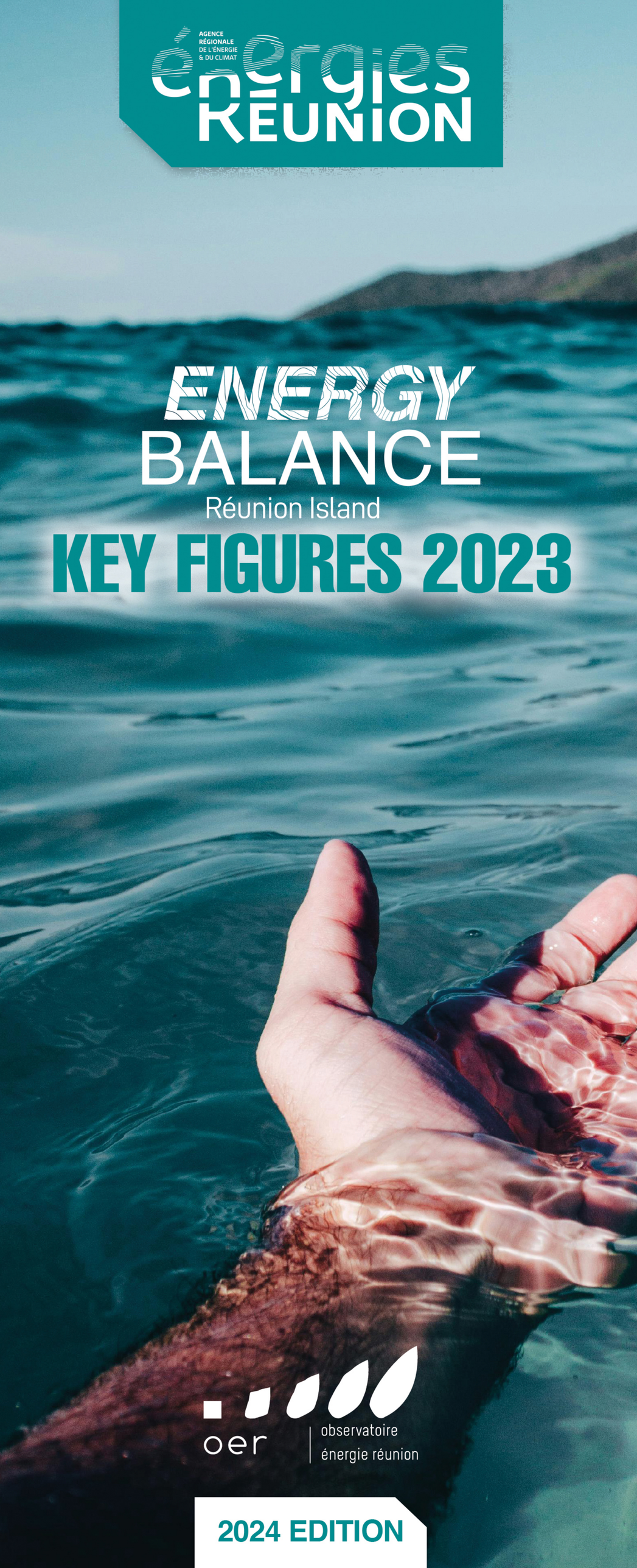
énergies Réunion

AGENCE RÉGIONALE DE L'ÉNERGIE & DU CLIMAT

ENERGY BALANCE

Réunion Island

KEY FIGURES 2023



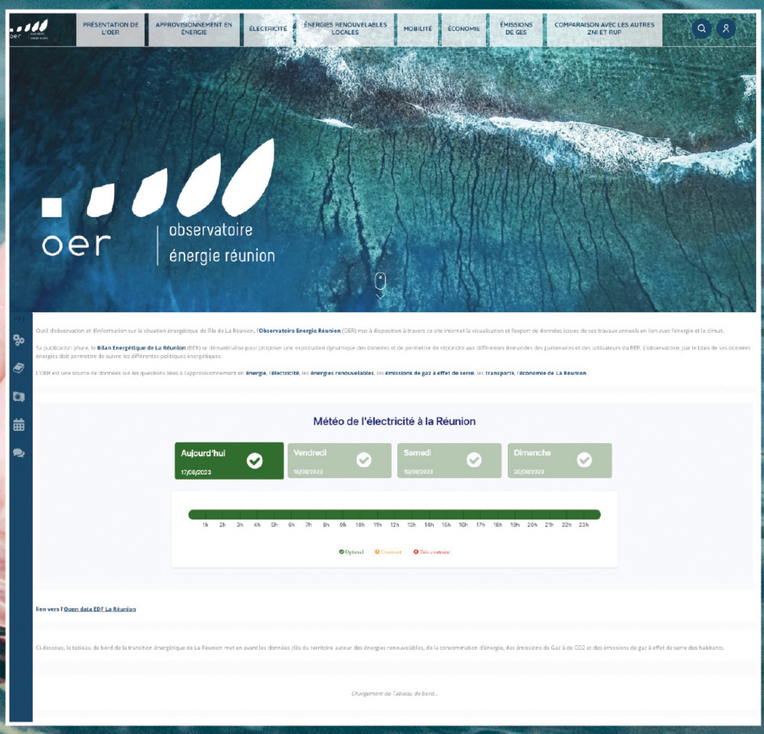
oer | observatoire énergie réunion

2024 EDITION

Find all the data of your Energy Balance on our new website :

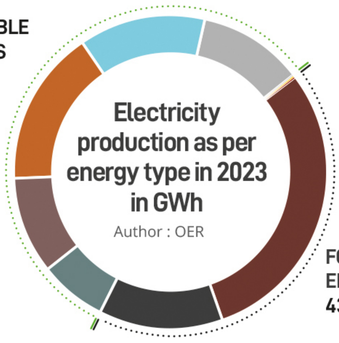
oer.energies-reunion.com

We wanted this tool to be dynamic and interactive for easy and relevant access to all energy data in Reunion Island !



Electricity 2023

ELECTRICITY PRODUCTION: 3 085.1 GWh – 265.3 ktoe



- **Heavy fuel and Diesel oil** 933.7 GWh - **30%**
- **Coal** 401.3 GWh - **13%**
- **Bagasse**** 201.1 GWh - **7%**
- **Wood pellets** 320.9 GWh - **10%**
- **Biodiesel** 500.9 GWh - **16%**
- **Hydropower** 393.6 GWh - **13%**
- **Other renewables (PV/windpower/biogas)** 325.8 GWh - **11%**
- **Generator sets** 1.1 GWh - **0%**
- **Batteries** 3.5 GWh - **0.1%**
- **Bioethanol** 3.2 GWh - **0.1%**

* Waste oils are no longer burned when coal is no longer used.
** Bagasse is used for both electricity and steam production. It is not possible to distinguish the quantity of bagasse required for electricity production.

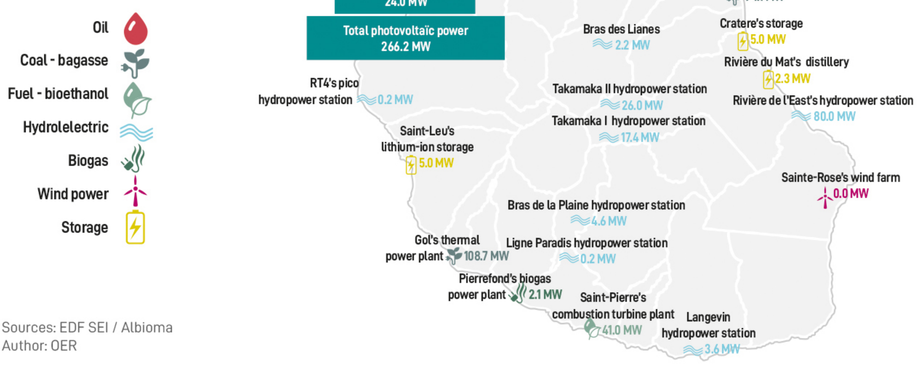
Renewable energy penetration rate in electricity production in different non-interconnected territories (NITs). Share of production from renewable sources in 2023 :

Guadeloupe	Martinique	Reunion Island	French Guiana	Corsica	New-Caledonia (2022)	French Polynesia (2022)
35.3%	25.7%	56.6%	66.5%	38.4%	25.7	35.9%

Sources: EDF Open Data for Corsica, Martinique, Guadeloupe and French Guiana, OER, OMEGA, Energy Observatory of New Caledonia, Polynesian Energy Observatory.

INSTALLED POWER CAPACITY: 984.8 MW

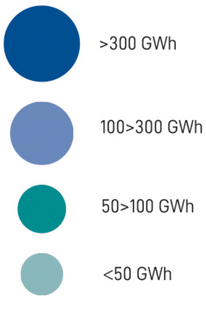
Installed power capacity on the 31st December 2023 : 984.8 MW

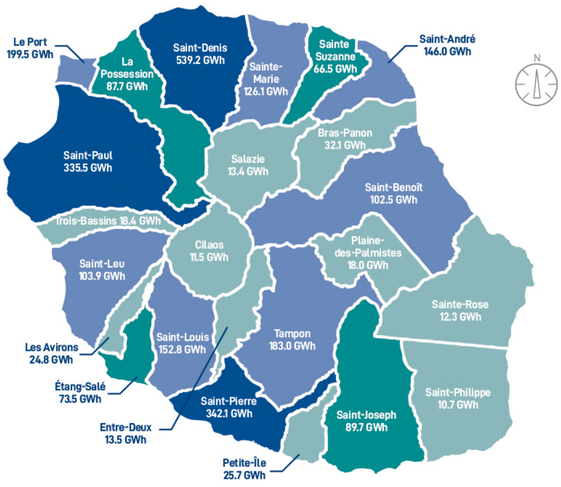


Sources: EDF SEI / Albioma
Author: OER

ELECTRICITY CONSUMPTION: 2 728 GWh – 234.6 ktoe

Electricity consumption per town in 2023





Sources: EDF SEI
Author: OER

Comparison of the electricity consumption per capita (MWh) in different NITs in 2023

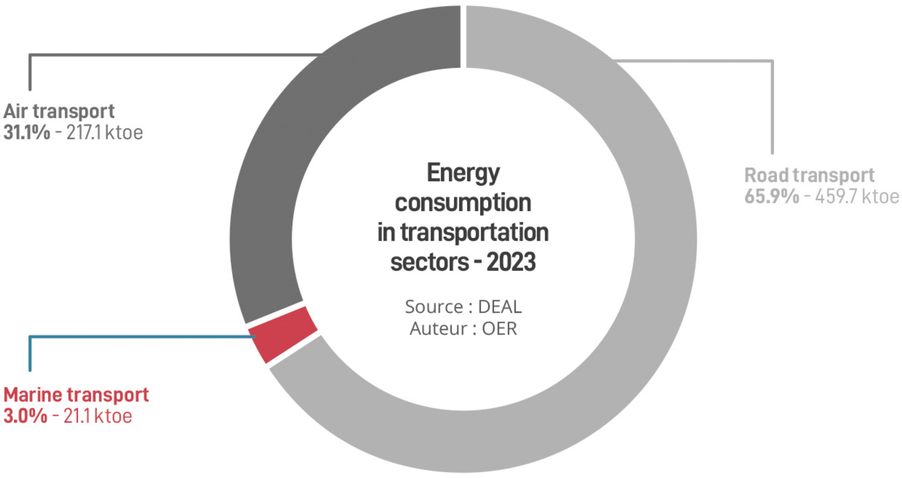
Guadeloupe (2022)	Martinique (2022)	Reunion Island	French Guiana (2022)	Corsica (2022)	New-Caledonia (2022)	French Polynesia (2022)
3.80	3.78	3.12	2.93	6.20	11.50/2.95*	2.31

Sources: EDF Open Data for Corsica and French Guiana, OER, OMEGA, Local community of Martinique, Energy Observatory of New Caledonia, Polynesian Energy Observatory. * excluding metal industry and mining.

Transportation 2023

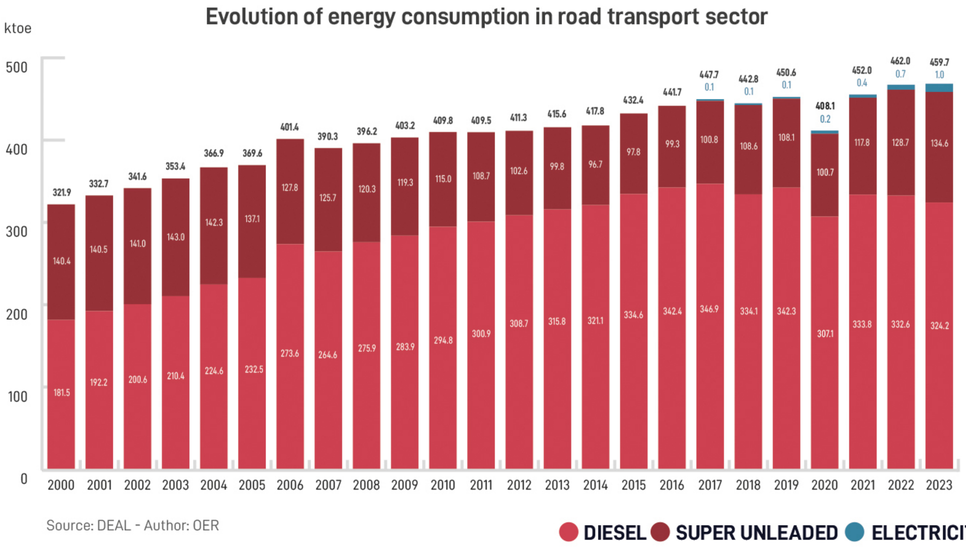
FUEL CONSUMPTION:

678 652 tons of fossil fuels and 696.8 ktoe
(Electric vehicles and alternative fuels excluded)



CONSUMPTION IN ROAD TRANSPORT SECTOR:

451 050 tons and 459.7 ktoe *(Electric vehicles included)*



ELECTRIC AND HYBRID TRANSPORTATION DEVELOPMENT

Cumulative number of hybrid non-rechargeable cars since 2006:

	2006	2016	2017	2018	2019	2020	2021	2022	2023	Variat. 22/23
Non-pluggable hybrid cars – **registered amount**	38	775	738	957	1 503	2 554	1 944	6 288	6 600	**5%**
Non-pluggable hybrid cars – Cumul. amount	**38**	**3 897**	**4 635**	**5 592**	**7 095**	**9 649**	**11 593**	**17 881**	**24 381**	**37%**

Cumulative number of electric and hybrid rechargeable cars since 2006:

Plug-in hybrid cars		215	379	528	633	939	1 689	2 632	3 551	**35%**
Electric cars		334	589	921	1 439	2 508	4 829	7 709	11 342	**47%**
Electric motorcycles					7	49	49	235	496	**111%**
Electric scooters								237	1 097	**363%**
ENSEMBLE	**0**	**549**	**968**	**1 449**	**2 079**	**3 496**	**6 567**	**10 813**	**16 486**	**86%**

Sources : Automobile department file until 2009, SDES and Statistics from the Ministry of Ecological Transition and Territorial Cohesion since 2010. Given a data consolidation by the SDES in 2023, the data as from 2011 in the above table has been updated. Author: OER.

In June 2024, there are **552 functional public power points** for electric vehicles over a total number of 762 public power points in Reunion Island.

Primary supply 2023

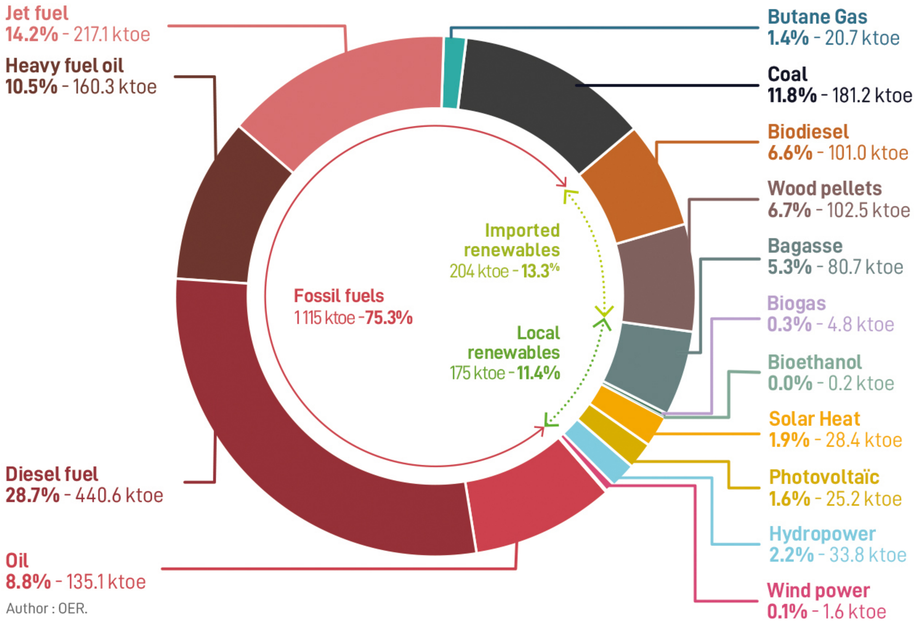
PRIMARY ENERGY SUPPLY:
17 836.1 GWh meaning 1 533.6 ktoe

			2023
IMPORTED FOSSIL RESOURCES	Oil*		135.1
	Diesel fuel*		440.6
	Heavy fuel oil		160.3
	Jet fuel*		217.1
	Butane gas*		20.7
	Coal		181.2
		Subtotal	**1 155.0**
IMPORTED RENEWABLE RESOURCES	Bioethanol		0.5
	Biodiesel**		101.0
	Wood Pellets***		102.5
		Subtotal	**204.0**
RENEWABLE AND RECYCLED RESOURCES	Biomass	Bagasse	80.7
		Biogas	4.8
		Bioethanol	0.2
		Wood	nd
	Sun	Solar heat	28.4
		Photovoltaic	25.2
	Water	Hydropower	33.8
	Recovery	Waste oils	0
	Wind	Wind power	1.6
		Subtotal	**174.7**
		TOTAL	**1 533.6**

* Corresponding to the stock removals from the SRPP
** Biodiesel was introduced in the Port Est power plant in June 2023 during the conversion from heavy fuel to bioliquid.
*** Wood pellets were introduced end of 2022 in the CTBR power plant during the conversion of boilers from coal to biomass.

Source : DEAL, ED SEI, Albioma – Author : OER

Consumption share of primary energy in 2023



Author : OER.

Evolution of the energy dependency rate from 2000 to 2023

2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
83.9%	87.5%	87.5%	88.3%	87.2%	86.2%	86.8%	86.1%	86.6%	87.1%	87.1%	87.5%	87.0%	88.2%	85.8%	88.6%*

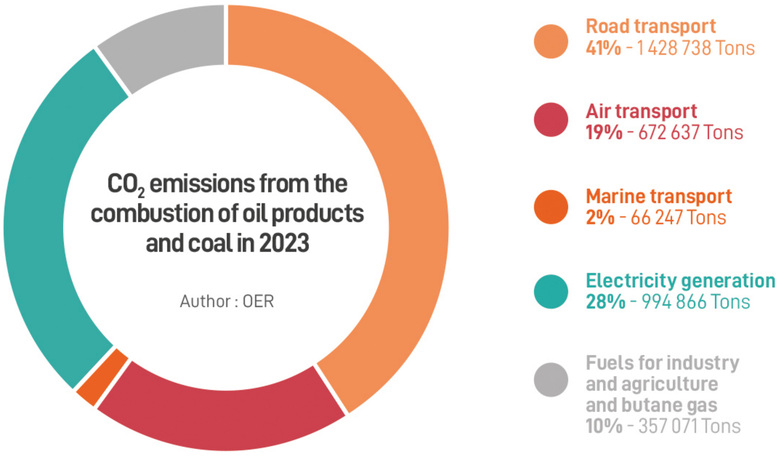
* In 2023, the rate increases with the import of new biosourced resources (biodiesel, wood pellets, bioethanol). Author : OER.

Comparison of the energy dependency rate in the different NITs

Guadeloupe (2022)	Martinique (2021)	Reunion Island (2023)	French Guiana (2015)	Corsica (2022)	New Caledonia (2022)	French Polynesia (2022)
83.6%	91.8%	88.6%	82.4%	89.8%	95.2%	92.5%

Sources: GEC for French Guiana, OREGES from Corsica, OER, OMEGA, Local community of Martinique, Energy Observatory of New Caledonia, Polynesian Energy Observatory

CO_2 EMISSIONS FROM THE COMBUSTION OF ENERGY PRODUCTS IN REUNION ISLAND IN 2023*



Total of CO_2 emissions from the combustion of oil products and coal : **3 520 kilotons.**

Direct CO_2 emissions per capita

- Direct emissions from electricity generation: **1.1 tCO_2/capita**
- Direct emission from all types of transportation: **2.5 tCO_2/capita**
- Emissions from fuels for agricultural, industrial and residential-tertiary sectors **0.4 tCO_2/capita**

One inhabitant of Réunion Island = 4 tCO_2

(Emissions due to the combustion of fossil fuels only)
* Simplified methodology of the GHG Emission Inventory

Comparison of the mean direct emissions ratio per kWh in different NITs

Direct emissions average ratio per kWh consumed (gCO_2/kWh)

Guadeloupe (2021)	Martinique (2021)	Reunion Island (2023)	Corsica (2022)	French Guiana (2019)	New Caledonia (2022)	French Polynesia (2022)
709	563	365	558	468	935/628*	503

Sources: EDF Open Data for Corsica and French Guiana, OER, OMEGA, Local community of Martinique, Energy Observatory of New Caledonia, Polynesian Energy Observatory
* Excluding metal industry and mining

Energy economics 2023

HIGHLIGHT OF THE YEAR 2023

Conversion of coal-bagasse and heavy fuel oil power plants

ALBIOMA Bois-Rouge's power plants have undergone a 100% conversion to biomass in 2023 : coal has been gradually replaced by wood pellets, alternating with bagasse.

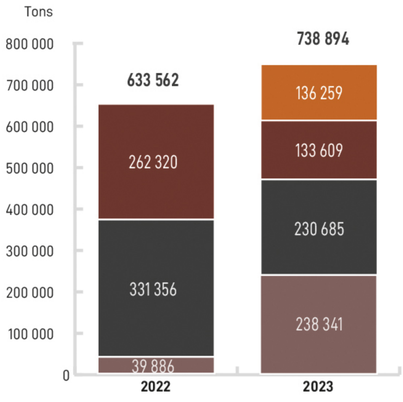
We also note the completion of the conversion of the PORT EST PEI plant to biodiesel.

Origin of renewable resources imported in 2023 that meet the European RED II directive :

- Wood pellets come from the United States and Asia.
- Biodiesel comes from Europe.

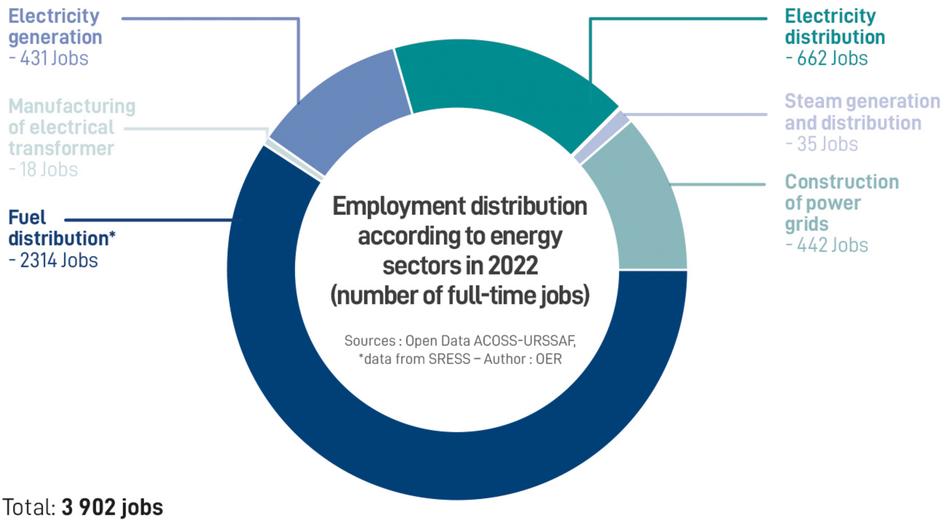
Source: Albioma, EDF PEI - Author : OER

Evolution of fuel imports from 2022 to 2023 (in tons)



WOOD PELLETS · COAL · HEAVY FUEL OIL · BIODIESEL

EMPLOYMENT IN THE ENERGY SECTOR



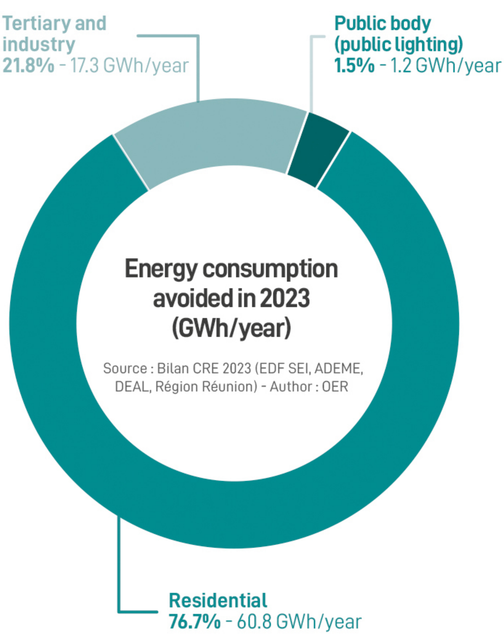
Total: **3 902 jobs**

ENERGY DEMAND MANAGEMENT MEASURES

The territorial compensation framework for small actions aiming to control demand for electricity consumption in Réunion Island was adopted by the CRE deliberation n°2019-006 of the 17th January 2019.

The territorial compensation framework specifies the nature, the characteristics and conditions of compensation for public energy service charges of small energy demand management actions implemented in Réunion during the years 2019-2023. The actions for Réunion Island have been defined and are monitored by the energy demand management committee made up of DEAL, Région Réunion, ADEME and EDF SEI as network manager.

The actions implemented in 2023 prevented an energy consumption of **79.3 GWh,** which is 92% of the revised annual objective of the framework (85.9 GWh/year in 2023).



Key figures 2023

TOTAL PRIMARY ENERGY CONSUMPTION:
17 836.1 GWh – 1 533.6 ktoe including 11% from local resources

- Energy dependency rate: 88.6%.
- Energy intensity per capita: 1.8 toe/capita.

TOTAL FINAL ENERGY CONSUMPTION:
12 527.3 GWh – 1 077.2 ktoe

- Transportation: 64.8% - Electricity: 21.8% - Duty-free fuels and combustibles for agriculture and industry (excluding transportation) and butane gas: 7.1% - Heat: 6.3%.
- Total electricity consumption per capita: 3 125 kWh/capita.
- Total road fuel consumption per capita: 634 litres/capita.

ELECTRICITY GENERATION:
3 085.1 GWh – 265.3 ktoe

- From 2013 to 2023, electricity generation increased by 0.9% on average per year.
- Peak power demand: 498 MW in February.
- **Share of renewable energies: 56.6% in 2023.**

	Hydropower*	Photovoltaic	Biodiesel*	Bagasse*	Wood pellets	Wind power	Biogas	Bioethanol
Installed capacity (MW)	134.3	266.2	211	202.8		8.8	6.8	41.0
Electricity generation (GWh)	393.6	292.5	500.9	201.1	320.9	18.1	15.2	3.2
Share in the electricity generation	12.8%	9.5%	16.2%	6.5%	10.4%	0.6%	0.5%	0.1%

* For the Bois Rouge coal-bagasse-biomass plant, the fuel-gasoil-biodiesel plant of Port Ouest/Est and the Rivière de l'Est hydroelectric plant, the installed capacity was considered..

SOLAR HEATING

- 198 337 individual solar water heaters = 793 348 m^2 = 297.5 GWh avoided**
- 54 195 m^2 of collective solar water heaters = 32.5 GWh avoided

→ **330.0 GWh avoided**

**The renewed solar water heaters are not included in the cumulative amount.

CO_2 EMISSIONS:
3 520 kilotons, being 4 tCO2/capita

- Direct emission average ratio per consumed kWh: **365 gCO2/ electrical kWh.**

General indicators	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Energy Intensity in toe/million euros (2010 constant euros)	85.62**	84.22**	82.77**	82.45**	80.64**	81.69	77.86	78.62	76.81*	**86.31**
Road fuels consumption per capita (L)	596	611	622	628	622	629	569	624	639	**634**
Primary energy quantity required to produce 1 ktoe of final electricity (ktoe)	2.80	2.75	2.74	2.71	2.63	2.75	2.79	2.76	2.44	**2.88**
Primary energy quantity required to produce 1 ktoe of final energy (ktoe)	1.44	1.43	1.43	1.41	1.38	1.41	1.47	1.43	1.34	**1.42**
Renewable energy production (GWh)	941.9	1 043.0	1 003.8	967.2	1 078.8	950.9	931.7	869.8	1154.5	**1 745.5**

* An erratum was made for the energy intensity 2022 figure following an update of the 2022 GDP data.
** Mise à jour des calculs pour la période 2014 - 2018.

Glossary

Bagasse:
Sugar cane residue obtained after grinding. Bagasse can be used as a biofuel.

Energy dependency rate:
Shows the proportion of energy that an economy must import. It is defined as net energy imports divided by primary energy consumption.

Energy intensity:
Measures the energy efficiency of the country's economy. The higher the intensity, the more the country consumes.

Final energy consumption:
Total energy consumed by end users (households, services, industries, transport and agriculture).

Non-interconnected territories (NITs):
Refers to the French territories that are not connected to the continental electrical grid due to their geographical remoteness. Reunion Island, Guadeloupe, Martinique, French Guiana and Corsica are referred as NITs.

PV:
Abbreviation for photovoltaic systems

Penetration rate of renewable energies:
Share of renewable energies in total power generation.

Primary energy consumption:
Primary energy consumption measures the total energy demand and covers consumption of the energy sector itself, losses during transformation and distribution of energy and final consumption by end users. The primary energy consumption provides a measure of the energy independency rate.

Necessary primary energy quantity to produce 1 ktoe of final energy:
This is a conversion factor to go from electricity to primary energy. It is a coefficient that enables the addition of electricity power and primary fossil energies in energy balance.
Rated capacity: Net power output available on the power grid.

Ton of oil equivalent (toe):
Energy unit equivalent to the energy released by burning one ton of crude oil. It is an energy unit that is used to compare energy from different sources.

For more information, search for
the technical energy balance (in French)
on our website!

oer.energies-reunion.com

Reunion Island Energy Observatory

The Reunion Island Energy Observatory, OER (Observatoire Energie Réunion), hosted by Energies Réunion, is part of the energy strategy led by the regional council and the partners of the island's action on energy policy.

Being an observation and information tool regarding the energy state of Reunion Island, the observatory comes from the wish of the different partners to provide them with a specific instrument to support energy management actions and develop renewable energies as well as measure the impact of these actions.

Energies Réunion

Since its creation, ten years ago, Energies Réunion has been committed to the energy transition of Reunion Island. Its main objective is to fight against climate change for the people of Reunion and combat energy poverty.

The local public company Energies Réunion works closely with local authorities and its fields of action are the energy strategy, the development of renewable energies and the management of energy demand. Energies Réunion greatly values to observe the energy and environmental situation of the island. It leads the Energy Observatory of Réunion Island (OER) thanks to the stringent collection, analysis and structuring of data concerning the energy sector. The company publishes reknowned technical studies and carries out the Energy Balance of Reunion Island (BER) every year.

www.energies-reunion.com

Observatory's partners for 2014-2023:

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