertainty in these estimates, as they do not include changes in the total area of forest in Samoa that may have occurred during the inventory period. As shown Table 5.3, the inventory does include CO₂ emissions due to logging and fuelwood extraction, but does not consider any clearing of forests (e.g. for agriculture). Instead, it is assumed that there was no change in the area of forest between 2000 and 2007. This is consistent with the opinion of the Food and Agriculture Organization and Samoa's Forestry

Division (FAO, 2005). The accuracy of this assumption can only be confirmed if and when new satellite imagery is made available and a comprehensive forest resource assessment is undertaken.

There is some anecdotal evidence to suggest that forests are being cleared for cattle farming. However, the general contraction in Samoa's agricultural sector since the 1990s taro blight suggests that some former croplands may have been converted back to forests. Without up-to-date satellite imagery the net effect of these processes on CO₂ emissions cannot be accurately assessed.

Source/Sink of CO ₂	Annual Tonnes CO ₂ Emitted / Removed							
	2000	2001	2002	2003	2004	2005	2006	2007
Biomass Growth (removal)	-805,431	-805,431	-805,431	-805,431	-805,431	-805,431	-805,431	-805,431
Logging (emissions)	71,738	85,399	87,652	56,225	49,228	61,455	13,197	13,197
Fuelwood (Emissions)	28,425	27,121	24,882	22,828	20,943	19,214	16,093	14,764
Net Removals	-705,267	-692,911	-692,897	-726,378	-735,260	-724,761	-776,141	-777,470

Table 5.3: Net CO₂ removals from forests (t CO₂, 2000-2007).

Two perennial crop species were assessed as part of the second GHG inventory: coconut and cocoa. Data from the Ministry of Agriculture and Fisheries shows a downward trend in the total area of these two species under cultivation. As shown in Table 5.4, the inventory assessed CO₂ removals through biomass growth for both these crops and CO₂ emissions associated with their clearance. The observed trend for the period 2000-2007 is that net amount of CO₂ being removed from the atmosphere due to biomass growth on croplands is declining due to clearance.

Source/Sink of CO ₂	Annual Tonnes CO ₂ Emitted / Removed							
	2000	2001	2002	2003	2004	2005	2006	2007
Clearance of coconut and cocoa (Emissions)	400,098	400,098	400,098	338,619	305,038	372,199	338,619	338,619
Biomass growth of coconut and cocoa (Removals)	-844,873	-764,854	-684,834	-617,111	-556,103	-481,663	-413,939	-346,216
Net CO ₂ Removals	-444,776	-364,756	-284,737	-278,492	-251,065	-109,464	-75,321	-7,597

Table 5.4: Net CO₂ emissions on croplands (t CO₂, 2000-2007)

6. Waste

6.1 Sector Overview

Emissions from the waste sector totalled 32,811 t CO₂-e in 2007, which was approximately 9% of Samoa's total CO₂-e emissions. As shown in Figure 6.1, the biggest source of emissions in this sector is wastewater management and discharge (78%), followed by open burning of waste (13%), solid waste management (9%) and waste incineration (<1%).

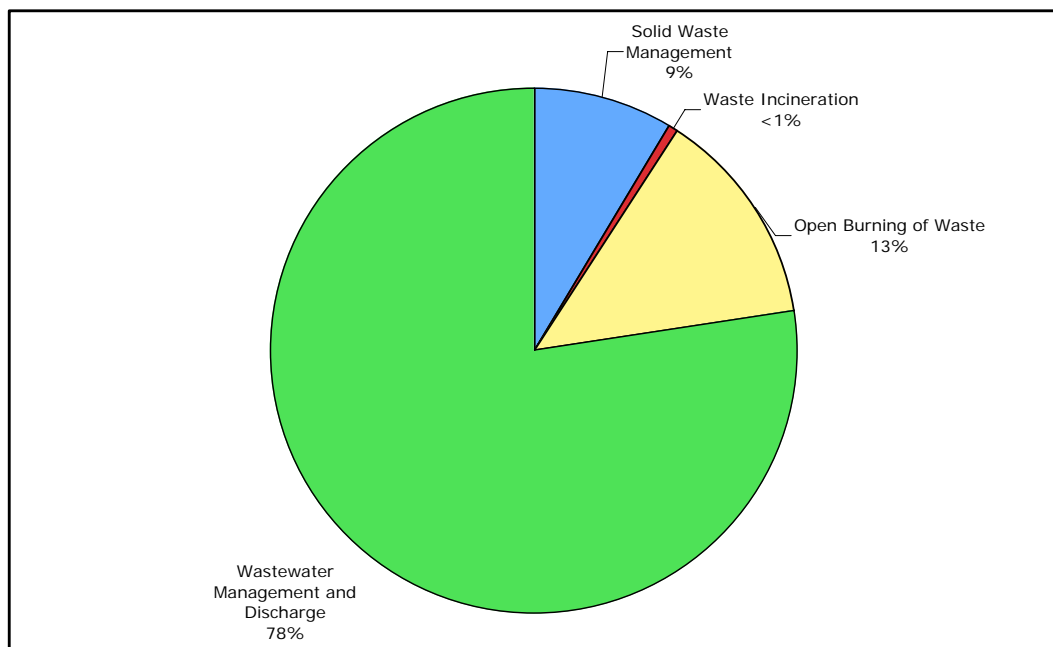


Figure 6.1: Source of waste emissions (2007).

As shown in Table 6.1, overall waste emissions declined slightly during the period 2000-2007 (-0.85%). This is largely due to the introduction of a national roadside collection service, resulting in more waste going to landfill rather than being burnt in backyards.

Source	2000	2007	% Change since 2000
Solid Waste Management and Disposal	714	2,856	300%
Waste Incineration	not assessed	127	na
Open Burning of Waste	6,918	4,390	-37%
Wastewater Management and Disposal	25,460	25,438	-0.1%
TOTAL	33,091	32,811	-0.85%

Table 6.1: Trend in GHG emissions from the Waste sector (t CO₂-e, 2000-2007).

6.2 Solid Waste Management

This category covers methane emissions from the decomposition of organic matter in Samoa's two main landfill sites on Upolu and Savaii. The introduction and expansion of a roadside collection service for residential waste has dramatically increased the amount of waste being sent to landfill, forcing methane emissions to rise from 714 t CO₂-e in 2000 to 2,856 t CO₂-e in 2007, which is an increase of roughly 300% (Table 6.1). Prior to 1998 there was no residential waste collection service in Samoa. Instead most residential waste was managed at the household level where it was either burnt or buried in shallow pits.

6.3 Incineration and Open Burning of Waste

This category covers emissions from the incineration of hospital waste by the Ministry of Health and emissions from open burning of residential waste. Emissions from the incineration of hospital waste are relatively minor, totalling approximately 127 t CO₂-e in 2007. Incineration is also a minor source of other gases, which in 2007 included 0.2 t CO, 0.2 t NO_x and 0.1 t SO₂.

According to the most recent census figures, open burning of waste remains a relatively common practice in Samoa, particularly outside of the Apia urban area. Emissions from open burning in 2007 were approximately 4,390 t CO₂-e. As shown in Figure 6.4, this represents a 37% decrease in emissions from this source since 2000, when emissions were estimated to be 6,918 t CO₂-e.

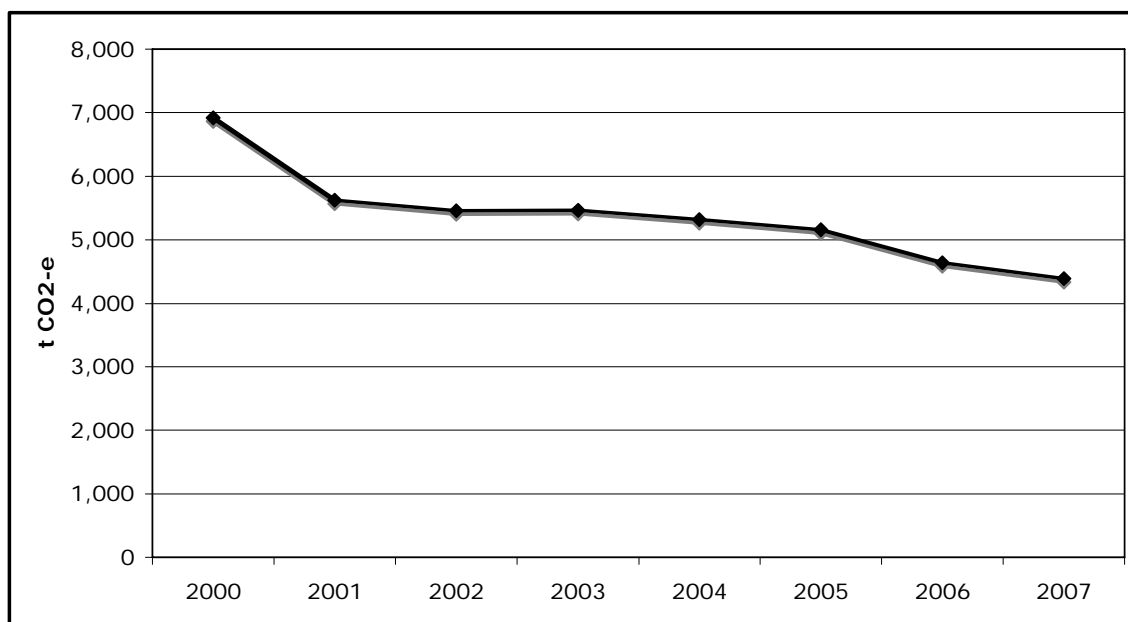


Figure 6.4: Tend in GHG emissions from open burning of waste (2000-2007).

The downward trend in emissions from open burning of waste reflects the growing trend for households to use the roadside collection service instead of burning their waste. The 2001 census showed that approximately 27% of urban households and 49% rural households used burning as their main form of waste management. However, the 2006 census showed that the proportion of households burning waste had declined to 15% and 36% for urban and rural areas respectively.

6.4 Wastewater Management and Disposal

This category covers methane emissions from residential wastewater management and disposal, which is the largest source of GHG emissions in the waste sector. Septic tanks are the main domestic wastewater disposal systems in use in Samoa, with a declining number of households using pit-latrines. In 2007 emissions from this source were approximately 25,438 t CO₂-e, which is 0.1% lower than in 2000 when emissions were 25,460 t CO₂-e (Table 6.1). This minor decrease in emissions is due to greater use of septic systems, which produce fewer emissions than pit-latrines.

7. Conclusions and Recommendations

7.1 Summary of findings

Fuel consumption in the energy sector accounts for the biggest share of Samoa's GHG emissions, followed by methane and nitrous oxide emissions associated with livestock farming. Emissions from the waste sector and from industrial processes and product use account for a smaller share of Samoa's overall GHG emissions.

Samoa's Second National GHG Inventory has revealed a strong increase in emissions since the 1994 baseline. The two main drivers of this growth in emissions are the increased consumption of imported petroleum products and the expansion of cattle farming. Other factors, including the introduction of HFC gases as replacements of ozone depleting substances, have also added to the upward pressure on GHG emissions. Samoa's increasing population, growing economy and changing socio-economic conditions are important underlying factors contributing the rising emissions.

7.2 Recommendations

The following recommendations are made to strengthen Samoa's GHG inventory in coming years:

- Establish a system and database to update all activity data required for the GHG inventory on an annual basis. This will greatly speed up the inventory process and should allow for annual monitoring of GHG emissions.
- Investigate options for improving the detail of activity data used for the GHG inventory. This will allow for more accurate estimates to be made and reduce the uncertainty associated with the inventory.
- Begin collecting data on those sources that are occurring in Samoa, but which were excluded from the first GHG inventory due to a lack of data. Details of these sources are provided in the *Methodologies*.
- Update land cover data for Samoa to allow more accurate estimates of CO₂ emissions and removals from forests and other land use categories.
- Mainstream the GHG inventory as an annual activity to allow regular monitoring of emissions. This will allow accurate and meaningful measurement of progress made in GHG abatement efforts.

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APPENDIX 1: REVISION OF THE 1st GHG INVENTORY

A review of the results from Samoa's first GHG inventory was undertaken as part of the second national inventory. There are a number of reasons why this was done. Firstly, there was a need to align the results from the first inventory with the reporting structure provided by the *2006 IPCC Guidelines*. The first inventory was prepared using the *Revised 1996 IPCC Guidelines*, which has a slightly different reporting framework.

Secondly, for several of the categories, the methodologies for estimating GHG emissions have varied since the first inventory was published. As such, it has been necessary to re-estimate the GHG emissions in these categories to reflect the developments in the IPCC methodologies. Thirdly, several categories were excluded from the first GHG inventory, due to a lack of data or limited understanding of the appropriate methodology to use. These gaps can now be filled, due to improved availability in data and developments in the IPCC methodologies.

Finally, with the benefit of hindsight some of the results from the first inventory were found to be inaccurate and needed to be revised. This does not imply that miscalculations were made during the first inventory. In fact, the need to revise some of the results has more to do with improved availability of data and a better understanding of how certain categories contribute to GHG emissions in Samoa. The report prepared for the first GHG inventory acknowledges many gaps and uncertainties in the data used and hence the potential inaccuracies in some of the estimates. The revision undertaken as part of the second GHG inventory seeks to overcome some of these uncertainties. Reviewing and amending inventory results is an inherent part of the GHG inventory cycle. It is hoped that over time this process of review will lead to more accurate inventories being prepared.

Table A1.1, outlines the categories that were reviewed and the specific revisions that took place. It should be noted that with various office moves, computer upgrades and staff changes, most of the files from the first GHG inventory have gone missing. This made it difficult to review the results from the first inventory.

IPCC Category (as reported in the first Inventory)	Reviewed?	Changes Made	Justification
Energy	No	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ None of the sectoral activity data was available, which made it impossible to review the emissions
Industry	Yes	<ul style="list-style-type: none"> ▪ Included new source categories, which were not included in the first GHG inventory (solvent use) ▪ Revised emissions of NMVOCs 	<ul style="list-style-type: none"> ▪ Improved methodologies ▪ Alignment with new IPCC reporting structure (i.e. IPPU category)
Solvents	Yes	<ul style="list-style-type: none"> ▪ Incorporated into IPPU sector 	<ul style="list-style-type: none"> ▪ Improved methodologies ▪ Alignment with new IPCC reporting structure (i.e. IPPU category).
Agriculture	Yes	<ul style="list-style-type: none"> ▪ Incorporated into AFOLU sector ▪ Revision of estimates of emissions from livestock farming ▪ Amendment of estimates for 	<ul style="list-style-type: none"> ▪ Improved activity data ▪ Alignment with new IPCC reporting structure (i.e. AFOLU)

		<p>N₂O from agricultural soils</p> <ul style="list-style-type: none"> ▪ Exclusion of the “field burning of agricultural residues” category 	
Land Use and Forestry	Yes	<ul style="list-style-type: none"> ▪ Incorporation into the AFOLU category ▪ Exclusion of “Forest and Grassland Conversion” source category ▪ Incorporation of “Abandonment of Managed Lands” category into “Forest Land” category ▪ Exclusion of “CO₂ Emissions and Removals from Soils” category 	<ul style="list-style-type: none"> ▪ Improved activity data ▪ New methodology ▪ Alignment with new IPCC reporting structure
Waste		<ul style="list-style-type: none"> ▪ Application of new methodology for emissions from solid waste management (IPPC Waste Model) ▪ Inclusion of estimates for open burning of waste ▪ Application of new IPCC methods for emissions from wastewater 	<ul style="list-style-type: none"> ▪ Improved activity data

Table A1.1: Categories from the first GHG inventory that were reviewed as part of the second GHG inventory.

APPENDIX 2: ESTIMATION OF CO₂ REMOVALS

As well as assessing GHGs released into the atmosphere (i.e. emissions), the GHG inventory also includes an estimate of CO₂ removals due to plant growth in forests and croplands. If plants on managed lands grow at a faster rate than vegetation clearance, there will be a net removal of CO₂ from the atmosphere. However, if vegetation is cleared at a faster rate than it can be replaced, the land category in question will be a net source of emissions.

The GHG inventory attempts to quantify the changes in carbon stocks through land use and land use changes. This is done by assessing the increase in carbon stocks due to biomass growth, as well as the loss of carbon stocks due to vegetation clearance. The principal information required to undertake this assessment is the annual area of each land use category, including forests, croplands, grasslands, settlements and wetlands. The annual area of each of these categories is estimated using aerial photography or satellite images. With images from two points in time, it is possible to observe changes in the total area of each land use category and the conversions that are occurring between land use categories.

For example, if the total area of forest is shown to have increased from one point in time to the next, then it is likely that forests would be a net carbon sink – vegetation growth is out-pacing vegetation clearance. On the other hand if the total area of forests declines, the forest sector would be considered a net source of CO₂ emissions (i.e. the carbon stored in the forest is assumed to be returned to the atmosphere when the trees are removed).

In attempting to estimate the net contribution of land use and land use changes to Samoa's overall GHG emissions, one key challenge was faced: the lack of reliable data on land cover. The most recent land cover data available in Samoa is based on 1999 aerial photography. This data was confirmed through a "ground-truthing" exercise in 2001. This provides a relatively good estimate of the area of each land category at the beginning of the inventory period (i.e. 1999-2001). However, there is no data available for the later part of the inventory (2002-2005).

To overcome the lack of land use data, it was necessary to rely on expert opinion, as well as information from agricultural surveys to estimate how land use changed during the inventory period. This led to the following key findings, which were used in the second GHG inventory:

- It is assumed that during the inventory period there was no net change in the area of forests in Samoa. This assumption is based on the opinion of the Forestry Division, as documented in the *2005 Forest Resource Assessment*. While there was been commercial logging during the inventory period, the net change in forest area has not changed. This is largely due to the contraction in the agriculture sector since the taro blight in the mid 1990s, which has slowed and potentially reversed the overall trend of land clearance for agriculture.
- The most recent surveys of agricultural activity, carried out by the Ministry of Agriculture and Fisheries, reveal a declining trend in the area of perennial crop species, such as coconut and cocoa. This data was used for Samoa's GHG inventory.

APPENDIX 3: UNFCCC REPORTING TABLES (2000-2007)

2000 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2000)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	146.11	-1,150.04	4.00	0.11	12.19	0.84	2.02	0.29
1 ENERGY	138.73		0.06	0.01	12.19	0.84	1.94	0.29
1A Fuel Combustion Activities	138.73		0.06	0.01	12.19	0.84	1.94	0.29
1A1 Energy Industries (electricity generation)	28.86		0.0012	0.0002	0.006	0.08	0.0019	0.05
1A2 Manufacturing Industries and Construction	12.44		0.0005	0.0001	0.002	0.00	0.0008	0.02
1A3 Transport (subtotal)	86.65		0.029	0.0041	6.92	0.57	1.30	0.094
1A3a Civil Aviation (Domestic Aviation)	0.06		0.0000004	0.000002	0.001	0.000	0.00026	NE
1A3b Road Transport	82.41		0.028	0.004	6.86	0.49	1.29	0.086
1A3c Waterborne Navigation (Domestic Shipping)	4.18		0.0004	0.00011	0.06	0.08	0.011	0.008
1A4 Other Sectors (subtotal)	10.78		0.0318	0.0043	5.26	0.18	0.64	0.1159
1A4 a Commercial/Institutional	0.93		0.0000	0.000001	0.0003	0.001	0.0001	NE
1A4 b Residential	5.51		0.0314	0.0042	5.20	0.11	0.62	0.11
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	4.34		0.0004	0.0001	0.06	0.07	0.01	0.008
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	3.71		NA	0.0005	NA	NA	0.08	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	3.71		NA	NA	NA	NA	0.08	NA
2D1 Lubricant Use	3.71				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.08	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Used as Substitutes for Ozone Dep. Subst.	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0005	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF ₆ and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N ₂ O from Product Uses (medical uses)	NA		NA	0.0005	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000004	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	0.000004	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2000)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0039	-1,150.04	2.58	0.10	NE	NE	NE	NE
3A Livestock			2.58	NE				
3A1 Enteric Fermentation			2.13					
3A2 Manure Management			0.44	NE				
3B Land	NE	-1,150.04	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-705.27	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-444.78	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0039		NE	0.103	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0034							
3C4 Direct N ₂ O Emissions from Managed Soils				0.08				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	3.67		1.36	0.0027	NE	NE	NE	NE
4A Solid Waste Disposal	NA		0.03		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.03		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	3.67		0.12	0.0027	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	3.67		0.12	0.0027	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	22.28		0.0003	0.0006	0.048	0.116	0.018	NE
International Aviation (International Bunkers)	20.91		0.0001	0.0006	0.029	0.088	0.01	0.01
International Water-borne Transport (International Bunkers)	1.37		0.0001	0.0004	0.019	0.028	0.004	0.003
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2000)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals	NE	0.00012	NO	0.00008	0.00009	NO	NO	NO	NO
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00012	NO	0.00008	0.00009	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.00012	NO	0.00008	0.00009	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00012	NO	0.00008	0.00009	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items(5)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2001 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2001)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	156.57	-1,057.67	4.32	0.13	11.94	0.86	2.01	0.31
1 ENERGY	151.26		0.06	0.01	11.94	0.86	1.91	0.31
1A Fuel Combustion Activities	151.26		0.06	0.01	11.94	0.86	1.91	0.31
1A1 Energy Industries (electricity generation)	39.88		0.0016	0.0003	0.008	0.11	0.0027	0.08
1A2 Manufacturing Industries and Construction	13.01		0.0005	0.0001	0.002	0.00	0.0009	0.02
1A3 Transport (subtotal)	87.73		0.029	0.0041	6.90	0.57	1.30	0.096
1A3a Civil Aviation (Domestic Aviation)	0.10		0.0000007	0.000003	0.002	0.000	0.00045	NE
1A3b Road Transport	83.26		0.028	0.0040	6.84	0.49	1.29	0.088
1A3c Waterborne Navigation (Domestic Shipping)	4.37		0.0005	0.00012	0.06	0.09	0.012	0.008
1A4 Other Sectors (subtotal)	10.64		0.0304	0.0041	5.02	0.18	0.61	0.112
1A4 a Commercial/Institutional	0.95		0.0000	0.000002	0.0003	0.002	0.0001	NE
1A4 b Residential	5.15		0.0299	0.0040	4.96	0.11	0.60	0.10
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	4.54		0.0004	0.0001	0.06	0.07	0.01	0.0084
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	2.76		NA	0.0003	NA	NA	0.09	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	2.76		NA	NA	NA	NA	0.09	NA
2D1 Lubricant Use	2.76				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.09	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Sub for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0003	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses (medical uses)	NA		NA	0.0003	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000005	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	0.000005	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2001)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0018	-1,057.67	2.89	0.12	NE	NE	NE	NE
3A Livestock			2.89	NE				
3A1 Enteric Fermentation			2.37					
3A2 Manure Management			0.51	NE				
3B Land	NE	-1,057.67	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-692.91	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-364.76	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0018		NE	0.115	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0013							
3C4 Direct N ₂ O Emissions from Managed Soils				0.09				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.54		1.37	0.0025	0.0001	0.0001	NE	0.0001
4A Solid Waste Disposal	NA		0.05		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.05		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.54		0.11	0.0025	0.0001	0.0001	NE	0.0001
4C1 Waste Incineration	0.040		0.000003	0.000003	0.0001	0.0001	NE	0.0001
4C2 Open Burning of Waste	2.54		0.11	0.0025	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	28.38		0.0003	0.0008	0.056	0.147	0.023	NE
International Aviation (International Bunkers)	26.95		0.0002	0.0008	0.038	0.113	0.02	0.01
International Water-borne Transport (International Bunkers)	1.43		0.0002	0.00004	0.019	0.034	0.004	0.003
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2001)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs (Gg)			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals	NE	0.00034	NO	0.00016	0.00019	NO	NO	NO	NO
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00034	NO	0.00016	0.00019	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.00034	NO	0.00016	0.00019	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00034	NO	0.00016	0.00019	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items(5)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2002 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2002)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	165.25	-977.63	4.64	0.14	11.55	0.88	2.00	0.31
1 ENERGY	159.50		0.06	0.01	11.55	0.88	1.87	0.31
1A Fuel Combustion Activities	159.50		0.06	0.01	11.55	0.88	1.87	0.31
1A1 Energy Industries (electricity generation)	38.34		0.0016	0.0003	0.008	0.10	0.0026	0.07
1A2 Manufacturing Industries and Construction	15.71		0.0006	0.0001	0.002	0.00	0.0011	0.03
1A3 Transport (subtotal)	93.54		0.029	0.0044	6.91	0.59	1.30	0.108
1A3a Civil Aviation (Domestic Aviation)	0.05		0.0000004	0.000001	0.001	0.000	0.00021	NE
1A3b Road Transport	88.21		0.028	0.0043	6.84	0.48	1.29	0.098
1A3c Waterborne Navigation (Domestic Shipping)	5.28		0.0005	0.00014	0.07	0.11	0.014	0.010
1A4 Other Sectors (subtotal)	12.02		0.028	0.0038	4.63	0.19	0.56	0.1047
1A4 a Commercial/Institutional	0.98		0.00002	0.000002	0.0003	0.002	0.0001	NE
1A4 b Residential	5.59		0.0275	0.0037	4.552	0.10	0.55	0.09
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	5.45		0.0005	0.0001	0.07	0.09	0.01	0.0101
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	3.10		NA	0.0003	NA	NA	0.13	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	3.10		NA	NA	NA	NA	0.13	NA
2D1 Lubricant Use	3.10				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.13	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0003	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF ₆ and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N ₂ O from Product Uses (medical uses)	NA		NA	0.0003	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000004	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	0.000004	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2002)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0048	-977.63	3.20	0.13	NE	NE	NE	NE
3A Livestock			3.20	NE				
3A1 Enteric Fermentation			2.61					
3A2 Manure Management			0.58	NE				
3B Land	NE	-977.63	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-692.90	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-284.74	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0048		NE	0.128	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0044							
3C4 Direct N ₂ O Emissions from Managed Soils				0.10				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.55		1.38	0.0024	0.0001	0.0001	NE	0.0001
4A Solid Waste Disposal	NA		0.06		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.06		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.55		0.10	0.0024	0.0001	0.0001	NE	0.0001
4C1 Waste Incineration	0.057		0.000004	0.000004	0.0001	0.0001	NE	0.0001
4C2 Open Burning of Waste	2.55		0.10	0.0024	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	29.48		0.0004	0.0008	0.063	0.153	0.024	NE
International Aviation (International Bunkers)	27.75		0.0002	0.0008	0.039	0.116	0.02	0.01
International Water-borne Transport (International Bunkers)	1.73		0.0002	0.00005	0.024	0.036	0.005	0.003
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF6 (2002)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals	NE	0.00043	NO	0.00041	0.00048	NO	NO	NO	NO
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00043	NO	0.00041	0.00048	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.00043	NO	0.00041	0.00048	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00043	NO	0.00041	0.00048	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items(5)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2003 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2003)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	165.02	-1,004.87	4.84	0.14	11.58	0.90	1.98	0.30
1 ENERGY	158.53		0.06	0.01	11.58	0.90	1.90	0.30
1A Fuel Combustion Activities	158.53		0.06	0.01	11.58	0.90	1.90	0.30
1A1 Energy Industries (electricity generation)	37.36		0.0017	0.0003	0.008	0.10	0.0025	0.07
1A2 Manufacturing Industries and Construction	15.13		0.0006	0.0001	0.002	0.00	0.0010	0.03
1A3 Transport (subtotal)	93.89		0.03	0.0045	7.31	0.61	1.38	0.104
1A3a Civil Aviation (Domestic Aviation)	0.05		0.0000004	0.000001	0.001	0.000	0.00022	NE
1A3b Road Transport	89.12		0.030	0.0043	7.25	0.51	1.36	0.095
1A3c Waterborne Navigation (Domestic Shipping)	4.72		0.0004	0.00014	0.06	0.10	0.013	0.009
1A4 Other Sectors (subtotal)	12.15		0.0258	0.0035	4.26	0.19	0.52	0.098
1A4 a Commercial/Institutional	1.10		0.0000	0.000002	0.0003	0.002	0.0001	NE
1A4 b Residential	5.05		0.0252	0.0034	4.18	0.09	0.50	0.09
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	5.99		0.0006	0.0002	0.08	0.10	0.02	0.0111
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	3.78		NA	0.0005	NA	NA	0.08	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	3.78		NA	NA	NA	NA	0.08	NA
2D1 Lubricant Use	3.78				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.08	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0005	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses (medical uses)	NA		NA	0.0005	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000005	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	0.000005	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2003)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0028	-1,004.87	3.40	0.13	NE	NE	NE	NE
3A Livestock			3.40	NE				
3A1 Enteric Fermentation			2.82					
3A2 Manure Management			0.58	NE				
3B Land	NE	-1,004.87	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-726.38	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-278.49	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0028		NE	0.132	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0023							
3C4 Direct N ₂ O Emissions from Managed Soils				0.11				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.72		1.39	0.0022	0.0001	0.0001	NE	0.0001
4A Solid Waste Disposal	NA		0.08		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.08		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.72		0.10	0.0022	0.0001	0.0001	NE	0.0001
4C1 Waste Incineration	0.065		0.000004	0.000004	0.0001	0.0001	NE	0.0001
4C2 Open Burning of Waste	2.72		0.10	0.0022	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	31.89		0.0003	0.009	0.084	0.227	0.037	0.012
International Aviation (International Bunkers)	30.57		0.0002	0.009	0.067	0.203	0.03	0.02
International Water-borne Transport (International Bunkers)	1.31		0.0001	0.00004	0.016	0.024	0.003	0.002
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2003)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals	NE	0.00069	NO	0.00046	0.00054	NO	NO	NO	NO
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00069	NO	0.00046	0.00054	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.00069	NO	0.00046	0.00054	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00069	NO	0.00046	0.00054	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items(5)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2004 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2004)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	157.26	-986.32	5.05	0.15	11.33	0.88	1.97	0.28
1 ENERGY	151.41		0.06	0.0078	11.33	0.88	1.87	0.28
1A Fuel Combustion Activities	151.41		0.06	0.01	11.33	0.88	1.87	0.28
1A1 Energy Industries (electricity generation)	43.63		0.0018	0.0004	0.009	0.12	0.0029	0.08
1A2 Manufacturing Industries and Construction	8.39		0.0003	0.0001	0.001	0.00	0.0006	0.02
1A3 Transport (subtotal)	89.19		0.031	0.0042	7.44	0.61	1.40	0.092
1A3a Civil Aviation (Domestic Aviation)	0.14		0.0000010	0.000004	0.003	0.001	0.00060	NE
1A3b Road Transport	85.06		0.030	0.0041	7.38	0.53	1.39	0.085
1A3c Waterborne Navigation (Domestic Shipping)	3.99		0.0004	0.00011	0.05	0.08	0.011	0.008
1A4 Other Sectors (subtotal)	10.20		0.0236	0.0032	3.888	0.15	0.47	0.0872
1A4 a Commercial/Institutional	1.39		0.0000	0.000002	0.0004	0.002	0.0001	NE
1A4 b Residential	4.63		0.0231	0.0031	3.831	0.08	0.46	0.08
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	4.18		0.0004	0.0001	0.06	0.07	0.01	0.0077
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	3.13		NA	0.0006	NA	NA	0.10	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	3.13		NA	NA	NA	NA	0.09	NA
2D1 Lubricant Use	3.13				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.09	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0006	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses (medical uses)	NA		NA	0.0006	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000007	NA	NA	0.003	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.003	NA
2H3 Other (Ammonia Use)	NA		NA	0.000007	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2004)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0048	-986.32	3.60	0.137066195	NE	NE	NE	NE
3A Livestock			3.60	NE				
3A1 Enteric Fermentation			3.02					
3A2 Manure Management			0.58	NE				
3B Land	NE	-986.32	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-735.26	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-251.07	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0048		NE	0.137	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0044							
3C4 Direct N ₂ O Emissions from Managed Soils				0.11				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.73		1.39	0.0021	0.0001	0.0001	NE	0.0001
4A Solid Waste Disposal	NA		0.09		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.09		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.73		0.09	0.0021	0.0001	0.0001	NE	0.0001
4C1 Waste Incineration	0.073		0.000005	0.000005	0.0001	0.0001	NE	0.0001
4C2 Open Burning of Waste	2.73		0.09	0.0021	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items (not included in national totals)								
International Bunkers (subtotal)	39.61		0.0003	0.0011	0.062	0.175	0.029	NE
International Aviation (International Bunkers)	39.04		0.0003	0.0011	0.055	0.164	0.03	0.01
International Water-borne Transport (International Bunkers)	0.57		0.0001	0.00002	0.008	0.012	0.002	0.001
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2004)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C2F ₆	Other	
Total National Emissions and Removals		0.00091	NO	0.00052	0.00061				
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00091	NO	0.00052	0.00061	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Sub for Ozone Depleting Substances	NE	0.00091	NO	0.00052	0.00061	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00091	NO	0.00052	0.00061	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO ₂ Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items (not included in national totals)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2005 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2005)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	161.31	-834.23	5.26	0.15	11.03	0.85	1.95	0.28
1 ENERGY	154.61		0.05	0.0076	11.03	0.85	1.84	0.28
1A Fuel Combustion Activities	154.61		0.05	0.01	11.03	0.85	1.84	0.28
1A1 Energy Industries (electricity generation)	42.84		0.0017	0.0003	0.009	0.12	0.0029	0.08
1A2 Manufacturing Industries and Construction	13.61		0.0006	0.0001	0.002	0.00	0.0009	0.03
1A3 Transport (subtotal)	89.08		0.031	0.0042	7.46	0.61	1.40	0.092
1A3a Civil Aviation (Domestic Aviation)	0.11		0.0000008	0.000003	0.0024	0.000	0.00049	NE
1A3b Road Transport	85.20		0.031	0.0041	7.41	0.53	1.39	0.085
1A3c Waterborne Navigation (Domestic Shipping)	3.77		0.0004	0.00010	0.05	0.08	0.010	0.007
1A4 Other Sectors (subtotal)	9.09		0.0215	0.0029	3.55	0.13	0.43	0.0781
1A4 a Commercial/Institutional	1.52		0.00002	0.000002	0.0005	0.002	0.0001	NE
1A4 b Residential	4.76		0.02	0.0028	3.52	0.08	0.42	0.07
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms (fishing)	2.81		0.0003	0.0001	0.04	0.05	0.01	0.0051
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	4.00		NA	0.0006	NA	NA	0.108	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	4.00		NA	NA	NA	NA	0.105	NA
2D1 Lubricant Use	4.00				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.105	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0006	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF ₆ and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N ₂ O from Product Uses (medical uses)	NA		NA	0.0006	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000004	NA	NA	0.0028	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.0028	NA
2H3 Other (Ammonia Use)	NA		NA	0.000004	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont (2005)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0089	-834.23	3.80	0.14	NE	NE	NE	NE
3A Livestock			3.80	NE				
3A1 Enteric Fermentation			3.22					
3A2 Manure Management			0.58	NE				
3B Land	NE	-834.23	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-724.76	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-109.46	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0089		NE	0.142	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0004							
3C3 Urea Application	0.0084							
3C4 Direct N ₂ O Emissions from Managed Soils				0.12				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.03				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.68		1.40	0.0020	0.0001	0.0002	NE	0.0001
4A Solid Waste Disposal	NA		0.10		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.10		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.68		0.09	0.0020	0.0001	0.0002	NE	0.0001
4C1 Waste Incineration	0.081		0.000006	0.000005	0.0001	0.0002	NE	0.0001
4C2 Open Burning of Waste	2.68		0.09	0.0020	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items (not included in national totals)								
International Bunkers (subtotal)	37.73		0.0005	0.0011	0.079	0.193	0.031	NE
International Aviation (International Bunkers)	35.53		0.0002	0.0010	0.050	0.149	0.02	0.01
International Water-borne Transport (International Bunkers)	2.19		0.0002	0.00006	0.030	0.044	0.006	0.004
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2005)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals		0.00076	0.00002	0.00055	0.00061				
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.00076	0.00002	0.00055	0.00061	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Sub for Ozone Depleting Substances	NE	0.00076	0.00002	0.00055	0.00061	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.00076	0.00002	0.00055	0.00061	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO ₂ Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items (not included in national totals)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2006 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2006)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	171.39	-851.46	5.45	0.16	10.21	0.87	1.85	0.29
1 ENERGY	164.90		0.05	0.01	10.21	0.87	1.72	0.29
1A Fuel Combustion Activities	164.90		0.05	0.01	10.21	0.87	1.72	0.29
1A1 Energy Industries (electricity generation)	46.56		0.0019	0.0004	0.009	0.13	0.0031	0.09
1A2 Manufacturing Industries and Construction	13.88		0.0006	0.0001	0.002	0.00	0.0009	0.03
1A3 Transport (subtotal)	92.06		0.030	0.0043	7.19	0.60	1.35	0.101
1A3a Civil Aviation (Domestic Aviation)	0.07		0.000001	0.000002	0.0015	0.000	0.00030	NE
1A3b Road Transport	87.33		0.029	0.0042	7.13	0.51	1.34	0.093
1A3c Waterborne Navigation (Domestic Shipping)	4.66		0.0004	0.00013	0.06	0.09	0.013	0.009
1A4 Other Sectors (subtotal)	12.40		0.0183	0.0025	3.011	0.15	0.37	0.0705
1A4 a Commercial/Institutional	1.73		0.0000	0.000003	0.0005	0.003	0.0001	NE
1A4 b Residential	5.84		0.018	0.0024	2.94	0.07	0.35	0.06
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	4.84		0.0005	0.0001	0.07	0.08	0.01	0.0089
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	4.07		NA	0.0005	NA	NA	0.1209	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	4.07		NA	NA	NA	NA	0.12	NA
2D1 Lubricant Use	4.07				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.12	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0004	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses (medical uses)	NA		NA	0.0004	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000009	NA	NA	0.0023	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.0023	NA
2H3 Other (Ammonia Use)	NA		NA	0.000009	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont. (2006)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0017	-851.46	3.99	0.15	NE	NE	NE	NE
3A Livestock			3.99	NE				
3A1 Enteric Fermentation			3.42					
3A2 Manure Management			0.57	NE				
3B Land	NE	-851.46	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-776.14	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-75.32	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0017		NE	0.146	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0002							
3C3 Urea Application	0.0015							
3C4 Direct N ₂ O Emissions from Managed Soils				0.12				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.03				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.42		1.41	0.0018	0.0002	0.0002	NE	0.0001
4A Solid Waste Disposal	NA		0.12		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.12		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.42		0.08	0.0018	0.00016	0.00020	NE	0.0001
4C1 Waste Incineration	0.097		0.000007	0.000006	0.00016	0.00020	NE	0.0001
4C2 Open Burning of Waste	2.42		0.08	0.0018	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE	NE	NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items (not included in national totals)								
International Bunkers (subtotal)	32.28		0.0004	0.0009	0.064	0.161	0.026	NE
International Aviation (International Bunkers)	30.76		0.0002	0.00086	0.043	0.129	0.022	0.010
International Water-borne Transport (International Bunkers)	1.52		0.0001	0.00004	0.021	0.032	0.004	0.003
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆ (2006)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals		0.001	0.00003	0.00051	0.00056				
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.001	0.00003	0.00051	0.00056	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.001	0.00003	0.00051	0.00056	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.001	0.00003	0.00051	0.00056	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items (not included in national totals)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

2007 EMISSIONS
UNFCCC Reporting Tables

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (2007)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	177.41	-785.07	5.66	0.1598	10.14	0.90	1.83	0.29
1 ENERGY	178.22		0.05	0.01	10.14	0.90	1.73	0.29
1A Fuel Combustion Activities	170.98		0.05	0.01	10.14	0.90	1.73	0.29
1A1 Energy Industries (electricity generation)	44.07		0.0018	0.0004	0.009	0.12	0.0030	0.08
1A2 Manufacturing Industries and Construction	16.24		0.0007	0.0001	0.002	0.00	0.0011	0.03
1A3 Transport (subtotal)	98.45		0.030	0.0047	7.35	0.62	1.38	0.113
1A3a Civil Aviation (Domestic Aviation)	0.00		NO	NO	NO	NO	NO	NO
1A3b Road Transport	92.99		0.030	0.0045	7.28	0.51	1.37	0.102
1A3c Waterborne Navigation (Domestic Shipping)	5.46		0.0005	0.00015	0.07	0.11	0.015	0.010
1A4 Other Sectors (subtotal)	12.23		0.0169	0.0023	2.778	0.16	0.34	0.0666
1A4 a Commercial/Institutional	1.39		0.0000	0.000002	0.0004	0.002	0.0001	NE
1A4 b Residential	5.20		0.0164	0.0022	2.701	0.06	0.32	0.06
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	5.64		0.0005	0.0002	0.08	0.09	0.02	0.0101
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	4.14		NA	0.0004	NA	NA	0.10	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	4.14		NA	NA	NA	NA	0.10	NA
2D1 Lubricant Use	4.14				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.10	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	0.0004	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses (medical uses)	NA		NA	0.0004	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	0.000006	NA	NA	0.003	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.003	NA
2H3 Other (Ammonia Use)	NA		NA	0.000006	NA	NA	NA	NA

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Reporting Table 1 cont. (2007)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0045	-785.07	4.19	0.15	NE	NE	NE	NE
3A Livestock			4.19	NE				
3A1 Enteric Fermentation			3.62					
3A2 Manure Management			0.57	NE				
3B Land	NE	-785.07	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-777.47	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	-7.60	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0045		NE	0.151	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	0.0009							
3C3 Urea Application	0.0037							
3C4 Direct N ₂ O Emissions from Managed Soils				0.12				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.03				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	2.28		1.42	0.0017	0.00021	0.00025	NE	0.0002
4A Solid Waste Disposal	NA		0.14		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.14		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	2.28		0.07	0.0017	0.00021	0.00025	NE	0.0002
4C1 Waste Incineration	0.124		0.000008	0.000008	0.00021	0.00025	NE	0.0002
4C2 Open Burning of Waste	2.28		0.07	0.0017	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items (not included in national totals)								
International Bunkers (subtotal)	37.43		0.0004	0.001	0.074	0.186	0.030	NE
International Aviation (International Bunkers)	35.65		0.0002	0.001	0.050	0.150	0.025	0.011
International Water-borne Transport (International Bunkers)	1.78		0.0002	0.00005	0.024	0.036	0.005	0.003
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

Key: NA = not applicable, NE = not estimated, NO = not occurring

UNFCCC Table 2. Samoa's National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF6 (2007)

Greenhouse gas source and sink categories	HFCs (Gg)					PFCs			SF ₆
	HFC-23	HFC-134	HFC-32	HFC-125	HFC-143	CF ₄	C ₂ F ₆	Other	
Total National Emissions and Removals									
1 ENERGY									
1A Fuel Combustion Activities									
1B Fugitive Emissions from Fuels									
1C Carbon Dioxide Transport and Storage									
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE	0.001	0.00005	0.00053	0.00059	NO	NO	NO	NO
2A Mineral Industry									
2B Chemical Industry									
2C Metal Industry									
2D Non-Energy Products from Fuels and Solvent Use									
2E Electronics Industry									
2F Product Uses as Substitutes for Ozone Depleting Substances	NE	0.001	0.00005	0.00053	0.00059	NE	NE	NE	NE
2F1 Refrigeration and Air Conditioning	NE	0.001	0.00005	0.00053	0.00059	NO	NO	NO	NO
2F2 Foam Blowing Agents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F3 Fire Protection	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F4 Aerosols	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F5 Solvents	NE	NE	NE	NE	NE	NE	NE	NE	NE
2F6 Other Applications	NE	NE	NE	NE	NE	NE	NE	NE	NE
2G Other Product Manufacture and Use									
2H Other (please specify)									
3 AGRICULTURE, FORESTRY AND OTHER LAND USE									
3A Livestock									
3B Land									
3C Aggregate Sources and Non-CO2 Emissions Sources on Land									
3D Other									
4 WASTE									
4A Solid Waste Disposal									
4B Biological Treatment of Solid Waste									
4C Incineration and Open Burning of Waste									
4D Wastewater Treatment and Discharge									
4E Other (please specify)									
5 OTHER									
5A Indirect N ₂ O Emissions from the Atmospheric Deposition of Nitrogen in NO _x and NH ₃									
5B Other (please specify)									
Memo items (not included in national totals)									
International Bunkers (subtotal)									
International Aviation (International Bunkers)									
International Water-borne Transport (International Bunkers)									
Multilateral Operations									

Key: NA = not applicable, NE = not estimated, NO = not occurring

APPENDIX 4: REVISED EMISSION ESTIMATES for 1994-1999
UNFCCC REPORTING TABLES

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1994)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	102.20	-658.56	2.25	0.05	5.41	0.92	1.07	NE
1 ENERGY	102.20		0.02	0.0009	5.41	0.92	1.02	NE
1A Fuel Combustion Activities	102.20		0.02	0.00	5.41	0.92	1.02	NE
1A1 Energy Industries (electricity generation)	8.79		0.0004	0.0001	0.003	0.02	0.0006	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	70.75		0.014	0.0006	5.26	0.71	0.99	NE
1A3a Civil Aviation (Domestic Aviation)	0.06		0.0000005	0.000002	0.000	0.003	0.00005	NE
1A3b Road Transport	68.45		0.014	0.0006	5.23	0.66	0.99	NE
1A3c Waterborne Navigation (Domestic Shipping)	2.23		0.0002	0.00002	0.03	0.05	0.006	NE
1A4 Other Sectors (subtotal)	22.66		0.0026	0.0002	0.144	0.19	0.03	NE
1A4 a Commercial/Institutional	1.16		0.0002	0.000011	0.0004	0.002	0.0001	NE
1A4 b Residential	11.14		0.0017	0.0001	0.003	0.02	0.00	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	10.36		0.0007	0.0001	0.14	0.17	0.03	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.05	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	NA	NA
2D1 Lubricant Use	NE				NE	NE	0.047184769	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.05	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1994)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOG (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	NE	-658.56	1.05	0.05	NE	NE	NE	NE
3A Livestock			1.05	NE				
3A1 Enteric Fermentation			0.73					
3A2 Manure Management			0.32	NE				
3B Land	NE	-658.56	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-658.56	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	NE		NE	0.051	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	NE							
3C4 Direct N ₂ O Emissions from Managed Soils				0.04				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.01				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.18	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		NE		NE		NE	
4A1 Managed Waste Disposal Sites	NA		NE		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.18	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.18	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	16.12		0.0002	0.0004	0.049	0.103	0.039	NE
International Aviation (International Bunkers)	14.02		0.0001	NE	0.020	0.060	0.01	NE
International Water-borne Transport (International Bunkers)	2.10		0.0001	0.00040	0.029	0.043	0.029	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1995)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	117.36	-693.44	2.45	0.06	5.20	0.88	1.04	NE
1 ENERGY	117.36		0.02	0.0010	5.20	0.88	0.98	NE
1A Fuel Combustion Activities	117.36		0.02	0.00	5.20	0.88	0.98	NE
1A1 Energy Industries (electricity generation)	15.09		0.0006	0.0001	0.003	0.04	0.0010	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	63.13		0.013	0.0005	5.05	0.62	0.95	NE
1A3a Civil Aviation (Domestic Aviation)	0.05		0.0000004	0.000002	0.000	0.000	0.00004	NE
1A3b Road Transport	60.84		0.013	0.0005	5.02	0.58	0.94	NE
1A3c Waterborne Navigation (Domestic Shipping)	2.23		0.0002	0.00002	0.03	0.05	0.006	NE
1A4 Other Sectors (subtotal)	39.13		0.0048	0.0003	0.152	0.21	0.03	NE
1A4 a Commercial/Institutional	1.03		0.0002	0.000010	0.0003	0.002	0.0001	NE
1A4 b Residential	27.50		0.0039	0.0002	0.008	0.04	0.00	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	10.60		0.0007	0.0001	0.14	0.17	0.03	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.06	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	0.06	NA
2D1 Lubricant Use	NE				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.06	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1995)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOG (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	NE	-693.44	1.25	0.06	NE	NE	NE	NE
3A Livestock			1.25	NE				
3A1 Enteric Fermentation			0.93					
3A2 Manure Management			0.32	NE				
3B Land	NE	-693.44	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-693.44	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	NE		NE	0.056	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	NE							
3C4 Direct N ₂ O Emissions from Managed Soils				0.05				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.01				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.18	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		NE		NE		NE	
4A1 Managed Waste Disposal Sites	NA		NE		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.18	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.18	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	16.18		0.0003	0.0004	0.052	0.108	0.042	NE
International Aviation (International Bunkers)	13.80		0.0001	NE	0.020	0.059	0.01	NE
International Water-borne Transport (International Bunkers)	2.37		0.0002	0.00039	0.033	0.049	0.033	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1996)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	119.30	-686.63	2.61	0.06	4.95	0.86	0.98	NE
1 ENERGY	119.30		0.02	0.0010	4.95	0.86	0.93	NE
1A Fuel Combustion Activities	119.30		0.02	0.00	4.95	0.86	0.93	NE
1A1 Energy Industries (electricity generation)	25.40		0.0010	0.0002	0.005	0.07	0.0017	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	58.15		0.013	0.0005	4.78	0.57	0.90	NE
1A3a Civil Aviation (Domestic Aviation)	0.05		0.0000000	0.000000	0.000	0.000	0.00000	NE
1A3b Road Transport	55.87		0.012	0.0005	4.75	0.53	0.89	NE
1A3c Waterborne Navigation (Domestic Shipping)	2.23		0.0002	0.00002	0.03	0.05	0.006	NE
1A4 Other Sectors (subtotal)	35.76		0.0039	0.0003	0.162	0.22	0.03	NE
1A4 a Commercial/Institutional	1.06		0.0002	0.000010	0.0003	0.002	0.0001	NE
1A4 b Residential	20.50		0.0029	0.0002	0.006	0.03	0.00	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms (fishing)	14.19		0.0008	0.0001	0.16	0.19	0.03	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.04	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	0.04	NA
2D1 Lubricant Use	NE				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.04	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1996)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	NE	-686.63	1.40	0.06	NE	NE	NE	NE
3A Livestock			1.40	NE				
3A1 Enteric Fermentation			1.08					
3A2 Manure Management			0.32	NE				
3B Land	NE	-686.63	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-686.63	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	NE		NE	0.060	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	NE							
3C4 Direct N ₂ O Emissions from Managed Soils				0.05				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.01				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.19	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		NE		NE		NE	
4A1 Managed Waste Disposal Sites	NA		NE		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.19	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.19	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	14.99		0.0002	0.0001	0.039	0.088	0.042	NE
International Aviation (International Bunkers)	13.80		0.0001	NE	0.019	0.058	0.01	NE
International Water-borne Transport (International Bunkers)	1.19		0.0001	0.00012	0.020	0.029	0.033	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1997)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	121.68	-680.77	2.75	0.06	6.33	0.99	1.24	NE
1 ENERGY	121.68		0.02	0.0010	6.33	0.99	1.19	NE
1A Fuel Combustion Activities	121.68		0.02	0.00	6.33	0.99	1.19	NE
1A1 Energy Industries (electricity generation)	21.73		0.0009	0.0002	0.004	0.06	0.0015	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	75.88		0.016	0.0007	6.18	0.74	1.16	NE
1A3a Civil Aviation (Domestic Aviation)	0.07		0.0000005	0.000002	0.000	0.000	0.00005	NE
1A3b Road Transport	73.57		0.016	0.0006	6.15	0.69	1.16	NE
1A3c Waterborne Navigation (Domestic Shipping)	2.23		0.0002	0.00002	0.03	0.05	0.006	NE
1A4 Other Sectors (subtotal)	24.08		0.0027	0.0002	0.144	0.19	0.03	NE
1A4 a Commercial/Institutional	1.76		0.0003	0.000017	0.0006	0.003	0.0001	NE
1A4 b Residential	11.96		0.0017	0.0001	0.003	0.02	0.00	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	10.36		0.0007	0.0001	0.14	0.17	0.03	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.05	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	0.05	NA
2D1 Lubricant Use	NE				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.05	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1997)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOG (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	NE	-680.77	1.53	0.06	NE	NE	NE	NE
3A Livestock			1.53	NE				
3A1 Enteric Fermentation			1.20					
3A2 Manure Management			0.32	NE				
3B Land	NE	-680.77	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-680.77	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	NE		NE	0.063	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	NE							
3C4 Direct N ₂ O Emissions from Managed Soils				0.05				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.01				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.20	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		NE		NE		NE	
4A1 Managed Waste Disposal Sites	NA		NE		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.20	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.20	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	16.36		0.0003	0.0004	0.057	0.115	0.048	NE
International Aviation (International Bunkers)	13.58		0.0001	NE	0.019	0.058	0.01	NE
International Water-borne Transport (International Bunkers)	2.78		0.0002	0.00038	0.038	0.057	0.038	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1998)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOC (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	123.22	-691.32	3.15	0.08	8.28	0.94	1.50	NE
1 ENERGY	123.22		0.03	0.004	8.28	0.94	1.44	NE
1A Fuel Combustion Activities	123.22		0.03	0.004	8.28	0.94	1.44	NE
1A1 Energy Industries (electricity generation)	24.11		0.0010	0.0002	0.005	0.06	0.0016	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	79.47		0.020	0.0018	6.43	0.69	1.21	NE
1A3a Civil Aviation (Domestic Aviation)	0.07		0.0000005	0.000002	0.000	0.000	0.00012	NE
1A3b Road Transport	76.52		0.020	0.0018	6.39	0.63	1.20	NE
1A3c Waterborne Navigation (Domestic Shipping)	2.88		0.0002	0.00005	0.04	0.06	0.008	NE
1A4 Other Sectors (subtotal)	19.67		0.0124	0.0016	1.850	0.19	0.23	NE
1A4 a Commercial/Institutional	1.48		0.0002	0.000012	0.0005	0.002	0.0001	NE
1A4 b Residential	9.81		0.0116	0.0015	1.736	0.05	0.21	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	8.35		0.0006	0.0001	0.11	0.14	0.02	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.06	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	0.06	NA
2D1 Lubricant Use	NE				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.06	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1998)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOG (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	NE	-691.32	1.89	0.08	NE	NE	NE	NE
3A Livestock			1.89	NE				
3A1 Enteric Fermentation			1.54					
3A2 Manure Management			0.35	NE				
3B Land	NE	-691.32	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-691.32	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	NE		NE	0.076	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	NE							
3C4 Direct N ₂ O Emissions from Managed Soils				0.06				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.01				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.22	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		0.01		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.01		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	0.00		0.0000	0.0000	0.000	0.000	0.000	NE
International Aviation (International Bunkers)	NE		NE	NE	NE	NE	NE	NE
International Water-borne Transport (International Bunkers)	NE		NE	NE	NE	NE	NE	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

UNFCCC Reporting Table 1. Samoa's National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors (1999)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOG (Gg)	SO ₂ (Gg)
Total National Emissions and Removals	126.14	-702.53	3.55	0.10	10.23	0.89	1.76	NE
1 ENERGY	126.14		0.05	0.01	10.23	0.89	1.69	NE
1A Fuel Combustion Activities	126.14		0.05	0.01	10.23	0.89	1.69	NE
1A1 Energy Industries (electricity generation)	26.74		0.0011	0.0002	0.005	0.07	0.0018	NE
1A2 Manufacturing Industries and Construction	NA		NA	NA	NA	NA	NA	NE
1A3 Transport (subtotal)	83.68		0.026	0.003	6.68	0.63	1.26	NE
1A3a Civil Aviation (Domestic Aviation)	0.06		0.0000005	0.000002	0.001	0.000	0.00019	NE
1A3b Road Transport	79.85		0.025	0.0029	6.63	0.56	1.25	NE
1A3c Waterborne Navigation (Domestic Shipping)	3.77		0.0004	0.00008	0.05	0.07	0.010	NE
1A4 Other Sectors (subtotal)	16.06		0.0222	0.0029	3.55	0.19	0.43	NE
1A4 a Commercial/Institutional	1.25		0.0001	0.000007	0.0004	0.002	0.0001	NE
1A4 b Residential	8.05		0.0215	0.0028	3.468	0.08	0.42	NE
1A4 c Agriculture/ Forestry/ Fishing/ Fish Farms	6.77		0.0005	0.0001	0.09	0.10	0.02	NE
1A5 Non-Specified	NO		NO	NO	NO	NO	NO	NO
1B Fugitive Emissions from Fuels	NO		NO	NO	NO	NO	NO	NO
1C Carbon Dioxide Transport and Storage	NO				NO	NO	NO	NO
2 INDUSTRIAL PROCESSES AND PRODUCT USE	NE		NA	NE	NA	NA	0.07	NA
2A Mineral Industry	NO		NO	NO	NO	NO	NO	NO
2B Chemical Industry	NO		NO	NO	NO	NO	NO	NO
2C Metal Industry	NO		NO	NO	NO	NO	NO	NO
2D Non-Energy Products from Fuels and Solvent Use	NE		NA	NA	NA	NA	0.07	NA
2D1 Lubricant Use	NE				NE	NE	NE	NE
2D2 Paraffin Wax Use	NE		NE	NE	NE	NE	NE	NE
2D3 Solvent Use	NA		NA	NA	NA	NA	0.07	NA
2D4 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
2E Electronics Industry	NO		NO	NO	NO	NO	NO	NO
2F Product Uses as Substitutes for Ozone Depleting Substances	NA		NA	NA	NA	NA	NA	NA
2G Other Product Manufacture and Use	NA		NA	NE	NA	NA	NA	NA
2G1 Electrical Equipment	NO		NO	NO	NO	NO	NO	NO
2G2 SF6 and PFCs from Other Product Uses	NO		NO	NO	NO	NO	NO	NO
2G3 N2O from Product Uses	NA		NA	NE	NA	NA	NA	NA
2G4 Other	NO		NO	NO	NO	NO	NO	NO
2H Other (please specify)	NA		NA	NE	NA	NA	0.002	NA
2H1 Pulp and Paper Industry	NO		NO	NO	NO	NO	NO	NO
2H2 Food and Beverages Industry	NA		NA	NA	NA	NA	0.002	NA
2H3 Other (Ammonia Use)	NA		NA	NE	NA	NA	NA	NA

UNFCCC Reporting Table 1 cont (1999)

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ Removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NM VOC (Gg)	SO ₂ (Gg)
3 AGRICULTURE, FORESTRY AND OTHER LAND USE	0.0035	-702.53	2.27	0.09	NE	NE	NE	NE
3A Livestock			2.27	NE				
3A1 Enteric Fermentation			1.89					
3A2 Manure Management			0.38	NE				
3B Land	NE	-702.53	NE	NE	NE	NE	NE	NE
3B1 Forest Land	NE	-702.53	NE	NE	NE	NE	NE	NE
3B2 Cropland	NE	NE	NE	NE	NE	NE	NE	NE
3B3 Grassland	NE	NE	NE	NE	NE	NE	NE	NE
3B4 Wetlands	NE	NE	NE	NE	NE	NE	NE	NE
3B5 Settlements	NE	NE	NE	NE	NE	NE	NE	NE
3B6 Other Land	NE	NE	NE	NE	NE	NE	NE	NE
3C Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.0035		NE	0.090	NE	NE	NE	NE
3C1 Biomass Burning	NE		NE	NE	NE	NE	NE	NE
3C2 Liming	NE							
3C3 Urea Application	0.0035							
3C4 Direct N ₂ O Emissions from Managed Soils				0.07				
3C5 Indirect N ₂ O Emissions from Managed Soils				0.02				
3C6 Indirect N ₂ O Emissions from Manure Management				NE				
3C7 Rice Cultivations			NO				NO	
3C8 Other (please specify)	NO		NO	NO	NO	NO	NO	NO
3D Other	NO		NO	NO	NO	NO	NO	NO
4 WASTE	NE		1.23	NE	NE	NE	NE	NE
4A Solid Waste Disposal	NA		0.02		NE		NE	
4A1 Managed Waste Disposal Sites	NA		0.02		NE		NE	
4A2 Unmanaged Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4A3 Uncategorised Waste Disposal Sites	NA		NE	NE	NE	NE	NE	NE
4B Biological Treatment of Solid Waste	NA		NE	NE	NE	NE	NE	NE
4C Incineration and Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4C1 Waste Incineration	NE		NE	NE	NE	NE	NE	NE
4C2 Open Burning of Waste	NE		NE	NE	NE	NE	NE	NE
4D Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D1 Domestic Wastewater Treatment and Discharge	NA		1.21	NE	NE	NE	NE	NE
4D2 Industrial Wastewater Treatment and Discharge	NA		NE	NE	NE	NE	NE	NE
4E Other (please specify)	NO		NO	NO	NO	NO	NO	NO
5 OTHER	NE		NE	NE	NE	NE	NE	NE
5A Indirect N₂O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH₃	NE		NE	NE	NE	NE	NE	NE
5B Other (please specify)	NO		NO	NO	NO	NO	NO	NO
Memo items(5)								
International Bunkers (subtotal)	0.00		0.0000	0.0000	0.000	0.000	0.000	NE
International Aviation (International Bunkers)	NE		NE	NE	NE	NE	NE	NE
International Water-borne Transport (International Bunkers)	NE		NE	NE	NE	NE	NE	NE
Multilateral Operations	NO		NO	NO	NO	NO	NO	NO

