



HORIZON
REUNION

ENERGY BALANCE

REUNION ISLAND 2018

EDITION 2019

KEY FIGURES



The CEO's Message

In a global context marked by the urgency of climate change and to limit our greenhouse gases emissions, energy is a major lever for action. At the Reunion Island's scale, the multiannual energy program which guides the island's energy strategy was drawn up and approved by the Regional Council in March 2019. It sets essential goals regarding transportation, energy production and demand until 2023 and 2028 to fully commit to energy self-sufficiency for the island. This strategy paper comes along with a social and economic impact assessment since the energy transition designed with all the energy's professionals and institutional stakeholders also means economic development and job creation.

After several years of an up and down renewable production, 2018 is a good year since renewable energies cover 36.5% of the electricity production, a level not seen in the past five years and which shows that our commitments are on the right track. There are more and more decentralised renewable power production facilities. In addition, a substantive work is conducted by all the stakeholders to reduce energy consumptions, with particular consideration for the most fuel-poor households because our energy transition is also meant to be a socially fair transition.

Because renewable energies are increasing, we are moving towards low-carbon electricity. It also means that fossil fuels importations are decreasing, leading to a better air quality for all Reunion Island inhabitants. Our goal is to get to 100% renewable energies and to reduce greenhouse gases emissions.

Therefore, it is essential to anticipate changes of the energy sector by relying on new technologies (domotic, smart grids, energy storage, etc.) which will need to be supported so that every inhabitant can access it. At the dawn of this innovations, what a stimulating challenge to decide which way to go! The efforts provided by all the energy stakeholders over the past years give the island energy's objectives a momentum to perpetuate and strengthen.

Also, the growing responsibility given to intercommunal authorities makes it possible to implement specific actions adapted to the island's insularity. Increasing market constraints and quantity of available information also show the changes introduced in the Reunion energy performance approach. The Energy Balance is enriched year after year and shows the ongoing evolutions in that way.

The Reunion Island Energy Observatory and more specifically the energy balance are reference tools that makes it possible to monitor every year a multitude of indicators about energy transport, greenhouse gases emissions and broadly the path Reunion Island is taking to the social, ecological and energy transition. With the decentralisation of actions at local scales, the Observatory's work is also part of the monitoring of local action plans on climate, air and energy and all the work related to energy transition.

I would like to thank all our technical and financial partners, private and institutional, for their contribution year after year to the redaction and publication of the Reunion Island Energy Balance and the overall work of the Reunion Island Energy Observatory.

Mister Alin Guezello

*Regional Councillor in charge
of New and Inclusive Energies,
Living Environment
CEO of Horizon Reunion*



Key figures 2018

TOTAL PRIMARY ENERGY CONSUMPTION :
16,768.2 GWh – 1,441.8 ktoe including 12.8% from local resources

- Energy dependence rate : 87.2%
- Primary energy consumption per capita : 1.7 toe/capita

TOTAL FINAL ENERGY CONSUMPTION :
12,120.9 GWh – 1,042.2 ktoe

- Transportation : 64.5% - Electricity : 22.5% - Duty-free fuels and combustibles for agriculture and industry (excluding transportation) and butane gas : 6.8% - Heat : 6.2%
- Total electricity consumption per capita : 3,159 kWh/capita
- Total road fuel consumption per capita : 617.7 litres/capita

ELECTRICITY GENERATION :
2,958.9 GWh – 254.4 ktoe

- From 2008 to 2018, electricity generation increased by 1.9% per year on average
- Peak power demand : 486 MW in December
- **Share of renewable energies : 36.5 % in 2018**

	Hydropower	Photovoltaic	Bagasse	Wind power	Biogas	Bioethanol
Installed capacity (MW)	133.2	190.4	210.0	16.5	4.4	41.0
Electricity generation (GWh)	601.4	253.3	196.3	12.8	12.7	2.3
Share in the electricity generation	20.3 %	8.6 %	6.6 %	0.4 %	0.4 %	0.1 %

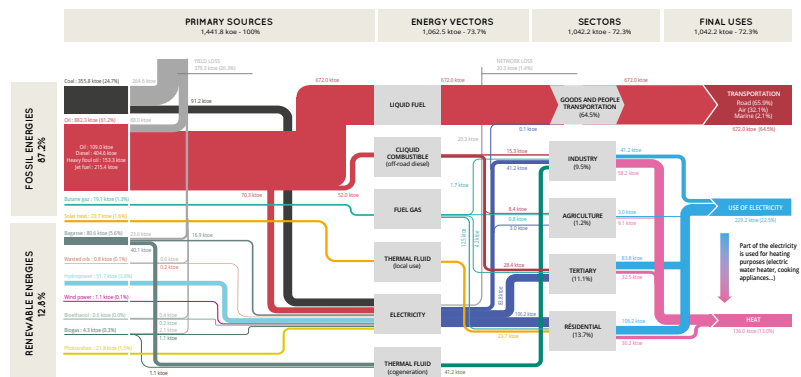
SOLAR HEATING

- 165,438 individual solar water heaters = 661 752 m² = 248.2 GWh avoided
 - 45,919 m² of collective solar water heaters = 27.5 GWh avoided
- 275,7 GWh avoided**

CO₂ EMISSIONS :

4,162.2 kilotons, being 4.83 tCO₂/capita

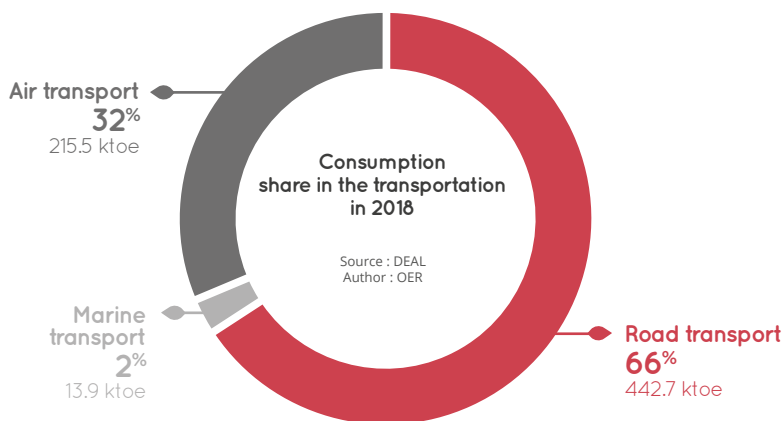
- Direct emission average ratio per consumed kWh : 679 gCO₂/ electric kWh





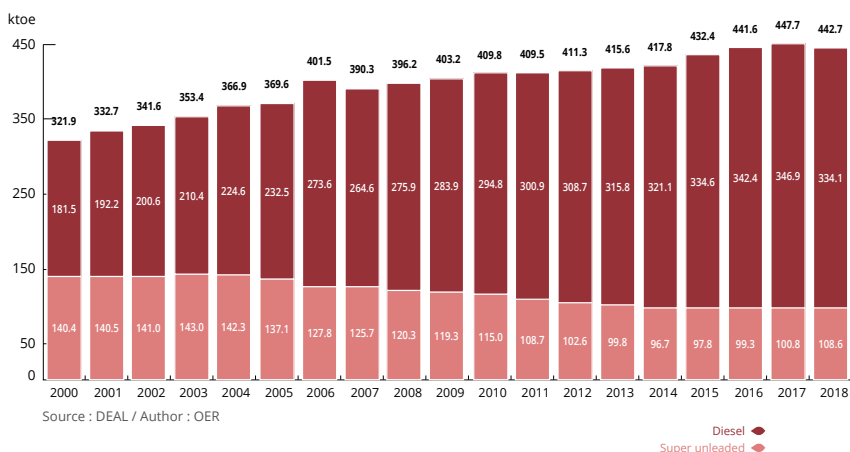
Transportation 2018

FUEL CONSUMPTION :
657,104 tons meaning 672.1 ktoe



CONSUMPTION IN THE ROAD TRANSPORT SECTOR :
437,714 tons meaning 442.7 ktoe

Evolution of diesel and super unleaded fuel consumption



ELECTRIC AND HYBRID TRANSPORTATION DEVELOPMENT

Cumulative number of electric and hybrid cars since 2006 :

	2006	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hybrid cars	38	685	960	960	1,671	2,385	3,122	3,897	4,635	5,592
Plug-in hybrid cars	0	0	0	0	0	0	105	215	379	528
Electric cars	0	6	12	12	62	123	227	334	589	921
TOTAL	38	691	972	972	1,733	2,508	3,454	4,446	5,603	7,041

Sources: Automobile department file until 2011, Car dealers from 2013 to 2015, RSVÉRO since 2016 – Author : OER

In May 2019, there are **123 public charge points** for electric vehicles in Reunion Island.



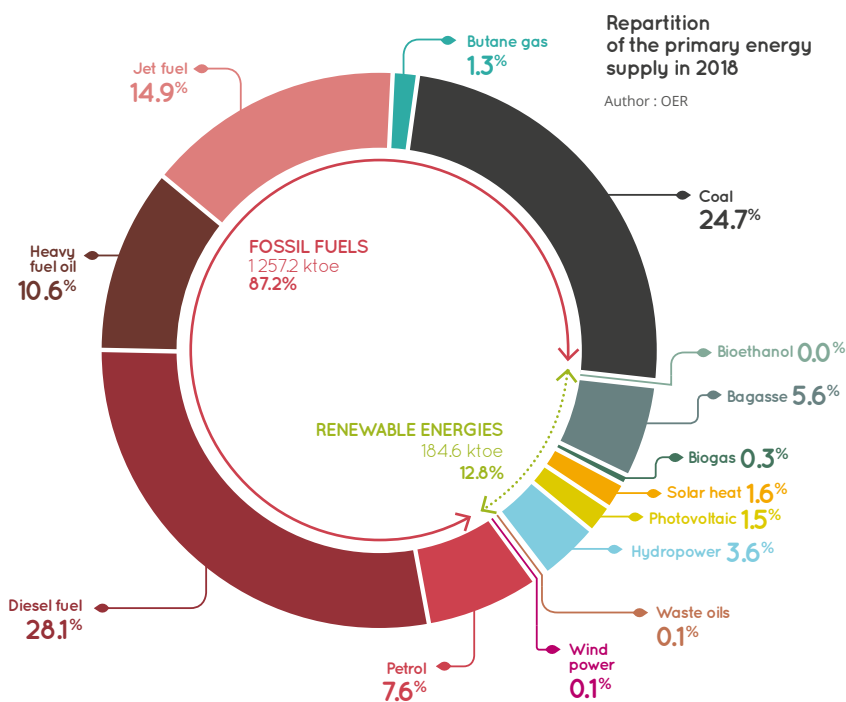
Primary supply 2018

PRIMARY ENERGY SUPPLY :

16,768.2 GWh meaning 1,441.8 ktoe

		2018	
IMPORTED FOSSIL RESOURCES	Oil*	109.0	
	Diesel fuel*	404.6	
	Heavy fuel oil	153.3	
	Jet fuel*	215.4	
	Butane gas*	19.1	
	Coal	355.8	
	Subtotal	1,257.2	
LOCAL RESOURCES	Bagasse	80.6	
	Biogas	4.3	
	Bioethanol	0.6	
	Wood	Unknown	
	Sun	Solar heat	23.7
		Photovoltaic	21.8
	Water	Hydropower	51.7
	Recovery	Waste oils	0.8
	Wind	Wind power	1.1
	Subtotal	184.6	
	TOTAL	1,441.8	

* Corresponding to the stock removals from the SRPP



Evolution of the energy dependency rate from 2000 to 2018

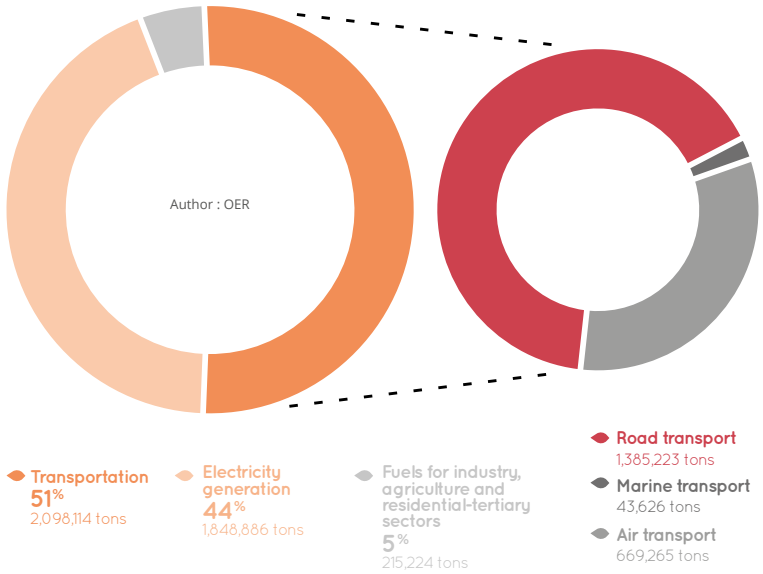
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
84.7%	85.7%	85.3%	84.6%	85.0%	87.1%	86.8%	87.4%	87.1%	87.7%
2010	2011	2012	2013	2014	2015	2016	2017	2018	
87.5%	88.3%	87.2%	86.2%	86.8%	86.1%	86.6%	87.0%	87.2%	

Author : OER



CO₂ EMISSIONS FROM THE COMBUSTION OF ENERGY PRODUCTS IN REUNION ISLAND IN 2018 *

CO₂ emissions from the combustion of oil products and coal in 2018



Total of CO₂ emissions from the combustion of oil products and coal : **4,162.2 kilotons**

Direct CO₂ emissions per capita

- Direct emissions from electricity generation : 2.14 tCO₂/capita
- Direct emission from all types of transportation : 2.43 tCO₂/capita
- Emissions from fuels for agriculture, industry and residential-tertiary sectors : 0.25 tCO₂/capita

One inhabitant of Reunion Island = 4.83 tCO₂

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

Direct emissions average ratio per kWh consumed gCO ₂ /kWh	Guadeloupe	Martinique	Reunion Island	Corsica	French Guiana
2017	789	711	705	374	299

Source : EDF Open Data.



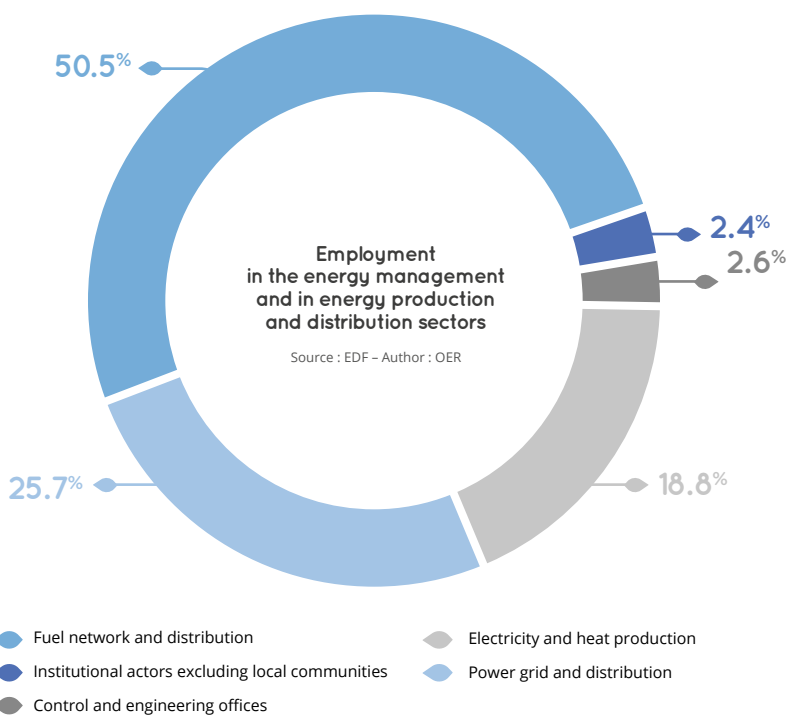
*Simplified methodology of the GHG Emission Inventory.

Employment 2018

The data are not exhaustive.

Activity fields	Number of jobs in 2018	Part
Institutional actors excluding local communities	73	2.4 %
Control and engineering offices	79	2.6 %
Electricity and heat production	567	18.8 %
Biogas	7	0.2 %
Wind power	8	0.3 %
Photovoltaic	81	2.7 %
Solar heat	115	3.8 %
Photovoltaic/Solar heat	58	1.9 %
Coal/Bagasse	145	4.8 %
Bioethanol	4	0.1 %
Hydropower	49	1.6 %
Fuel	100	3.3 %
Power grid and distribution	773	25.7 %
Fuel network and distribution	1,522	50.5 %
TOTAL (estimation)	3,014	100 %

Author : OER



Glossary

Bagasse :

Sugar cane residue, obtained after grinding. The 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 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 because of their geographical remoteness.

Penetration rate of renewable energies :

Share of renewable energies in the 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 the final consumption by end users. The primary energy consumption allows measuring the energy independence rate.

PV :

Abbreviation for photovoltaic systems.

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 the energy from different sources.



For more information,
find out the technical
energy balance (in French)

Reunion Island Energy Observatory

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

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

Horizon Réunion

Since 2013, the local public company Horizon Réunion has supported Reunion Island towards electric self-sufficiency, serving communities, territories and its inhabitants.

Formerly called Energies Réunion, the company changed its name on 12 February, 2019, following the opening of its corporate purpose to new skills regarding the environment, biodiversity, and climate. Its role : to support local authorities in the development of concrete projects with energy, solidarity and sustainability challenges.

Observatory's partners for 2014 - 2018 :



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Free, objective and independent advice, hotline :

0262 257 257

www.spl-horizonreunion.com contact@spl-horizonreunion.com