



20 a 22 de Junho de 2016 - São Paulo/SP

## **Compromissos do Brasil na COP 21 e a Indústria do Cimento**

***Brazil's commitments at COP 21 and the cement industry***

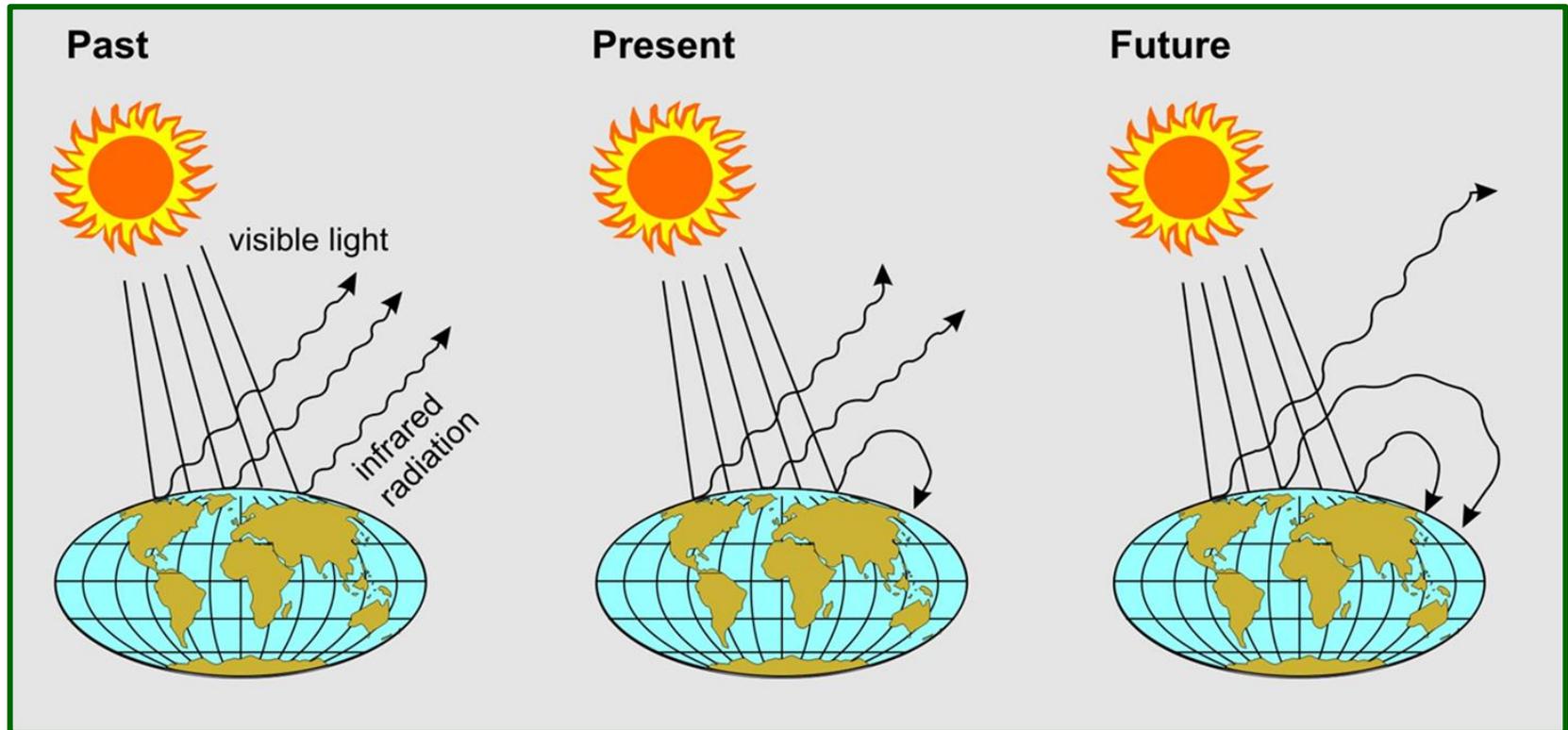
**Professor José Goldemberg**

**June 20, 2016**

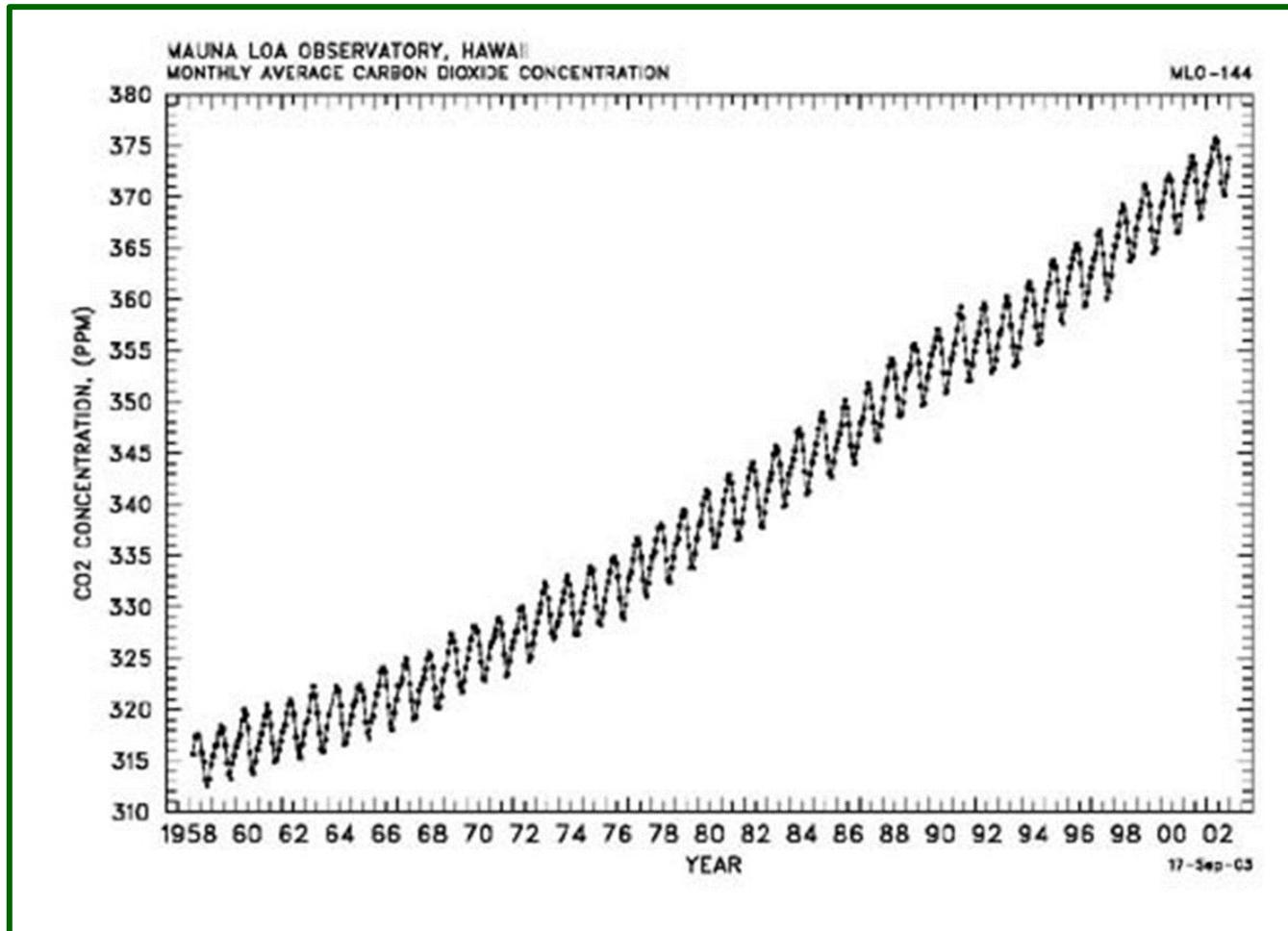
Realização



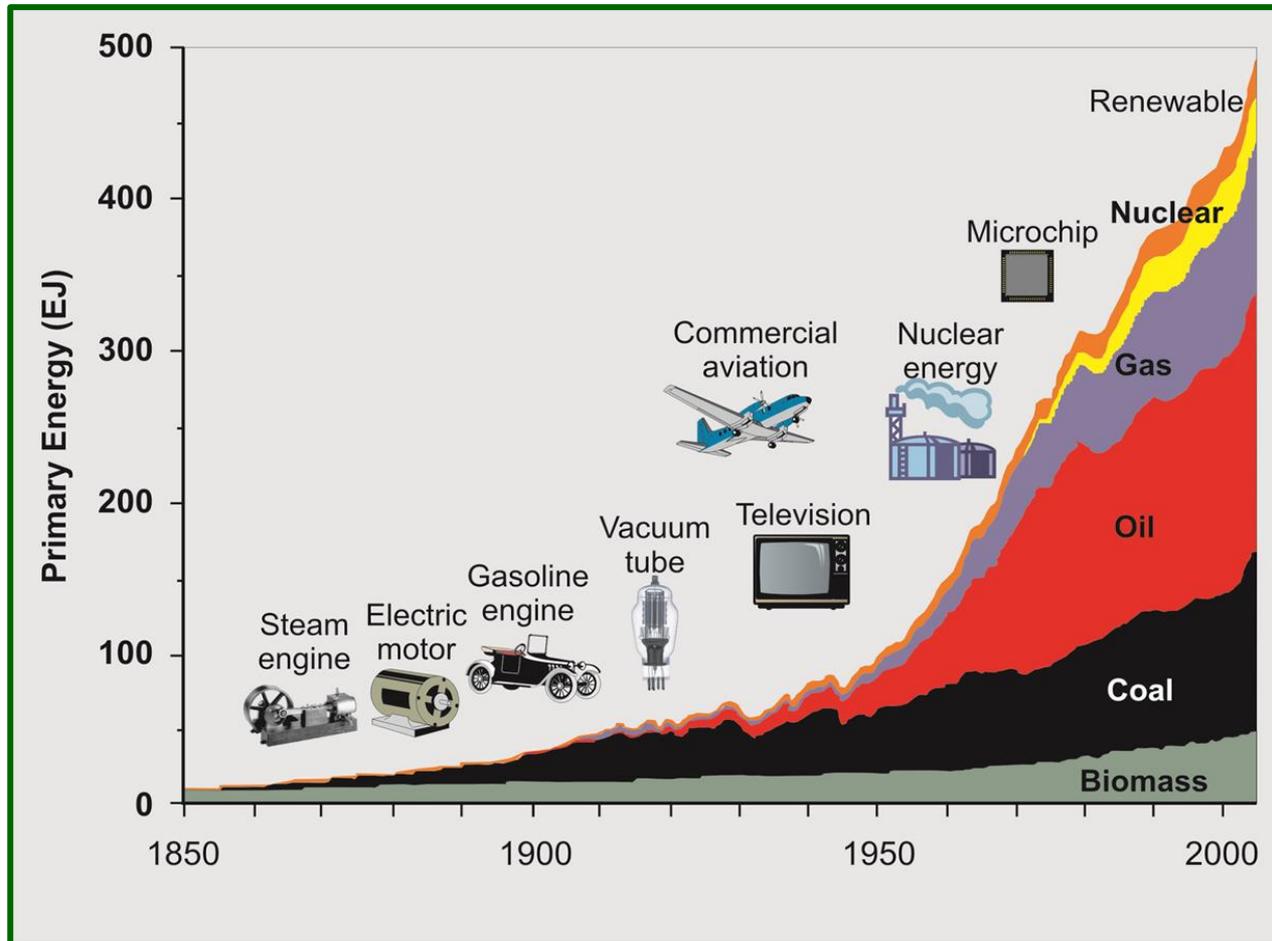
# The greenhouse effect



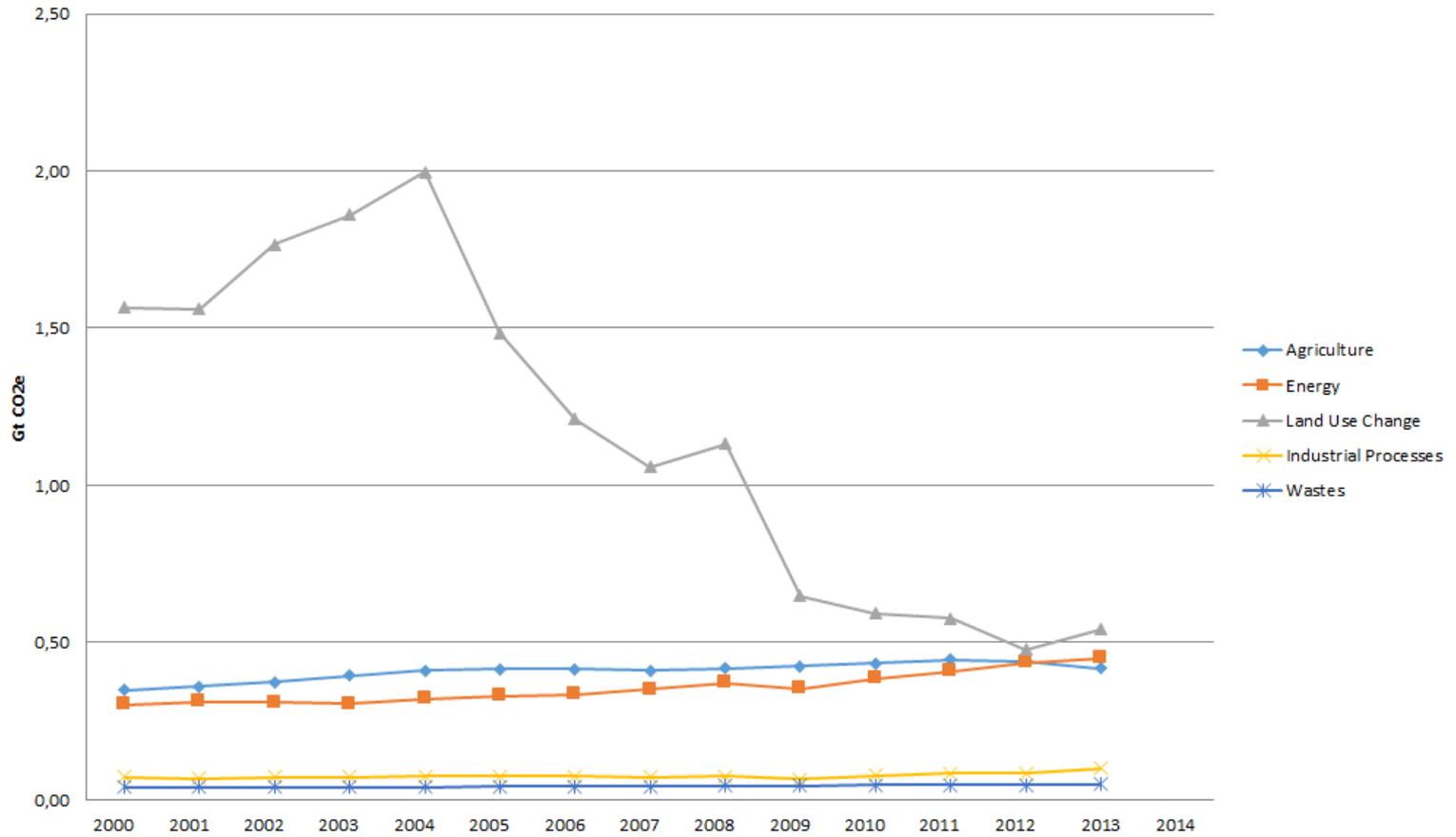
## CO<sub>2</sub> Concentration in Mauna Loa (Havaí)



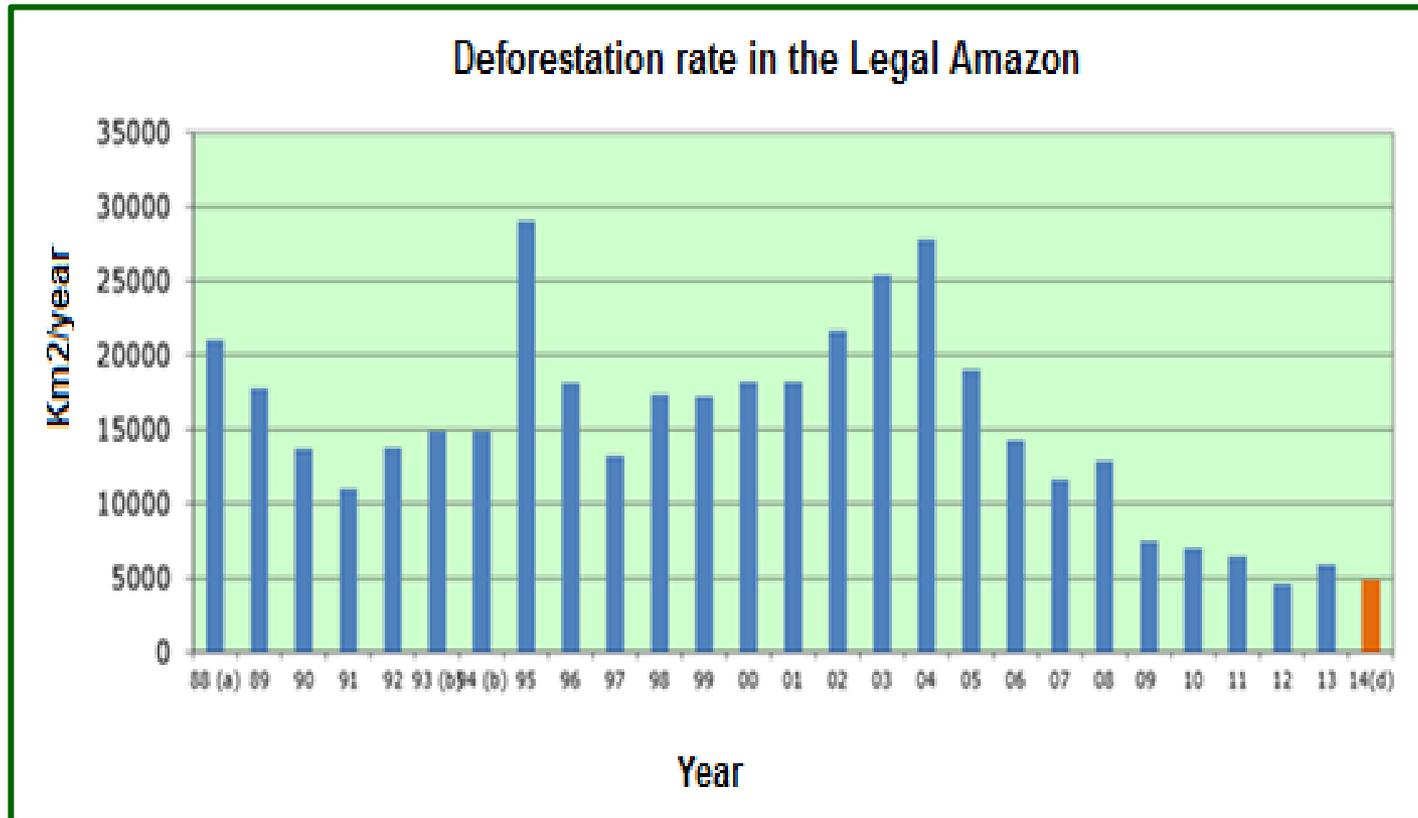
# Evolution of the world's energy consumption



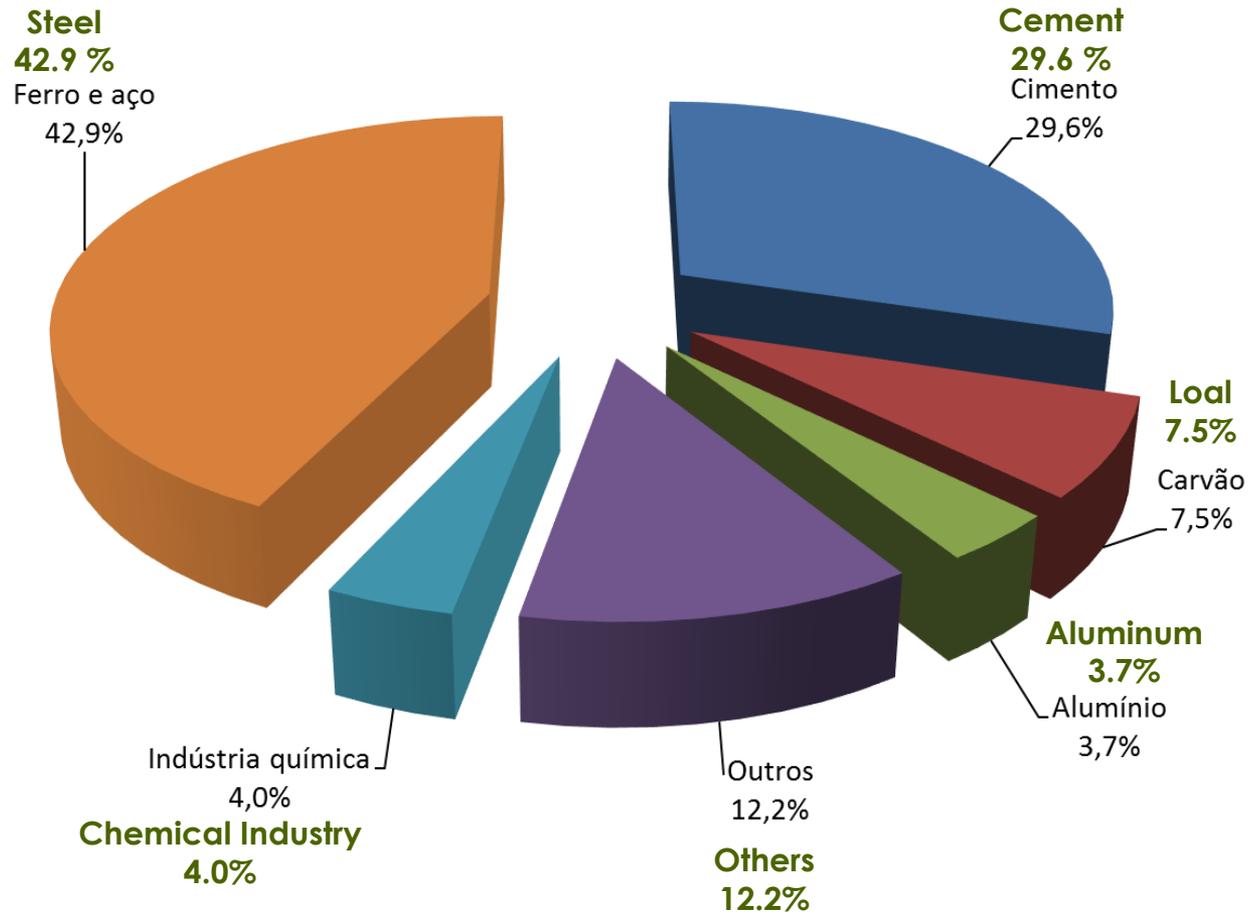
### Brazilian GHG emissions



## Annual Deforestation Rates in the Legal Amazon (1988-2014)



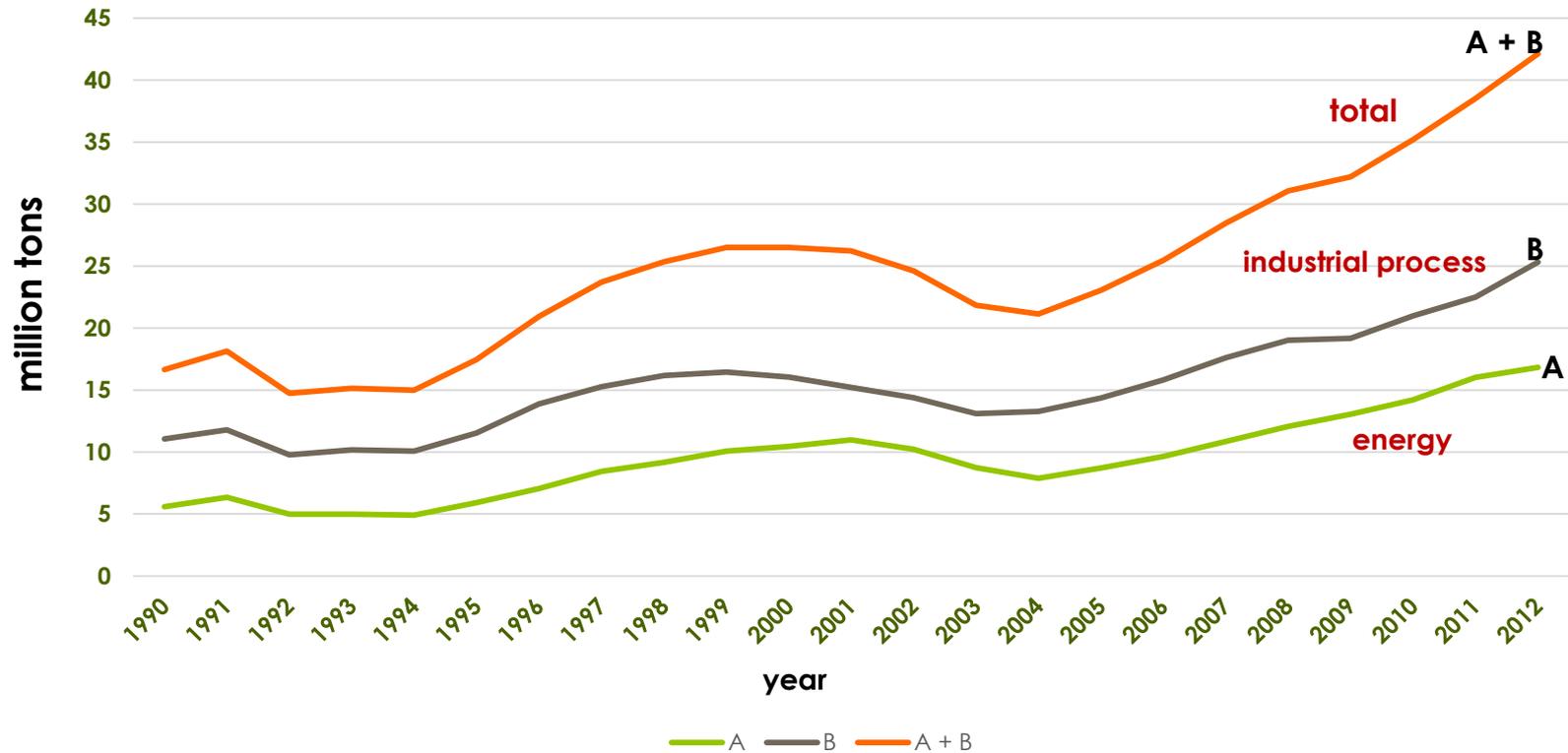
## CO<sub>2</sub> emissions in Brasil (2012) Industrial Process (85.365 x 10<sup>6</sup>tons)



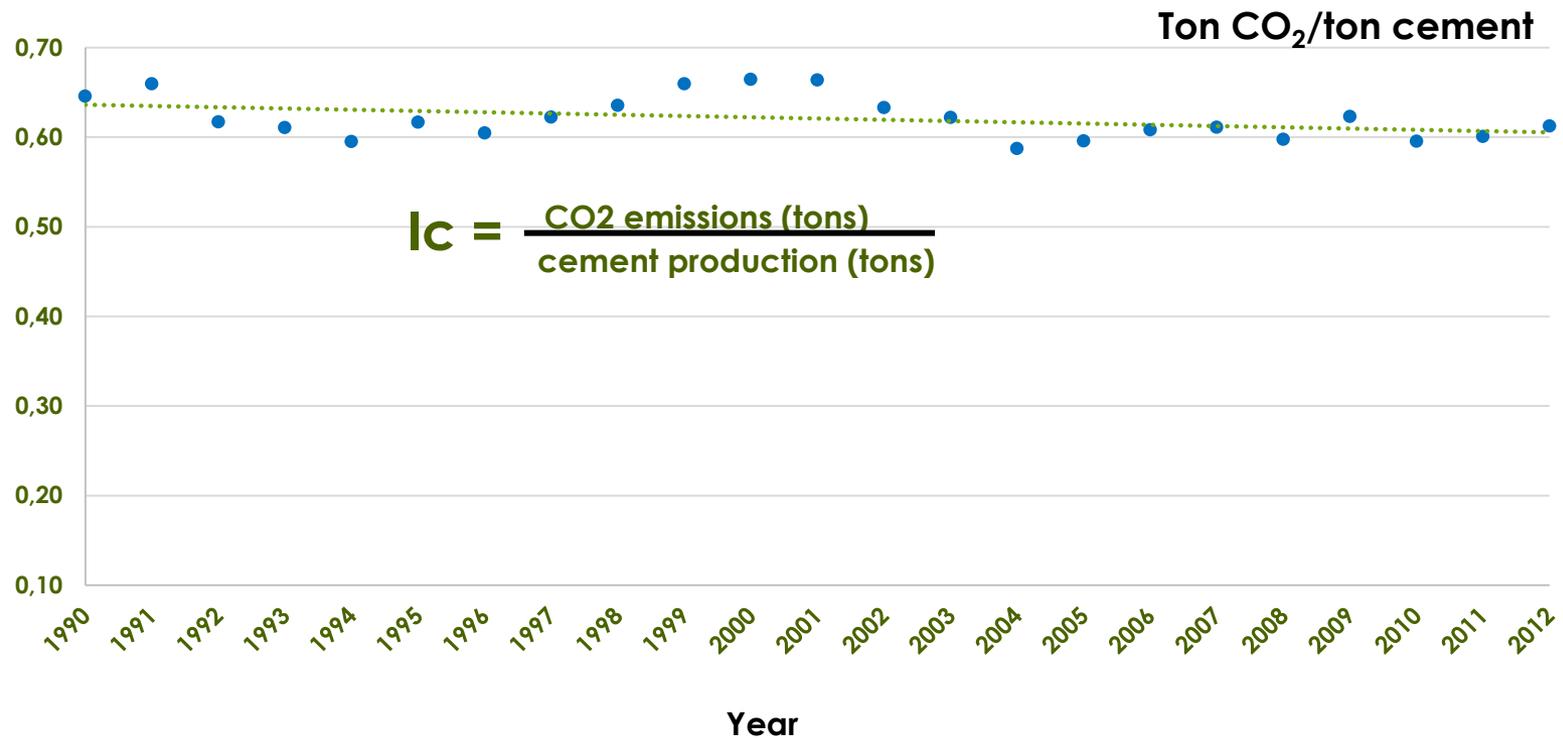
## Evolução das emissões de GEE na produção, transformação e no uso de energia

Setores <sup>(1)</sup>	MtCO <sub>2</sub> eq	
	2014	2023
<b>Setor Elétrico <sup>(2)</sup></b>	64	73
Sistema Interligado Nacional	45,0	37,5
Autoprodução	18,9	35,1
Setor Energético	29	57
Residencial	18	21
Comercial	2	3
Público	1	1
Agropecuário	18	22
Transportes	224	306
Industrial	106	145
Emissões fugitivas	21	33
<b>Total</b>	<b>483</b>	<b>660</b>

## CO<sub>2</sub> emissions in cement production in Brazil



## Evolution of the carbon intensity of the cement industry in Brazil (Ic)



## **The decline in the carbono intensity in Brazil**

- I. Alternative fuels**
- II. Improvement in energy efficiency**
- III. Additives**
- IV. New Technologies (including CCS)**