



# Biomass conversions in La Reunion

December 09<sup>th</sup>, 2021



# Sommaire

1		Overview of Albioma group	3
2		The energy transition in La Reunion	7
3		Sourcing sustainable wood pellets	14
4		Delivering impact through local value chain	18
5		Questions & answers	21

1



# Overview of Albioma group



# Albioma

An independent renewable energy producer



*Thermal biomass*

A unique **partnership** for 25 years with the sugar industry to **produce renewable energy from bagasse**, the fibrous residue from sugar cane



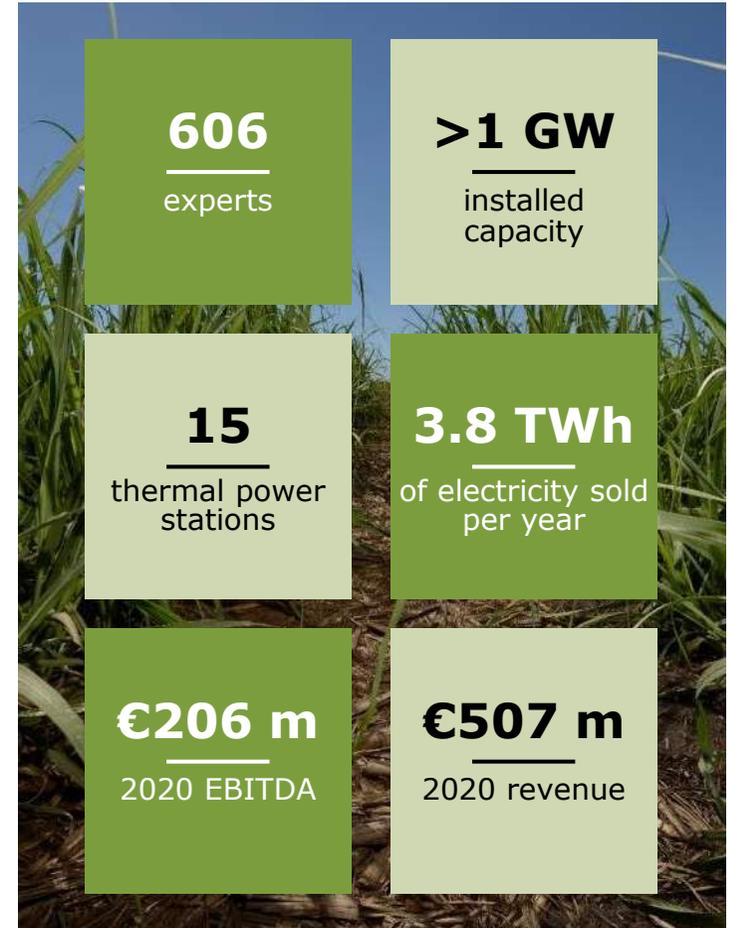
*Photovoltaic*

**The leading producer of photovoltaic energy** in the French overseas territories



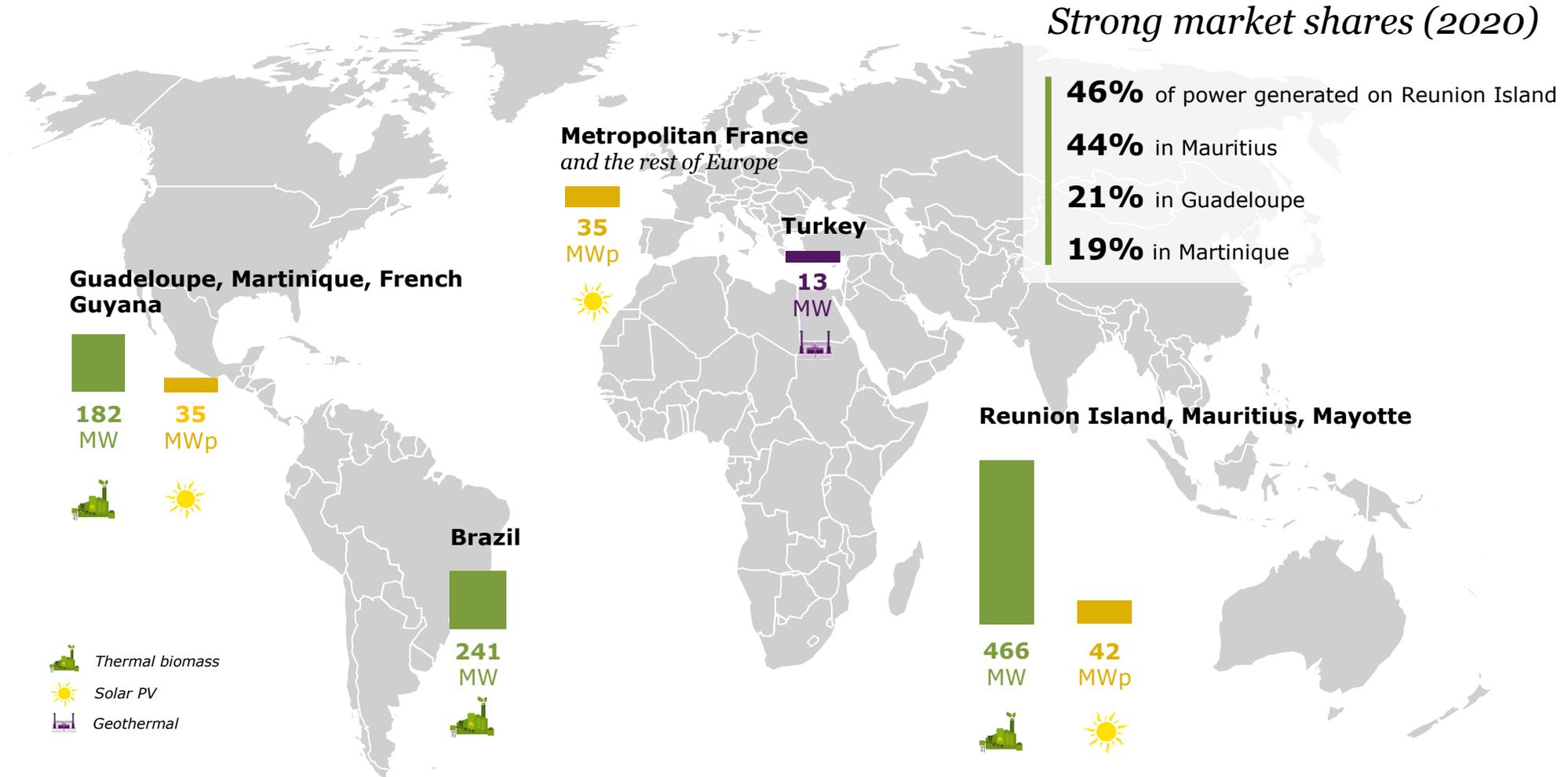
*Geothermal*

Our new **renewable baseload energy**



# > 1 GW installed capacity across the world

889 MW thermal biomass, 112 MWp solar and 13 MW geothermal



Note: June 2021

# The energy transition in the French overseas territories



## 100% biomass target in our plants

- ▶ Substitution of biomass for coal in plants which recover bagasse
- ▶ Give priority to local biomass, while avoiding conflicting uses (cane straw, forest residues, etc.) and contributing to a circular economy (green waste, etc.)
- ▶ Use of traceable and renewable imported biomass to top up

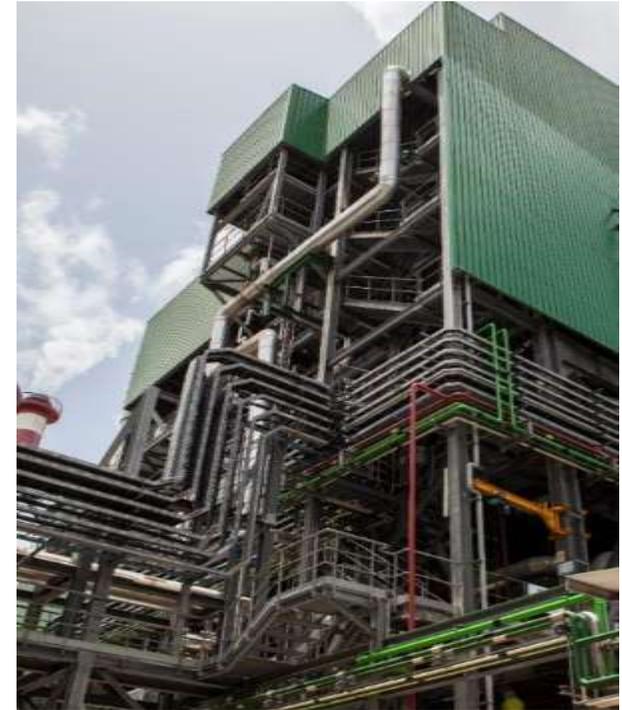


## Increase renewable energy production

- ▶ Production of reliable energy, guaranteeing security and stability of the grid from 100% renewable sources
- ▶ Commissioning of new biomass projects, solar energy storage projects and 100% storage projects in non interconnected areas aiming to counter the intermittent nature of production



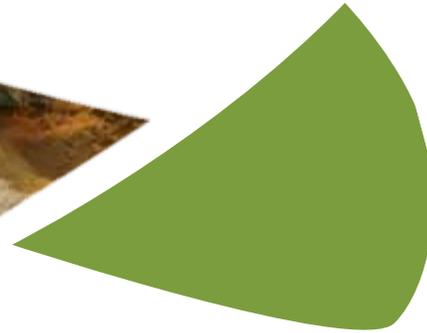
## Make use of solid recovered fuels (SRF)



*Albioma Le Moule, Guadeloupe*

2

The energy transition in La Reunion



# Albioma, power producer in La Réunion since 1992



**255**

MW  
thermal

**33**

MW  
solar

**200**

M€  
Invested over  
2016-2020

**213**

employees

**200**

FTE through sub-  
contractors

*Données 2020*

# The energy transition in La Reunion

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Albioma's projects are part of the French government's Climate plan

- ▶ **Switching out of coal to a fuel mix of wood pellets, local biomass and bagasse, aiming to generate 100% green power**
  - Priority to local biomass, while avoiding conflicting uses (cane straw, forest residues, etc.) and contribute to a circular economy (e.g. green waste)
  - Security of supply with biomass imports, focusing on regional sources
  - Traceability and sustainability through certification systems and inspections by third-party organizations
- ▶ **The conversion of Albioma's power plants is included in the decrees related to the Multiannual Energy Programme for La Reunion**
  - Our projects are underpinned by a supportive regulatory framework with a long-term horizon
- ▶ **The conversion of Bois Rouge power station and the investment in the associated port infrastructure is under way**
- ▶ **The application for the conversion of Le Gol power station is currently reviewed by the regulator (CRE) and EdF**

# Albioma Bois Rouge (ABR) power station

The ABR conversion to 100% biomass was approved in 2020

<b>Capacity:</b>	100 MW (on-line since 1991)
<b>Fuel mix (now):</b>	Coal/bagasse
<b>Fuel mix (2023):</b>	Biomass/bagasse
<b>Imported biomass:</b>	450,000 tonnes/year
<b>Local biomass:</b>	50,000 tonnes/year



ABR will supply  
21% of the island's power  
from renewable sources



# Albioma Le Gol (ALG) power station

The ALG conversion application is currently under review

<b>Capacity:</b>	110 MW (on-line since 1995)
<b>Fuel mix (now):</b>	Coal/bagasse
<b>Fuel mix (2024):</b>	Biomass/bagasse
<b>Imported biomass:</b>	450,000 tonnes/year
<b>Local biomass:</b>	50,000 tonnes/year

Following its conversion, ALG will generate 24% of the island's power from renewable sources



# Wood pellet handling

- ▶ Wood pellets are produced from by-products of the forestry and sawmilling industries and are a sustainable fuel source
- ▶ The production involves milling and drying of the raw material, to turn it into sawdust, which is then compacted in the form of pellets
- ▶ Given the energy and effort that went into the manufacturing of the pellets, it is important to keep them in covered storage, to ensure their integrity
  
- ▶ The energy content of wood pellets is 17GJ/tonne
- ▶ One of the consequences of switching from coal (25GJ/tonne) to wood pellets is that a greater volume of fuel will be needed to produce the same power output
  - Greater throughput for port operators
- ▶ The need for covered storage will also require investment at the port: covered storage



# Investment in port infrastructure

- ▶ Construction of 4 domes, to allow the import and storage of wood pellets
- ▶ Each dome will have a capacity of 45,000m<sup>3</sup> or 30,000 tonnes of wood pellets
- ▶ 2 domes per power station
- ▶ Significant investment in port infrastructure



3

Sourcing sustainable wood pellets



# An overview of the wood pellet market

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## ► **Evolution of the market**

- Wood pellets have become the most liquid, internationally traded type of biomass used for power and/or heat generation
- The wood pellet market has grown substantially, with 25-30m tonnes of wood pellets traded on an annual basis

## ► **Demand drivers**

- The use of wood pellets has evolved from an opportunistic and short-term activity to a stable and growing business underpinned by coal to biomass conversions and demand for home heating
- In the industrial market, the use of wood pellets remains dependent on subsidies/support mechanisms introduced to incentivise green power generation
- The biggest sources of demand are coal to biomass conversions and dedicated biomass plants in Europe and Asia

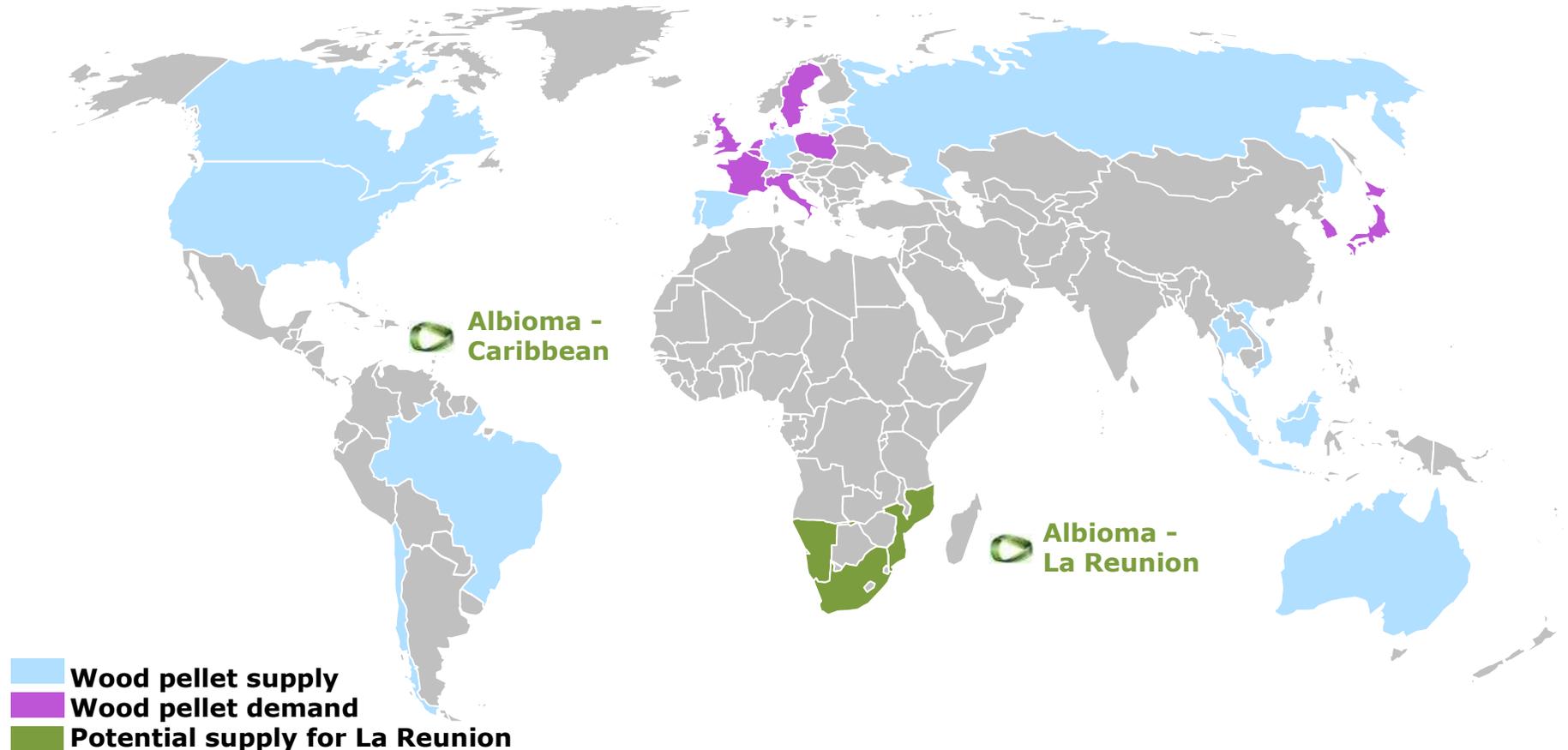
## ► **Wood pellet supply**

- Wood pellet supply has evolved at the same pace with demand
- Suppliers tend to be less creditworthy and smaller entities (compared to their clients), but there has been some consolidation in the market

## ► **The further convergence of specs and sustainability parameters will facilitate the market's growth and commoditization of wood pellets**

# Global industrial wood pellet supply/demand

- ▶ The main users of industrial pellets are located in Europe, Korea and Japan
- ▶ The largest producers of pellets are based in North America and SE Asia
- ▶ Albioma's emerging demand in the Indian Ocean can support the emergence of regional suppliers



# Regionalization of wood pellet supply

- ▶ The regionalization of our wood pellet supply is one of our key objectives, aiming to increase regional co-operation, and reduced steaming time (lower CO2 emissions from shipping)
- ▶ Our focus is on the Indian Ocean Rim Association (IORA), an inter-governmental organisation aimed at strengthening regional cooperation and sustainable development within the Indian Ocean region
- ▶ 23 Member States including South Africa, Mozambique, Australia, Malaysia and Thailand
- ▶ France became a Member State in December 2020 (based on its presence in La Reunion)



# Regulatory requirements for the use of biomass in Europe

## ▶ **Legality and traceability**

- Compliance with EU Timber Regulation, to minimize the risk of sourcing illegally logged timber

## ▶ **Sustainability**

- Activities carried out in accordance with harvesting permits
- Maintain the health and vitality of the forest ecosystem
- Impact of harvesting on soil quality and biodiversity are minimized
- Harvesting maintains or improves the long-term production capacity of the forest

## ▶ **Land Use, Land Use Change and Forestry**

- The country of origin is part of the Paris Agreement
- Laws in place to conserve and enhance carbon stocks and sinks
- System for reporting GHG emissions

## ▶ **GHG emission savings**

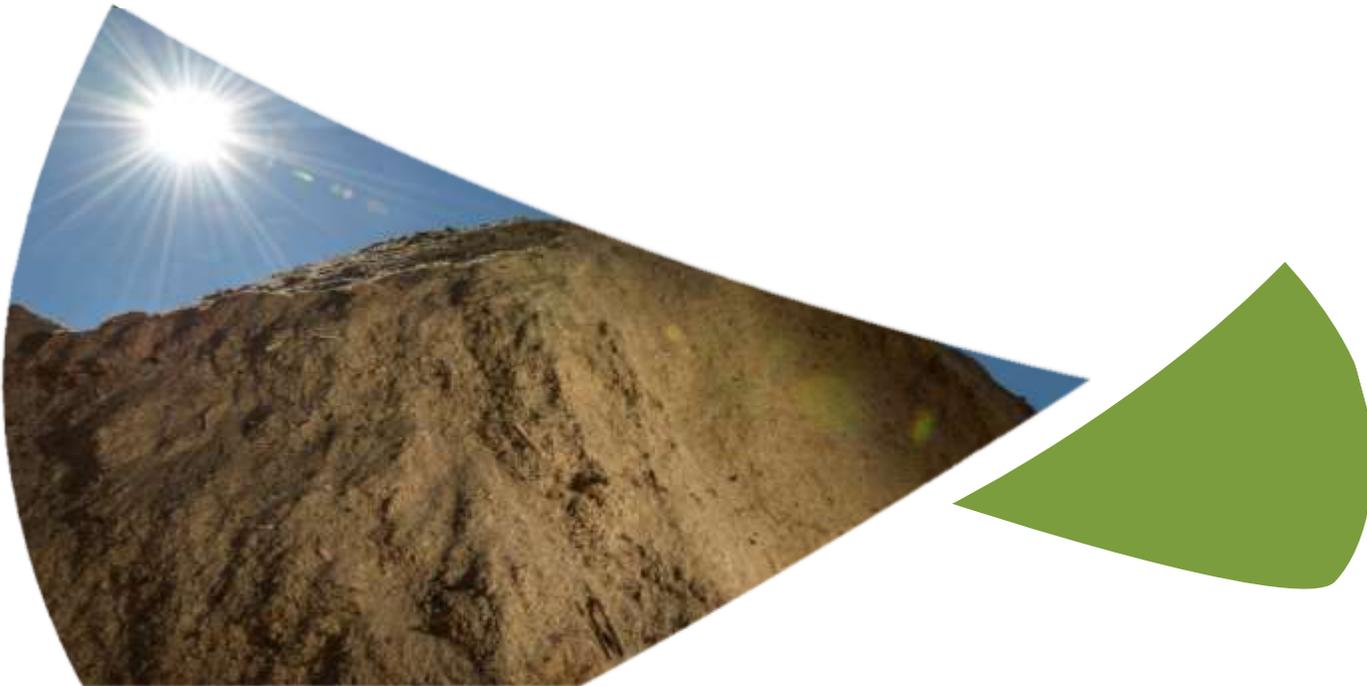
- Biomass stations shall achieve at least a 70% GHG emission savings

## ▶ **The regulatory requirements are expected to become stricter, focusing on the use of low grade wood for power generation and higher GHG savings**

4



Delivering impact through  
local value chain



# Focus on locally sourced biomass

## Developing new value-chains on the territory



- ▶ We have estimated an annual potential of **100 000 tons** of locally available biomass:
  - **45 000 tons** of shredded **green waste**
  - **10 000 tons** of **wooden packaging**
  - **10 000 tons** from **forestry by-products**
  - **25 000 tons** from **tree felling and trimming**
  - **10 000 tons** from **invasive wood species**
- ▶ Albioma works closely with the ONF National Forestry Office, the Reunion National Park, local authorities and the private sector to develop new value chains from untapped reservoirs

# Expected impacts of locally sourced biomass

## A strong potential for the local economy



- ▶ **Boosting the local forestry industry** by offering new markets for under-valorised forestry by-products
- ▶ Support to the **structuring of private forest landowners** to create value for the territory
- ▶ **Diminishing volumes destined to landfill** through the creation of value chains for green waste
- ▶ Fostering **circular economy** and boosting **employment opportunities** through the development of new activities (logging, collection, processing, transport...)
- ▶ Contributing to the efforts to control and eradicate **invasive species** in the National Park
- ▶ National **innovation** which can be adapted and replicated

5 |

## Questions & answers

