

A photograph of a sugarcane field at sunset. The sun is low on the horizon, creating a warm orange and yellow glow. The sugarcane stalks are silhouetted against the bright sky. A semi-transparent purple overlay covers the bottom half of the image, where the text is located.

# RAIZEN

MATEUS SCHREINER GARCEZ LOPES – TECHNOLOGY DIRECTOR  
MI webinar on Biorefineries efficiency improvement

raízen

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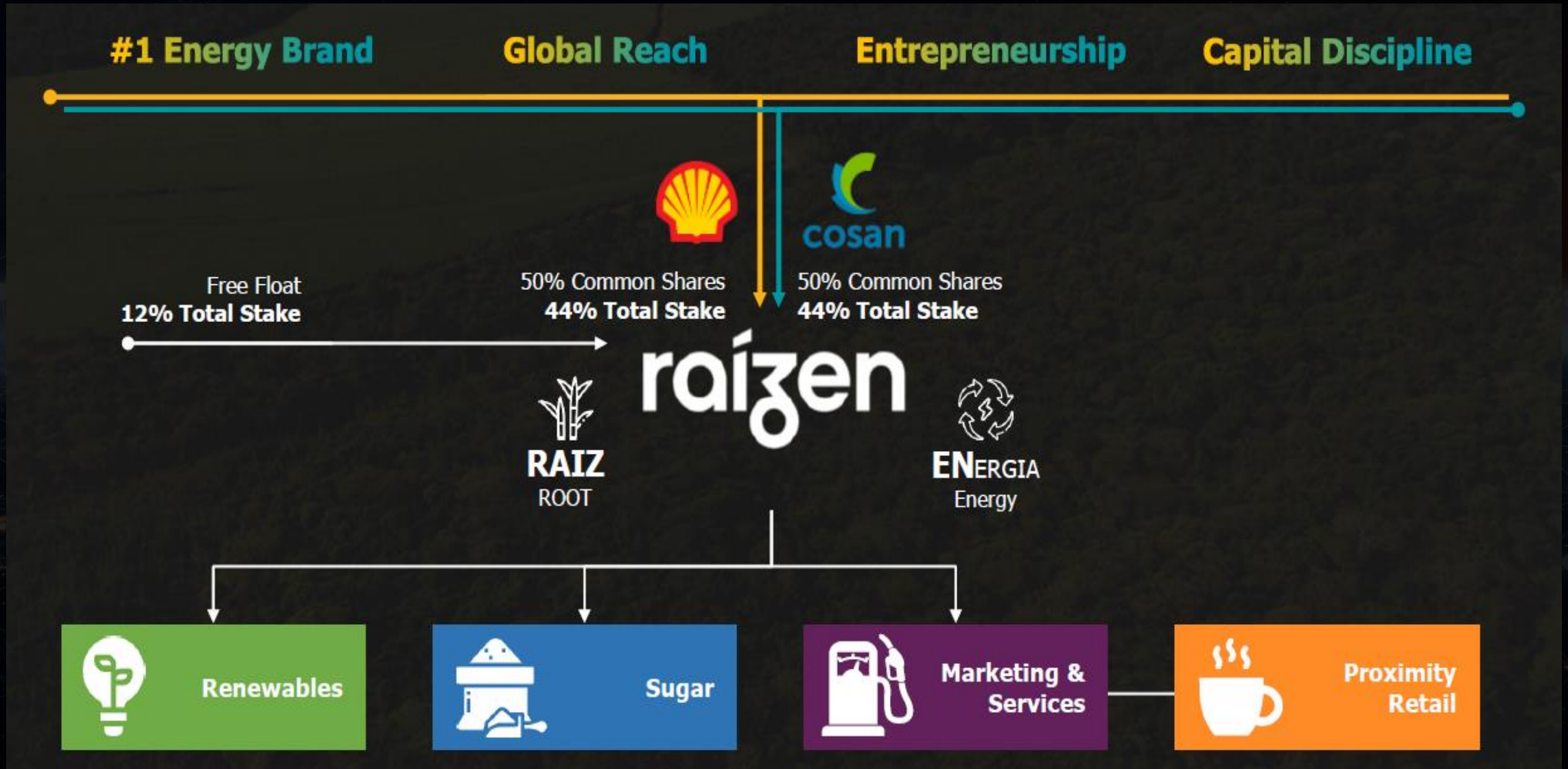
**RAÍZEN**

HISTORY & INTEGRATED PORTFOLIO

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# OUR SHAREHOLDER STRUCTURE & BUSINESS UNITS

raízen





# Our Ecosystem: From Soil-to-Consumer



**35** Bioenergy Parks <sup>(1)</sup>  
**105 mm ton** biomass processing capacity <sup>(1)(3)</sup>

**1.3GW** Bioelectricity Generation Capacity <sup>(1)</sup>  
 Energy self-sufficient in all units

**#1** Global Ethanol Player  
 12 mm m<sup>3</sup> <sup>(2)(3)</sup>

**#1** Global Sugar Produced  
 6.2 mm ton <sup>(1)(3)</sup>



**+2.5x** Net Revenues  
 From R\$ 52 bn to R\$ 125 bn <sup>(1)(2)(3)</sup>

**18% ROACE**  
 Return on Average Capital Employed <sup>(3)(4)</sup>

**+4x** EBITDA  
 From R\$ 2 bn <sup>(6)</sup> to R\$ 9 bn <sup>(1)</sup>

**3x** Investment Grade Rating  
 (Fitch, Moody's, S&P)



**#2** Fuels Distributor   
**#1** Ethanol Distributor in   
**7,300+** Service Stations

**50+** Million Customers Served Annually <sup>(B2B2C)</sup>



**1,300+** Shell Select Stores <sup>(5)</sup>  
 JV with **FEMSA**



**1 Oil Refinery**  
 Argentina (120 kbpd)



**Renewables**



**Sugar**



**Marketing & Services**



**Proximity Retail**

Source: ANP. Notes: (1) Considers the sum of Raízen's and Biosev's operations. Closing of the acquisition of Biosev is still subject to precedent conditions. 26 parks, 73 mm ton biomass processing capacity, 1 GW of Bioelectricity Generation Capacity 114.6 mm net revenues, 6.6 mm EBITDA and 4.3mm sugar produced are from Raízen while 9 parks, 32 mm ton biomass processing capacity, 0.3 GW of Bioelectricity Generation Capacity, 10.5 mm net revenues, 2.3 mm EBITDA and 1.8 mm sugar produced are from Biosev (2) Includes ethanol volume from the Marketing & Services segment. (3) As of end for the year ended March 31, 2021 (4) Average last 3 years and considering as ROACE the ratio of the Company's EBIT/ (Total Assets – Current Liabilities ) (5) Considers 1,100 Grupo Nós stores in Brazil and 200 Shell convenience stores in Argentina. (6) For the year ended March 31, 2011.



# INTEGRATED ENERGY PLATFORM

One-stop-shop partner for the Energy Transition offering **competitive low carbon solutions**






## EXCELLENCY PILLARS

-  Low Carbon Solutions
-  Operation Traceability
-  Circular Economy
-  Sustainable Value Chain
-  Feedstock Control (Biomass)

## INTEGRATED PORTFOLIO



## CUSTOMER

-  Powering Industries & Businesses
-  Energy to Consumers
-  Proximity & Retail
-  Digital Engagement & Platforms
-  Integrated Distribution Network



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## **ETHANOL**

### CURRENT AND FUTURE PERSPECTIVE

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# ETHANOL | LEADING PLAYER IN KEY MARKETS



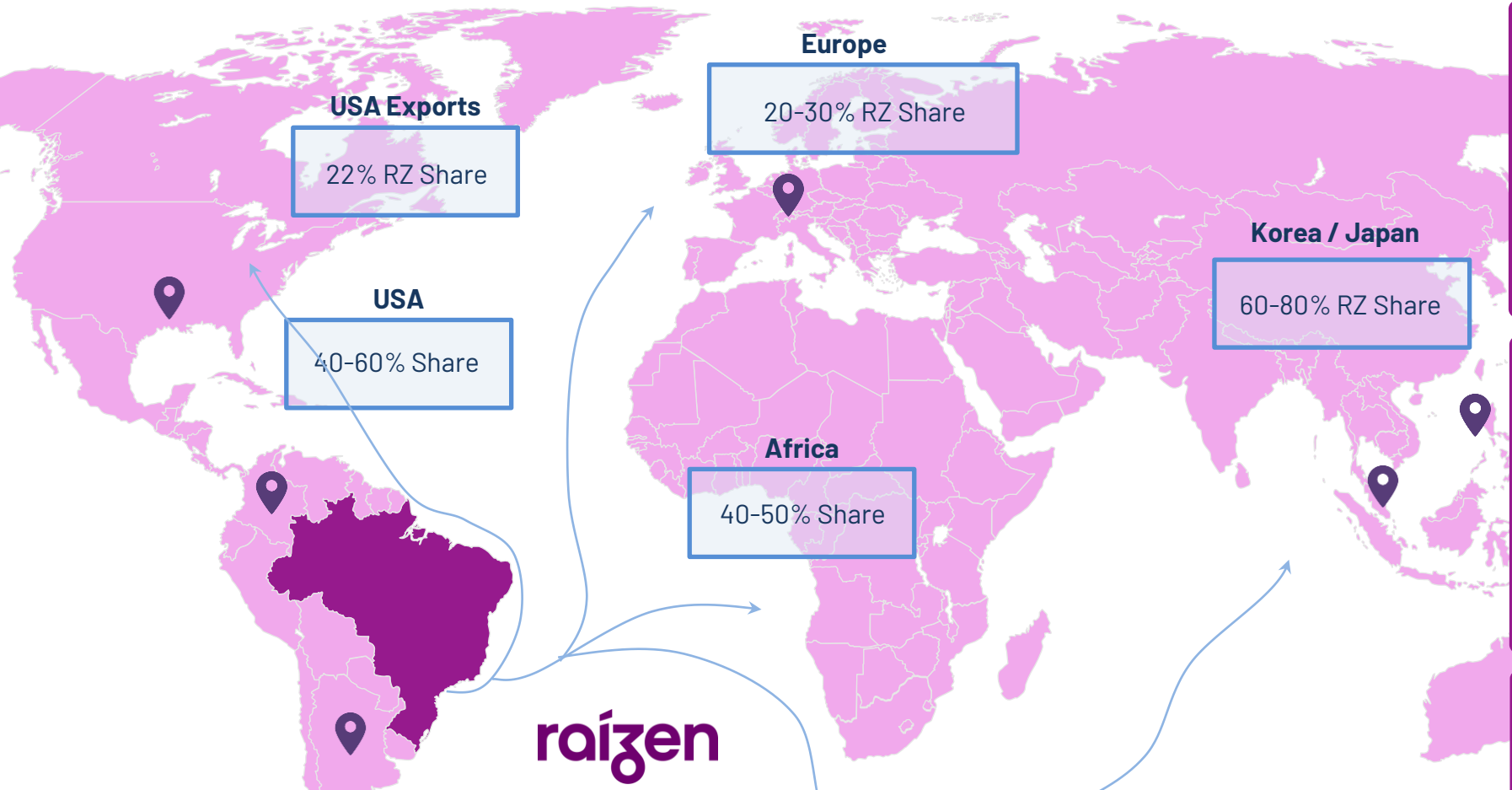
LEVERAGED BY INFRASTRUCTURE THAT ENABLES DIFFERENTIATED SOLUTIONS

 **USA**  
Global exports:  
3,32 Mln cbm (56%)

**Raízen's share:**  
22%

 **Brazil**  
Global exports:  
1,81 Mln cbm (21%)

**Raízen's share:**  
65%



Raízen Own System	9mIn cbm
Raízen Total	14mIn

**+50**  
Countries with  
Raízen products  
Sugar, Ethanol &  
Oil Products

**+400**  
Counterparts in  
sales and purchases  
Sugar, Ethanol &  
Oil Products

**32%**  
Major International  
Ethanol Trade Flows



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**ETHANOL – E2G**

FULFILLING THE PLAN

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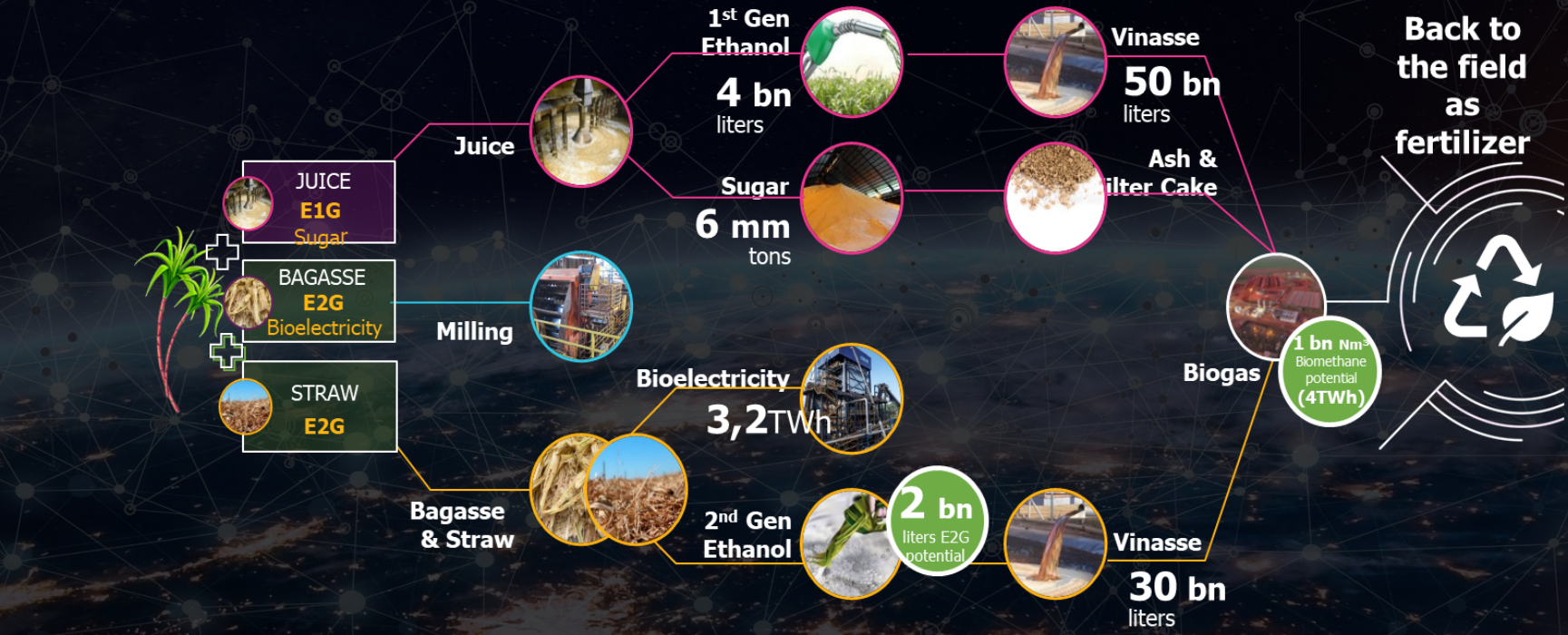


# Raízen - Bioenergy Parks - Raízen Potential

Efficient and Sustainable land use = profitable Circular Economy

## Excellence

-  Traceability in operations
-  Sustainable Value Chain
-  Robust Feedstock Control (Biomass)



1st Gen Ethanol

4 bn liters



2nd Gen Ethanol

2 bn liters



Biogas

1 bn liters



Bioelectricity

3,2TWh



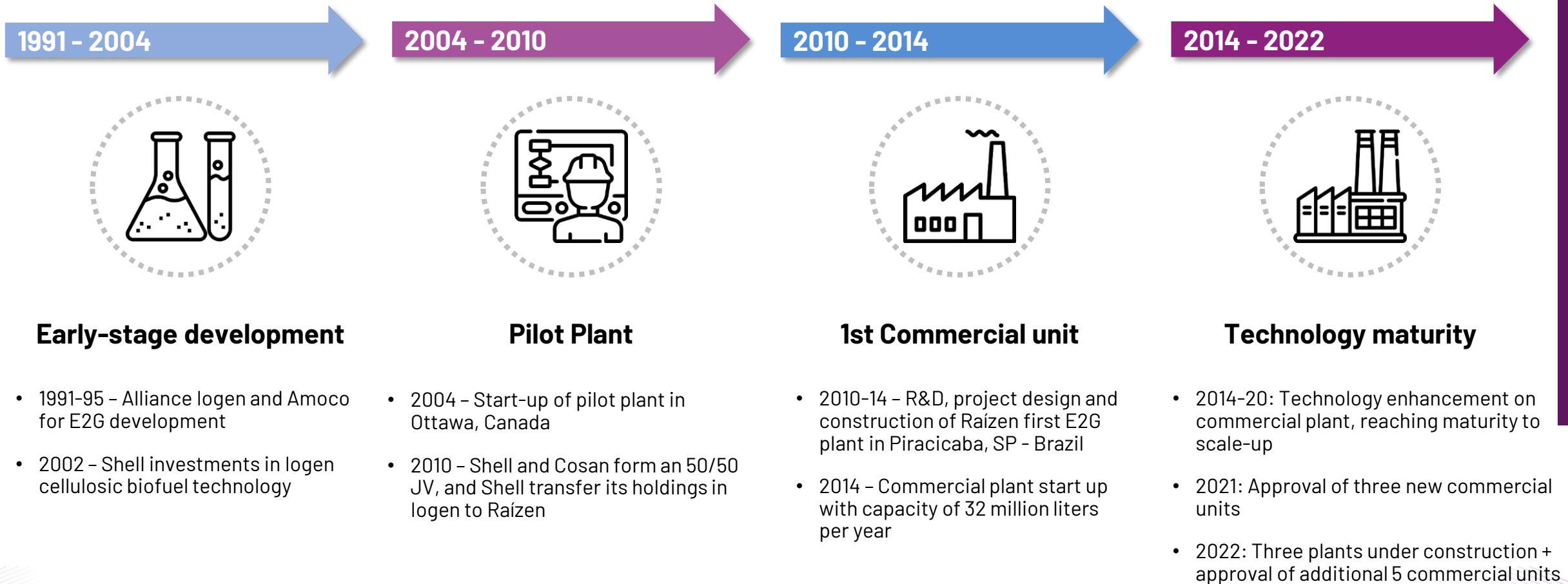
Sugar

6 mm tons



## PROVEN TECHNOLOGY

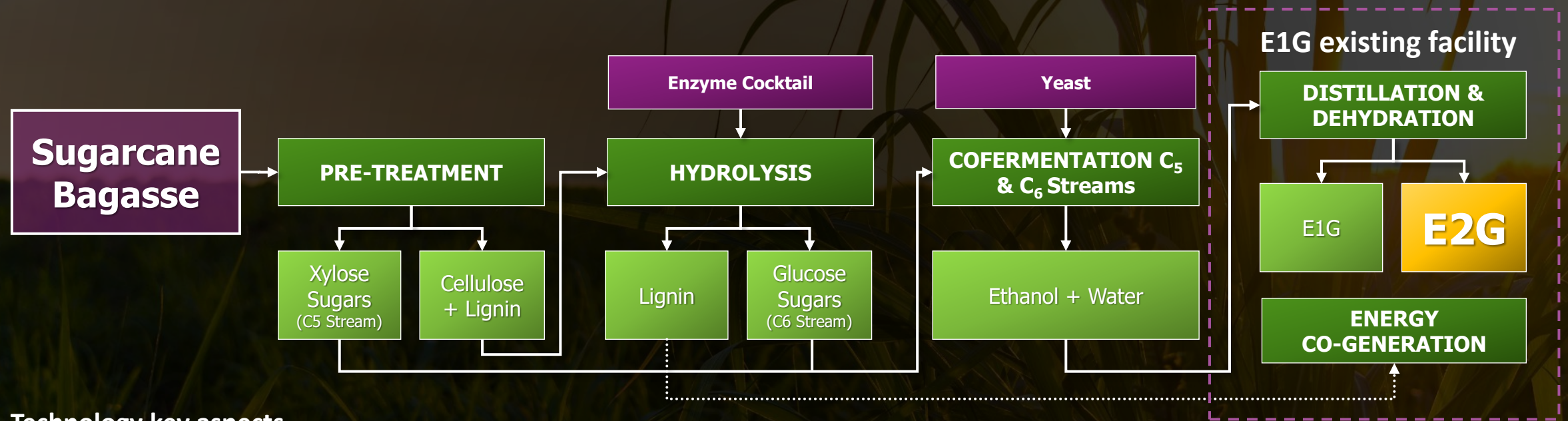
**Raízen's technology has evolved with success in the last 30 years achieving a unique technological position in the market**





# RAÍZEN E2G PROPRIETARY PROCESS AND INTEGRATION TO E1G MILLS

Raízen technology has an integrated approach to smartly valorize biomass and take advantage of existing E1G assets



## Technology key aspects

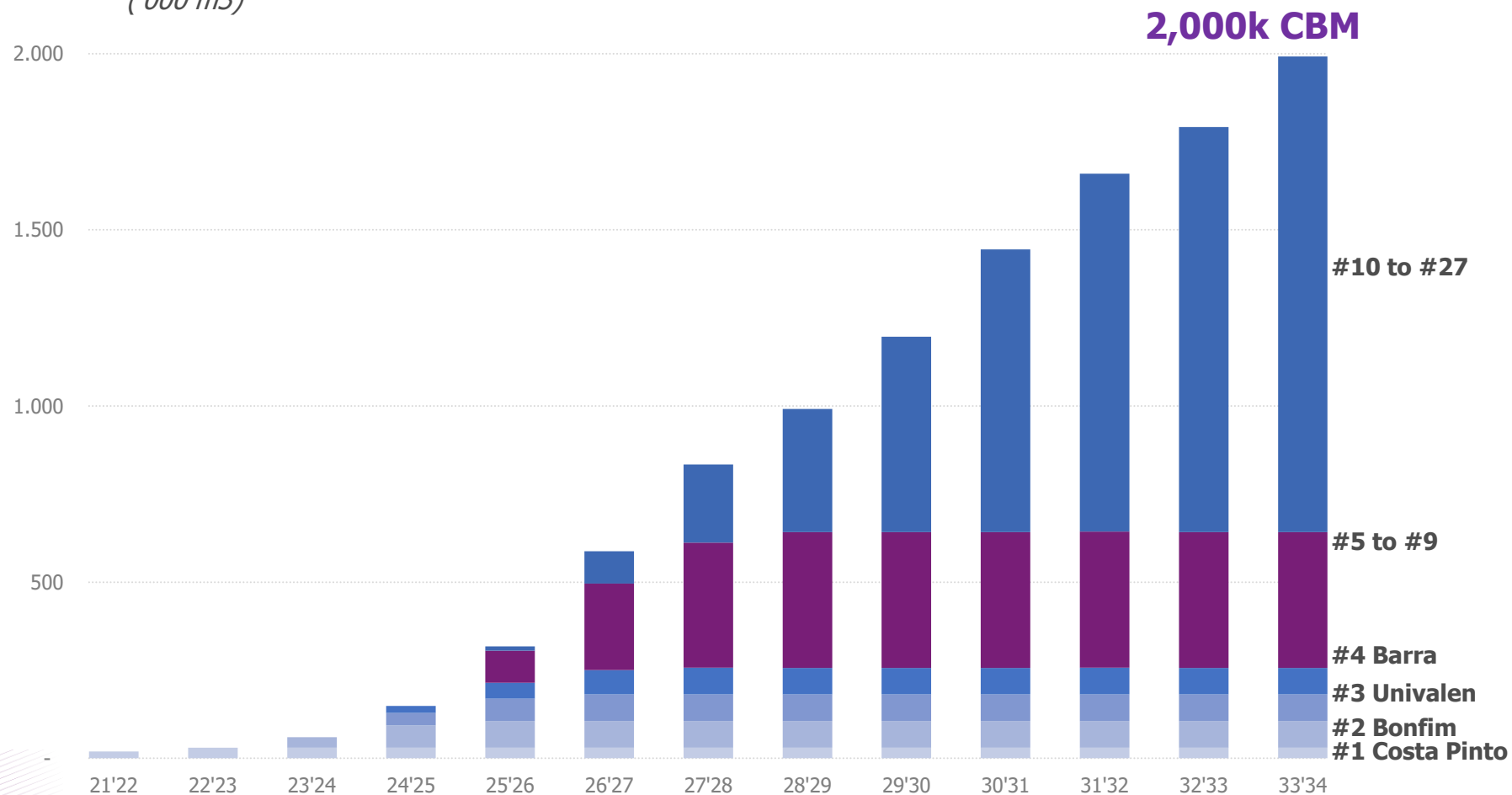
- Competitive & fully synergetic technology with existing sugarcane E1G mills
- Proprietary Pre-treatment with +25 years of development and +8 years of industrial expertise
- Proven operational know-how, with many solutions and improvements included
- Robust engineered yeast able to conferment C5 & C6 with high productivity and yields
- World-class tailor-made enzymes supply with guaranteed quality

# RAÍZEN'S E2G

## FULFILLING THE PLAN



### Capacity Ramp-Up (*'000 m3*)



**#5 to #9 Plants**  
OFFTAKE **CONTRACT SIGNED**

**#3 Univalen e #4 Barra**  
ANNOUNCED **2022**  
COMMISSIONING **2024**  
[ALREADY UNDER CONSTRUCTION]

**#2 Bonfim**  
ANNOUNCED **2021**  
COMMISSIONING **2023**

**#1 Costa Pinto**  
OPERATING IN **FULL CAPACITY 30,000**  
**CBM/YEAR**

**CUMULATIVE PRODUCTION**  
**120,000+ CBM**





# PHOTO - BONFIM MILL

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# PHOTOS - BONFIM MILL

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# PHOTO - UNIVALEM MILL

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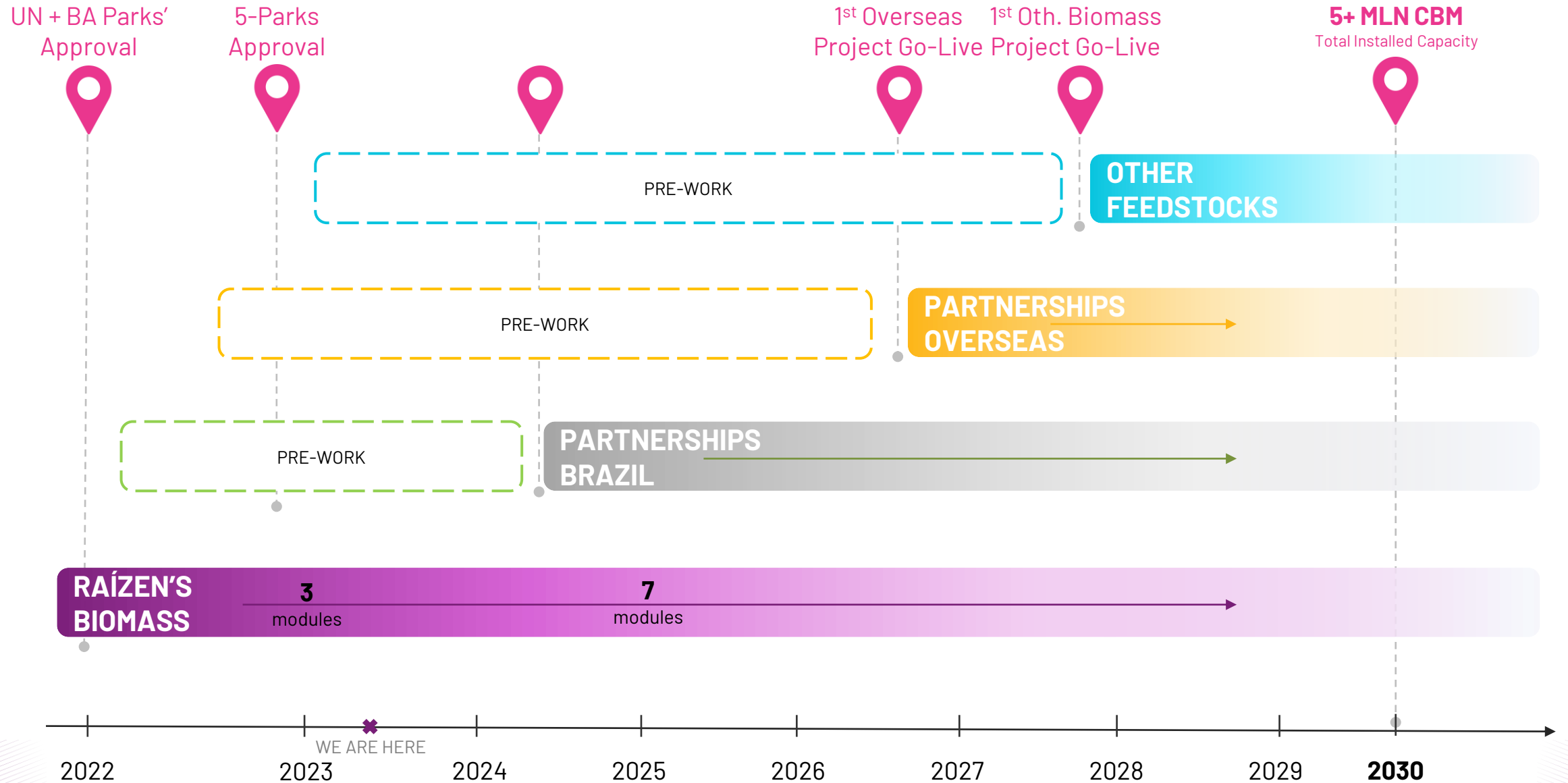
# PHOTO - BARRA BONITA MILL

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# RAÍZEN'S E2G ROADMAP 2030



-> PEOPLE! to roll-out the construction of multiple plants in parallel:

- > Key proprietary equipment production
- > Engineering/construction
- > Plant startup and operation
- > Technology optimization

-> Technology optimization (fine tuning)

- > Utilization of the by-products. GMO yeast that can consume by-products with low concentration (organic acids, arabinose, inhibitors, etc..) to increase carbon conversion yields
- > Increase enzyme efficiency and unit cost
- > Reduce ashes content in the bagasse/straw (reduce maintenance costs)

-> Lignin application





raízen