



FIJI NATIONAL  
UNIVERSITY

# Carbon Footprint Report



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## 1.0 Executive summary

FNU is the largest University in Fiji, with its campuses and centres spread across 28 different locations throughout the country. The Fiji National University (FNU) was formally established in 2010 by a merger of six state-funded tertiary institutions in Fiji: Fiji Institute of Technology, Fiji School of Medicine, Fiji School of Nursing, Fiji College of Advanced Education, Lautoka Teachers College, and Fiji College of Agriculture. A year later, the Training and Productivity Authority of Fiji was also merged with the University, and a new centre, the National Training and Productivity Centre, was formed.

FNU is a dual-sector University offering excellent Technical and Vocational Education and Training (TVET) alongside excellent Higher Education (HE). The University plays a vital role at the local, regional, national, and global levels. It is dedicated to becoming a leader and champion on climate change to accomplish the Sustainable Development Goals and be good environmental stewards. FNU is committed to enforcing environmentally friendly initiatives for a greener and sustainable ecosystem

With Fiji National University's strategic alignment and focus on sustainability to support the National and Global community towards reducing greenhouse gas emissions, the realisation of the current carbon footprint is the first step. A carbon footprint can broadly be defined as measuring the greenhouse gas emissions that are directly and indirectly caused by activity.

This is the first carbon footprint report developed for the University to identify the level of carbon emissions. The carbon footprint exercise will provide relevant information on the major emissions with the application of the GHG Protocol Corporate Standard.

Carbon foot printing is a critical step in achieving sustainability goals at FNU. Thus, FNU has committed to transitioning to a sustainable institution with the adoption of strategies and methods to measure, monitor, and mitigate the University's carbon footprint. This report would enable the University to fulfil its Strategic Plan target as well as its Sustainability Plan.

## 2.0 Methodology

The methodology adopted for the carbon footprint study is the GHG Protocol Corporate Standard which employs a 3 Scope methodology for calculating carbon footprint. The table below indicates the 3 scopes and three focus areas that will help determine the University's carbon footprint.

Scope	Type	Focus
Scope 1	Direct emissions	Fuel Combustion Emission – Vehicular Fuel Combustion Emission - Generators
Scope 2	Indirect emissions	Purchased Electricity
Scope 3	Other indirect emissions	Business Travel – Air Waste generated (excluded) Water and wastewater treatment (excluded) Leased assets (excluded)

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Due to the unavailability of data, the carbon emissions were not calculated for the following items.

- Waste generated
- Water and wastewater treatment
- Leased assets

The University will consider enhancing data collection in selective areas in future to expand scope three further.

All campuses and centres have been accounted for the calculation of carbon emission except for Technical College of Fiji (TCF) campuses which was transferred to FNU in the year 2020.

The following sites have been considered as part of this report.

1. Nasinu Campus
2. Koronivia Campus, including Crop & Livestock Farms
3. School of Public Health, Tamavua Campus
4. School of Nursing, Tamavua Campus
5. Derrick Campus & adjacent Ono Street Hostels, Samabula
6. Pasifika Campus including Hoodless House, Kivi House, PCP Block & Waimanu Clinic
7. Fiji Maritime Academy
8. Narere Centre
9. Naceva Centre
10. McGregor House Lautoka
11. Nadi Campus
12. Natabua Campus Lautoka
13. Ba Campus
14. Navua Farm
15. Suva Hospitality & Textile Campus
16. Naduna Campus
17. Labasa Campus (LTD building, Rosawa Centre & Rara Centre – Rented Properties)
18. Raiwai Campus
19. Navua Hotel
20. NTPC Namaka Centre
21. Maritime Centre Nadi
22. Natabua (vacant land), Lautoka
23. Legalega, Nadi
24. Ba Lot 2, opposite main campus
25. Nabua Campus
26. Labasa Naiyaca Campus

The data collection was collated for the past three years which was then analysed to determine the level of carbon emissions.

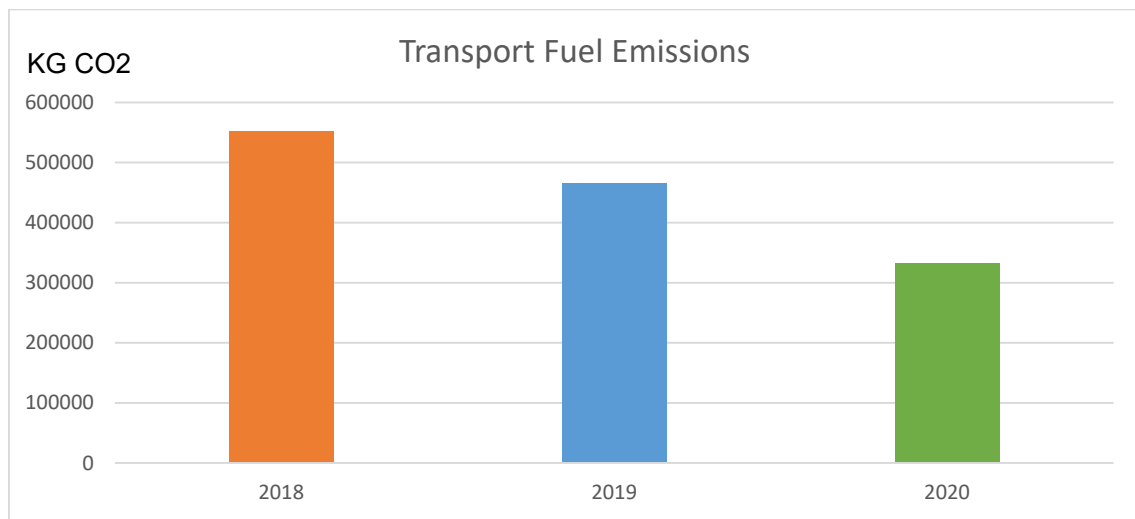
### 3.0 Data Analysis

#### 3.1 Scope 1 – Direct emissions

##### 3.1.1 Fuel Combustion Emission - Vehicular

The emissions from fuel combustions through vehicles and generators entirely constituted this category. The data presented here only includes FNU-owned vehicles and does not account for any transportation in taxis or staff’s personal vehicles.

Business-related commutes for staff and students by third-party service providers have been excluded due to the unavailability of data.



Graph showing the fuel-based emissions from FNU owned vehicles

Year	Diesel			ULP			Total CO2 Emission (Kg)
	Diesel Litres	Cost	Diesel CO2 Emission (Kg)	ULP Litres	Cost	ULP CO2 Emission (Kg)	
2018	123,262.35	\$216,372.64	325,412.62	94,640.93	\$194,774.18	226,381.11	551,793.73
2019	91,703.52	\$166,067.72	242,097.29	84,644.60	\$173,585.95	223,461.75	465,559.04
2020	66,919.14	\$107,809.15	176,666.54	59,035.29	\$114,211.57	155,853.14	332,519.68

#### Fleet Capacity

The below table shows the fleet Capacity from 2018 to 2020

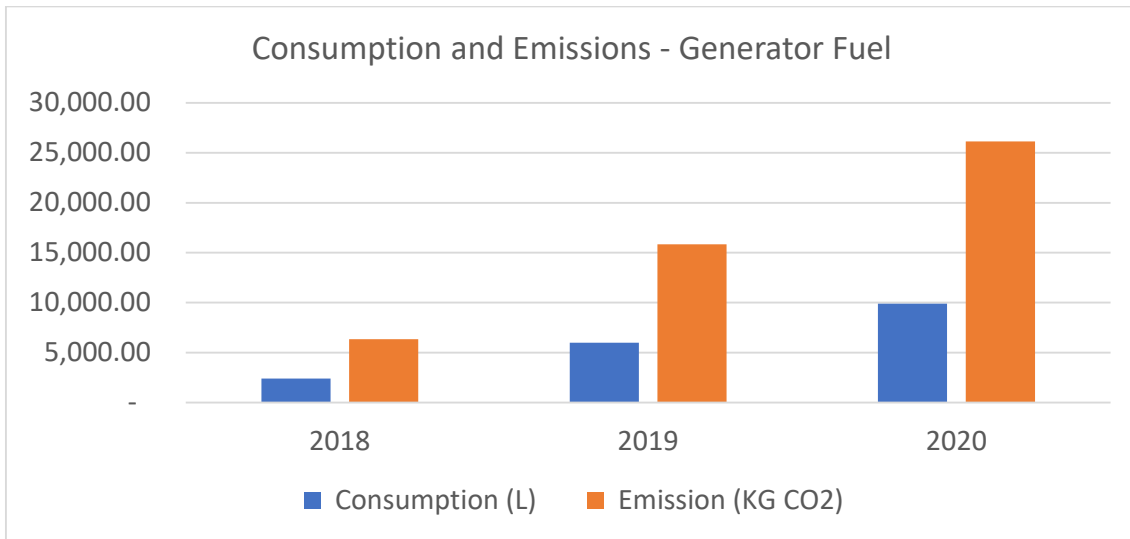
Class	2018	2019	2020

Bus	18	16	14
Minibus			4
Pickup trucks (Twin Cabs/Single Cabs)	15	16	12
Vans	9	8	8
Truck	4	3	1
Sedan	23	33	27
Wagon	25	14	4
SUV	25	25	20
<b>Total</b>	<b>119</b>	<b>115</b>	<b>90</b>

A reducing trend has been noticed over the years, with a major drop in 2020 due to a reduction in the number of vehicles. The vehicle runs were further reduced due to lockdowns imposed due to COVID19 restrictions. It is also estimated to increase once operations normalise.

### 3.1.2 Fuel Combustion Emission - Generators

The data for diesel consumption was obtained and analysed for emissions. The below representations show the results of emissions from 2018 to 2020.



Year	Consumption (L)	Emission (KG CO2)
2018	2,400.00	6,336.00
2019	6,000.00	15,840.00
2020	9,900.00	26,136.00

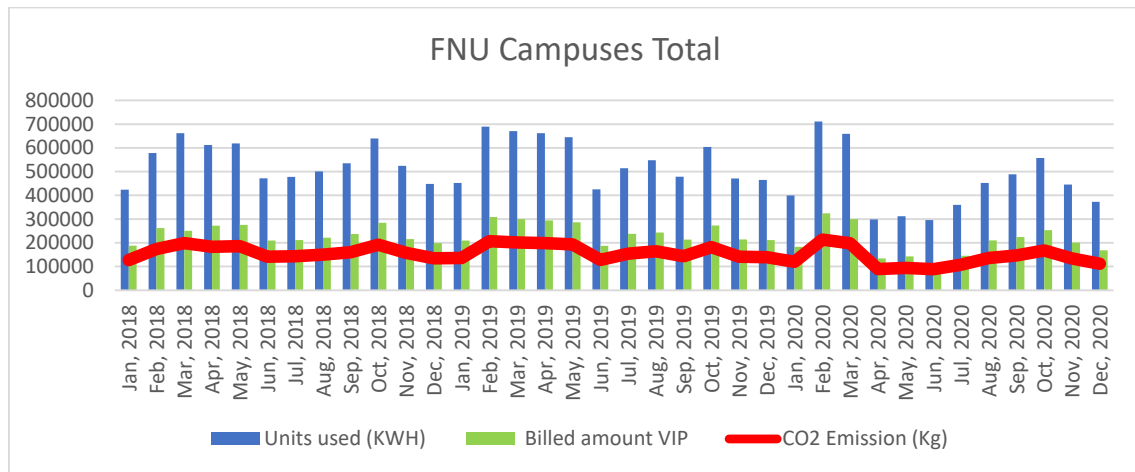
The generator emissions have shown a considerable increase from 2018 to 2020. The increased generator consumption is due to the University installing additional new generators to ensure minimal disruption during power outages.

### 3.2 Scope 2 – Indirect emissions

This category accounts for emissions from electricity supplied by Energy Fiji Limited (EFL).

This report includes combined data for all FNU Campuses & Centres as well as properties rented by FNU.

The conversion factor was calculated based on information from the EFL 2019 annual report. The report presents data that renewable energy production has a ratio of 57.59% and calculated from the data is the rate of emission from diesel generation, which is 68%. This gives a factor of 0.288. Allowing for minor losses, including reactive energy, a figure of 0.3 is used for the calculation of Carbon Emissions per kWh.



FNU Campuses Total			
Year	Units used (KWH)	Billed amount VIP	CO2 Emission (Kg)
2018	6,492,272	\$2,825,089.79	1,947,681.6
2019	6,625,632	\$2,977,207.55	1,987,689.6
2020	5,352,088	\$2,398,262.44	1,605,626.4

The trend indicates a drop in 2020 which is due to reduced usage during restrictions imposed during COVID 19 outbreak in 2020.

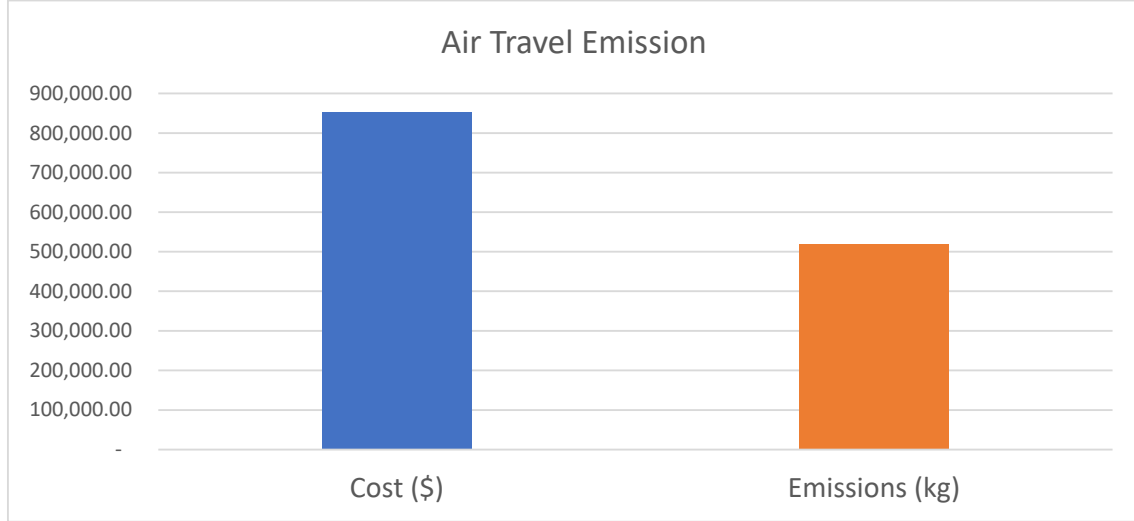
### 3.3 Scope 3 – Other Indirect Emissions

#### Business Travel – Air

The data for business travel was only available for 2019 which was assessed for emissions.

The data available did not provide all travels origins and destinations. Hence the carbon emission was calculated for those for the origin and destination information was available and then prorated against cost.

The below table indicates the emission for the year 2019.



Item	Cost (\$)	Emissions (kg)
Flight Travels 2019	852,621.62	518,907.13

#### 4.0 Total Emissions

Since complete data was available only for 2019 from the selected categories, the year 2019 will be presented as a benchmark for the carbon footprint report for an overall calculation.

Due to operational disruptions faced in 2020 by COVID-19, the data does not indicate ideal university operations.

Item	Emissions (kg)
Scope 1 - Vehicular Emissions	465,559.04
Scope 1 - Generator Emissions	17,424.00
Scope 2 - Electricity Consumption	1,987,689.60
Scope 3 - Flight Travels 2019	518,907.13
<b>Total</b>	<b>2,989,579.77</b>
<b>Total (Metric Tonnes)</b>	<b>2,989.58</b>



#### 4.1 Emissions per EFTS

The total number of Effective Full-Time Students (EFTS) in 2019 was 12,226. Thus, the emissions rate is calculated to be 244.53 KG CO<sub>2</sub>/student/year

#### 4.2 Emission per gross floor area

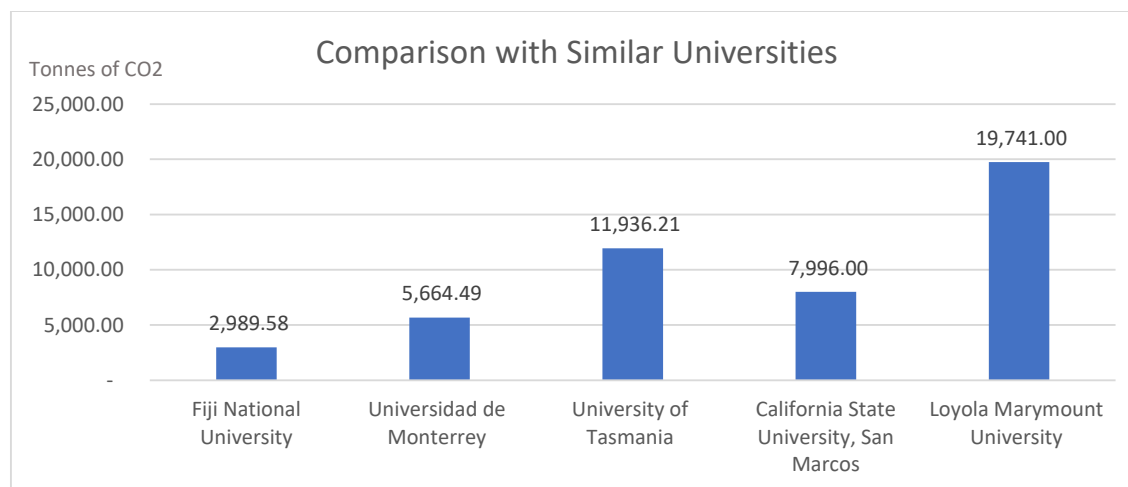
The total gross floor area of the university totals to 137,225 square metres Thus, the emission rate is calculated to be 21.79 KG CO<sub>2</sub>/ square metre.

#### 4.3 Comparison with Similar Universities

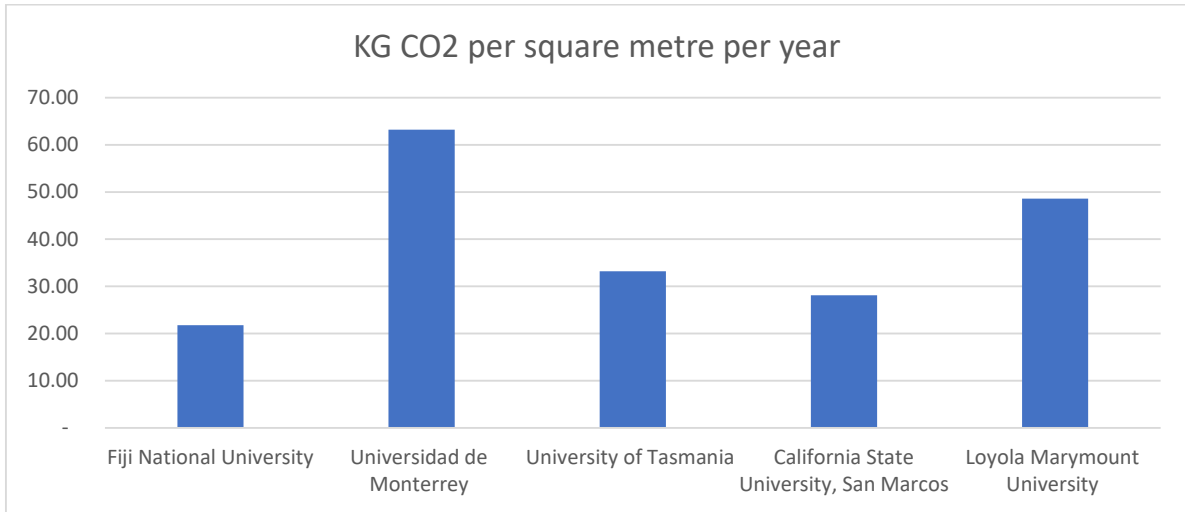
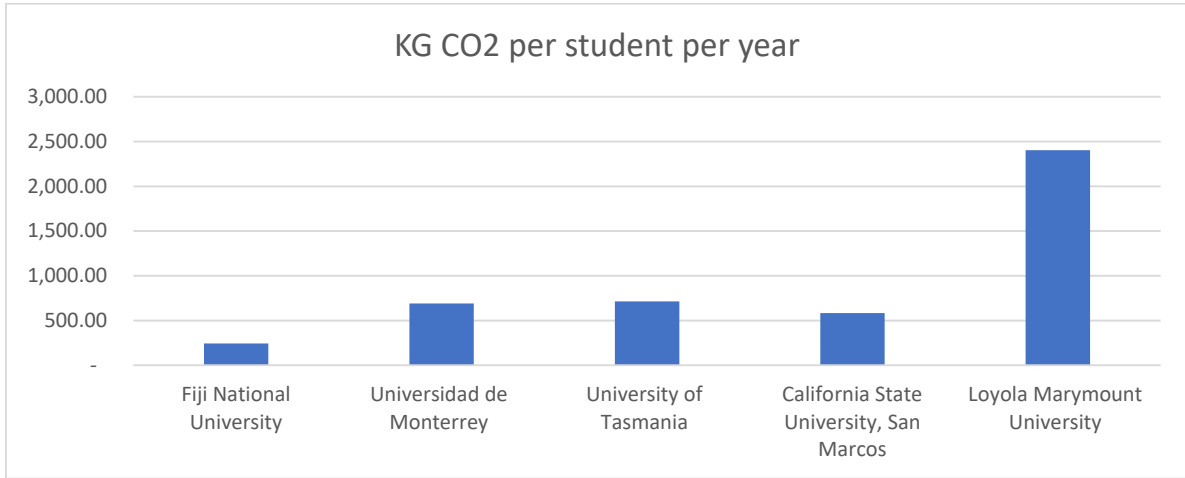
The following universities have been used for comparison

No.	University	Location	EFTS	Gross Floor Area
1	Universidad de Monterrey	San Pedro Garza García, Mexico	8205	89,575.66 sq.m
2	University of Tasmania	Tasmania, Australia	16,720.95	4,393,020.94 sq.m
3	California State University	San Bernadino, USA	13,714	3,062,888 sq.m feet
4	Loyola Marymount University	Los Angeles, California	8213	406,449.65 sq. m

The table below shows the comparison of Fiji National Universities' performance against other Universities of similar size based on student capacity.



Due to the unavailability of data from local universities, the comparison was limited.



## 5.0 Conclusion

Fiji National University's emission is much lower compared to other Universities. One of the reasons could be that many categories from Scope 3 had to be excluded due to data unavailability. More than 50% of Fiji's electricity is from renewable energy sources leading to a lower emission rate per Kilowatt Hour (KWh). The heating and cooling loads in Fiji is much less compared to universities abroad.

The University has pledged to reduce carbon emissions by 25% in the next five years and has joined the "Race to Zero" initiative to reach net-zero carbon by 2050, as well as declaring a climate emergency. As a result, annual carbon footprint reports will be produced annually to assess carbon emissions and implement mitigation techniques as part of a zero-carbon strategy.

Some of the potential areas that can be addressed to reduce the carbon emissions are as follows, but not limited to:

- Vehicle fuel consumption
- Use of LPG generators
- Reduction of electricity consumption
- Awareness – increasing awareness by educating people on the actions that lead to an increase in carbon emissions through various means and on various platforms.

The University also needs to investigate data management, i.e., identifying the required data and ensuring continuous collection and analysis of data. In line with the data management, the University can then expand on scope 3 of the carbon emission analysis, leading to additional categories for analysis.