Expert Workshop for the How2Guide for Bioenergy

Biomass Resources and Bioenergy Potential in South America

Tools for Assessing Production Costs

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INTERNATIONAL LOW-CARBON ENERGY TECHNOLOGY PLATFORM

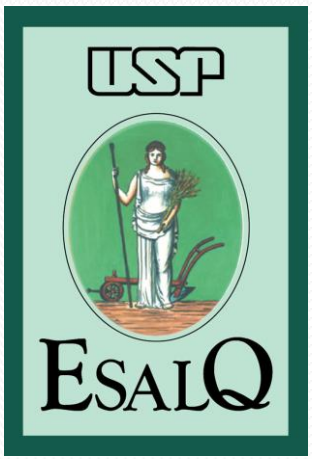
Ministry of Mines and Energy of Brazil

AGENDA

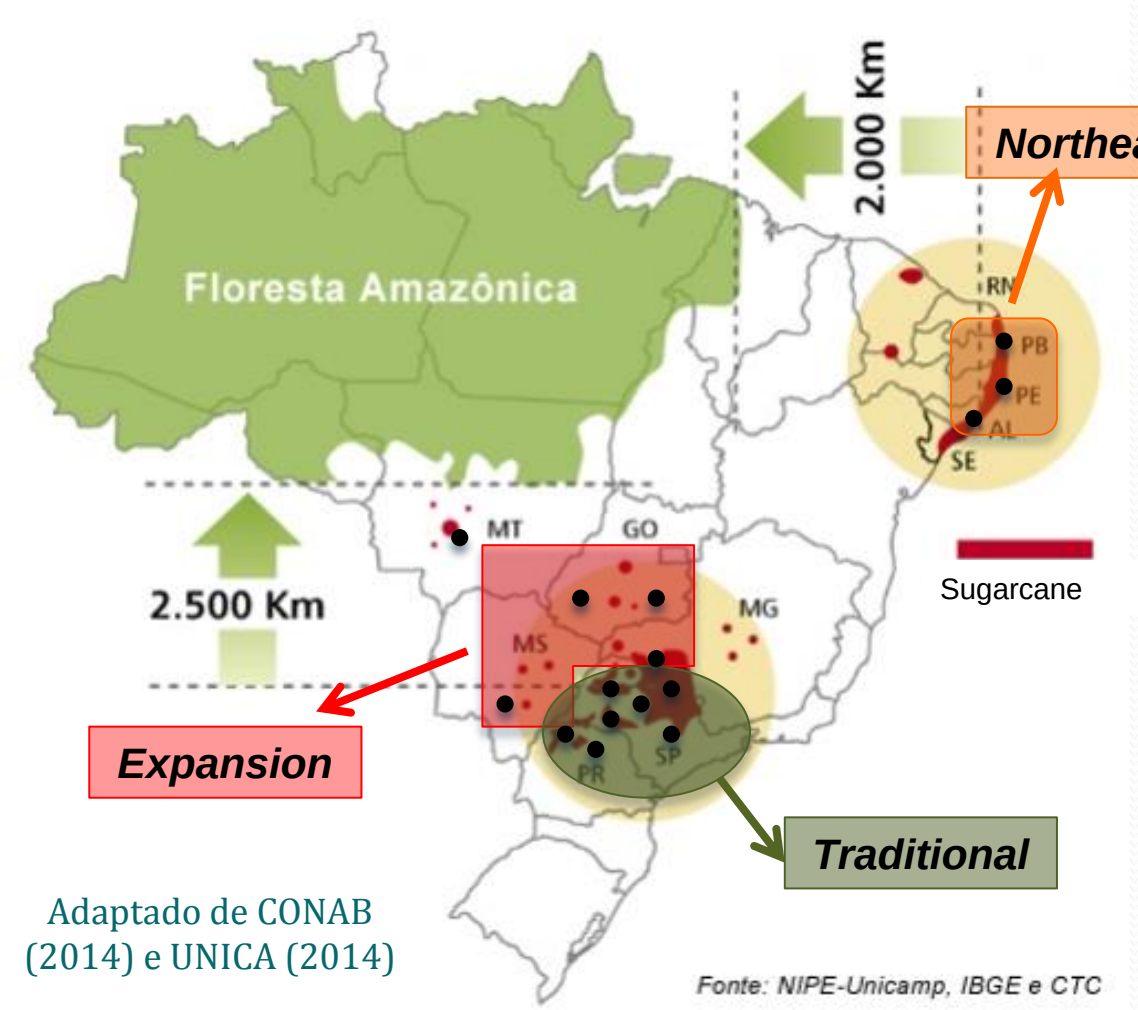
1. The university extension project
2. Methodology
3. Key results
4. Take-way messages

The extension project

- Started in 2008 organized by PECEGE (University of Sao Paulo Extension Group) and 100% funded by CNA (Brazilian Confederation of Agriculture and Livestock);
- Goal of create a methodology to measure and survey crop-year average costs of sugarcane, sugar and ethanol in Brazil.



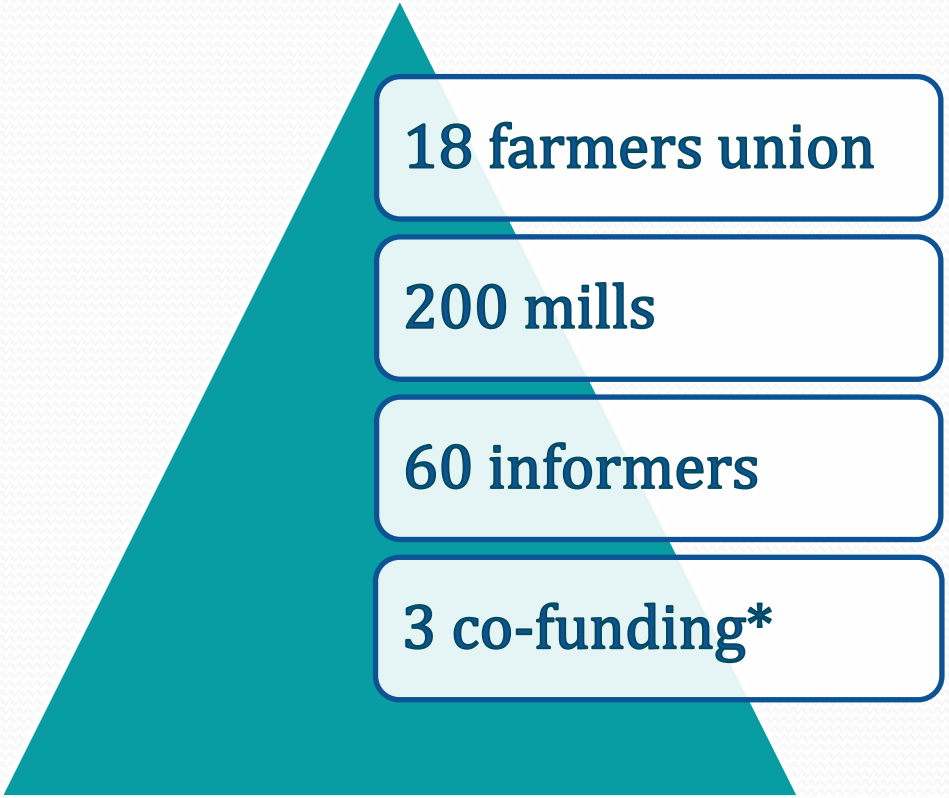
The extension project



Adaptado de CONAB (2014) e UNICA (2014)

- Define crop-year averaged costs of 3 Brazilian production regions;
- Collect the average farmer cost in the 15 most important cane farmers unions
- Invite all the mills in the main areas of the analysis to participated of the survey

The extension project - Sample



* Subscribers of “Portal PECEGE de Informações Sucroenergéticas”

Sample in 2014:

- **1/3 of Brazillian cane production (213 million tons);**
- **16 of the 30 top players.**

Methodology

FARMERS "PAINEL" – MEETING WITH FARMERS TO DEFINE THE "TYPICAL" FARMER IN THE AREA ESPECIFING TECHNOLOGY, CONSUMPTION AND PRICES.

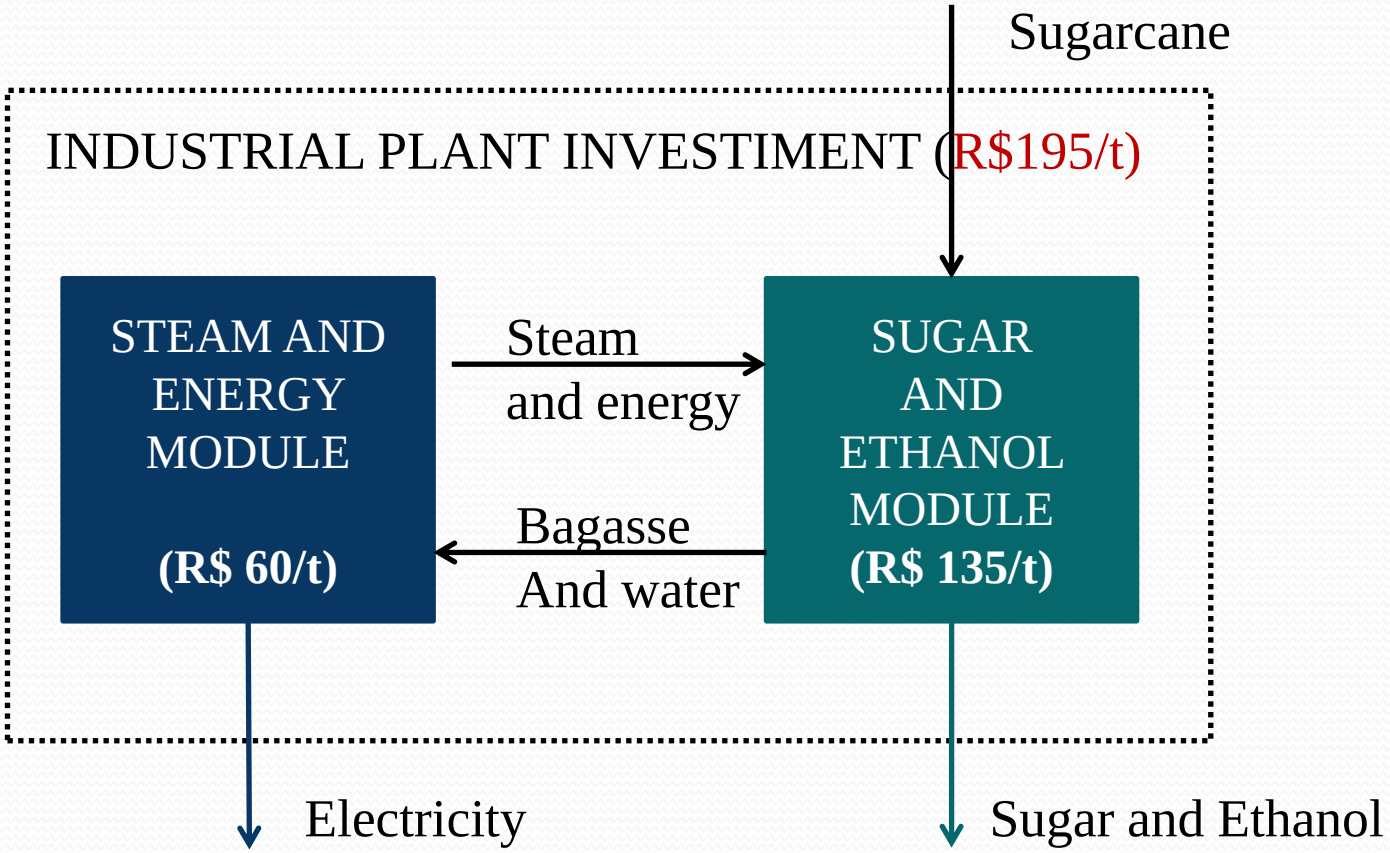
CATANDUVA - SP

GOIATUBA - GO

SERTÃOZINHO - SP

MILLS– PHONE CONTACT, FOLOWED BY QUESTIONNARY FILLED USING PECEGE'S SYSTEMS ASSISTANCE.

Methodology



ASSUMPTIONS:

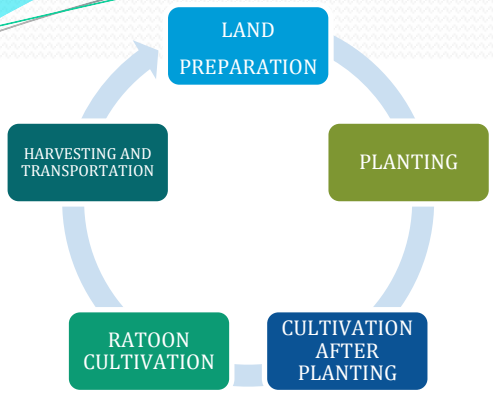
Sugarcane planting is considered stable each year

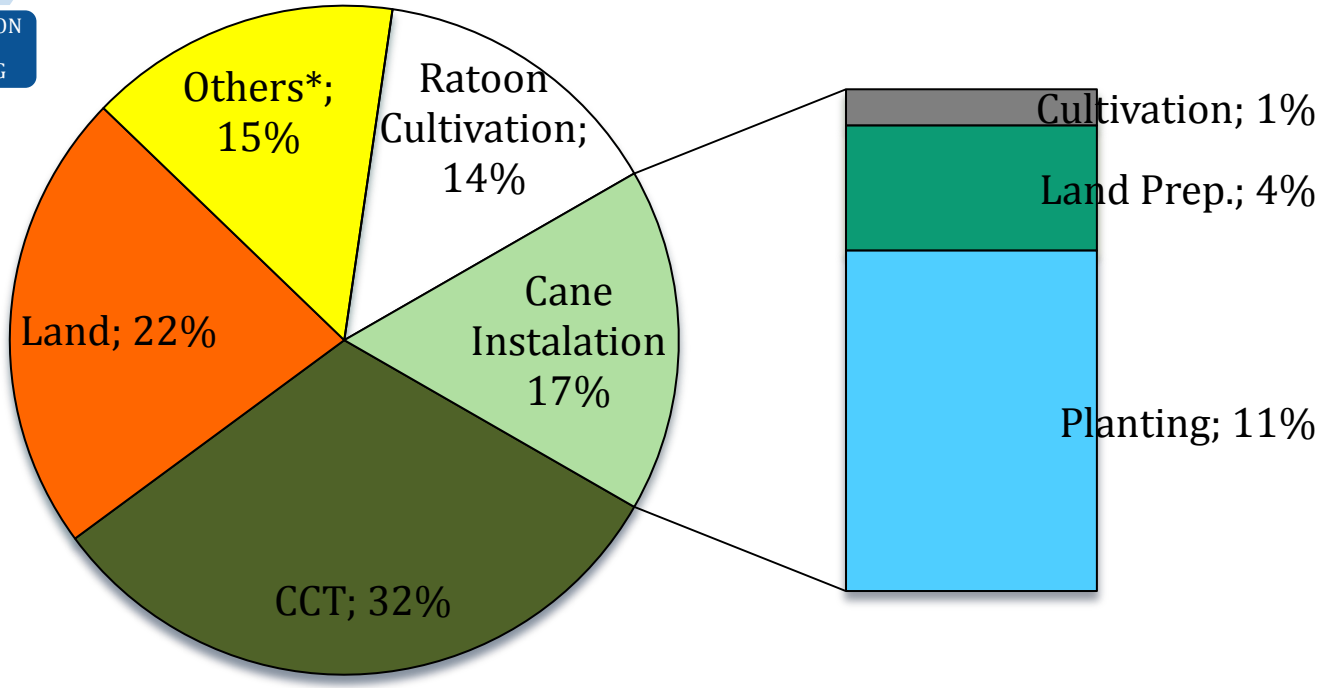
Mill of 2,4 million tons cane crushing capacity

Linear depreciation: ***30 year***

Opportunity cost to capital investiment: ***real interest rate 6% a.y.***

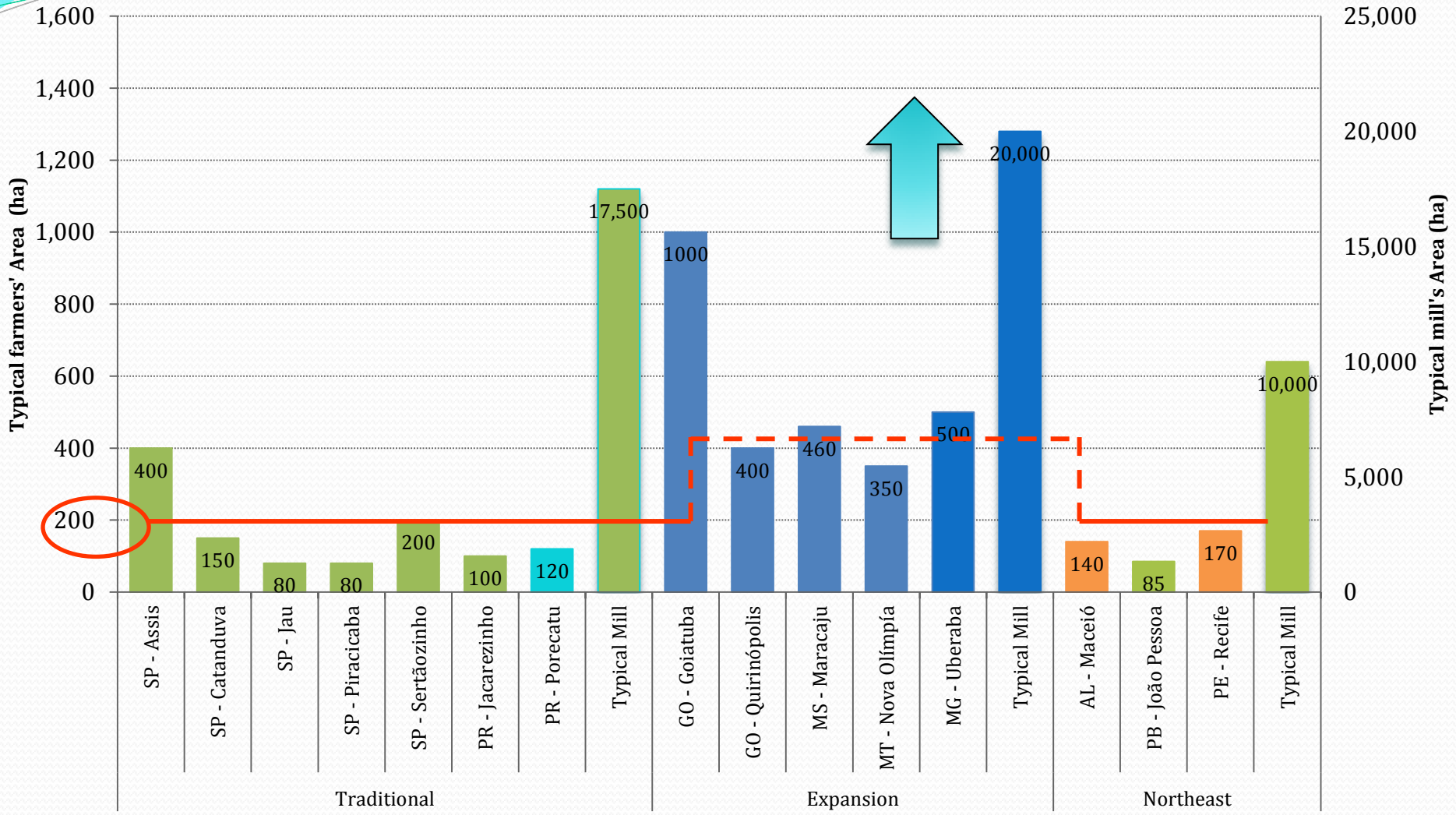
Methodology/Key Results





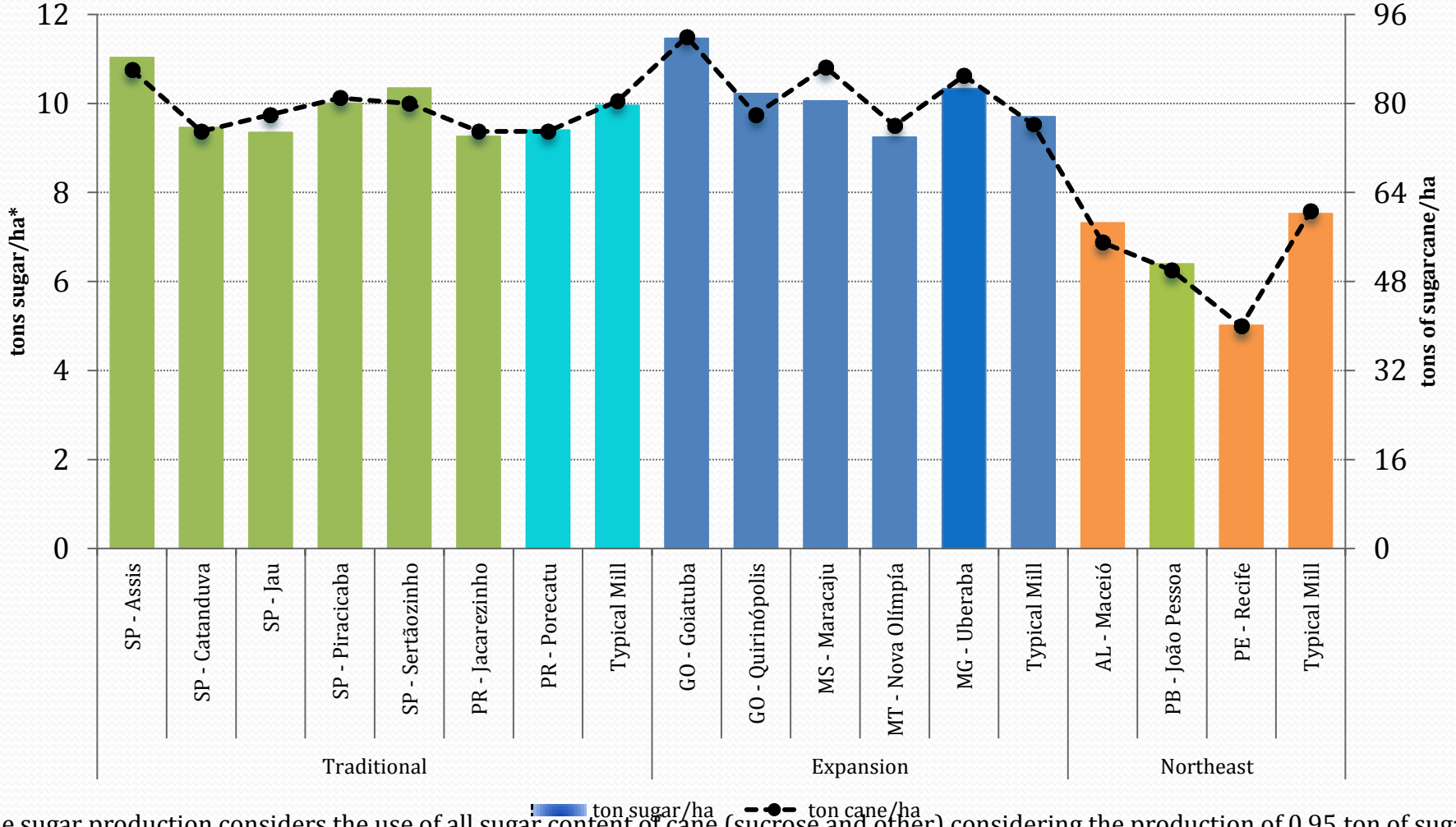
*Management costs, working capital, assets depreciations, Farmers wage and capital cost (but land)

Key Results



Only in Goiatuba and Maracaju region the typical famer share its cane production area with another crop which is soybeans in both cases and use 50% of the area

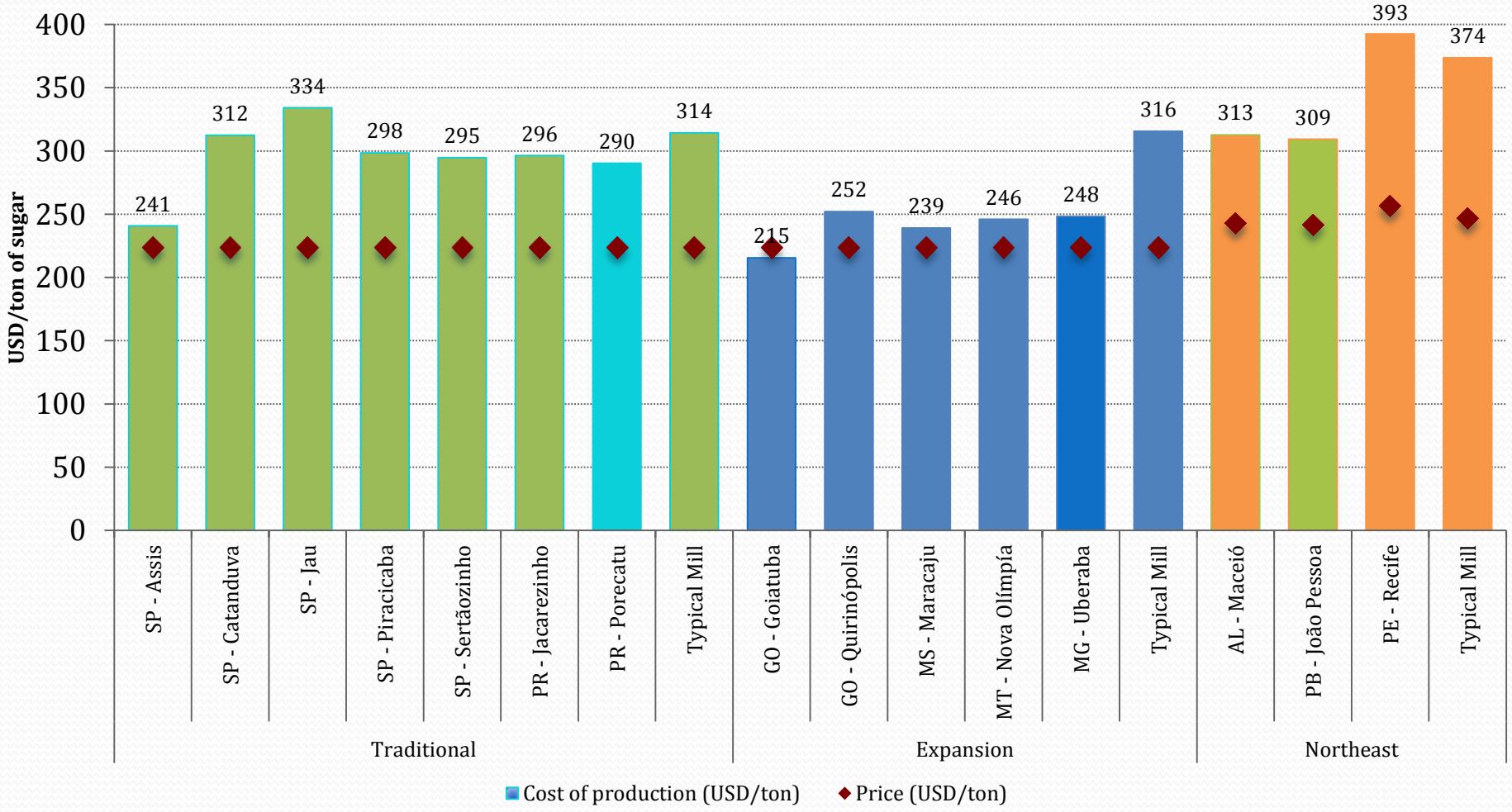
Key Results – *Productivity in 2014 (farmers)*



* The sugar production considers the use of all sugar content of cane (sucrose and other) considering the production of 0,95 ton of sugar per ton of ATR . This assumption is only possible if there is a join production of sugar and ethanol as happens in the Brazilian industry.

The average sugar production in Center-South (Traditional and Expansion) of Brazil was 10 tons of sugar/ha while in the Northeast was 6.3 tons/ha

Key Results – *Cost of production in 2014 (farmers)*



* The exchange rate considered was 2,15 R$/USD

1/3 of cane produced by farmers get 50% discount in the price paid to harvesting and transportation services (its represent around USD 45/ton of sugar)

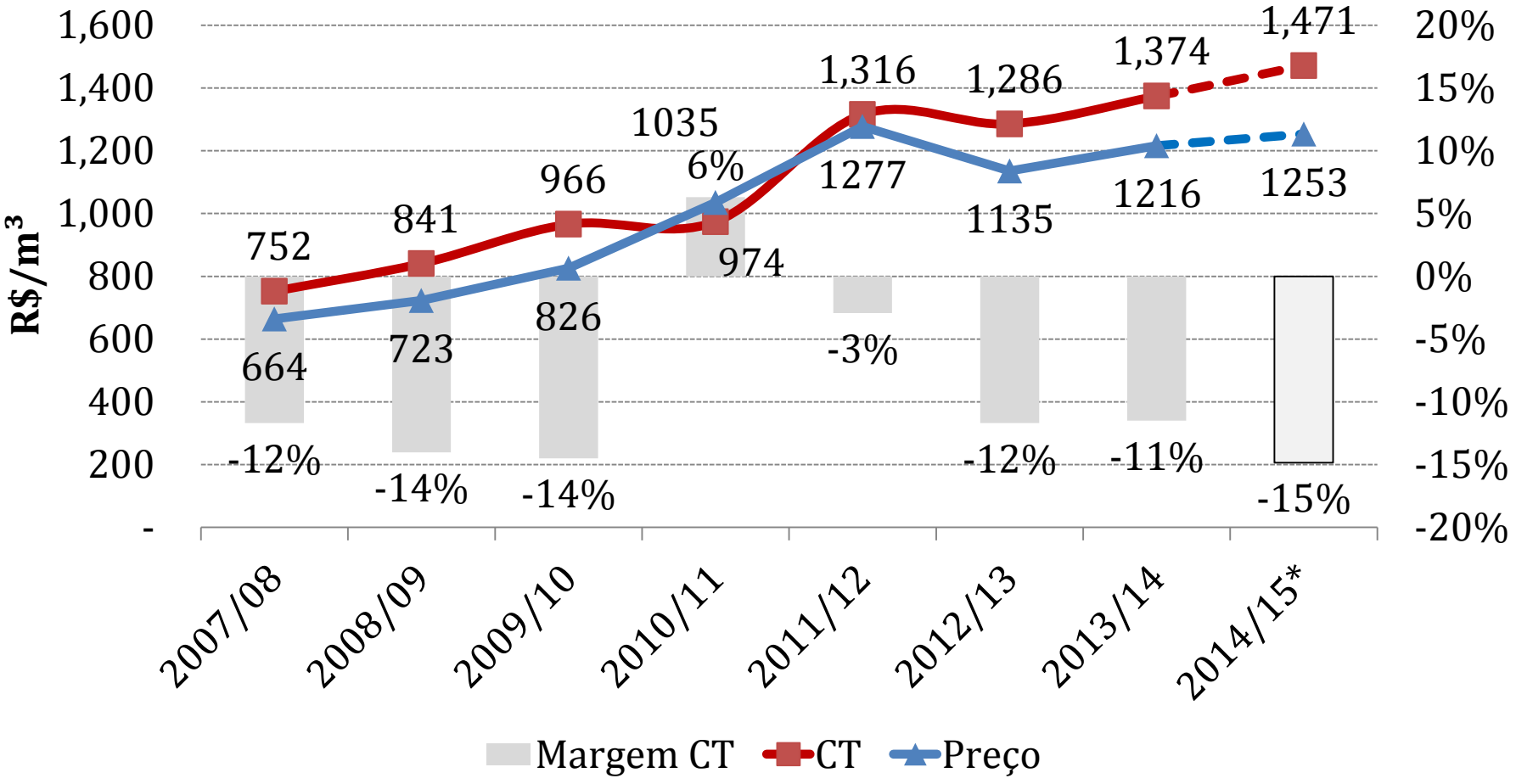
Key Results – *Farmers costs*

Key Indicators	Values
sugar cane yield (ton/ha)	80
sugar content (kg of sucrose equivalent per ton)	125,77
working hours per ha	17,5
labour costs per (USD/h)	USD 4,90
sugar cane price (USD/ton)	USD 28,15
sugar cane seeds use (ton/ha)	15
seed costs (USD/ha)	USD 514,92
harvest cost (USD/ton)	USD 6,29
loading costs (USD/ton)	USD 1,94
transport costs to sugar cane mil (USD/ton)	USD 3,22
type of mechanisation	Mechanized
harvesting and transportation	contracted

** Avegared number for 2014 considering R$/USD= 2,15*

Key Results

Hydrated rthanol cost, price and margin evolution in Traditional region



Averaged annual losses of R$ 106/m³ (-9% do TC) in the last 8 crop-years.
Only 50% of the cost of the investment was paid
In 2013/14 crop-year electricty profits could recovery 50% of ethanol losses

Key Results

Distribution of Ethanol cost in Brazil in 2013/14 crop-year

LOW: ↓ R$ 1.200 m³

16% of mills

31% of mills Tradictonal
11% of mills Expansion

REGULAR: R$ 1.200-1.350/m³

28% of mills

32% of mills Expansion
32% of mills Traditional

HIGH: R$ 1.350-1.500/m³

27% of mills

25% of mills Expansion
26% of mills Traditional
38% of mills Northeast

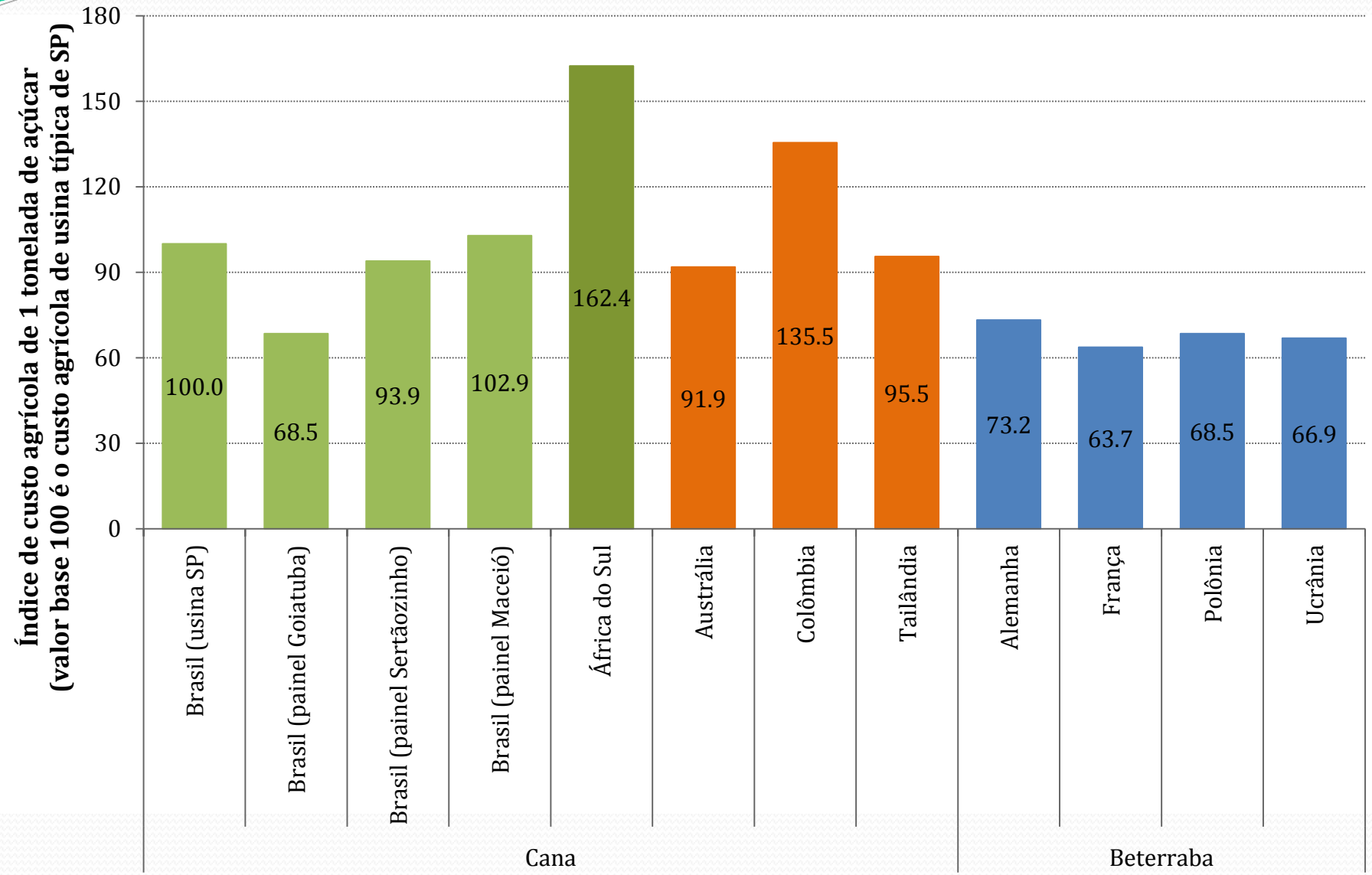
VERY HIGH: ↑ R$ 1.500/ m³

29% of mills

32% of mills Expansion
11% of mills Traditional
62% of mills Northdeast

Key Results

Sugar content agricultural cost – World Benchmark



Source: PECEGE (2010, 2013a, 2013b), Agribenchmark (2014) adapted by the author
Averaged number of 2014 considering R$/USD=2,15

Take-away messages

- Huge opportunity for average producers follow the best practices examples;
- Reduction in costs will be deeply foster by higher productivity levels and quality of the use machines, mainly harvesters and planters;
- It is highly probably that the path for lower cost practices will be long! The plans should consider the goal of a cane cycle .

OBRIGADO!

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INFORMAÇÕES SUCROENERGÉTICAS

Documentos digitais para
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