

BRAZILIAN SUGARCANE INDUSTRY ASSOCIATION
UNIÃO DA INDÚSTRIA DE CANA-DE-AÇÚCAR



California Energy Commission

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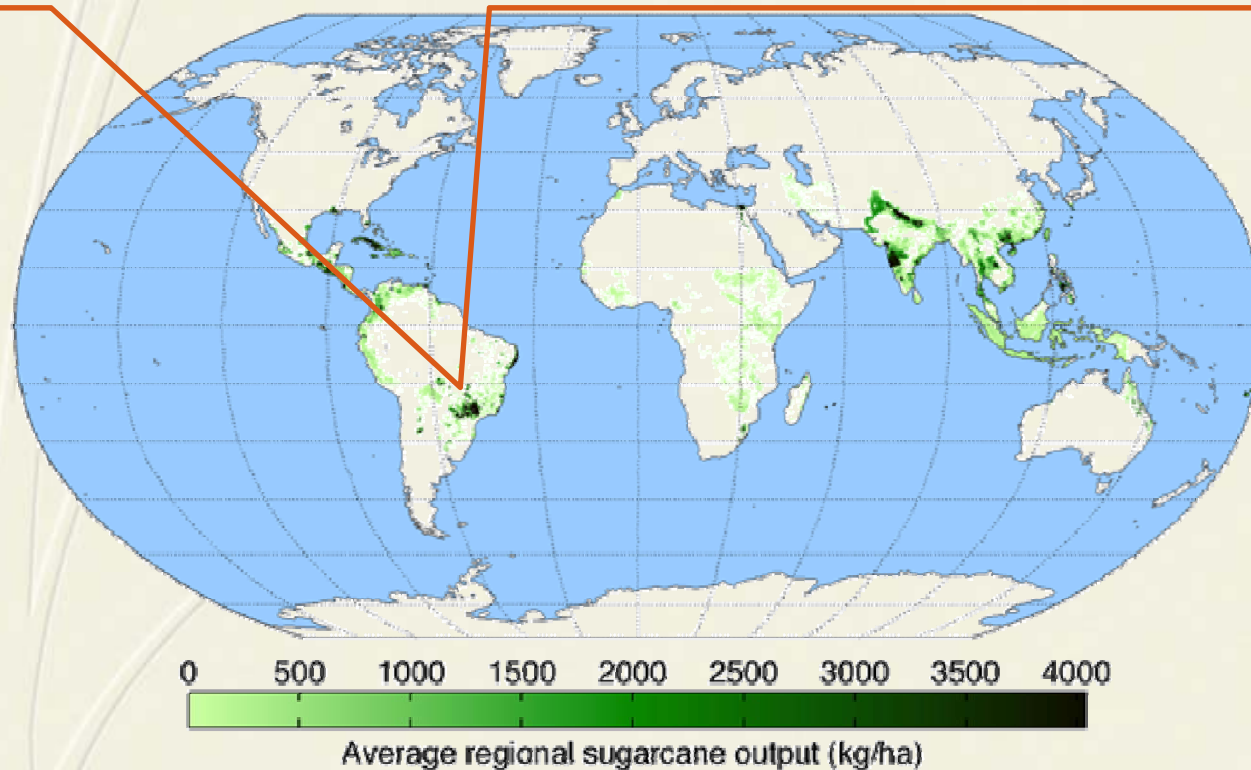
Brazilian Sugarcane Ethanol in California

Potential Growth Projection and Outlook for Exports

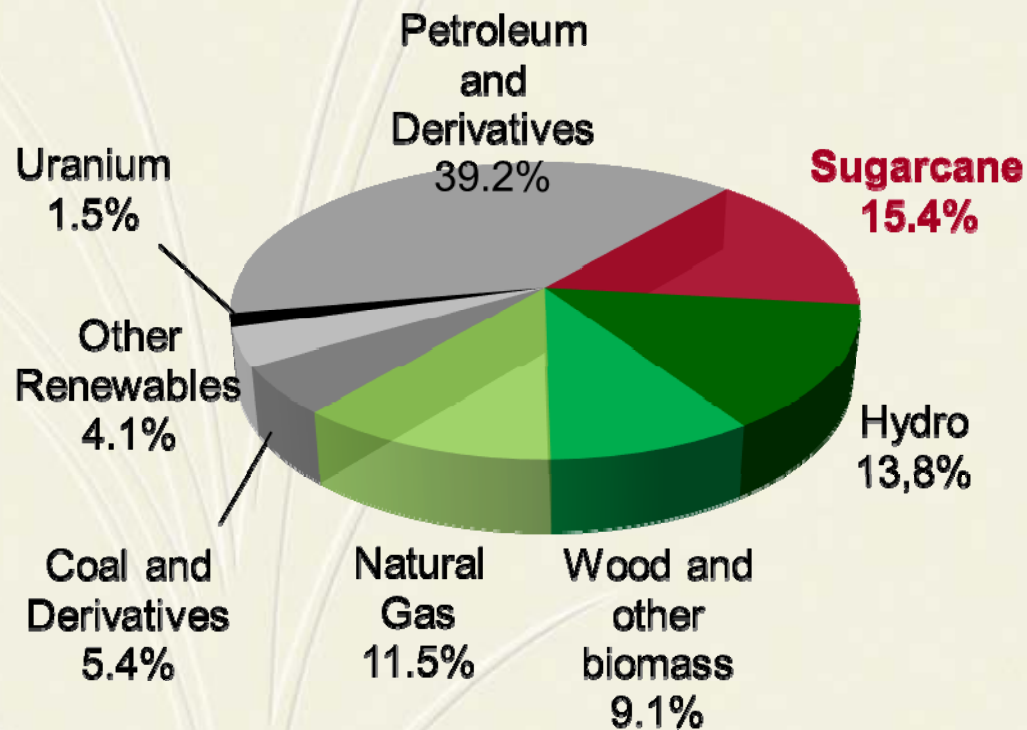
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BRAZIL IS #1 IN SUGARCANE

- ✓ Brazil is the **world's largest cane producer**, twice #2 India
- ✓ Brazil's **South-Central region accounts for 90%** of country's cane harvest
- ✓ Brazil's sugarcane sugar **yields have grown at 3% CAGR** since late 1970s



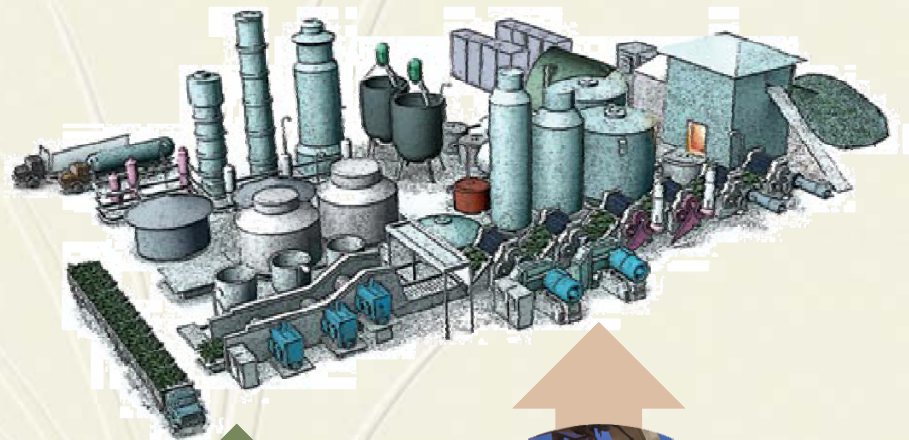
CANE IS #1 RENEWABLE ENERGY IN BRAZIL



- ❖ Renewable energy represents **42.4% of Brazil's energy mix.**
- ❖ Sugarcane is Brazil's **#1 source of renewable energy** (ethanol + bioelectricity), the second overall only behind petroleum.
- ❖ **Almost 80% of all power generation is hydro-based** but marginal electricity supply growth is critical focus now.

UNICA SPEAKS FOR BRAZILIAN INDUSTRY

UNICA is the leading sugarcane industry association, representing over 130 producers and mills and responsible for 60% of all ethanol and sugar production in Brazil.



SUGAR
38 Million Tons



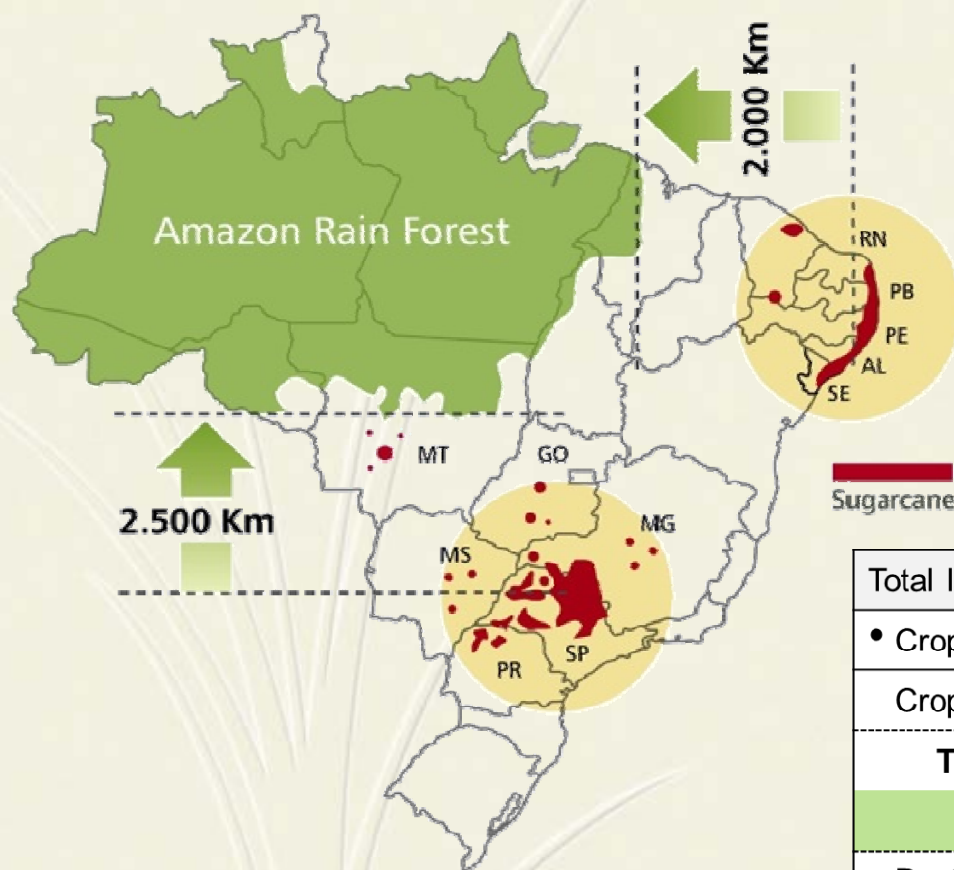
ETHANOL
6 Billion Gallons



ELECTRICITY
16,000 GWh

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UNICA SPEAKS FOR BRAZILIAN INDUSTRY



Sugarcane occupies 1% of Brazil's total land to produce almost 600 million tons per crop year

	Million hectares	% of the Brazilian territory
Total land area	852	
• Crop and pasture land	258	30%
Crop land	60	7%
Total sugarcane area	9.5	1%
Sugarcane area for ethanol	4.6	0.5%
Pasture land	198	23%
• Native Vegetation	554	65%
• Other Uses	40	5%

1 Hectare = 2.5 acres

Source: UNICA, CONAB, IBGE. For the figures on land use: Institute for International Trade Negotiations – ICONE; The Brazilian Institute of Geography and Statistics – IBGE (PAM 2010 and Censo Agropecuário 2006); Brazilian Ministry of the Environment – MMA; National Institute for Space Research - INPE (TerraClass) and Agricultural Land Use and Expansion Model Brazil Ag-LUE-BR (Gerd Sparovek, ESALQ/USP). Produced by UNICA.

POLICIES TO ENSURE SUSTAINABLE GROWTH

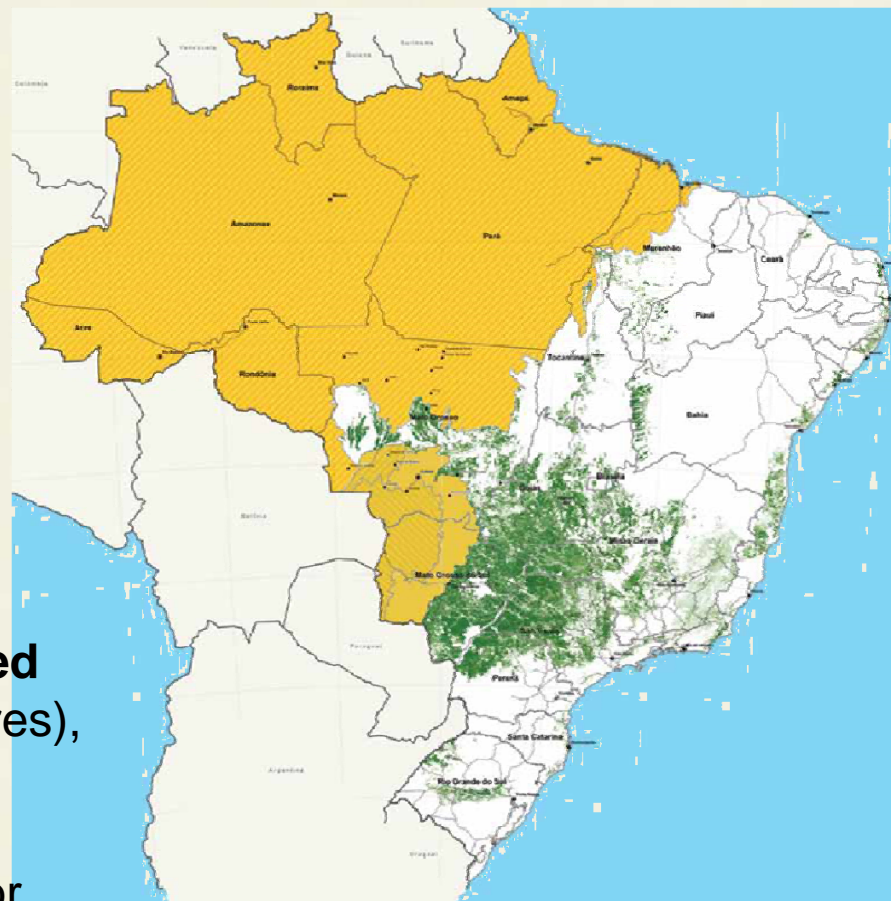
At UNICA's urging, the Federal Government has implemented regulations that:

- Excludes sugarcane plantation in **sensitive biomes** such as the Amazon forest and Pantanal wetlands.
- Excludes sugarcane cultivation on **native vegetation** (e.g., cerrado, grasslands)

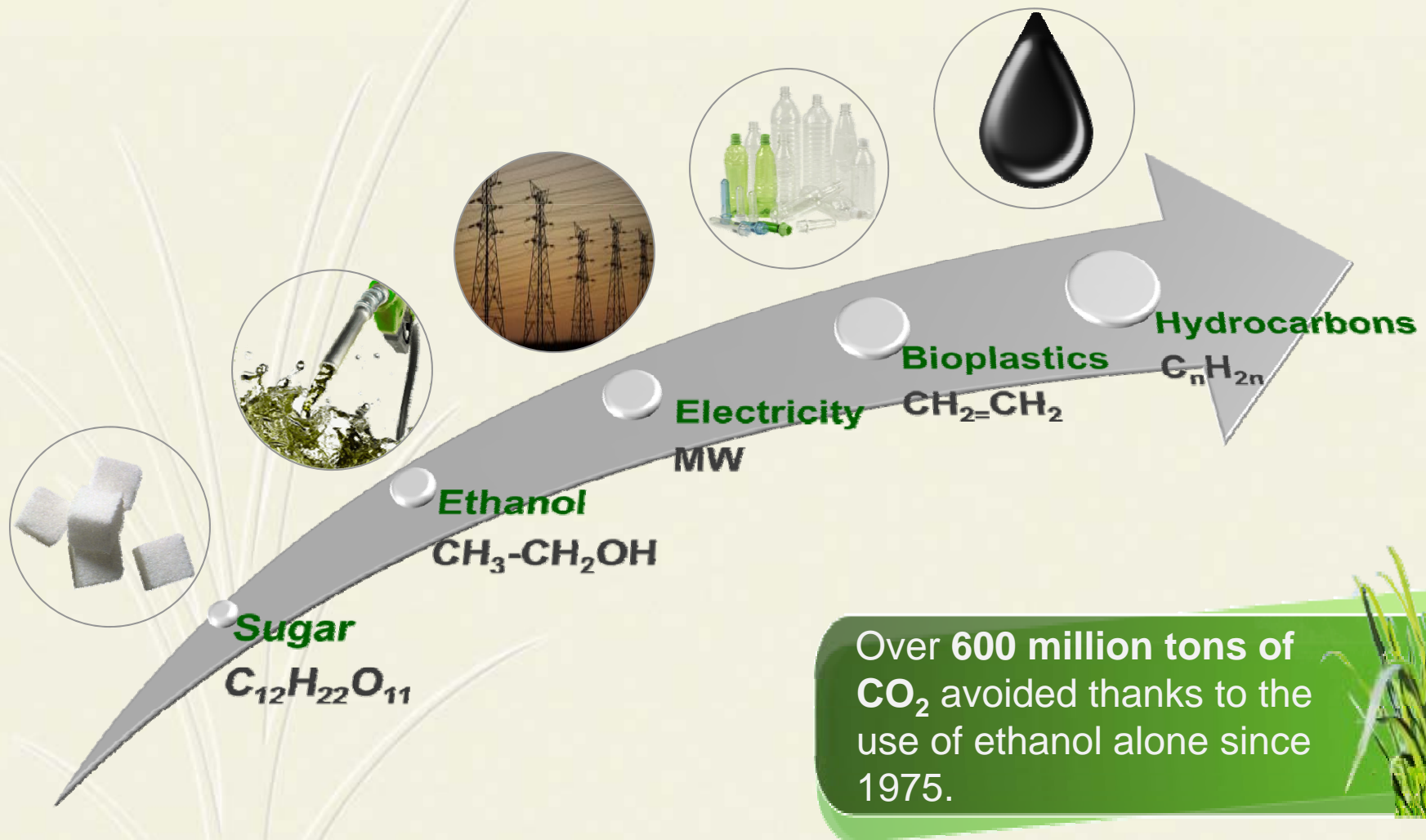
EMBRAPA undertook **satellite mapping** exercise and identified **areas suitable for sugarcane production** based on environmental, economic and social criteria.

Result is that **sugarcane expansion is allowed on about 65 million hectares** (160 million acres), which is equivalent to 7.5% of Brazil's territory.

Today about 1% of Brazil's total land is used for sugarcane – food, ethanol and electricity.



PRODUCTS SUGARCANE MAKES POSSIBLE



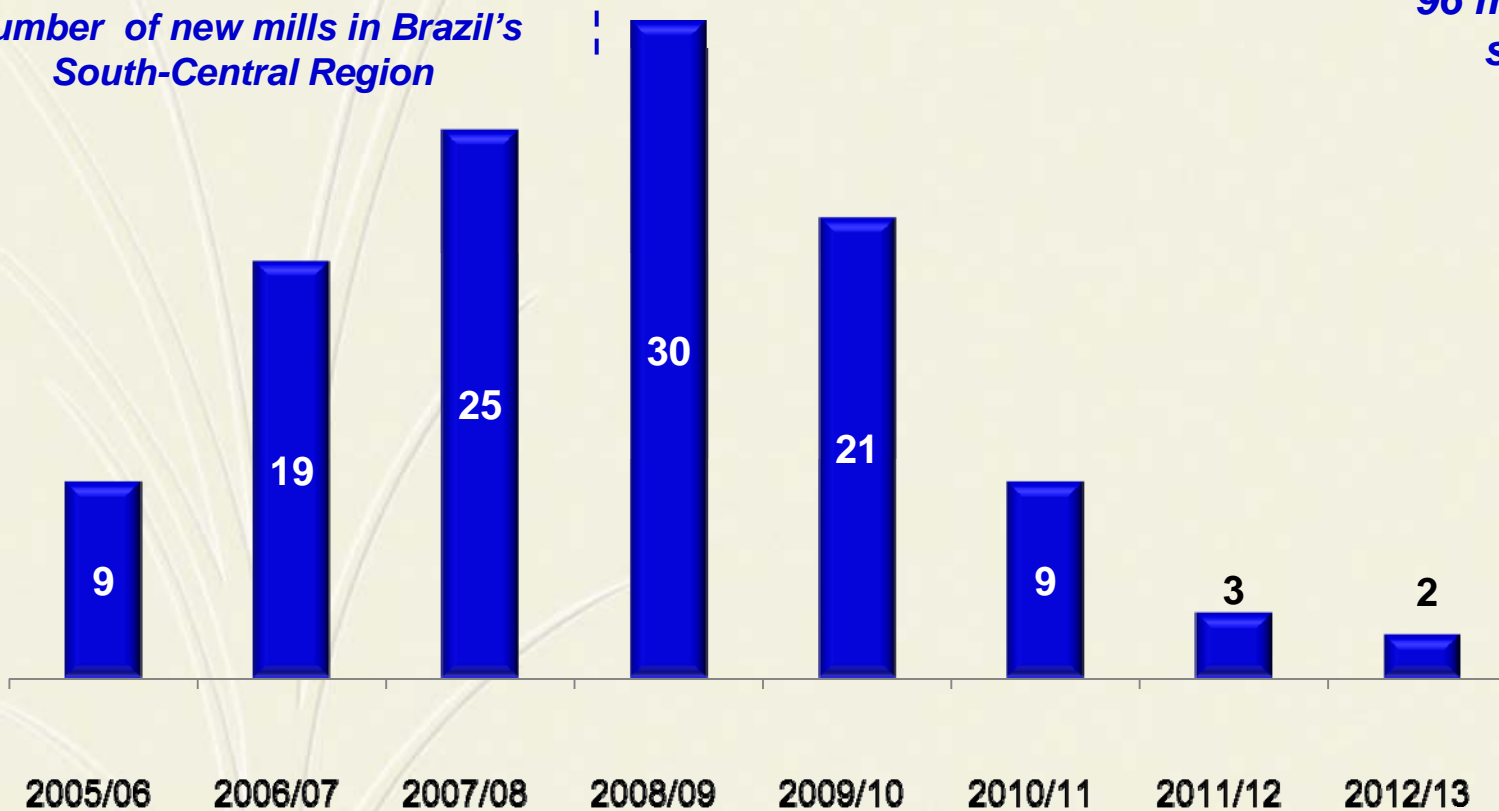
MAJOR STRUCTURAL CHANGES

- ***Investments change focus:*** from building new mills to purchasing brownfields – consolidation
- *Strong M&A Activity involving nearly 150 MM Ton*
- ***Renewed effort to optimize production and sales:*** investments in logistics, technology, agricultural and industrial structures

NUMBER OF NEW SUGARCANE MILLS IN BRAZIL

Number of new mills in Brazil's South-Central Region

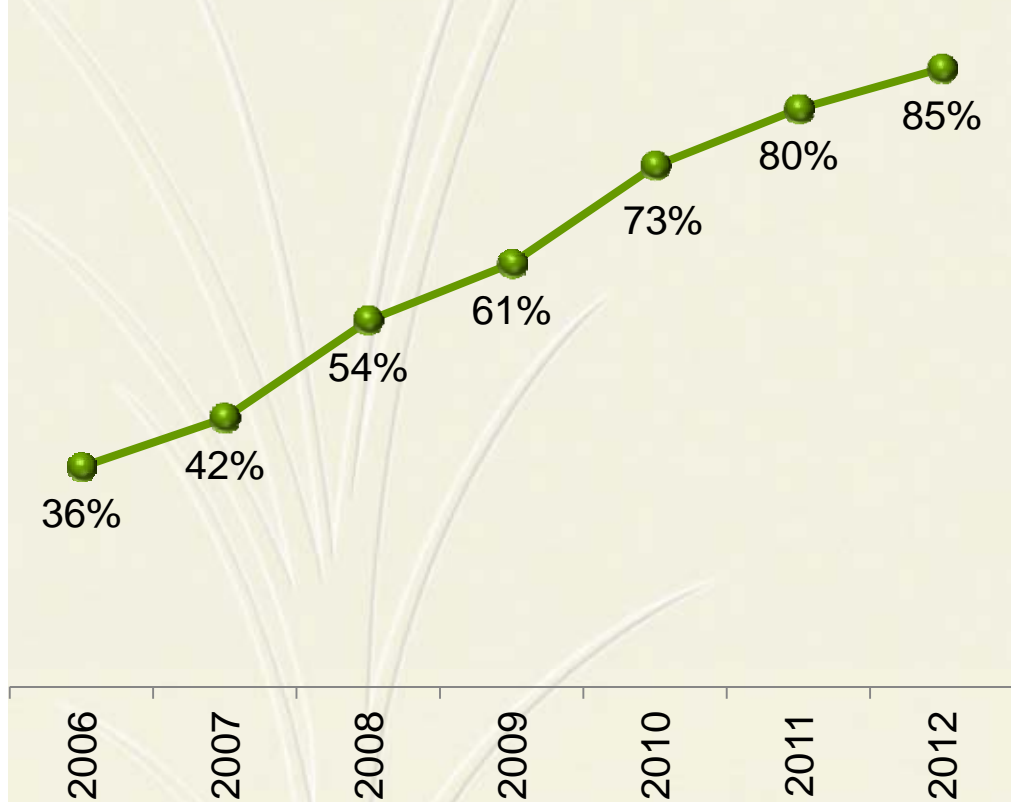
*Sugarcane crushed in 2012/2013 harvest year:
96 million tons of sugarcane*



→ ?

INCREASE IN MECHANIZED HARVESTING IN SOUTH-CENTRAL BRAZIL

Share of cane fields harvested mechanically



Mechanized harvesting of more than 4 million hectares between 2006 and 2012

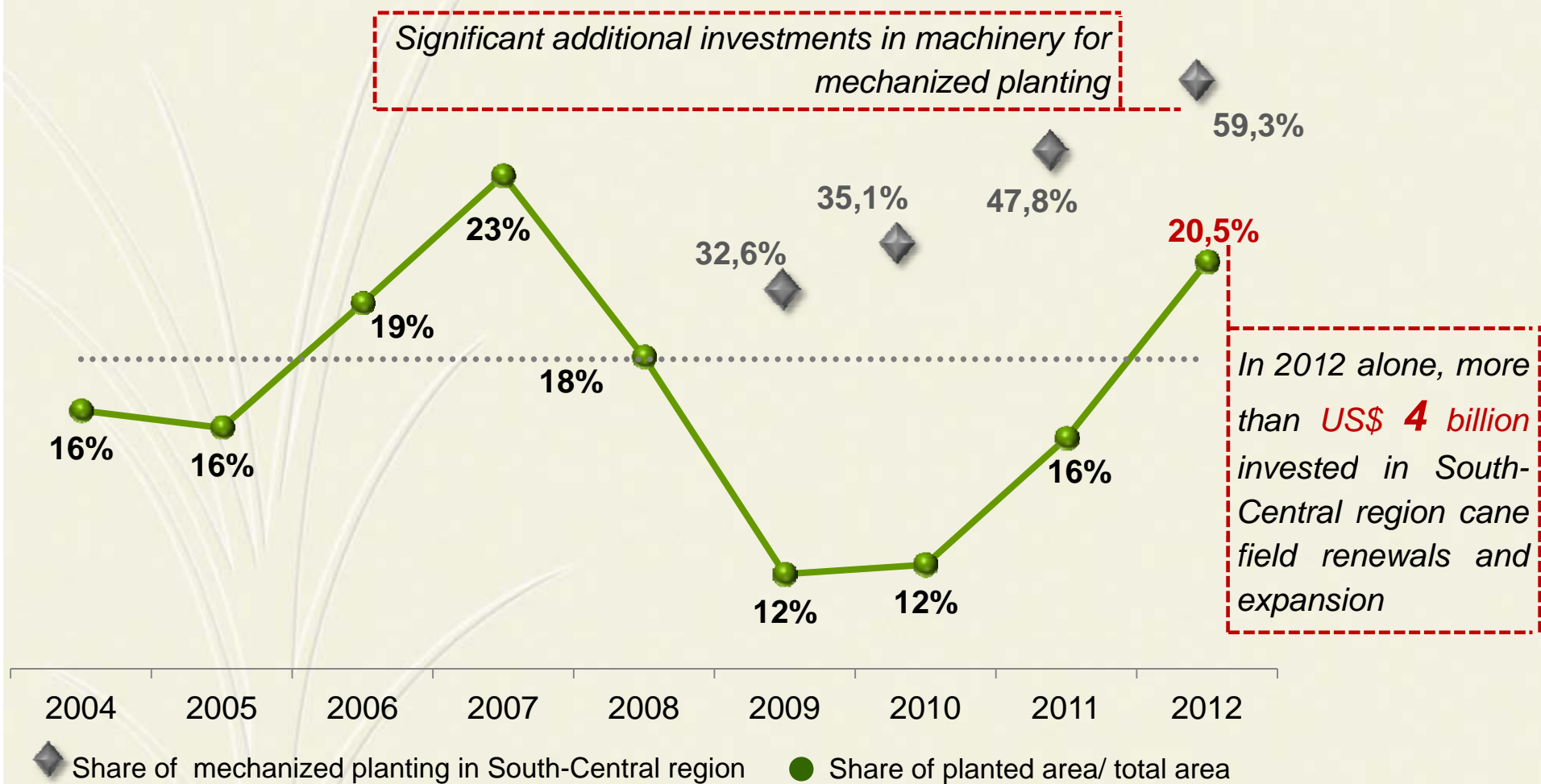
Mechanization demanded:

- ✓ 5,700 trucks and trailers
- ✓ 3,400 harvesters
- ✓ 13,600 trolleys
- ✓ 6,800 tractors

Total equipment purchases:

US\$ 4.5 billion (in current prices)

IMPROVED CANE FIELD RENEWAL RATE... ... WITH INCREASED MECHANIZED PLANTING



LOGISTICS FOR ETHANOL DISTRIBUTION AND EXPORTS ALSO TARGETED WITH NEW INVESTMENTS



Extension:

- ✓ Pipeline: **1,261** km
- ✓ Waterways: **750** Km
- ✓ Covers **five** Brazilian states and **45** municipalities

Transport capacity:

~ **20** billion liters/year

Estimated investments to 2017

US\$ **3.5** billion

*Estimated reduction in logistics-related costs ranges
form **20%** to **30%** to 2015*

The background of the slide is a close-up photograph of several sugarcane stalks, showing their characteristic ribbed texture and green color. The stalks are oriented vertically, creating a sense of height and growth.

Current Projections

Cane Ethanol Exports

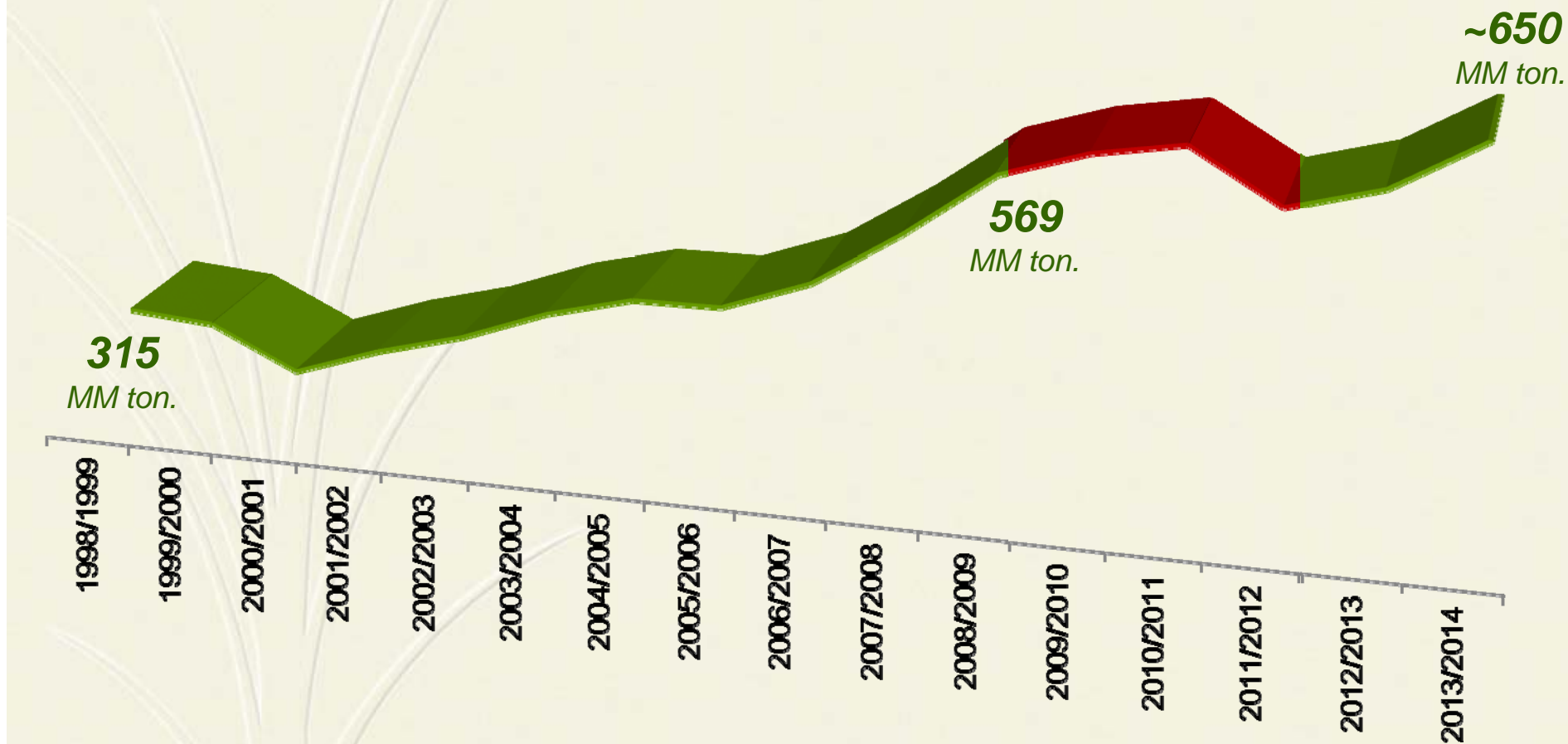
WHAT UNICA PROJECTED IN 2010

	2009/10	2015/16	2020/21
Sugarcane production (million tons)	602.19	829	1,038
Sugar (million tons)	32.96	41.3	45.0
Domestic Market and Stocks	8.87	11.4	12.1
Export	24.09	29.9	32.9
Ethanol (billion gallons)	6.79	12.4	17.2
Domestic Market and Stocks	5.95	9.2	13.1
Export	0.84	3.2	4.1
Bioelectricity (MW average)	1,800	8,158	13,158
Share of electricity demand (%)	3%	11%	14%

Note: e = estimated data; potential generation of surplus electricity has been calculated based on the utilization of 75% of the available bagasse and 50% of the available straw, and considering the sugarcane production during most recent harvest, Sources UNICA, Copersucar, and Cogen.

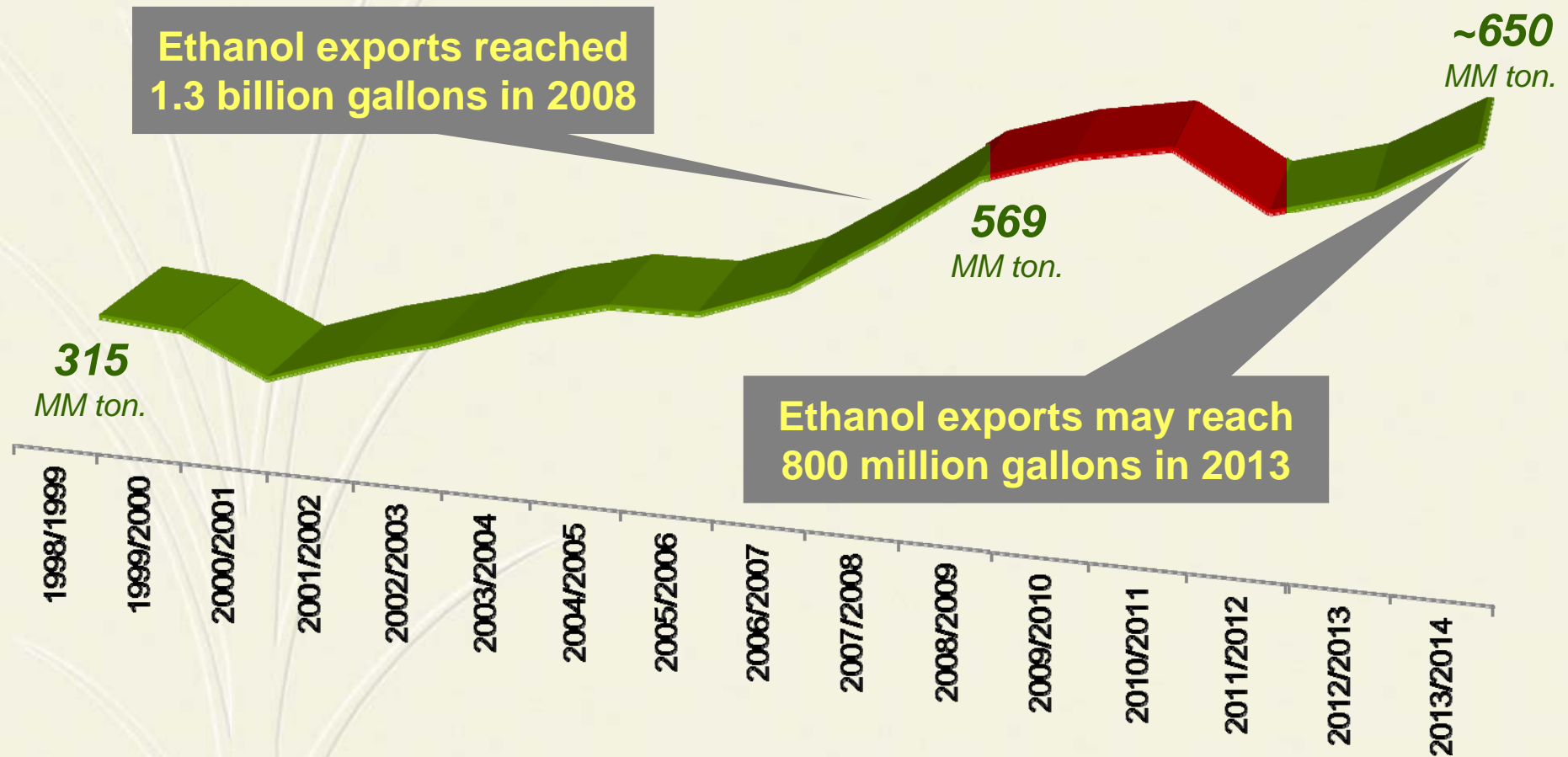
CHANGES TO THE OUTLOOK

Sugarcane Processed in Brazil (1998 to Present)



CHANGES TO THE OUTLOOK

Sugarcane Processed in Brazil (1998 to Present)



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WHAT DRIVES CANE ETHANOL DEMAND

- Until now, sugarcane ethanol demand is driven by domestic demand, namely flex-fuel vehicles (FFVs).
 - FFVs account for half of Brazil's passenger car fleet and growing.
 - Consumers know to use ethanol in FFVs when ethanol is priced no more than 70% of gasoline (E25).
 - Nearly all FFVs opted for ethanol in 2009 but considerably less today.
- Government policy to maintain gasoline prices flat for last seven years led to a migration back to gasoline.
 - Brazil is estimated to be subsidizing gasoline by over \$0.50 per gallon
 - This domestic market distortion constrains ethanol production capacity growth.
- Even without change in government policy, the industry will need to grow to maintain demand at home and abroad.

WHAT UNICA IS PROJECTING TODAY FOR THE SOUTH-CENTRAL REGION'S 2013/2014 SUGARCANE HARVEST

	2013/2014
Sugarcane production (million tons)	589.6
Sugar (million tons)	35.5
Domestic Market and Stocks	9.7
Export (available for export)	25.8
Ethanol (billion gallons)	6.7
Domestic Market and Stocks	6.0
Export	0.7

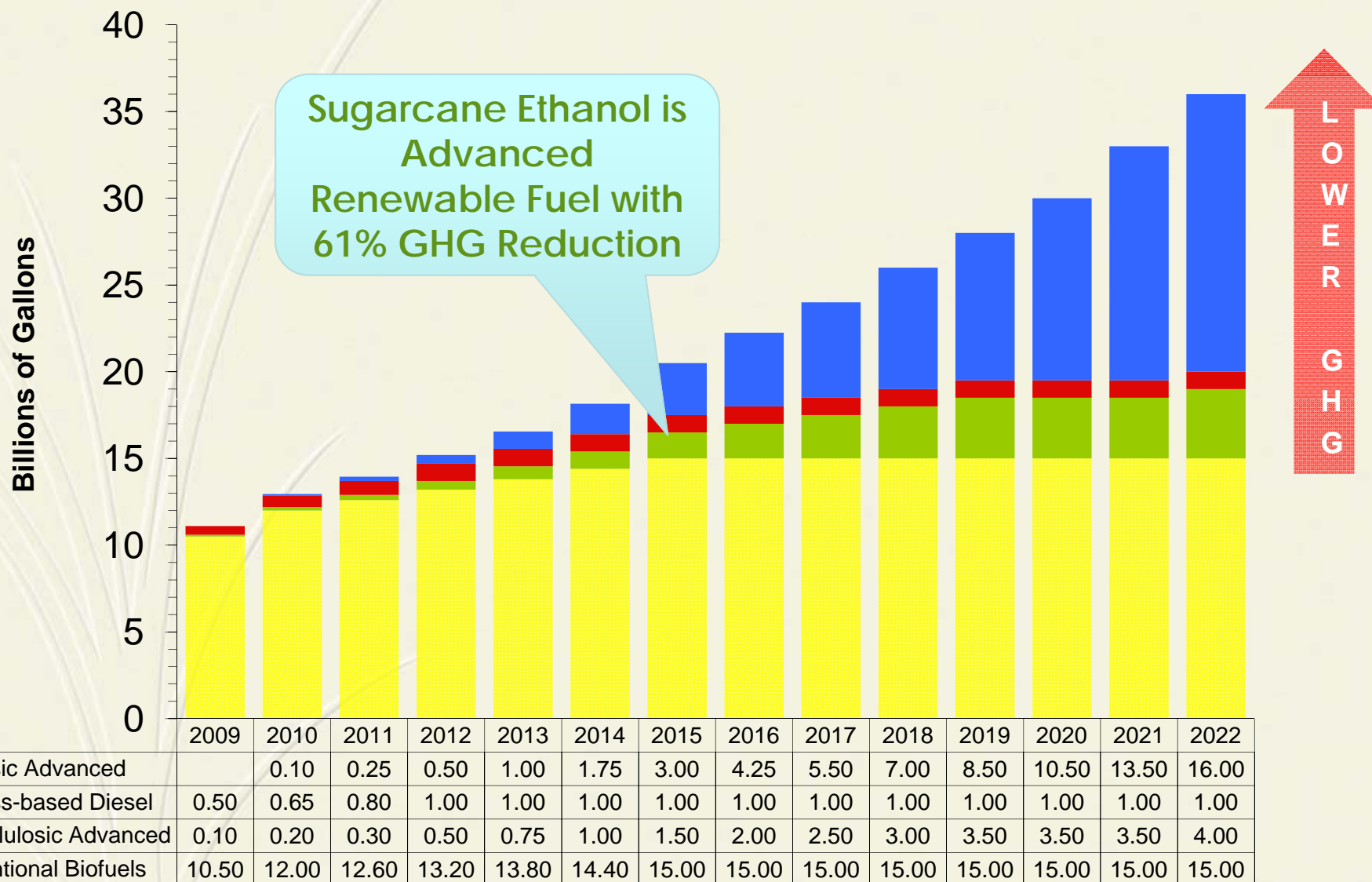
Source: UNICA Note: estimate released on April, 2013.

The background of the slide is a close-up photograph of several sugarcane stalks. The stalks are green and have a distinct ribbed texture. They are arranged vertically, with some stalks in the foreground being more prominent than others in the background. The lighting is soft, highlighting the natural color and texture of the cane.

Sugarcane's Advanced Biofuels

Cane Ethanol in the RFS and the LCFS

U.S. RENEWABLE FUELS STANDARD (RFS-2)

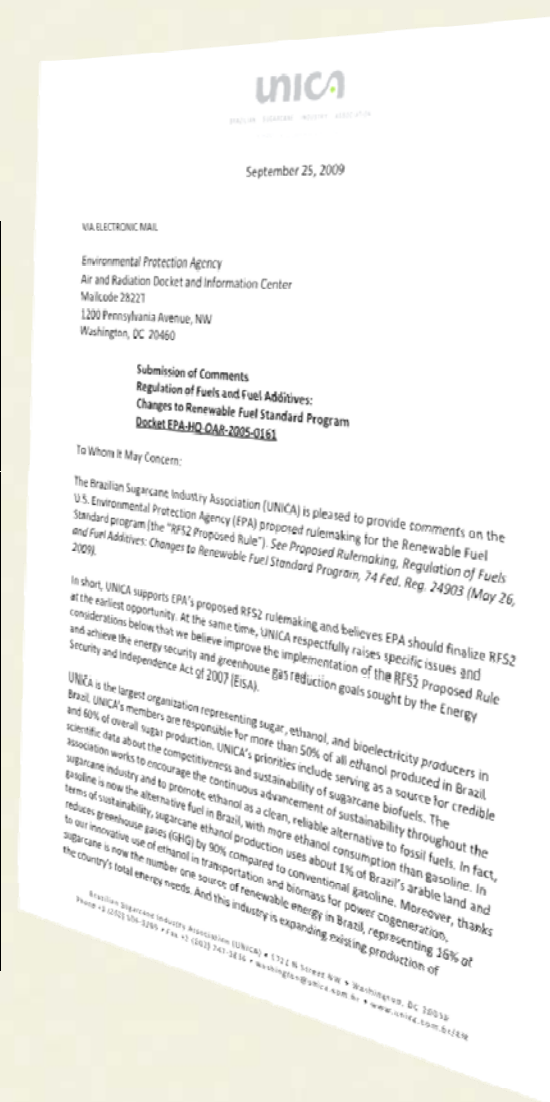


Source: EISA of 2008, U.S. Environmental Protection Agency (RFS-2) Final Rule.

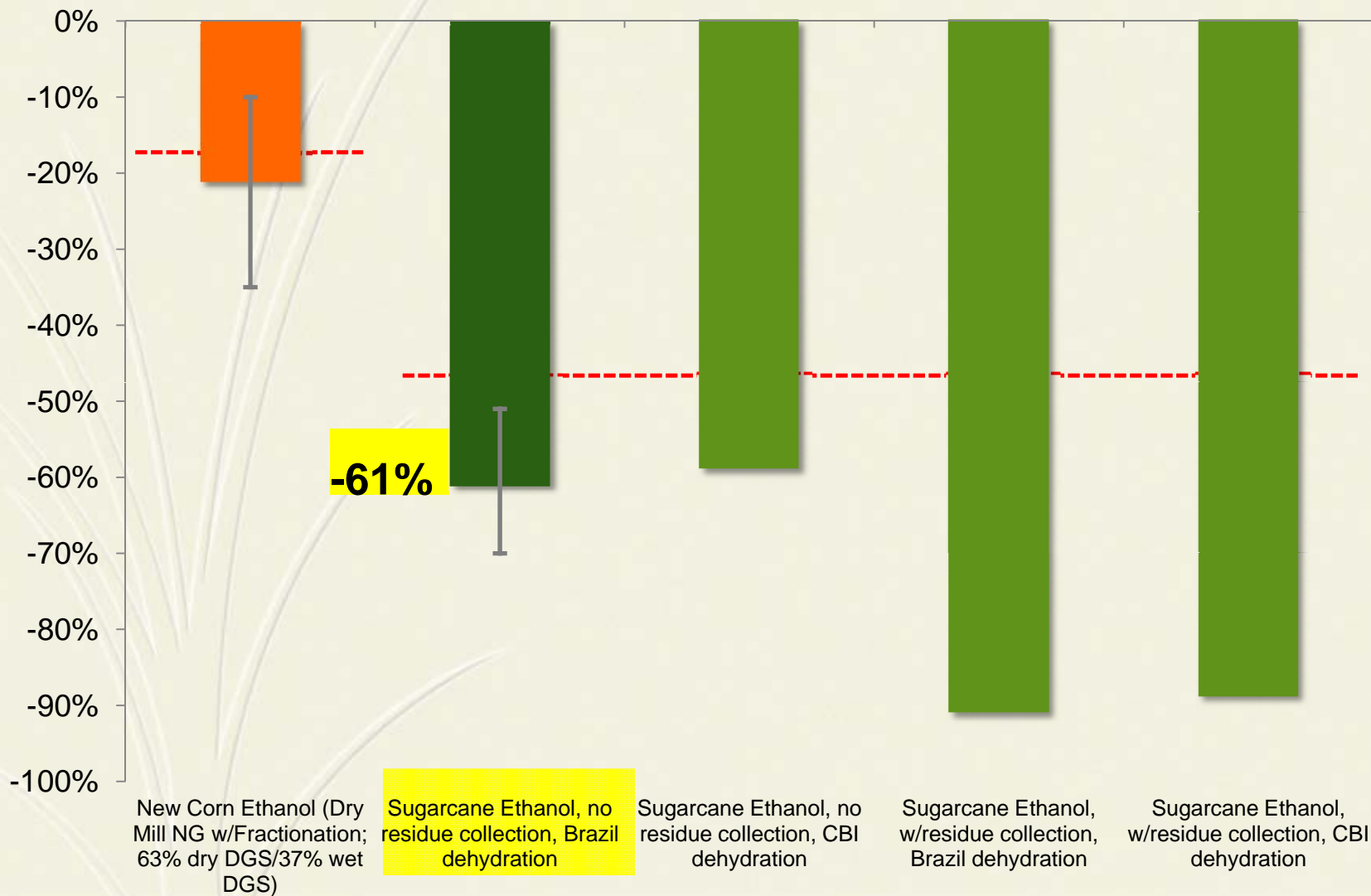
WHAT UNICA TOLD EPA...

While we were pleased with results of EPA's rulemaking, we believe that GHG reduction – even *including ILUC* – is still better than 61%...

	100 years 2% Discount	30 years 0% Discount
EPA Proposed Rule	-44%	-26%
Brazilian Regional Land Use Modeling	-64%	-52%
Recognizing Carbon Uptake of 17tC/ha	-69%	-60%
Emission Credits for Cogeneration	-82%	-73%



EPA RFS RESULTS

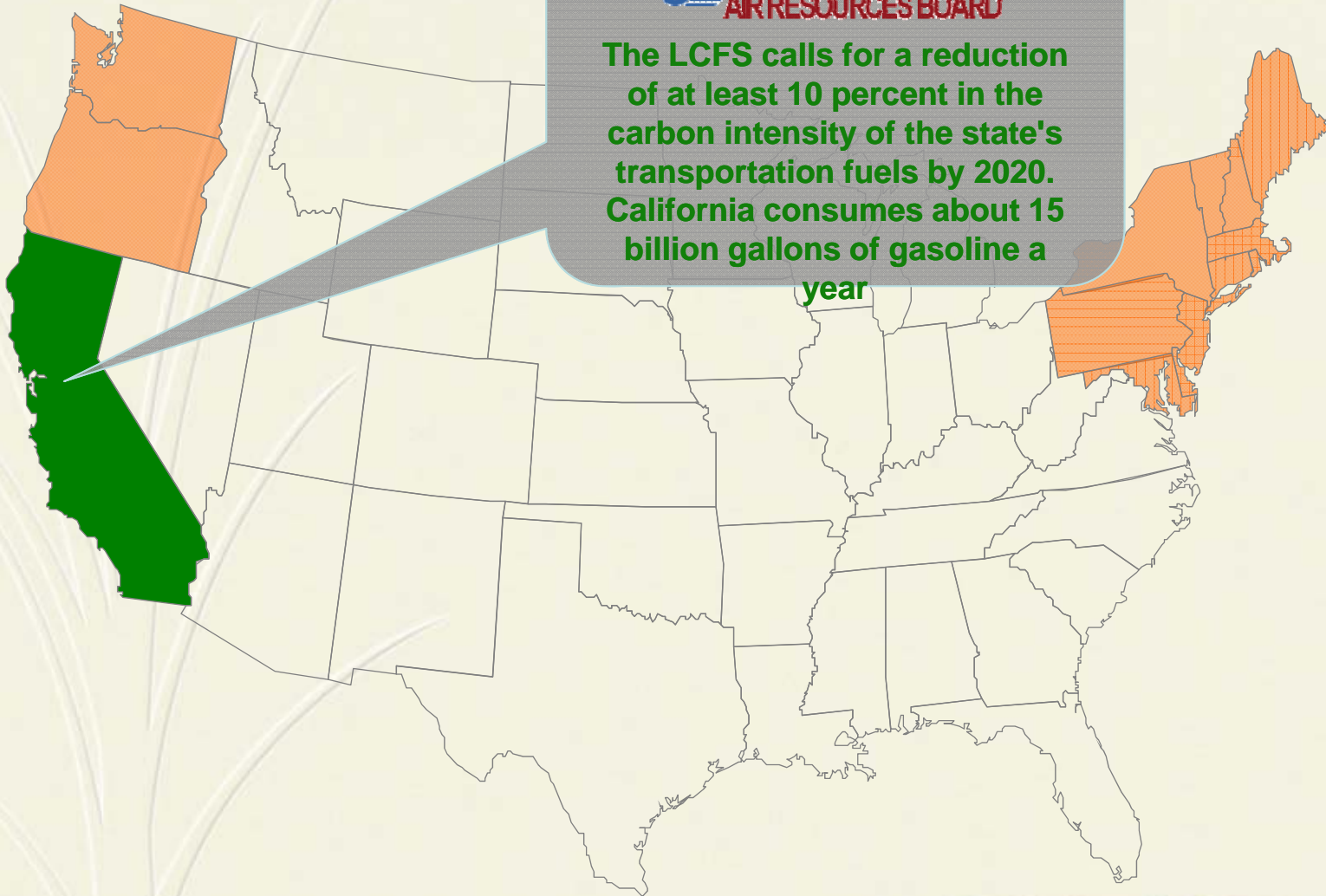


CALIFORNIA'S LOW CARBON FUEL STANDARD



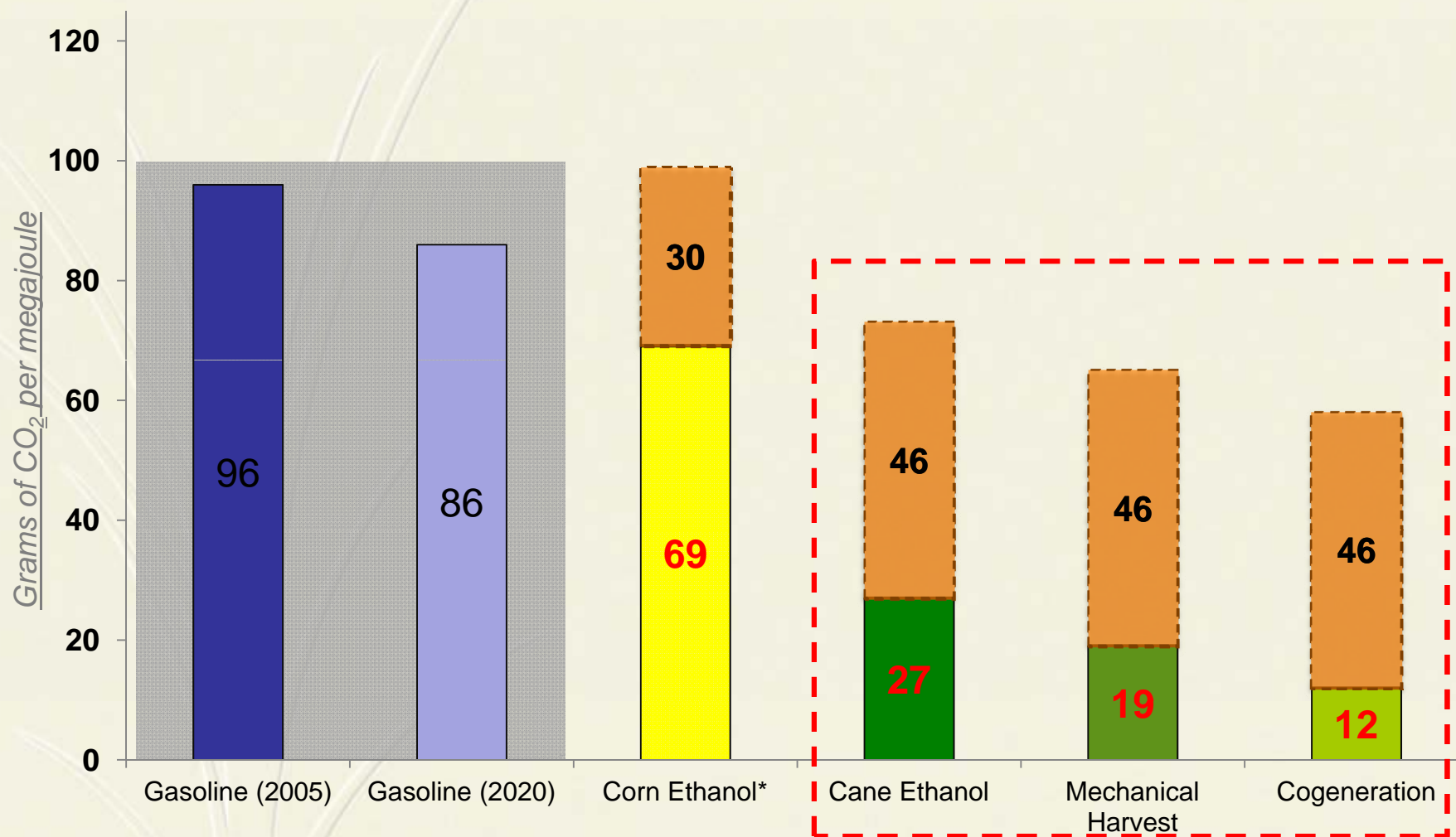
AIR RESOURCES BOARD

The LCFS calls for a reduction of at least 10 percent in the carbon intensity of the state's transportation fuels by 2020. California consumes about 15 billion gallons of gasoline a year



LCFS WITH INDIRECT LAND USE PENALTY

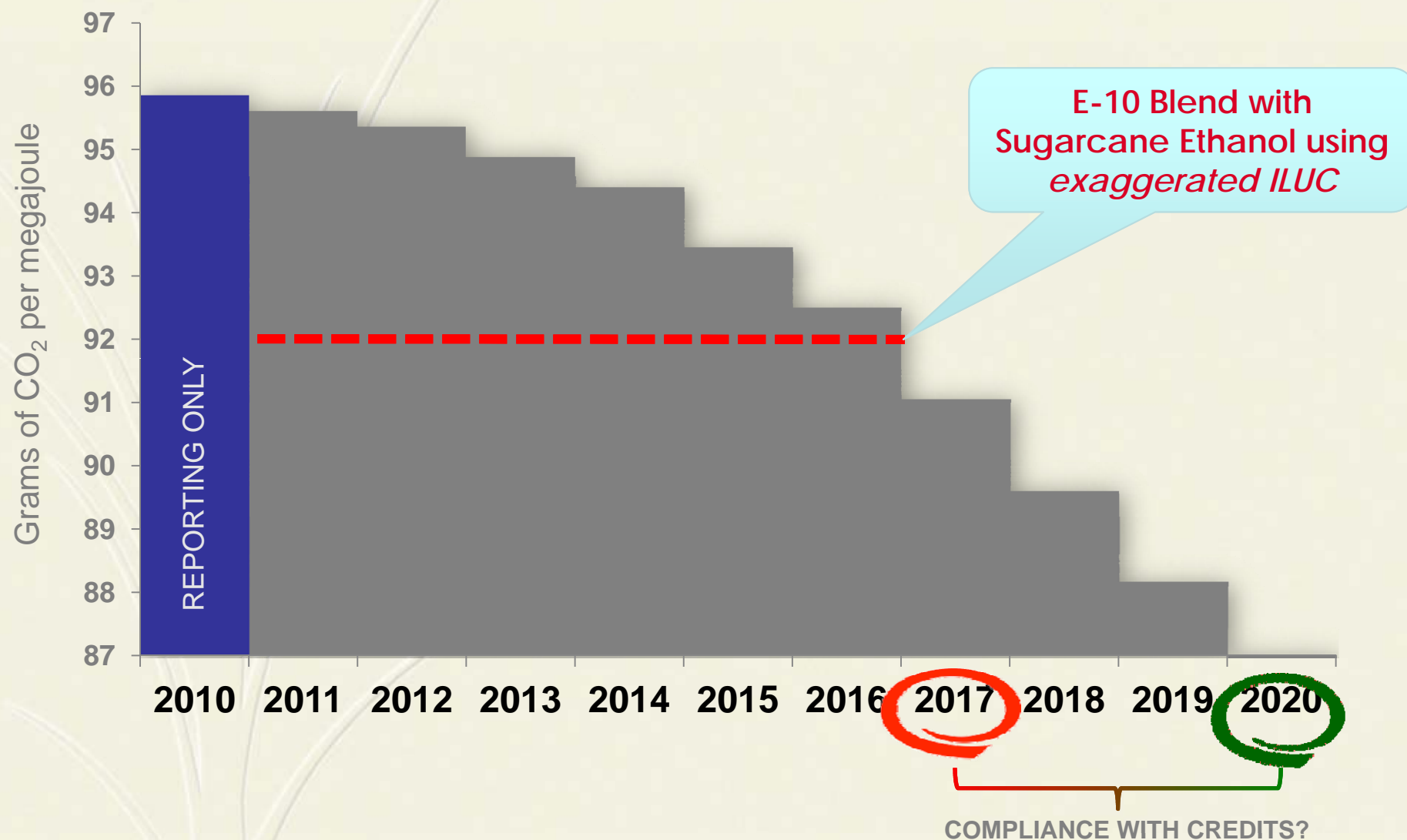
Despite Modeling Errors, Sugarcane Ethanol is Lowest Carbon Liquid Fuel



Fonte: California Air Resources Board's Low Carbon Fuel Standard.

LCFS SIMULATION WITH SUGARCANE ETHANOL

Even with ILUC, 10% sugarcane ethanol blends meet LCFS to 2017



Source: California Air Resources Board's Low Carbon Fuel Standard, August 2009.