

# **BNDES & Cellulosic Ethanol (E2G)**

**Workshop on Second Generation Bioethanol and Biorefining**

CTBE, Campinas, November 2017



# Recent History of E2G – The USA case

As of July 2008, there were 55 cellulosic biorefineries either completed, under construction or in the planning stage in a total of 31 states across the country. Altogether they create an expected capacity of 629 million gallons per year (MGY) and a potential expansion to 995 MGY. Most of the demonstration and commercial scale facilities are scheduled to start operation on 2009 or 2010.

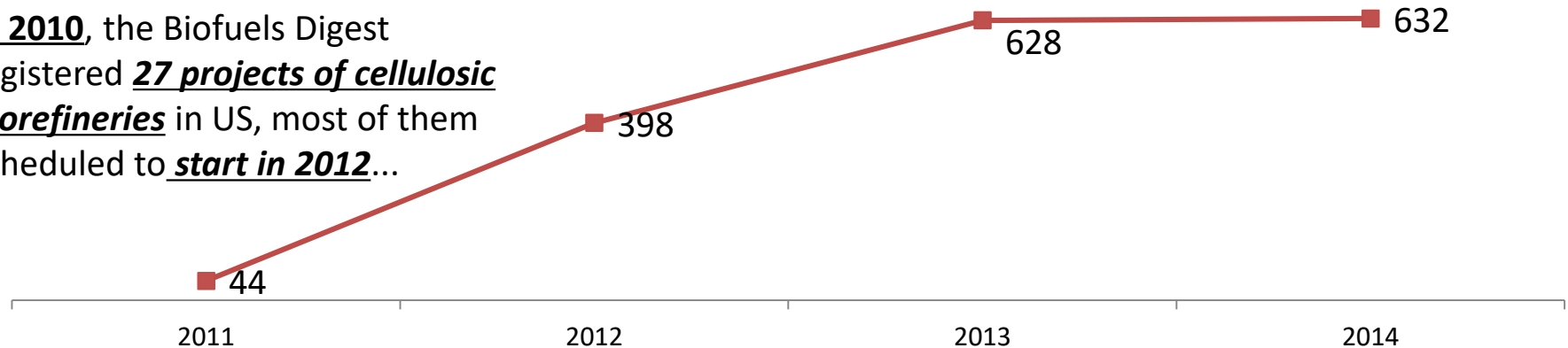
**Table 4.1**  
**Lignocellulosic Biorefineries by Scale and Stage of Development**

	Commercial Scale <sup>a</sup>	Demonstration Scale <sup>b</sup>	Pilot Scale <sup>c</sup>
Completed	-	2	3
Under Construction	1	3	5
Planning Status	21	14	6
<b>Total</b>	<b>22</b>	<b>19</b>	<b>14</b>

Source: USDOE

## Perspectives for USA E2G production in 2010 (MGY)

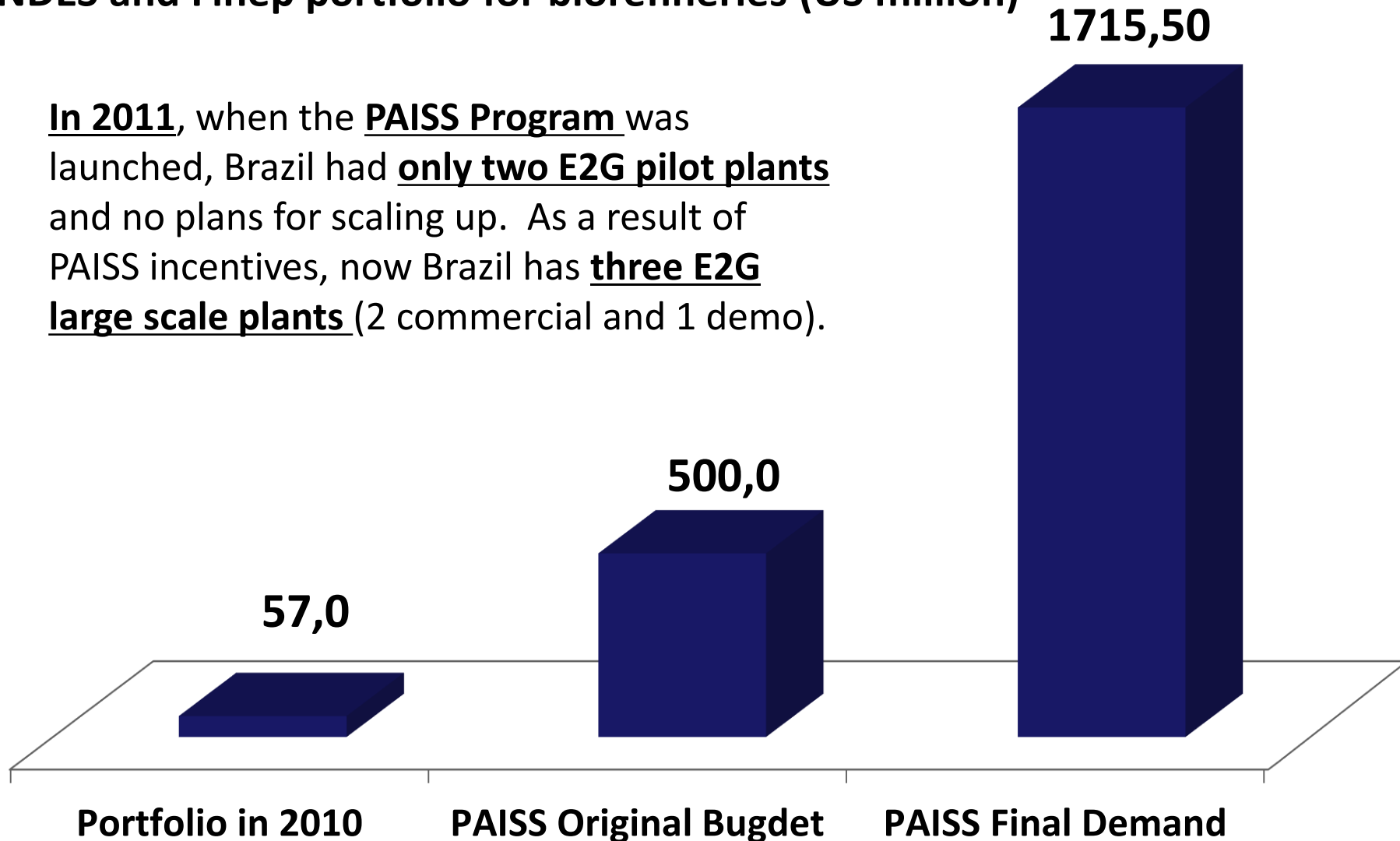
**In 2010**, the Biofuels Digest registered **27 projects of cellulosic biorefineries** in US, most of them scheduled to **start in 2012**...



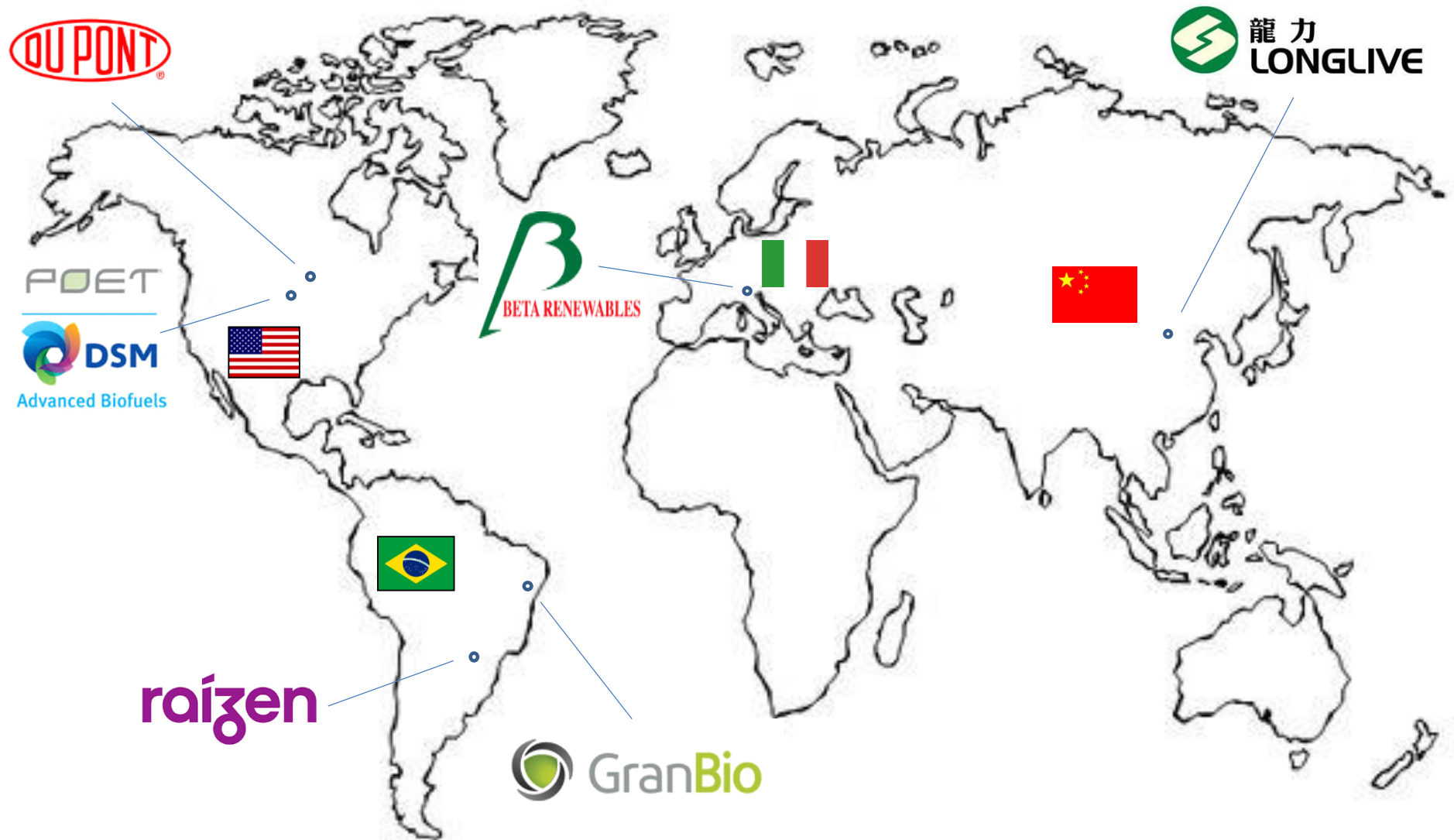
Source: Biofuels Digest

## BNDES and Finep portfolio for biorefineries (US million)

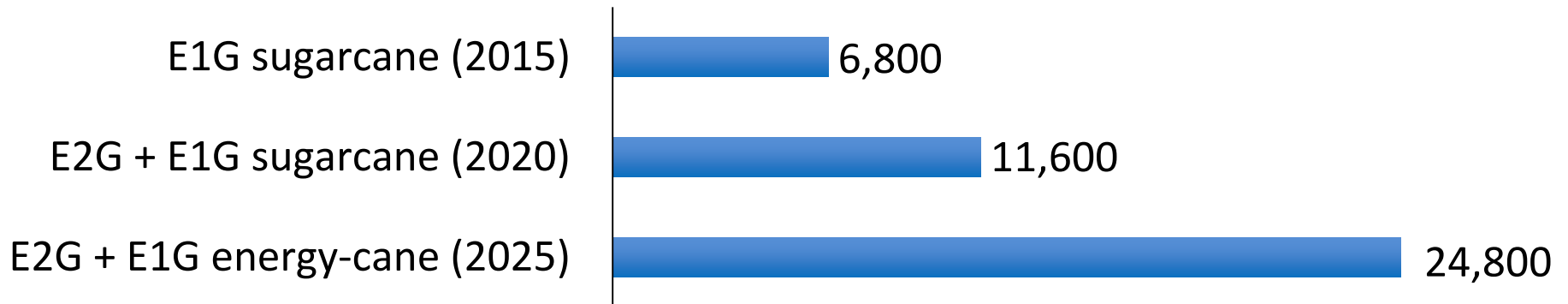
In **2011**, when the PAISS Program was launched, Brazil had only two E2G pilot plants and no plans for scaling up. As a result of PAISS incentives, now Brazil has three E2G large scale plants (2 commercial and 1 demo).



# Current E2G commercial plants

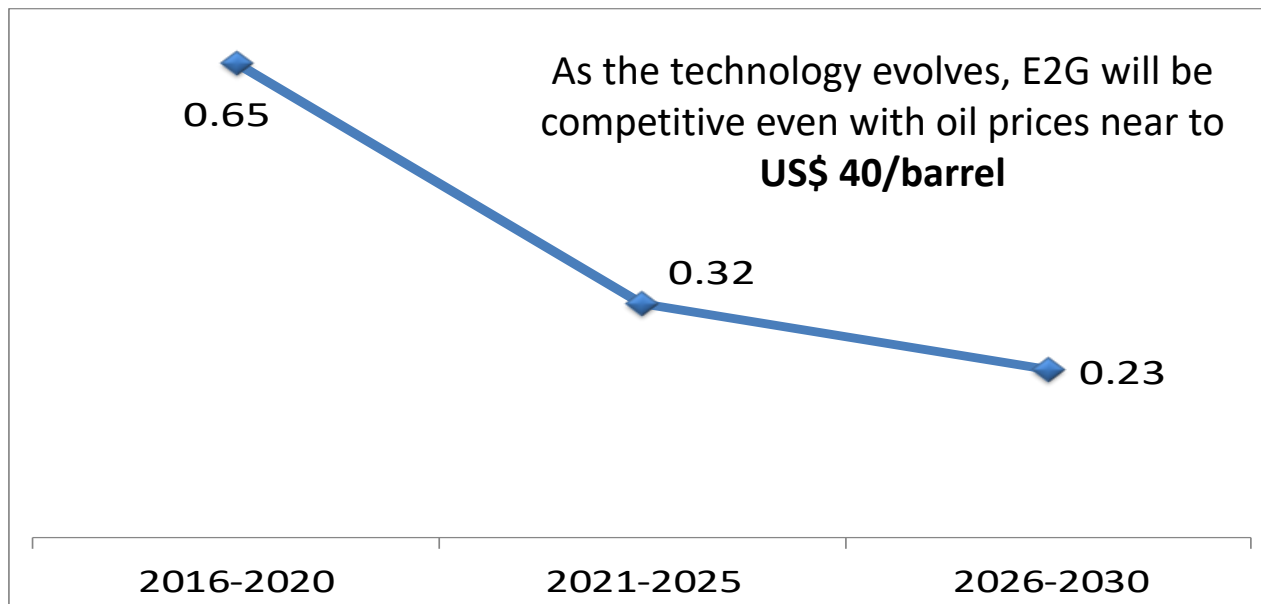


## Productivity (liters/ha)



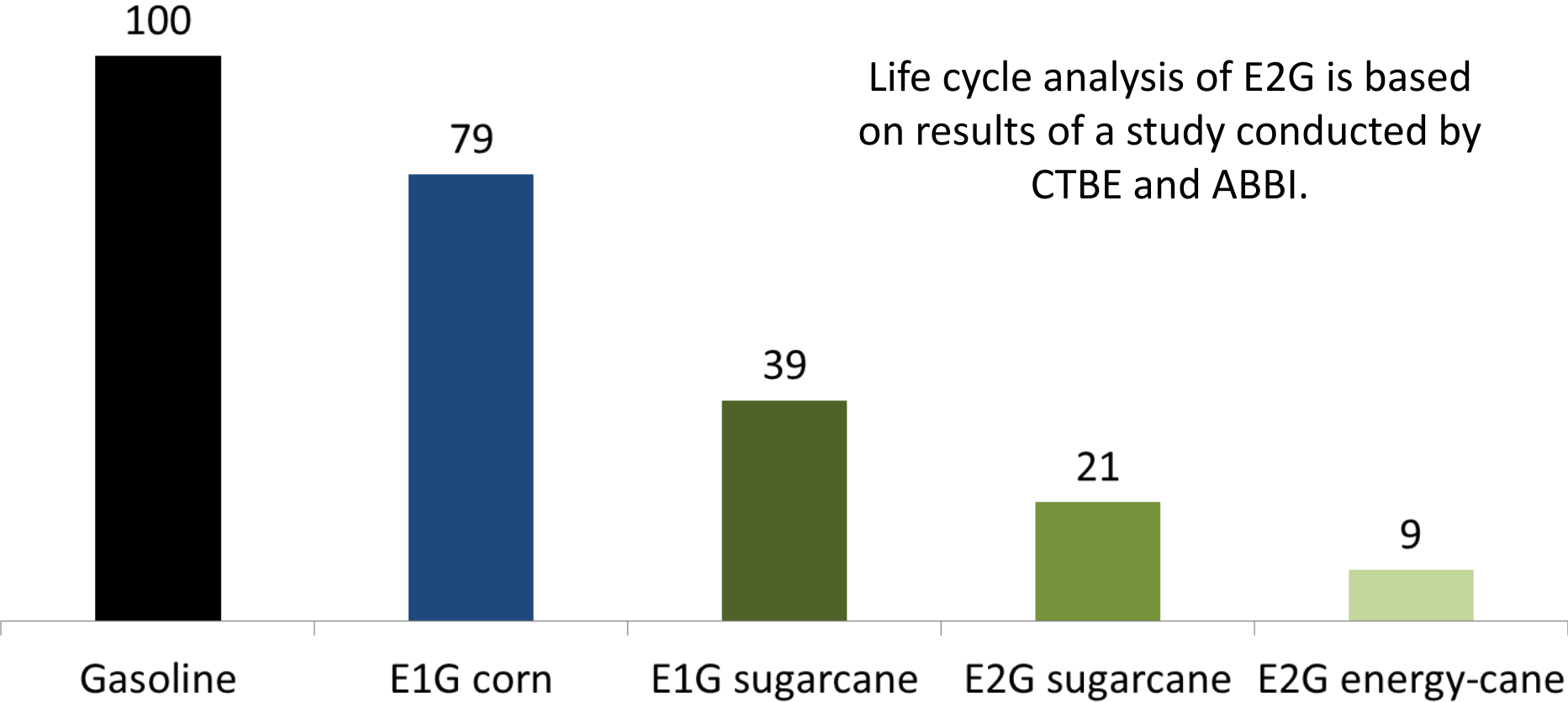
Source: BNDES and CTBE

## E2G minimum selling price (US\$/liter)



Source: BNDES and CTBE

## Potential reduction of CO2 emitted from gasoline (base 100)



Source: US EPA for gasoline and E1G.



RenovaBio



**Member Countries**



**Thanks for your attention!**

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