

Chapter 7 – Waste Sector

The GHG emissions from waste sector was 24.77 kt CO₂ eq in 2023. While in the absence of actual monitored data for the period 2007-2023, the MSW generation in Vanuatu has been estimated from the total population of the country and using the MSW generation rate of 89.1 kg/capita/year as provided in the Vanuatu National Waste Audit Report (2023) for estimating the GHG emissions. By and large, the waste sector emission has increased over the period 1994- 2023 and is mainly due to increase in population and increasing consumption pattern of population. In 2023, GHG emissions in the Waste sector amounted to 24.77 kt CO₂ eq viz about 4.88% of the total national GHG emissions. The GHG emissions from Solid waste disposal emissions is about 16.47 kt CO₂ eq (66.50% of the sector) are wastewater treatment and discharge emissions are kt CO₂ eq (33.50% of the sector). The total methane (CH₄) emissions from waste sector was 0.75 kt (84.26%) and nitrous oxide (N₂O) emissions was 0.015 kt (15.74%).

Chapter 8 – Adaptation Priorities: Addressing Vulnerable Sectors

Priority actions are organized into the following themes and sectors:

1. Climate and Disaster Vulnerability and Multi-Sector Impact Assessment
2. Integrated Climate Change Adaptation and Disaster Risk Reduction
3. Community-Based Adaptation and Disaster Risk Reduction
4. Loss and Damage Mechanisms
5. Ecosystem-Based Approaches

Progress in Sendai Framework for Disaster Risk Reduction

Priority 1: Understanding Disaster Risk

Priority 2: Strengthening Disaster Risk Governance to Manage Disaster Risk

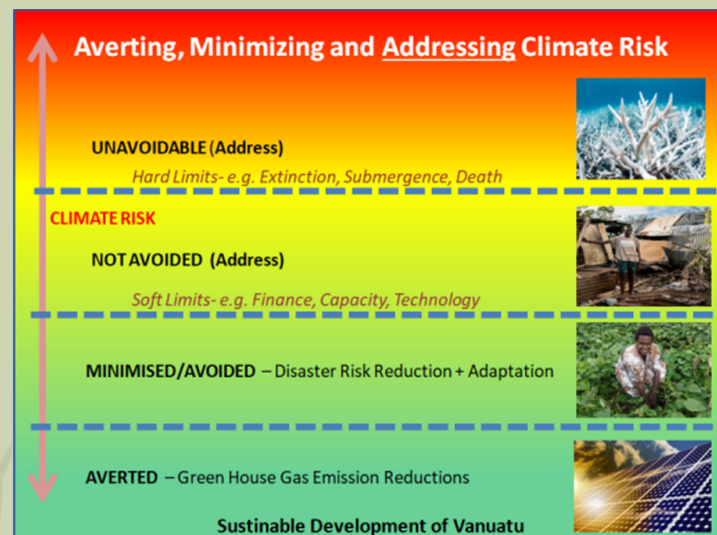
Priority 3: Investing in Disaster Risk Reduction for Resilience

Priority 4: Enhancing Disaster Preparedness for Effective Response and Recovery

Chapter 9 – Loss and Damage Priorities and Status, and actions to avert, minimize and address loss and damage under Article 8 of the Paris Agreement

Vanuatu has experienced existential loss and damage firsthand. As a result of these experiences, Vanuatu is now working on a localized definition of Loss and Damage to mean “the loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events.

Damage is therefore the negative impacts that can be repaired or restored (such as windstorm damage to the roof of a building, or damage to a coastal mangrove forest from coastal surges which affect villages). While, loss is the negative impacts that cannot be repaired or restored (such as loss of geologic freshwater sources related to glacial melt or desertification, or loss of culture or heritage associated with potential population redistribution away from areas that become less habitable due to climate change)”



The people of Vanuatu are experiencing increasingly severe impacts from climate change, driven by increases in greenhouse gas (GHG) concentrations which are unequivocally caused by human activities associated with fossil fuels and industry. Vanuatu and other Pacific Small Island Developing States are not responsible for climate change, and have contributed less than 0.0016% and 0.02% respectively to global historical greenhouse gas emissions.



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Vanuatu's First Biennial Transparency Report

Vanuatu as a party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement (PA) is committed to develop, publish, and regularly update national greenhouse gas inventories and provide a comprehensive overview of the nation's efforts to fulfill its commitments under the Paris Agreement, specifically focusing on its Nationally Determined Contributions (NDCs). The report is a key part of the Enhanced Transparency Framework (ETF) under the Paris Agreement.

The report provides estimates of Vanuatu's net greenhouse gas emissions (GHG) for the reporting years 2018 to 2023.

The sectors covered in Vanuatu's GHG Inventory includes:

1. Energy
2. Agriculture
3. Forestry and Land Use (FOLU)
4. Waste

The national GHG inventory of Vanuatu for the period 2018-2023 is estimated using the tier 1 methodology and using Default emission factors provided by the 2006 IPCC Guidelines for the direct GHGs emissions. Vanuatu's total greenhouse gas emissions (excluding removals) increased from 62.94 kt CO₂ eq in 1994 to 507.68 kt CO₂ eq in 2023. This represents an increase of 707% compared to 1994.

Trends by Gas

1. Carbon dioxide (CO2)

The energy sector and its sub-sectors are the main source of CO2 emissions, accounting for approximately 100% of CO2 emissions (excluding LULUCF sector as it is a net sink). The CO2 emissions from Vanuatu has shown the increasing trend during 1994-2023, the CO2 emissions in year 1994 was 55.15 kt and increased to 152.79 kt in 2023, indicating increase by 177%. The combustion of fossil fuels remains the main contributor of CO2 emissions in Vanuatu.

2. Methane (CH4)

About 93% of Methane emission in Vanuatu comes from the agriculture sector i.e. from Livestock- Cattle, Swine, Horses, Goat and Chicken; enteric fermentation and manure management. The waste sector (Solid waste -MSW, Wastewater) is the second largest source of CH4 emissions, accounting about 6.9% of emissions. Minor fraction of methane comes from the energy sector; mainly as the emissions from combustion of fossil fuel (0.01%). In 2023, Methane emissions were 10.83 kt compared to 16.01 kt in 2000, indicating a decrease by 32.36% over the period 2000-2023.

3. Nitrous oxide (N2O)

The Nitrous oxide (N2O) emissions in Vanuatu were 0.19 kt in 2023 and 0.03 kt in 1994, which indicates an increase of about 17.34% during the period 1994-2023. In 2023, the main source of N2O emissions in Vanuatu was livestock (manure management) (89%), Wastewater treatment and handling (8%) and energy sector (3%) mainly transport sector tail gas emissions (mobile combustion) and minor emission from stationery combustion

The Vanuatu's BTR is comprised of nine (9) Chapters which will be briefly summarized as follows;

Chapter 1 – National Circumstances and Institutional Arrangements

Climate change is a top priority for the Government of Vanuatu, underscored by the declaration of a climate emergency by the National Parliament in May 2022.

Vanuatu has also emerged as a leading global advocate for seeking an advisory opinion from the International Court of Justice on climate change responsibilities. In this chapter of the first Biennial Transparency Report (BTR), Vanuatu explores its national context, delving into crucial aspects across several distinct sections to depict the country's current circumstances and pertinent considerations. The report offers detailed insights, incorporating relevant subsections as needed.

Chapter 2 – National Greenhouse Gas Inventory

Vanuatu has consistently used the Tier-1 methodological approach and IPCC default emission factors for GHG estimation in its previous inventory submissions, including the First, Second, and Third National Communications, as well as the First Biennial Update Report. This inventory, covering the years 2018–2023, follows the same approach. Vanuatu's total greenhouse gas emissions (excluding removals) increased from 62.94 kt CO₂ eq in 1994 to 507.68 kt CO₂ eq in 2023. This represents an increase of 707% compared to 1994. Emissions peaked in the year 2000 amounting to 663.89 kt CO₂ eq, which is the highest level of GHG emissions ever reported in Vanuatu. Post-2000, emissions declined to 506.22 kt CO₂ eq in 2007 but remained consistently high compared to 1994. There was a subsequent increase, reaching 554.15 kt CO₂ eq in 2010, followed by a sharp decrease in 2009 reaching 423.44 kt CO₂ eq. Between 2011 and 2015, emissions showed minor fluctuations but remained within the 574.32 – 594.37 kt CO₂ eq range. The emissions have decreased during the years 2018 to 2022 from 586.17 kt CO₂ eq in 2018 to 451.55 kt CO₂ eq in 2022 respectively. This is attributed due to the decreased economic growth and global COVID-19. In 2023, total greenhouse gas emissions amounted to 507.68 kt CO₂ eq. The key sector with increasing emissions over the period 1994- 2023 includes the Energy sector (increased by 145.50%). This is followed by waste sector which represents an increase by 68% during the period 2000-2023. While Agriculture sector represents a decreasing trend (decreased by 44% during 2000-2023) mainly due to decline in livestock population.

Chapter 3 – Energy Sector

The energy sector is the second largest GHG emissions contributing sector in the Vanuatu's total national GHG inventory (excluding removals). During 1994-2023, the emissions from energy industries (electricity generation) increased by 242% despite the increase of renewable energy in the generation mix 13 .

Manufacturing industries and construction shows highest increase (1283%) followed by energy industries, transport (107%) and Other sectors (27.02%). This is driven by the needs of the growing population and expanding economy. In line with the 2006 IPCC Guidelines, the categories that are covered in the energy sector of Vanuatu includes; Energy Industries, Manufacturing Industries and Construction, Transport and Other sectors (Commercial/Institutional, Residential). In the year 2023, the total emission from energy sector was 154.51 kt CO₂ eq which contributed 30.43% to the total national GHG emissions (excluding removals).

Chapter 4 – Industrial processes and product use

In Vanuatu, IPPU sector is non-existence in the absence of any major industry or industrial process emissions. Hence, GHG emissions from this sector considered as not occurring for the inventory years 2018-2023.

Chapter 5 – Agriculture & Livestock Sector

The livestock sector is the largest GHG emissions contributing sector to the Vanuatu's total national GHG emissions (excluding removals). The emissions show a decreasing trend in both Enteric fermentation and Manure management, mainly attributed to the decrease in livestock population. By way comparison the overall emissions from this sector have decreased by 44% during the period 2000-2023. During this period the emissions from enteric fermentation and manure management have decreased by 20.15% and 33.45% respectively.

Chapter 6 – Land use, land-use change and forestry (LULUCF)

Vanuatu is net carbon negative, since the land-use change and forestry sector is a net sink of CO2 in Vanuatu
Vanuatu submitted its National REDD+ Forest Reference Level (FRL) in 2023. The accounting area of the FRL is the land area within the political borders recognized by Vanuatu and amounts to 1,289,000 ha. REDD+ is addressed at the national level by Vanuatu. The FRL study covered 13 major islands covering 89% of the total land area of Vanuatu and all of the forested area of Vanuatu. The total land area of Vanuatu is 123,667 ha of which 912,209 ha or 76% of land area is covered by natural forest¹⁵ . Cropland represents the second largest land use with 156,812 ha or 13% of the national land area. Grasslands predominately occur on the islands Efate and Espiritu Santo and cover approximately 3% of the entire land cover of Vanuatu.