



BIOGAS AT ENGIE

MARTA KAMOLA-MARTINES

*WBA eFestival
19 May 2020*



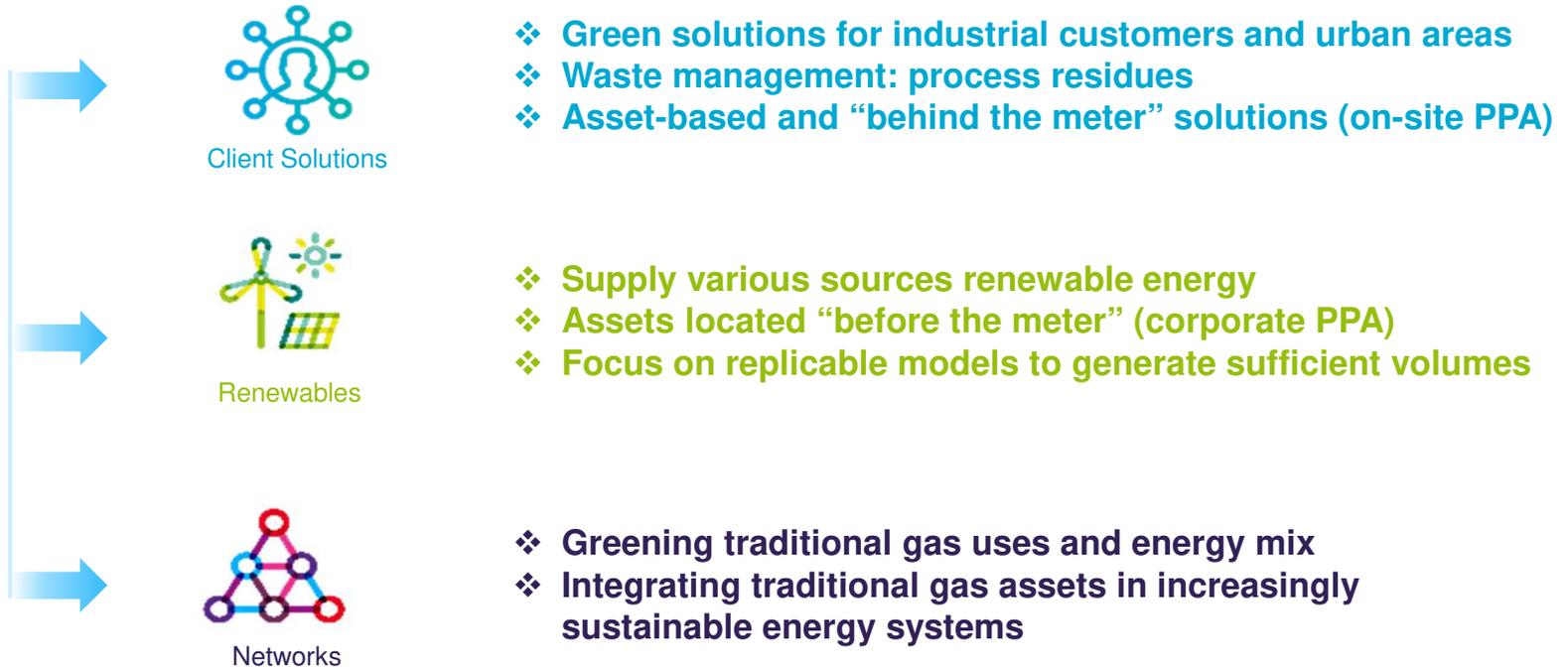
TURNING WASTE INTO GREEN ENERGY AND MUCH MORE



No fit for all solution, economic model depends on local context

BUSINESS LOGIC OF BIOGAS DEVELOPMENT

Business



BIOGAS IN FRANCE AND AT ENGIE



FRANCE : 12 units in operation, 4 approved, 60 projects in the pipe

- Current status: 0,35/0,40 TWh;
- Targets : 1.3/1.5 TWh in 2023 -> 5/6 TWh in 2030;
- France target: 10% of renewable gas in total gas consumption in 2030
- Focus on scalability, simplicity and size;
- Challenge : increased competitiveness in the context of decreasing FIT.

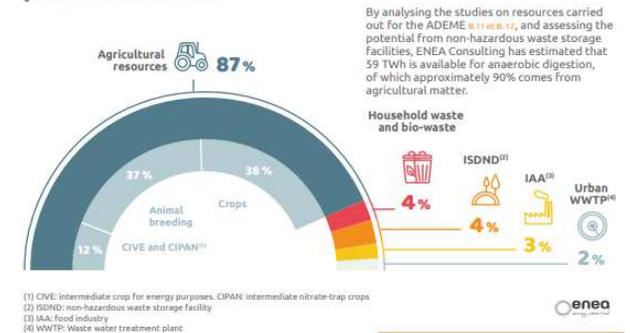


THE NETHERLANDS : N°2 EPC contractor

- More than 50 references in the farming and agroindustry;
- Active in The NL, France, Belgium, Israel, Turkey;
- 4 units delivered in France;
- Partnership with FrieslandCampina, one the 3 biggest dairy cooperatives in Europe

FRANCE: Overall Biogas outlook

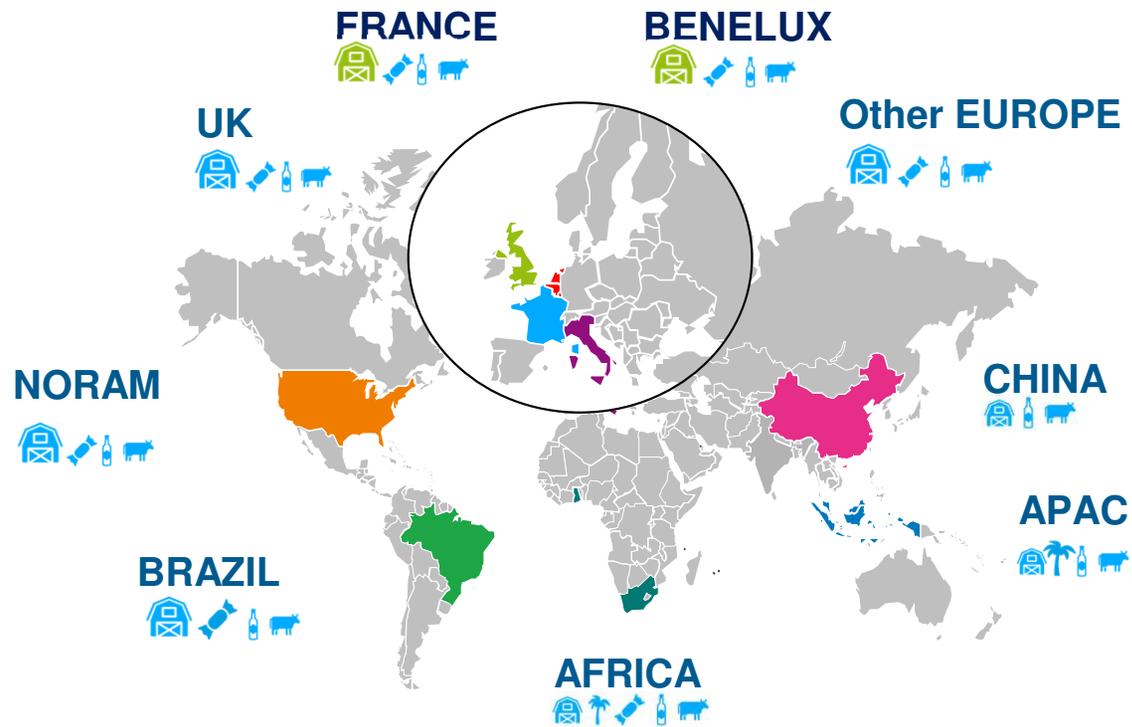
Agriculture, the leading contributor to biomethane production in 2030



FRANCE : ENGIE Commitment to Biogas:

- switch all its French gas operations to renewable gas and renewable hydrogen, by 2050.
- invest €800 million in the sector by 2023, and €2 billion, by 2030.
- Produce 5 to 6 TWh in 2030.
- French gas operators, **GRTgaz** (and Teréga) are committed to achieving a **100% carbon-neutral gas supply** in their transport infrastructure by 2050.

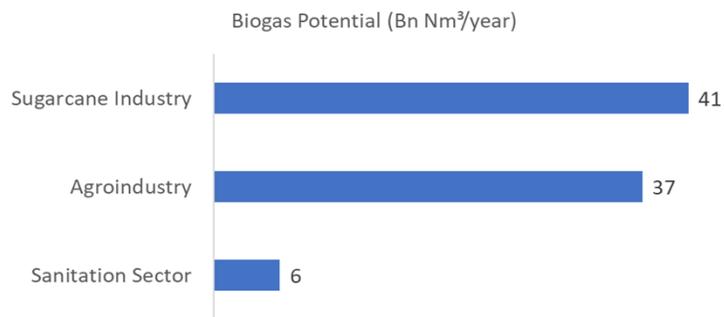
OUR SCOPE IS ALSO INTERNATIONAL



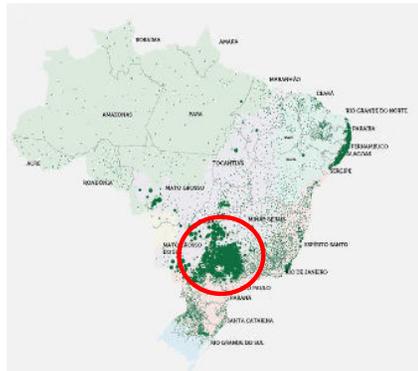
-  Sugar
-  Farming
-  Beverage
-  Milk
-  POME

LATIN AMERICA – BRAZIL: A HIGH POTENTIAL MARKET

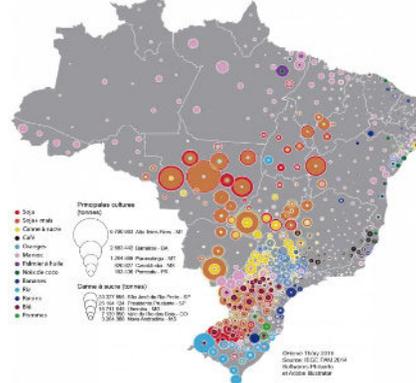
- Annual biogas potential in Brazil is estimated at some 85 bn cm (ca. 556 TWh)
- 93% of this potential is concentrated in sugarcane industry and agroindustry



Sugarcane Areas



Main agricultural producing regions



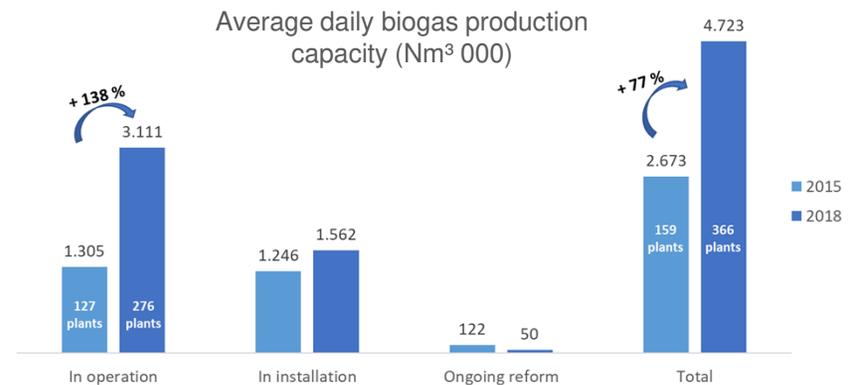
Breakdown Estimate by Region



Source: ABIOGAS forecast

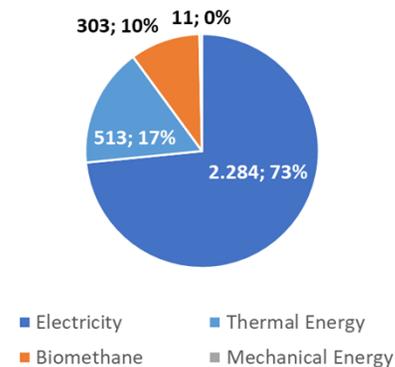
BRAZIL: BIOGAS PRODUCTION IS ALREADY EXPANDING

- The volume produced in Brazilian operating plants more than doubled between 2015 and 2018;
- The daily production capacity in 2018 reached 4.7 MM Nm³, considering plants in operation, installation and ongoing reform;
- In 2015, 65% of production was in Southeast Region and 26% in South Region.



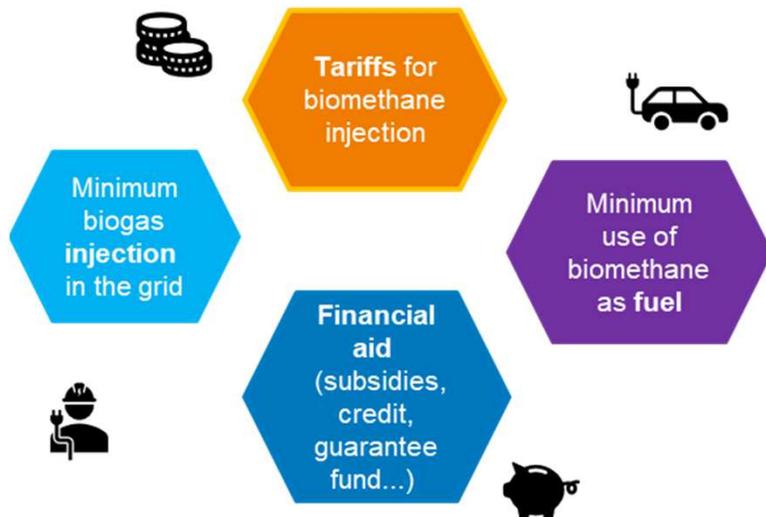
➔ Total Biogas Production in 2018: 1.1 Bn m³

- Albeit still a nascent market, it has begun to consolidate with over 60 actors being members of Abiogás association



BRAZIL: REGULATIONS SUPPORT GROWTH

Key states benefits from **obligations** and **incentives** promoting biogas.



National biofuels policy establishing annual national decarbonization goals for the fuel sector, encouraging biofuels production and its greater participation in the Brazilian transportation energy matrix.

WRAP-UP



- For ENGIE biogas and biomethane development is one of strategic development axis, both in France and internationally.
- Latin America presents an important potential for sustainable biogas development, accounting for 20% of the global potential, i.e. 120 Mtoe (ca. 1 400 TWh) (IEA).
- Brazil is one of the key markets characterized by an accelerating growth momentum and favorable policy approach.
- For ENGIE this is an important playground where we can put into practice our competencies, build on our sound customer base and existing assets as well as partnerships. A recent MoU with Cibiogas is an example.
- We are keen on working with partners to design adapted business models and extract value of the huge potential that this region offers.

An aerial photograph of a basketball court at night. The court is painted with vibrant, multi-colored geometric patterns in shades of blue, red, yellow, and green. Several people are visible on the court, some appearing to be playing basketball. A small white sign with the text 'KM(S1)' is placed on the court's surface. The surrounding area includes trees and some outdoor seating. The entire scene is framed by a dark, semi-transparent rectangular overlay.

THANK YOU

Contacts:

marta.kamola-martines@engie.com (Paris HQ)

olivier.delprat@engie.com (Brazil BU)

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