

“10th meetings of the GBEP Task Force on Sustainability and Steering Committee”



Ethanol expansion in Brazil, insights from an allocation methodology

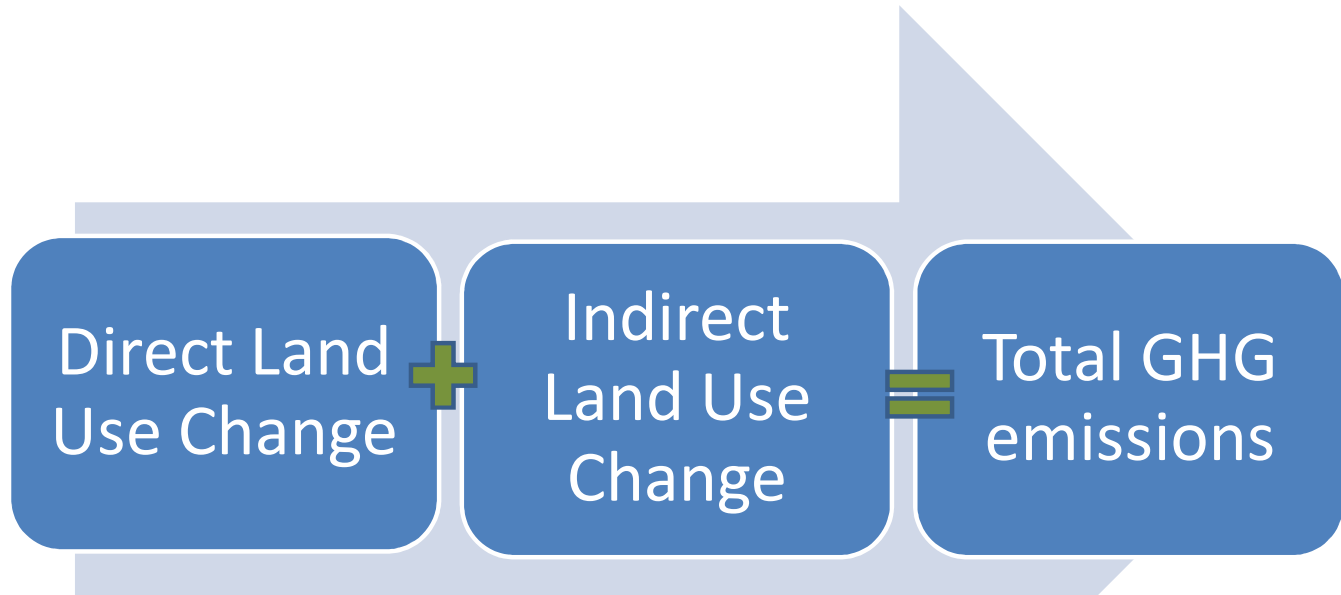
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Rome
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→ www.iconebrasil.org.br

Advantages and disadvantages of the allocation methodology

- ✓ Transparency
 - ✓ Simplicity
 - ✓ No methodological prejudgment
 - ✓ Need a smaller number of inputs (information).
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- ✗ Still need theoretical development for consolidate cause-effect relationships.
 - ✗ hard to incorporate changes in technology and behavior patterns.
 - ✗ Confronted by critics many efforts have been made to make models more transparent (simplicity is still an issue).



- Secondary data: crops (official surveys) and deforestation (satellite imagery).
- Processing rules for substitution among uses

- Application of coefficients of uses displaced by sugarcane
- Productivity gains

- Results: hectares displaced directly and indirectly by sugarcane
- Application of GHG emission factors for land use change

Emissions associated to LUC (Ton CO ₂ eq)	-46,884
Emissions associated to ILUC (Ton CO ₂ eq)	2,462,069
Total emissions (LUC + ILUC) (Ton CO ₂ eq)	2,415,186
Additional ethanol production (Ton of total recoverable sugar)	19,672,059
Energy content of additional ethanol production (Giga Joule)	248,330,532
ILUC factor (g CO ₂ eq / MJ)	7.63
Kha/Mtoe	25

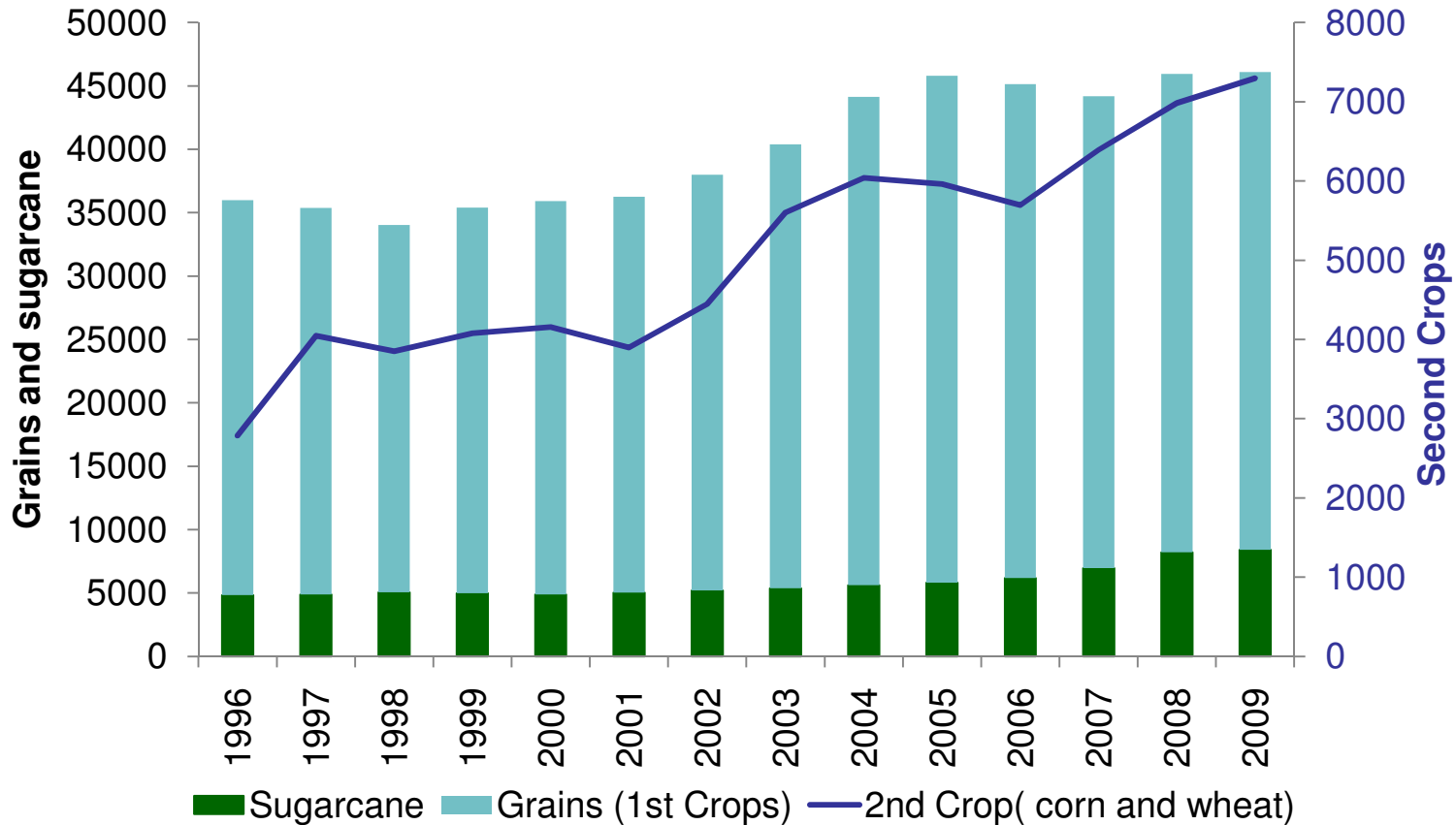
Source: ICONE/CGEE.

The full study is available on our website: www.iconebrasil.org.br
 Seeking for transparency, the database and calculations are also available (in Excel file).

Why we found smaller ILUC factor than⁴ other studies?

- Yield gains: Pasture intensification and Multicropping
- Regionalization
- Period chosen for the analysis
- Isolate the demand effect

Multicropping: more production and less competition for cropland



Source: CONAB

Corn second crop represented in 2008:

- 35% of total corn area;
- 24% of total soybean area.

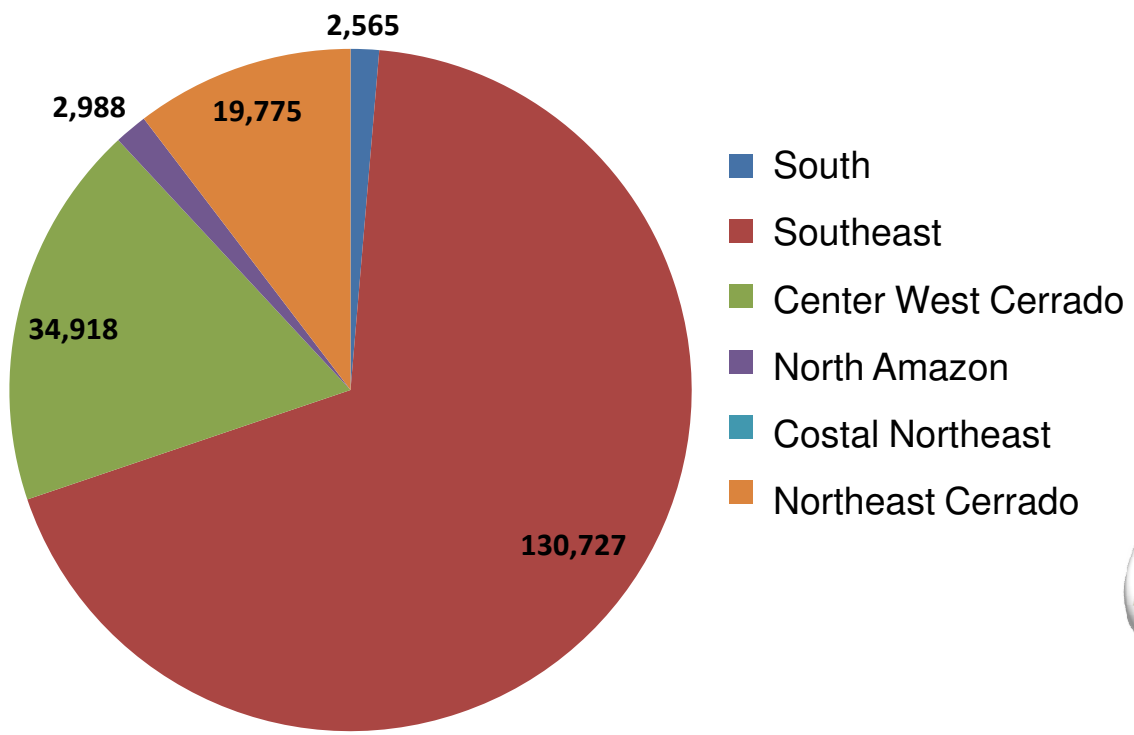
Pasture intensification

Variable	Unit	1996	2008	Growth rate	Total Variation in the Period
Beef Production	Million Tons	6,186.9	9,765.4	5.34%	57.8%
Pasture Area	Million Hectares	184,141	180,143	-0.14%	-2.17%
Slaughter Rate	% of Cattle Herd	0.1781	0.2175	2.57%	22.1%
Stock Rate	Heads/Hectare	0.8596	1.1111	2.69%	29.3%
Carcass Weight	Tons/Head	0.2194	0.2243	0.16%	2.24%
Beef per Hectare	Tons/Hectare	0.0336	0.0542	5.49%	61.3%

Source: ICONE, original data from IBGE, UFMG and ICONE

Huge stock of pasture area, and significant rate of pasture intensification. But production has also grown very fast.

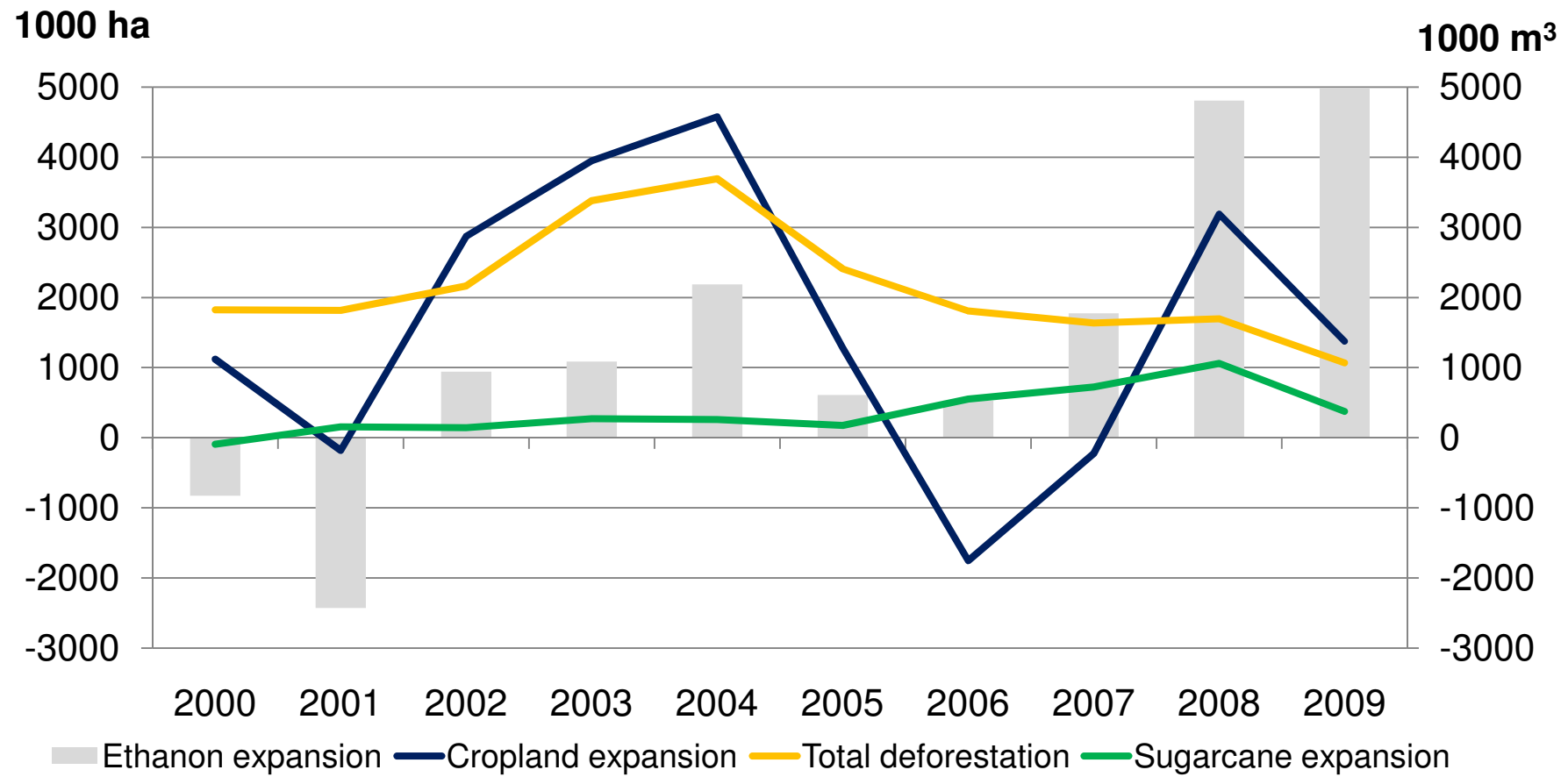
Conversion of Native Vegetation Caused by (direct + indirect) Brazilian sugarcane expansion between 2005 and 2008 (ha)



Source: ICONE.

Productivities gains are strong enough, so there is no need for reallocation of area between Brazilian regions to recover the production losses: Regionalization is important.

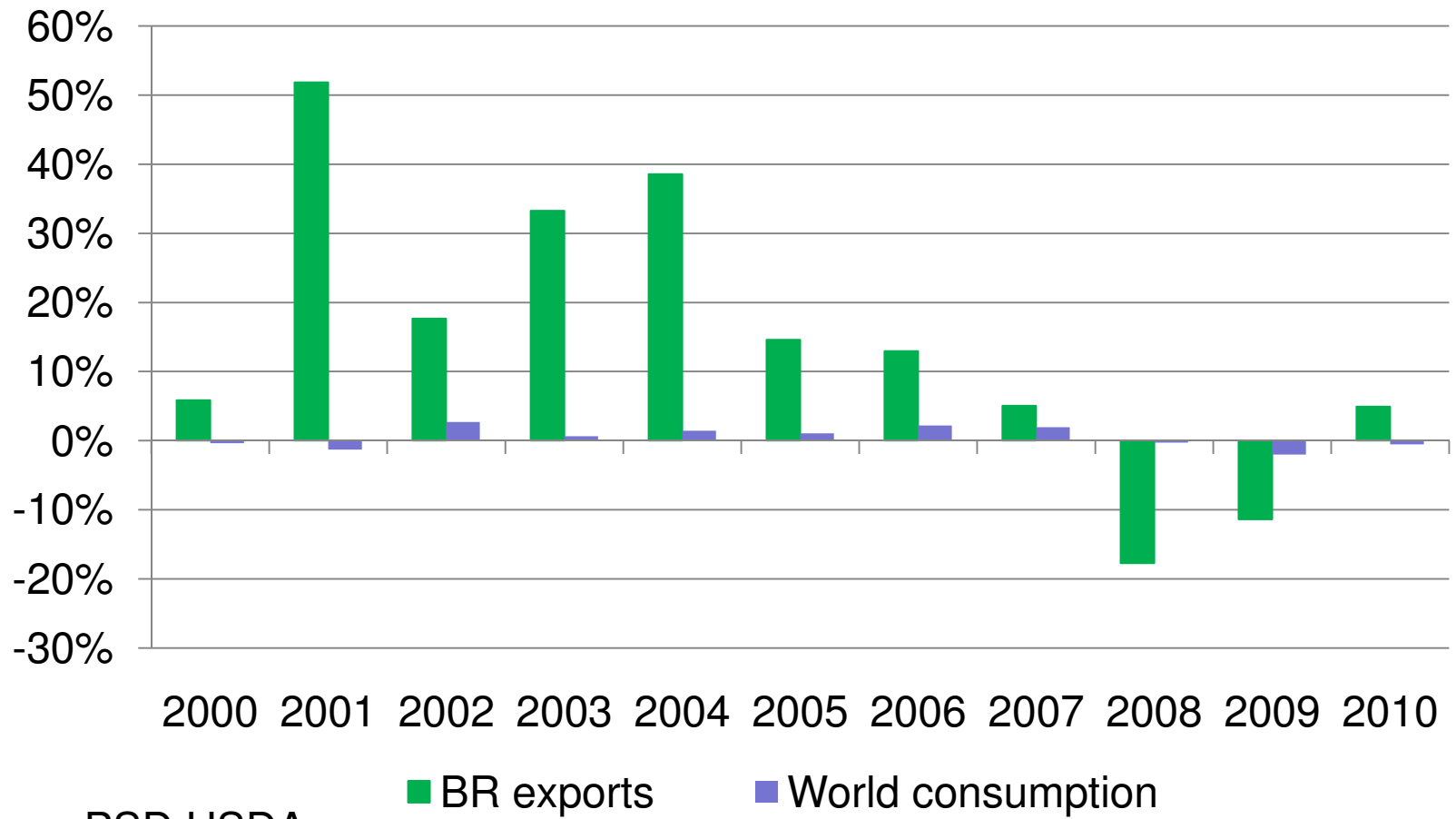
Ethanol expansion vs cropland vs deforestation rates



Source:
 NPE/PRODES (Amazon deforestation); LAPIG/UFG (Cerrado deforestation); SOS Mata Atlantica; IBGE (crops area).

Crops area does not fully explain deforestation rates.
 Higher sugarcane and ethanol growth are simultaneous to lower deforestation rates.

Meat market: Brazilian exports and world consumption growth rates



Source: PSD USDA

On the long term, growth rate of Brazilian beef exports and world consumption growth rates will be similar: we expect less pressure from demand.

Some last thoughts

- Will LUC in the future be similar to the past (especially for the period 2002-2005)?
- How different is LUC dynamics without pressure from demand?

Recent land use policies and strategies

- Plan to Prevent Deforestation of the Amazon (2004)
- State zoning (different dates)
- Soybean moratorium (2006)
- Sugarcane zoning (2009)
- Plan to prevent deforestation of the Cerrados PPCerrado (2010)

The effect of those policies are not represented in any of the models actually used to measure ILUC.



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