

PROSPECTS FOR BRAZIL'S SUGAR & ETHANOL INDUSTRY

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DATAGRO



***USDA Agricultural Economic Outlook Forum 2009
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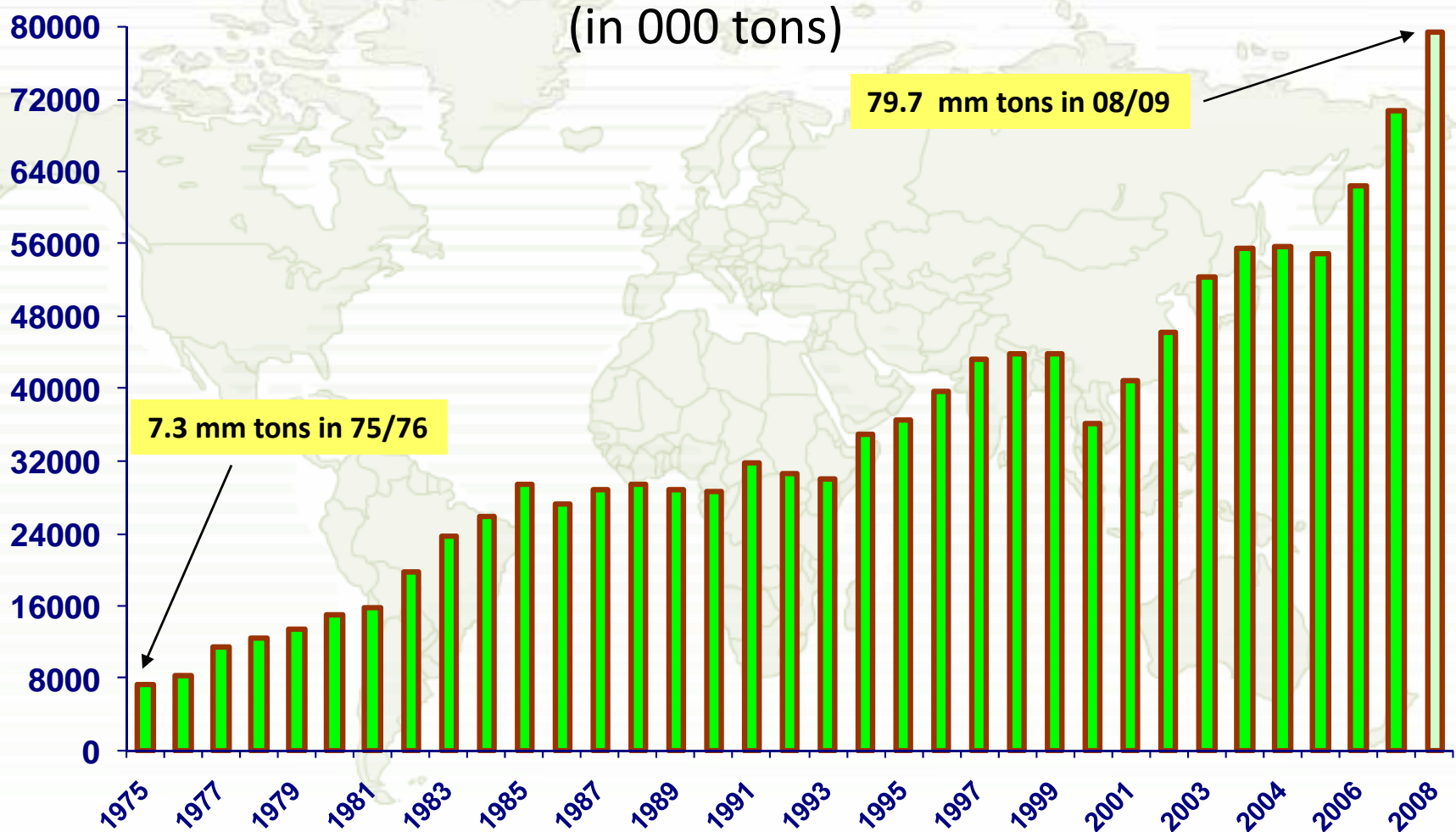
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Historics in Brazil

- Since 1999, when ended the 10-year deregulation period initiated in 1989, the supply of total sugars has risen considerably.
- Since 1975, industry's size grew 10-fold.



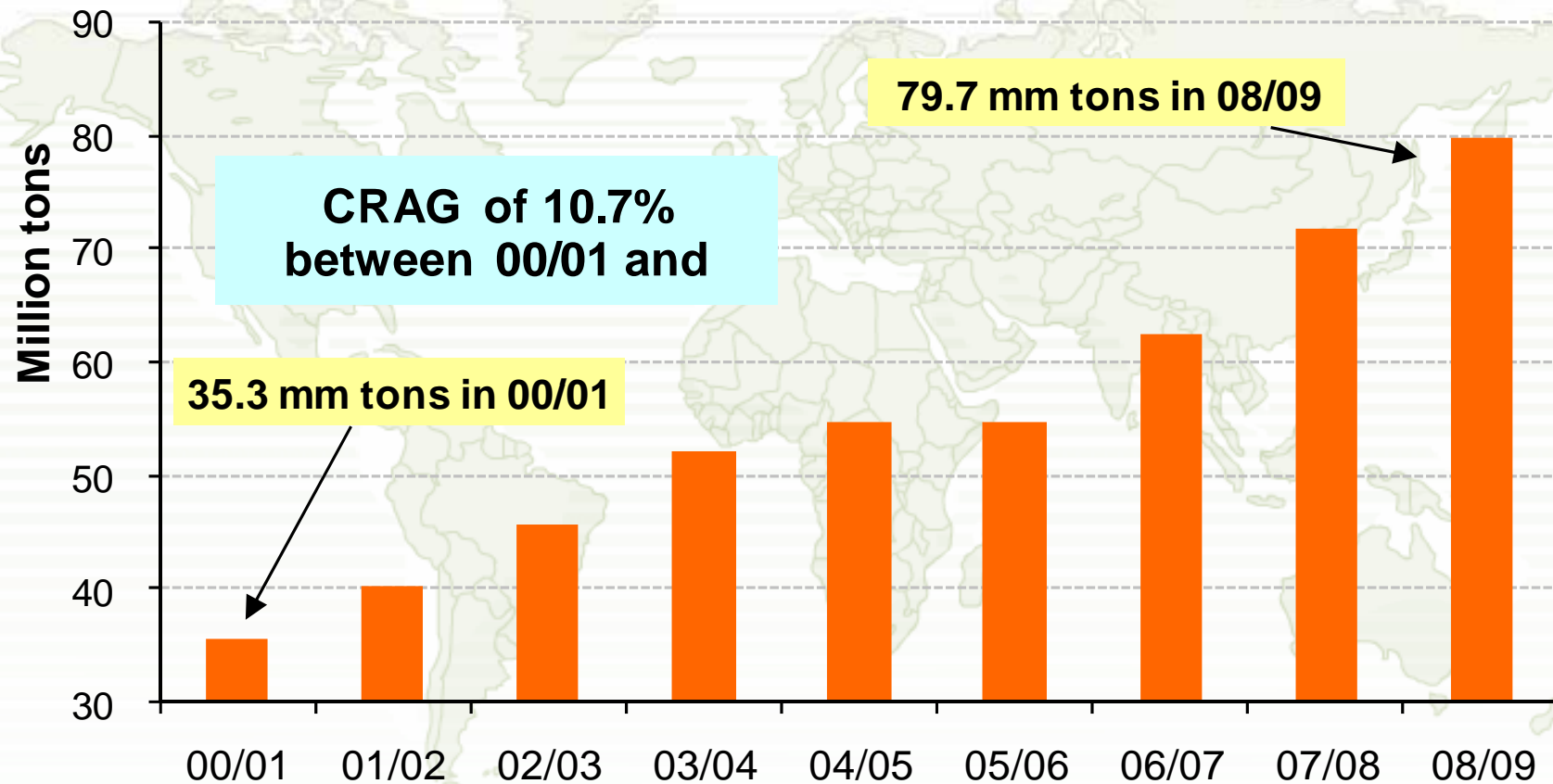
Supply of Total Sugars (TRS) in Brazil



Source: Datagro

Supply of Total Sugars (TRS) in Brazil

(in million tons)



Source: Datagro

Production in Brazil			
Crop	06/07	07/08	08/09
Cane (million tons)			
BR	428.01	491.37	565.60
CS	372.67	431.87	499.60
NE	55.33	59.50	66.00
Sugar (million tons tel quel)			
BR	30.05	30.64	31.60
CS	25.83	26.19	26.75
NE	4.22	4.45	4.85
Ethanol (billion liters)			
BR	17.85	22.40	27.10
CS	16.05	20.34	24.79
NE	1.80	2.06	2.30

Source: Datagro

Consumption in Brazil			
Crop	06/07	07/08	08/09
Sugar (million tons)			
Domestic	10.22	10.94	11.27
Exports	19.93	19.44	19.63
Total	30.16	30.38	30.90
Ethanol (billion liters)			
Anhydrous fuel	5.24	6.23	6.45
Hydrous fuel	7.77	11.34	14.15
Exports	3.85	3.68	5.05
Other uses	1.20	1.37	1.45
Total	18.05	22.62	27.11

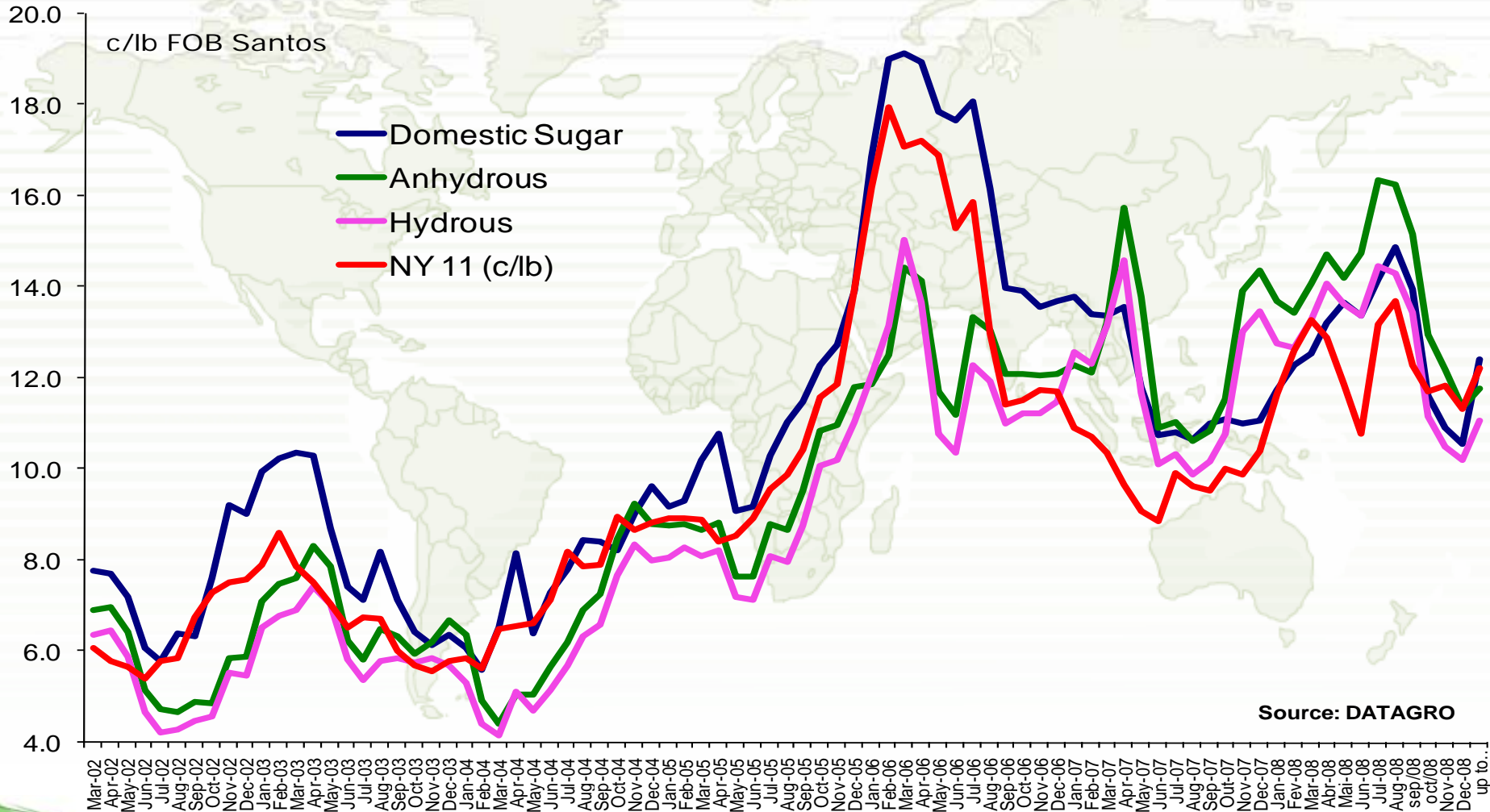
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Main characteristics

- Integrated in sugar and ethanol (in hydrous ethanol equivalent):
 - Ethanol from molasses (indirect): 4.051 bi liters (14.7%),
 - Ethanol from cane juice (direct): 23.455 bi liters (85.3%).
- Intervention mechanisms were eliminated & industry entered in lengthy 10-year deregulation process, ending 1999.
- Economies of scale are being pursued not only thru scale, but also clustering of mills, with establishment of shared service centers.
- Fully liberalized, and given that Brazil accounts for >42% of world sugar exports, and >85% of ethanol exports, prices in the domestic and world market influence each other.

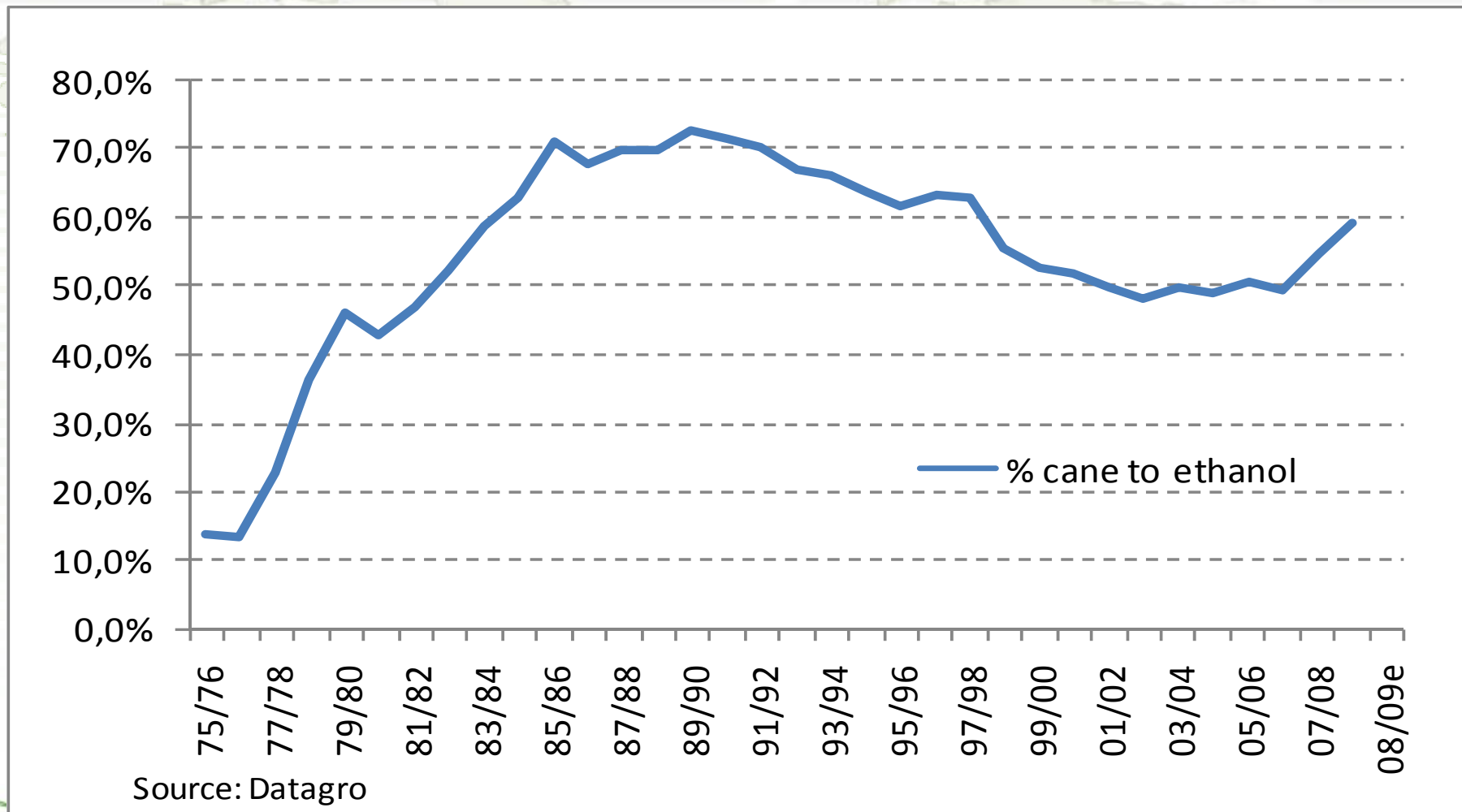
Price Equivalencies - Centre-South

For producer located in Ribeirão Preto, SP – Monthly average



% of Cane for Ethanol

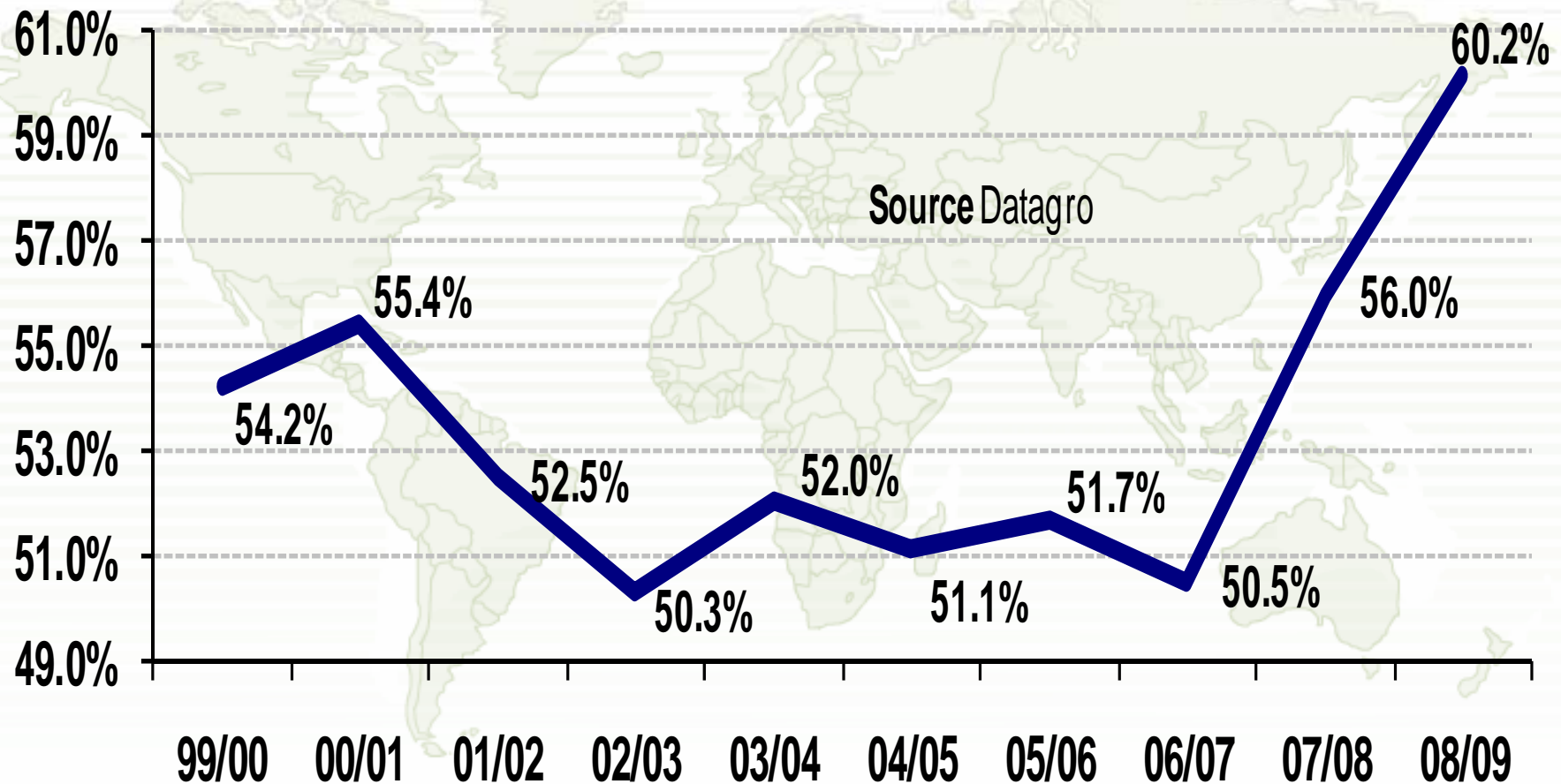
Brazil



Source: Datagro

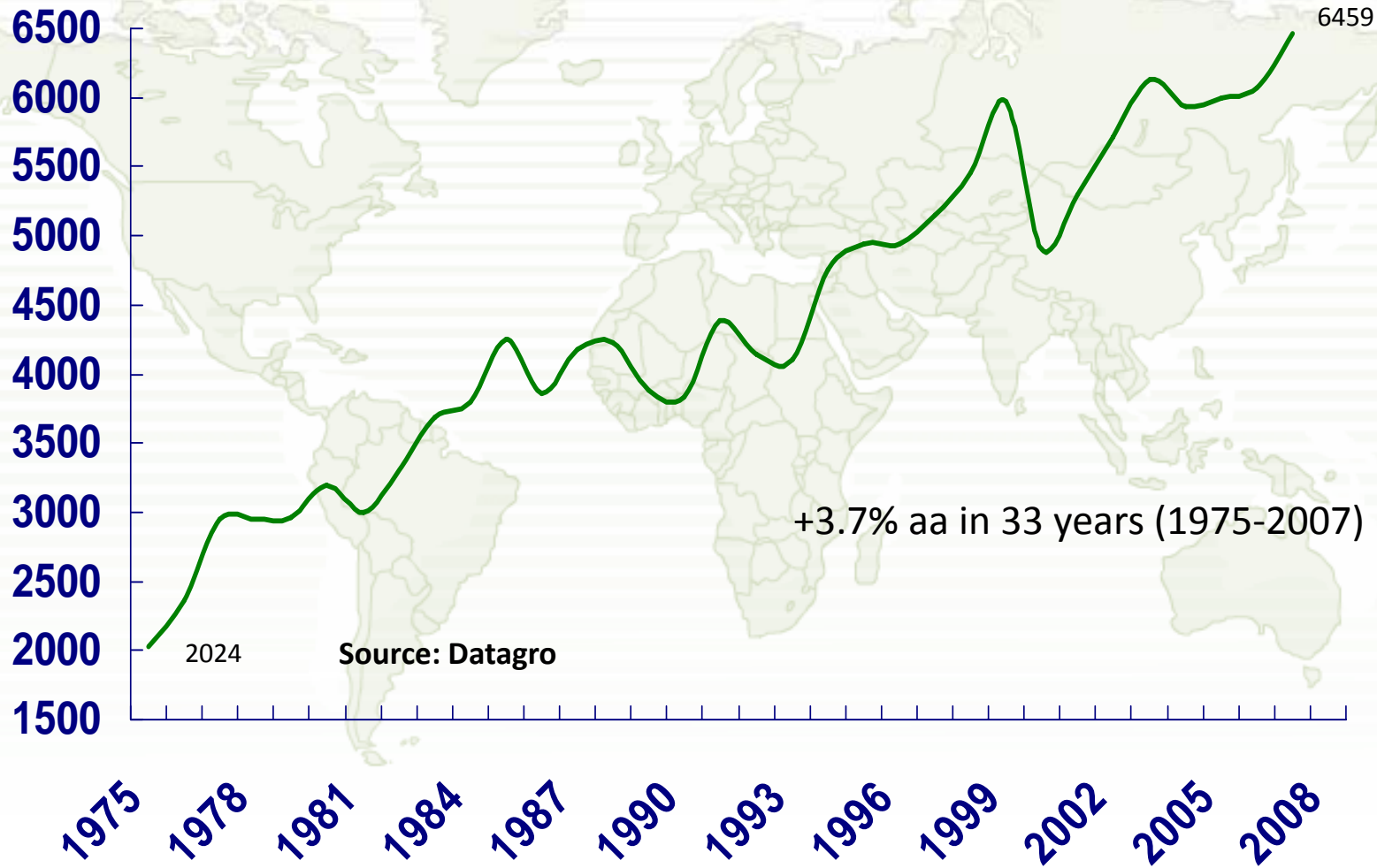
% of Cane for Ethanol

Brazil's Centre-South region



Agro industrial Yield - Brazil

(in liters of hydrous ethanol equivalent per hectare)



Potential Rise in Productivity

- Projected efficiency gains in conventional technology, and conversion of cane cellulose into ethanol, can more than double productivity of cane ethanol until 2025.
- E10 in the world would require 117 billion liters/year today. This production level is attainable with sugar cane, in Brazil and/or other parts of the world.

Technology	2005		2015		2025	
	liter/tc	liter/há	liter/tc	liter/há	liter/tc	liter/há
Conventional	85	6,000	100	8,200	109	10,400
Hydrolysis	-	-	14	1,100	37	3,500
Total	85	6,000	114	9,300	146	13,900
Area needed for 117 billion liters (in million hectares)		19.5		12.6		8.4

Source: NIPE/USP, 2006.

Land Use in Brazil - 2008

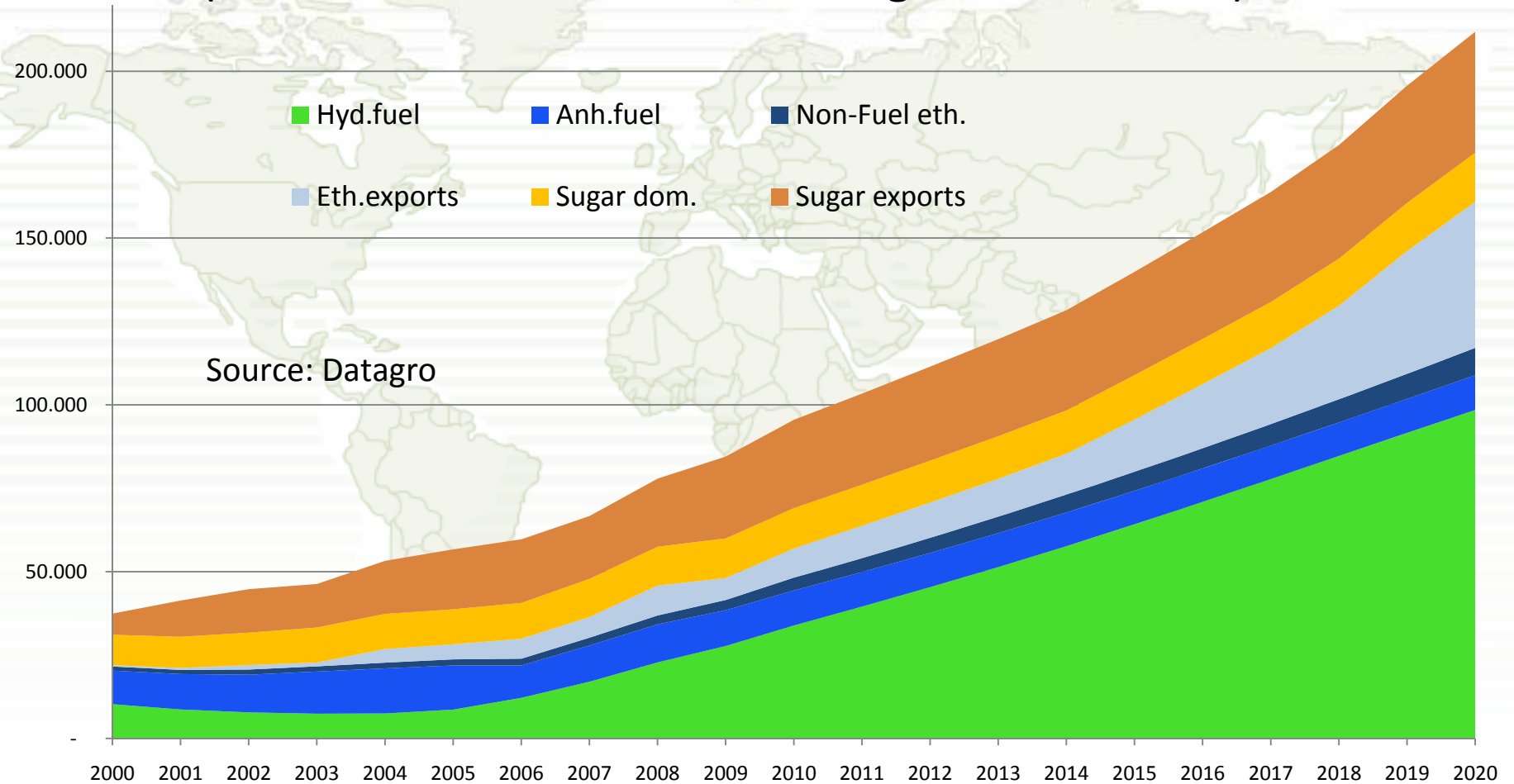
(million hectares)

Brazil's territory	851
Forests & strategic biomas (Amazon, Atlantic, pantanal)	350
Cultivated Forests	5
Preservation areas	55
Cities, rivers, lakes, roads	20
Other areas (depleted, improper for agriculture)	38
Current in use for agriculture & livestock	
Annual crops	60.6
Soybeans	24.2
Corn	21.2
Permanent crops	16.1
Sugar cane	7.2
Pastureland	220.0
Expected to be released to agriculture	70-90
Without any current use	86.3

Source: MAPA, Casa Civil, Datagro.

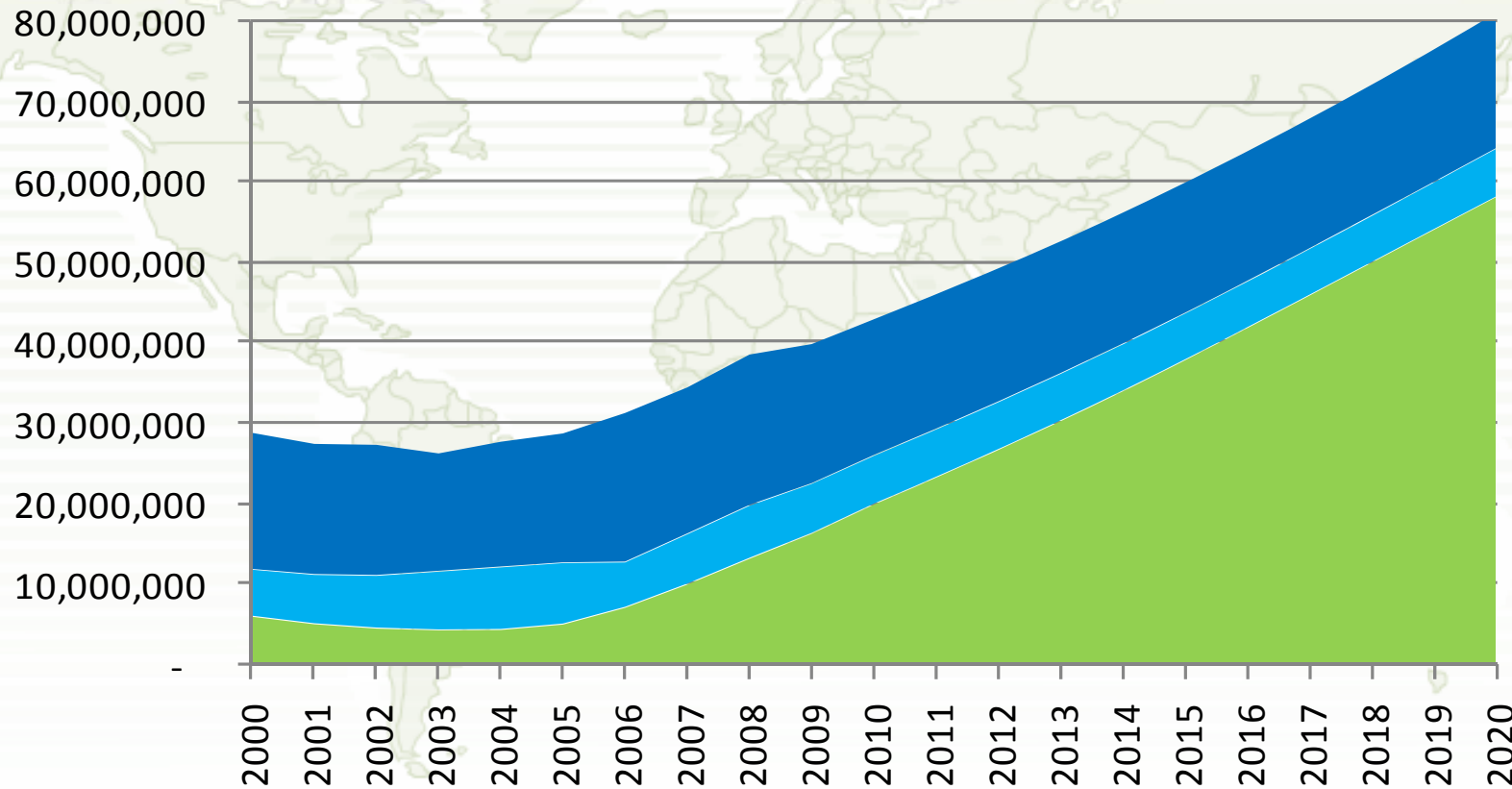
Brazil's T.R.S. Projected Demand to 2020

(in million tons of TRS – actual figures until 2008)



Otto cycle fuel demand in Brazil

(in cubic meters – actual until 2008)



Source: Datagro

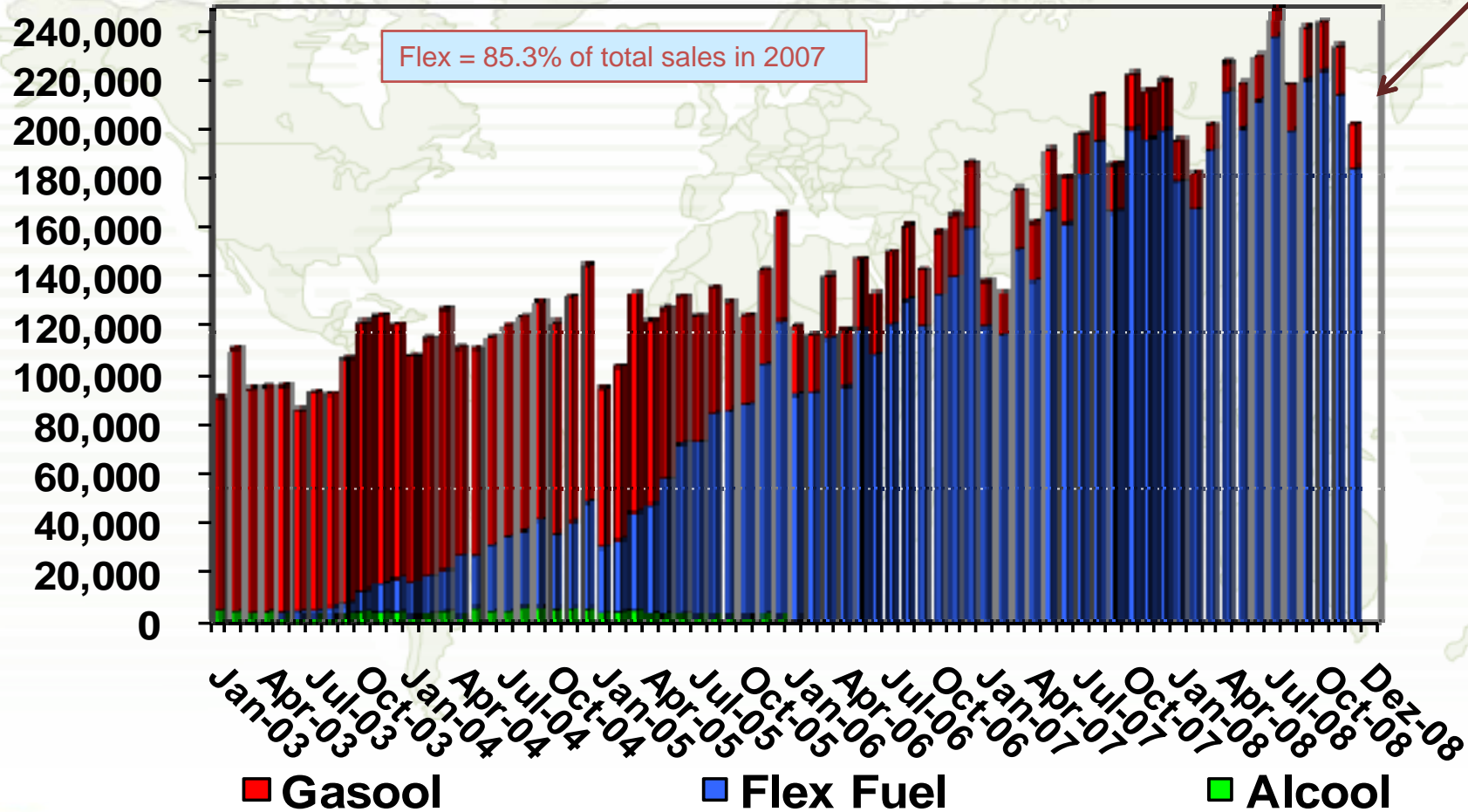
■ Hydrous Fuel ■ Anhydrous Fuel ■ Pure Gasoline



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Ethanol demand is on the rise from rising scale of new car sales, and predominance of flex cars that can use hydrous ethanol

January 2003 to December 2008



Elaborated by Datagro

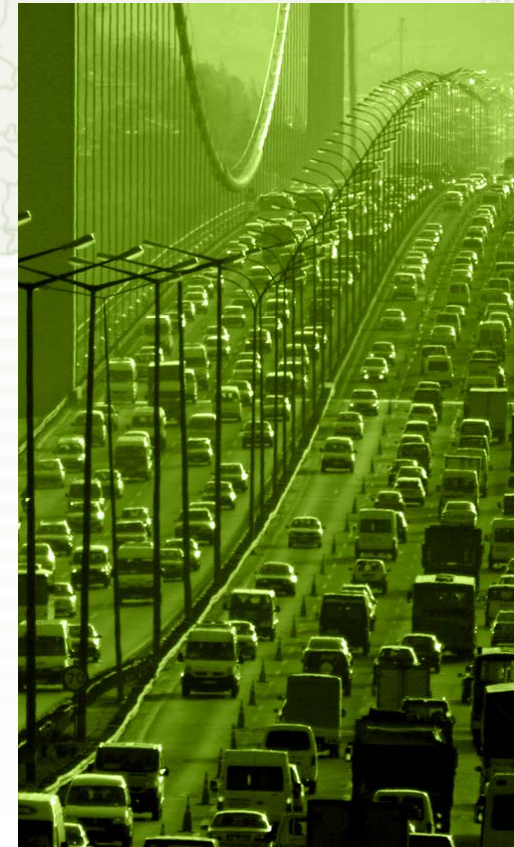


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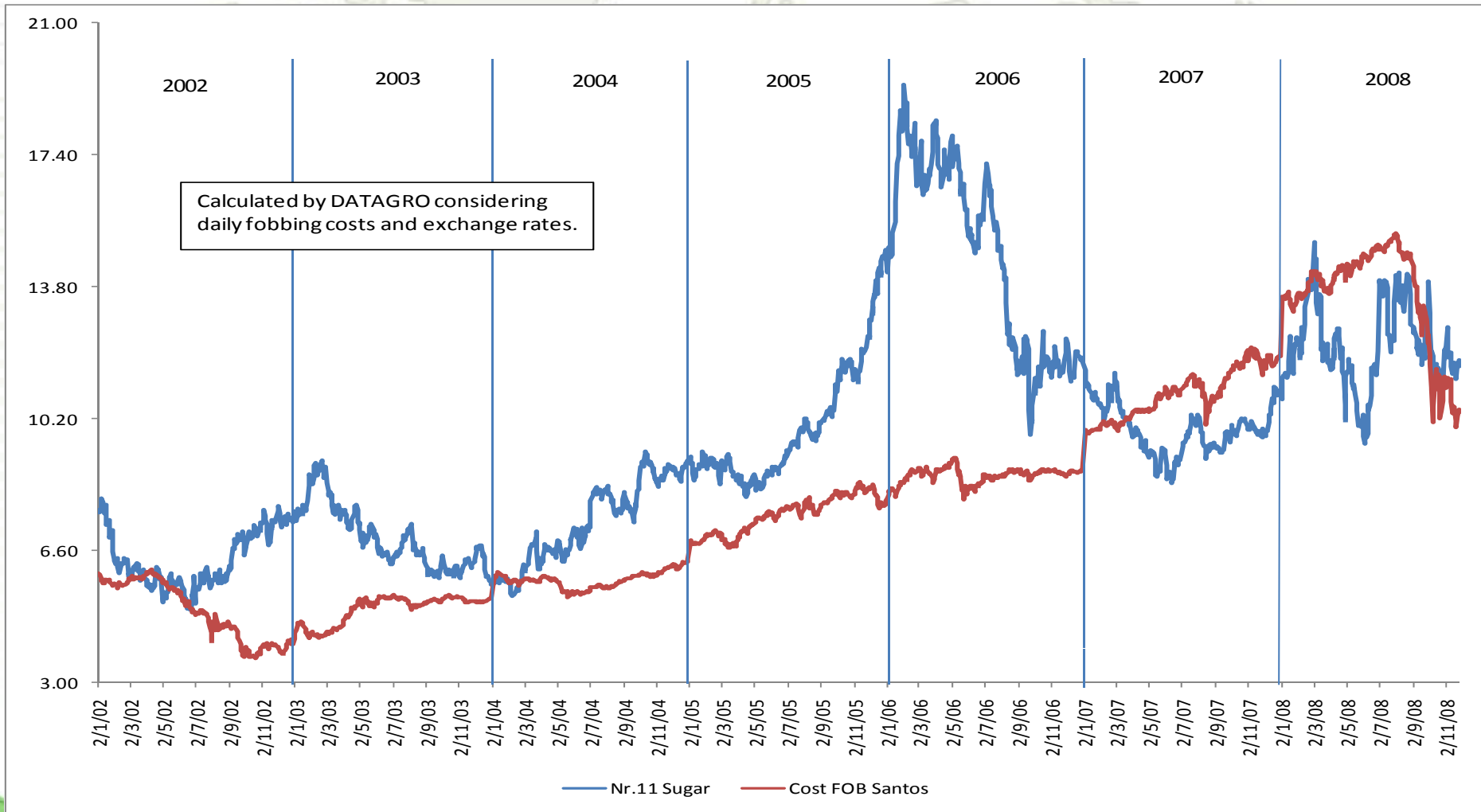
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Estimated % of Flex Fleet using Hydrous Ethanol

- 2006: 72%
- 2007: 82%
- 2008: 85%



Brazil's Sugar Cost FOB vs. World Price



Impact of Cogen

- With current electricity tariffs of R\$ 150 to 160/MWh (or US\$ 66.6 to 71.1/MWh), revenues from co-generation account for approximately 15% of total revenues accrued from sugar and ethanol.
- Considering direct cost of cogen in 12% to 15% of revenue, the margin of contribution from cogen is equivalent to the ROR obtained from sugar and ethanol.
- Cogen has become an important element in the economics of the Brazilian sugar and ethanol industry that, in a few years, will be key for survival.
- In 2007, only 509 MW of actual installed capacity were exported to the national grid by 42 of 370 sugar cane processing plants.
- In 2008, potential installed capacity was close to 8.5 GW (considering medium pressure boiler technologies, of 63 bar boilers. Average consumption of power in Brazil is 53 GW.
- Surplus energy from sugar cane is seasonal, and mostly produced during drier months (May to November), when most of Brazil's hydro-power generating capacity is under stress.
- Considering higher pressure boilers (>81 bar), and the use of 50% of sugar cane trash (tops and leaves), surplus energy from cane is estimated at 27.1 GW of installed capacity in 2008.
- Cogen has an economic impact similar to that provided by distillers dried grains in corn ethanol production.

Cellulosic Ethanol

- A option for bagasse, tops and leaves.
- Sugar mill is already a logistics operation for transport of low value product.
- Cost of collection in Brazil is low – cane produced near plants :
 - US\$ 6/ton for tops and leaves.
 - Zero cost for bagasse.
- Cost of collection in Northern hemisphere countries estimated at US\$ 15 to 60/ton.
- Cellulosic ethanol will be more competitive from sugar cane bagasse, & tops and leaves.

Mechanization

- Mechanical harvesting:
 - 2008: >50% of cane harvested in S.Paulo was mechanically harvested.
 - 2014: 100% will be mechanically harvested (protocol).
- Mechanical planting:
 - Planters are still inefficient: 18 tc/ha seedling, 6 ha/day per machine.
 - Syngenta/John Deere: new technology for planting gems.
 - 15% reduced investment in planting;
 - Higher productive being measured in experiments.

Capital Requirements

- Capital requirement is increasing.
- Nr of groups is rapidly shrinking, and it is highly probable that in the coming years, much greater concentration will be observed.
- Ownership in the Brazilian industry is becoming more internationalized: 14.5% of all cane crushed in Brazil will be controlled by non-Brazilian companies.
- Ethanol is also becoming increasingly competitive with gasoline and petrochemical naphtha, for chemical transformation.

Outlook

- Size of the Brazilian sugar and ethanol industry will be mostly dependent on demand, not supply .
- As the market share of ethanol in the domestic market is already sizeable, additional expansion will be dependent on market developments abroad.
- As sugar cane ethanol becomes increasingly competitive with gasoline and petrochemical naphtha, it may bring interesting development opportunities to many sugar cane producing countries that can benefit from the Brazilian experience.
- The geopolitical implications and trade opportunities of this process cannot be overlooked.

Outlook

- Targets for the use of renewable fuels in the US and the European Union may bring opportunity for the complementary supply of ethanol from friendly origins, guaranteeing expanded market penetration for future use by domestic producers.
- This can be achieved while at the same time safeguarding their income and markets.
- But not only that: in near future, other emerging markets may prefer to use green ethanol instead of gasoline, for pure commercial, price related reasons.
- Biomass ethanol has been disregarded for not being competitive, nor having sufficient scale to meet the challenges of carbon emissions reduction.
- The performance of the Brazilian sugar and ethanol industry speaks for itself, and serves as demonstration effect to many other countries, disseminating origins, and increasing trade opportunities in energy and non-energy products.

A light green world map is centered in the background of the slide. The text is overlaid on the map.

www.datagro.com

9 March 2009 II International Symposium Datagro / Udop on Sugar and Ethanol – Trade Fair Feicana/Feibio – Auditorium UNIP, Araçatuba, SP, Brazil.

6 May 2009 III International Sugar Organization / Datagro New York Sugar Conference – Rainbow Room, Rockefeller Center, New York, NY – 2009 New York Sugar Dinner.

19-20 October 2009 IX International Datagro Sugar and Ethanol Conference – Grand Hyatt São Paulo, SP, Brazil – 2009 São Paulo Sugar Dinner.