



Centro Clima

**CENTRO DE ESTUDOS INTEGRADOS SOBRE
MEIO AMBIENTE E MUDANÇAS CLIMÁTICAS**

**Center for Integrated Studies on Climate Change
and the Environment**

Federal University of Rio de Janeiro – Brazil



UFRJ



Ciência e Tecnologia para o Brasil

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MAJOR FEATURES OF THE BRAZILIAN ECONOMY - 2002



- GDP of US\$ 500 billions
- Population of 174 millions inhabitants
- GDP/cap of US\$ 2,800
- Land Area of 8.5 millions km²

GHG Emissions in Brazil

1st National Communication: Inventory of Brazilian GHG Emissions in 1990-1994

- CO_2 emissions from LULUCF = three times higher than emissions from the energy system
- GHG emissions from cattle raising activities: nearly equal to CO_2 emissions from fossil fuels

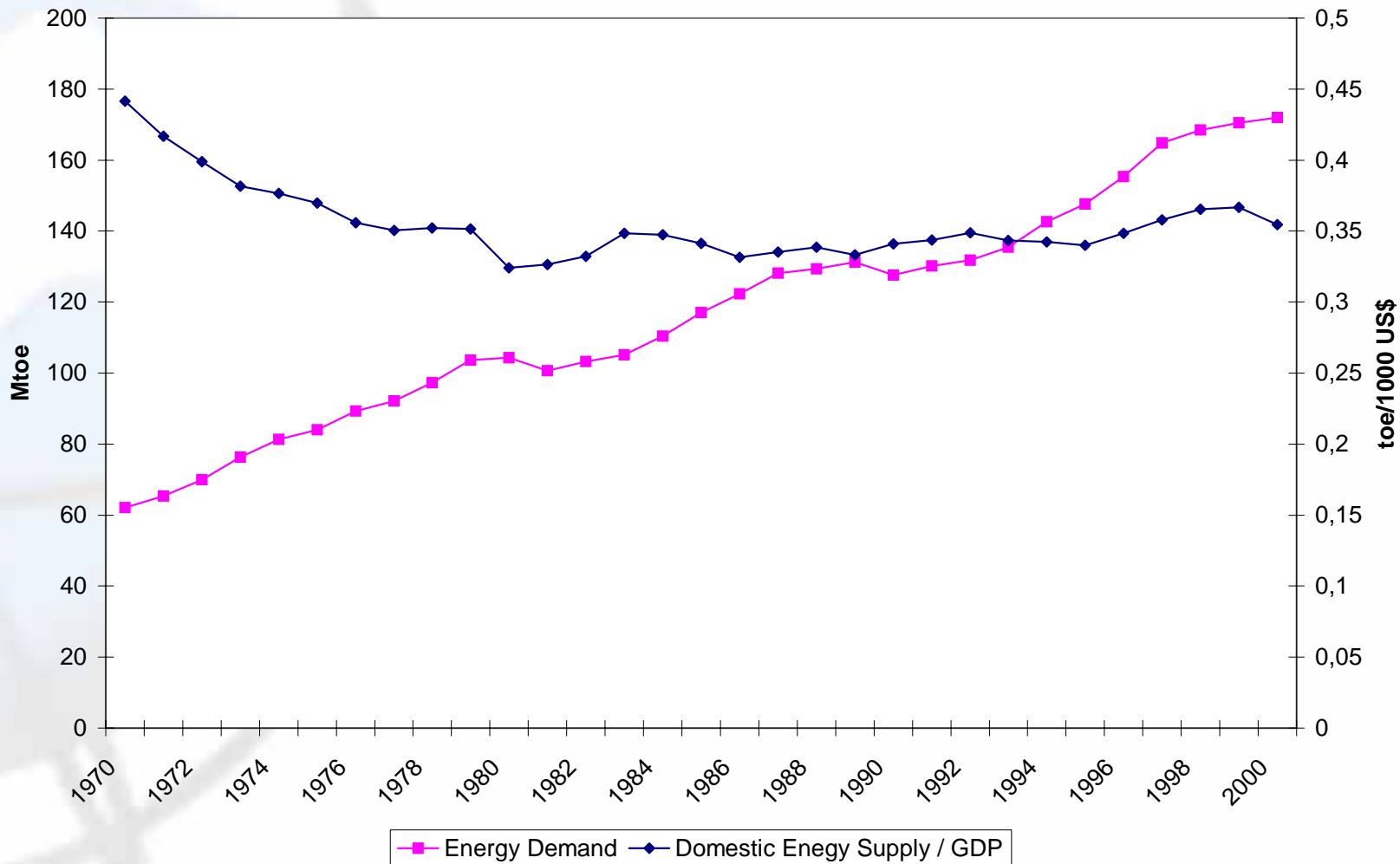
Medium and long-term prospects:

- CO_2 emissions from energy will be dominant

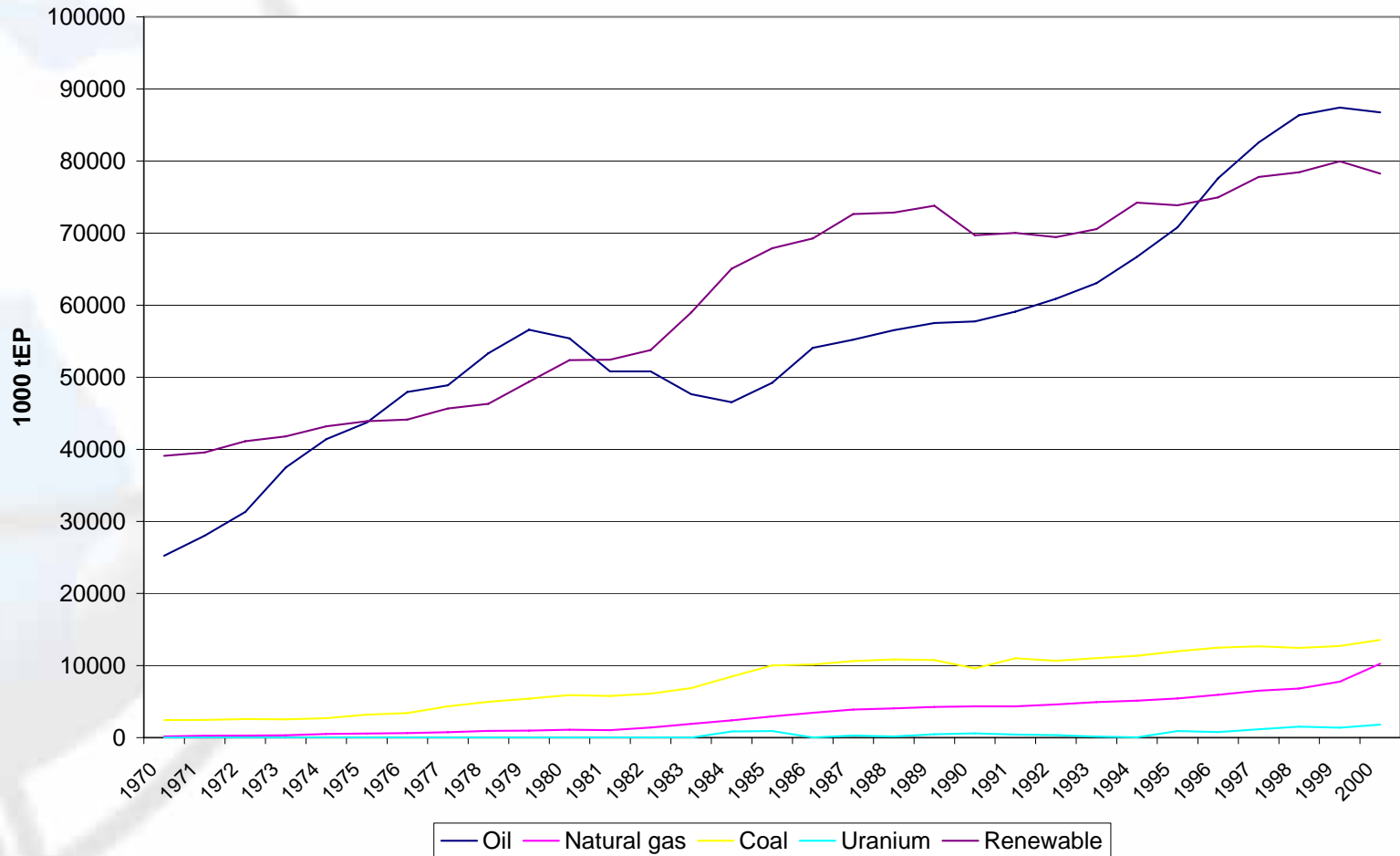
Challenges in Land-use Change Emissions

- Deforestation drivers go far beyond economic factors;
- Key drivers from social policies
 - Lack of access to land x agrarian reform
 - Governance:
land-use planning x enforcement of laws & regulations;
- Huge potential for reforestation of degraded land (30 million hectares).

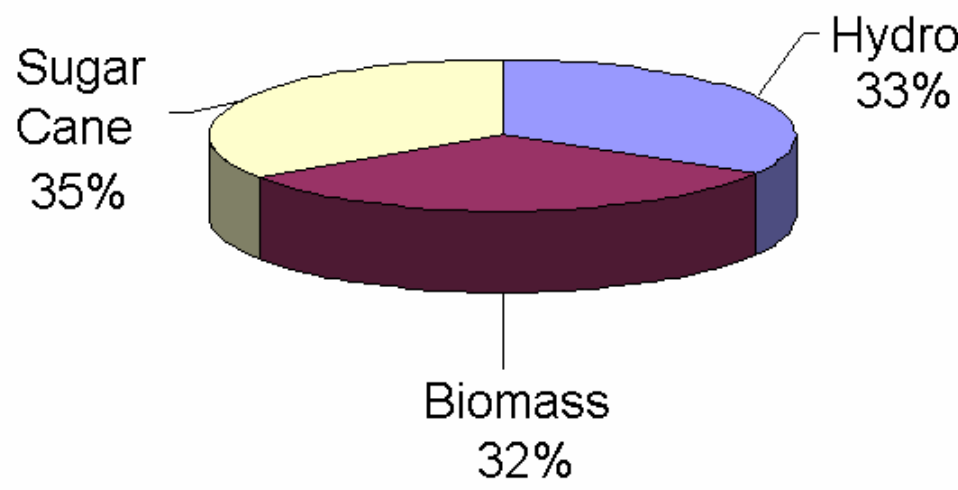
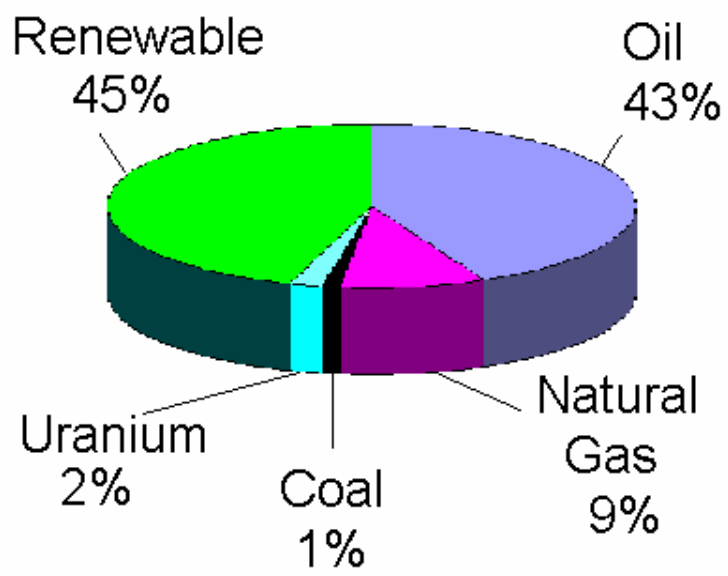
Energy Demand and Intensity



Domestic Energy Supply by Source



Primary Energy Consumption - 2002



Domestic Energy Supply (DES) - 2002

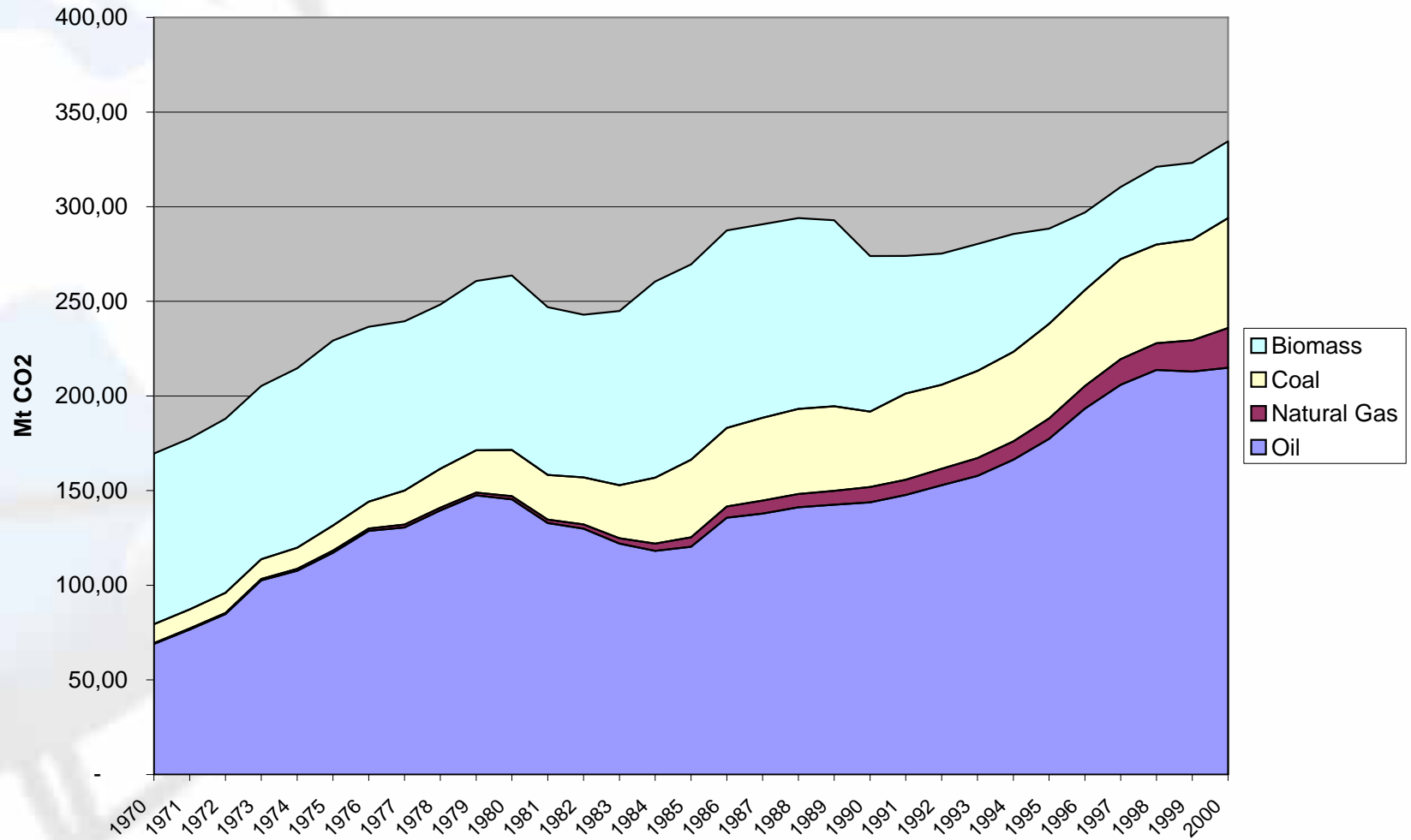
	Brazil	OECD	World
tCO ₂ / toe of DES	1.7	2.34	2.36
Renewable energy / DES	41%	6%	14%
Losses* / DES	10%	27%	26%
Import Dependence	14%	45%	-

* Distribution, Transmission and Conversion

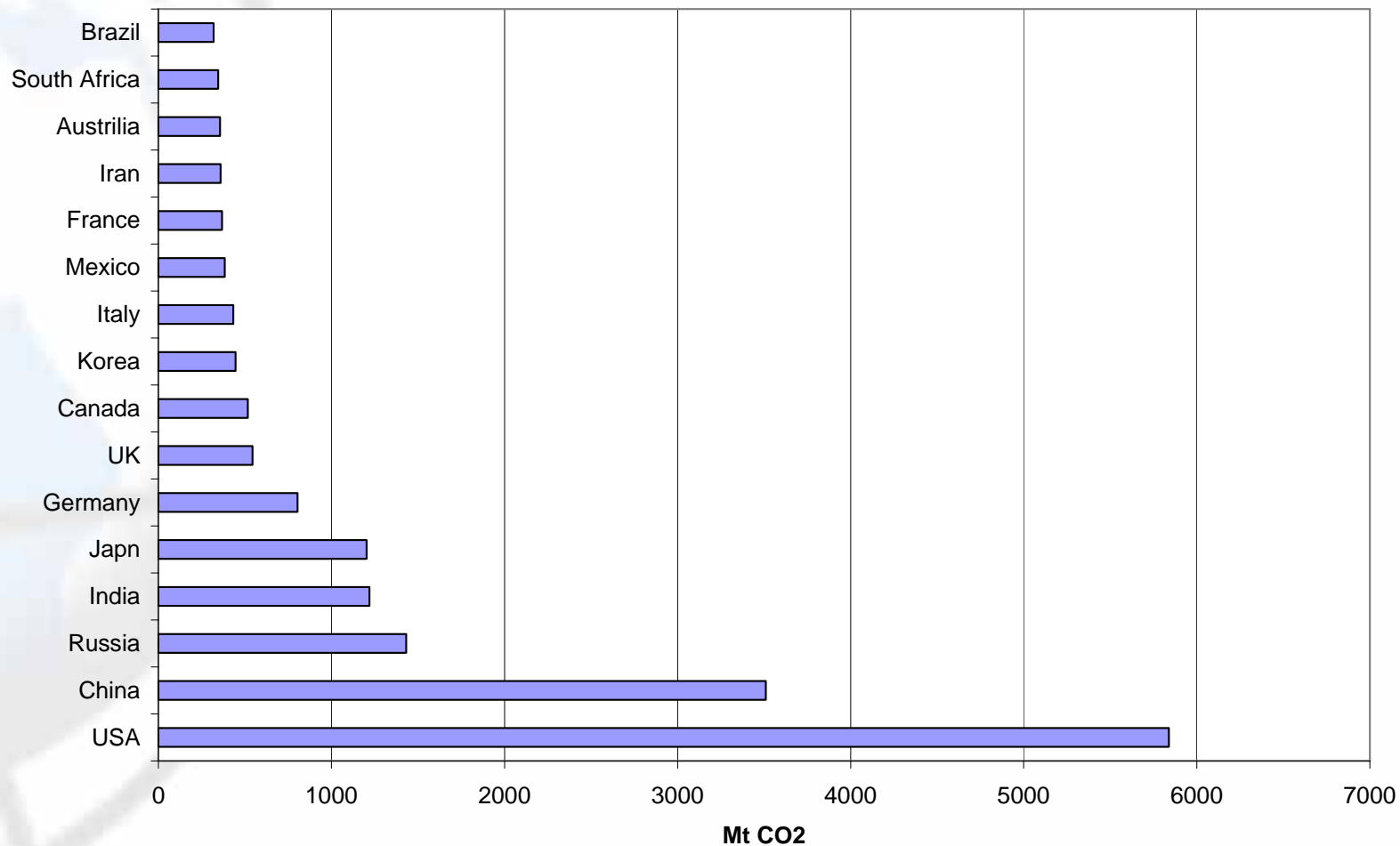
Relevance of Biomass in Brazil

- Share in total energy supply = 30% (2004);
- Main biomass energy resources: wood, charcoal, sugarcane bagasse, ethanol from sugarcane, vegetal oils, biodiesel;
- Agricultural land availability:
 - Land used by agriculture sector: 50 million ha;
 - Land used by sugar cane crops: 5 million ha;
 - Estimated land for ethanol production: 2.5 million ha;
 - Total Brazilian agricultural land: 140 million ha (exclusive of land suitable for forest plantations);
 - Land still available for agriculture: 90 million ha.

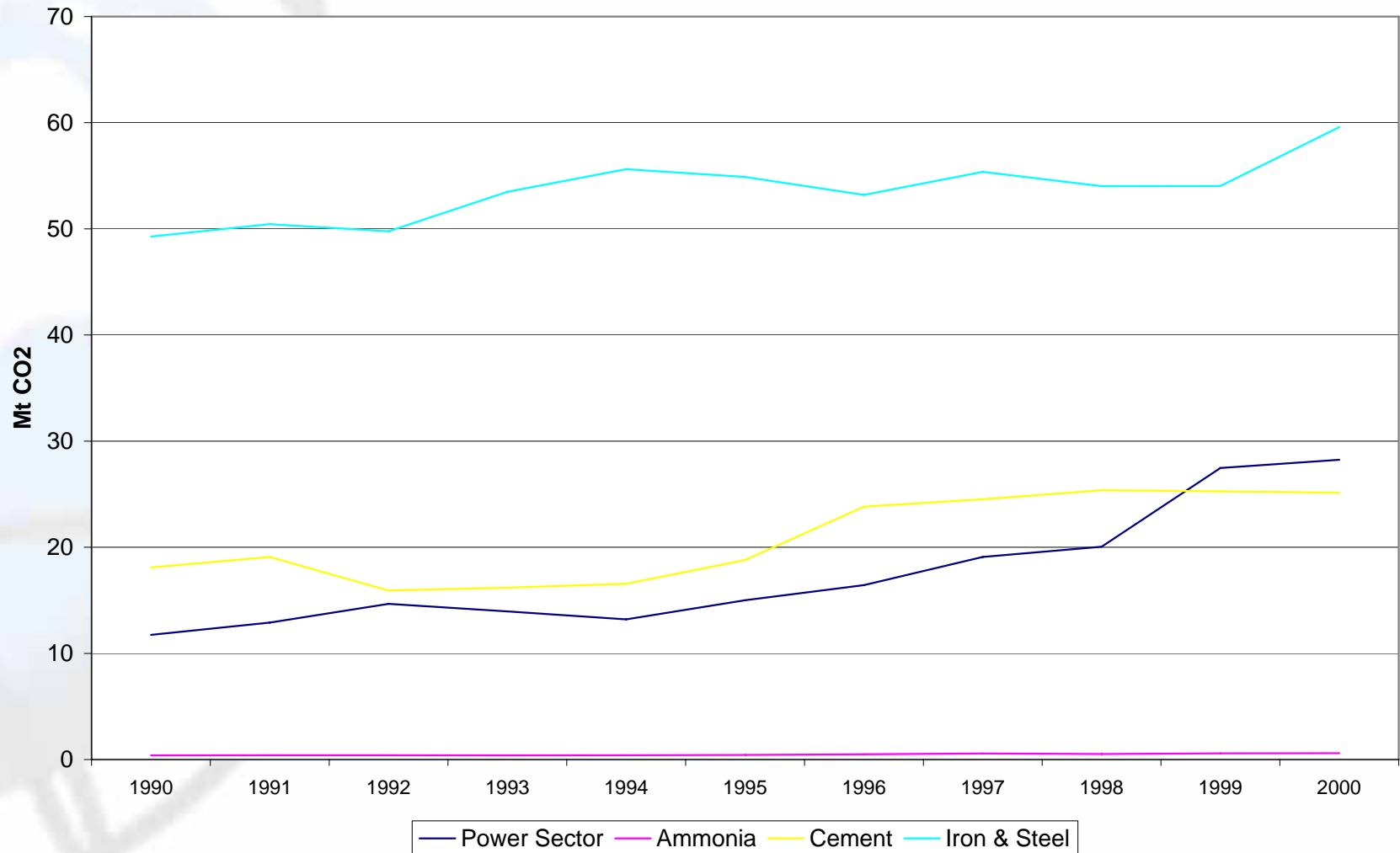
CO₂ Emissions from Energy



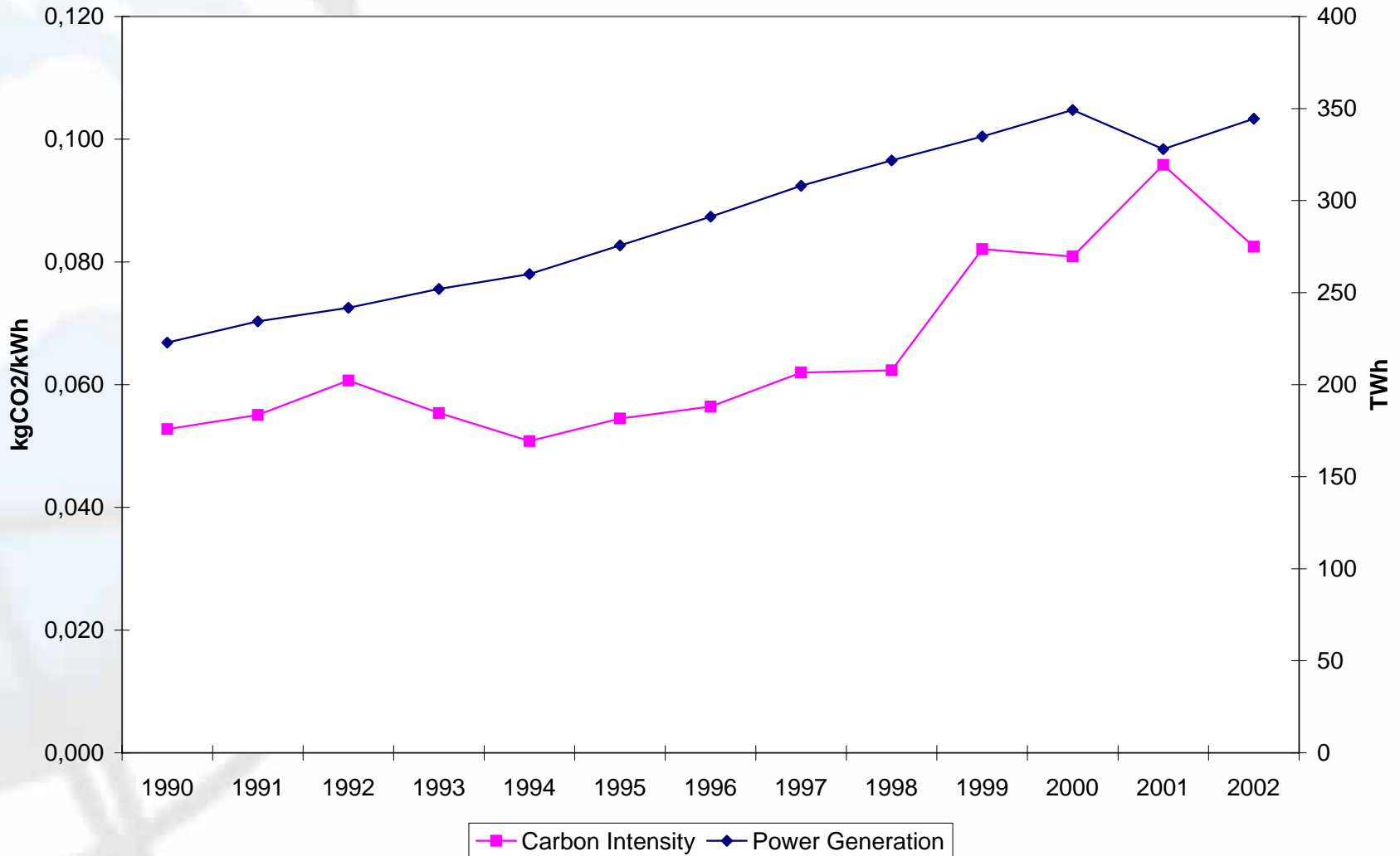
CO₂ Emissions from Energy - 2002



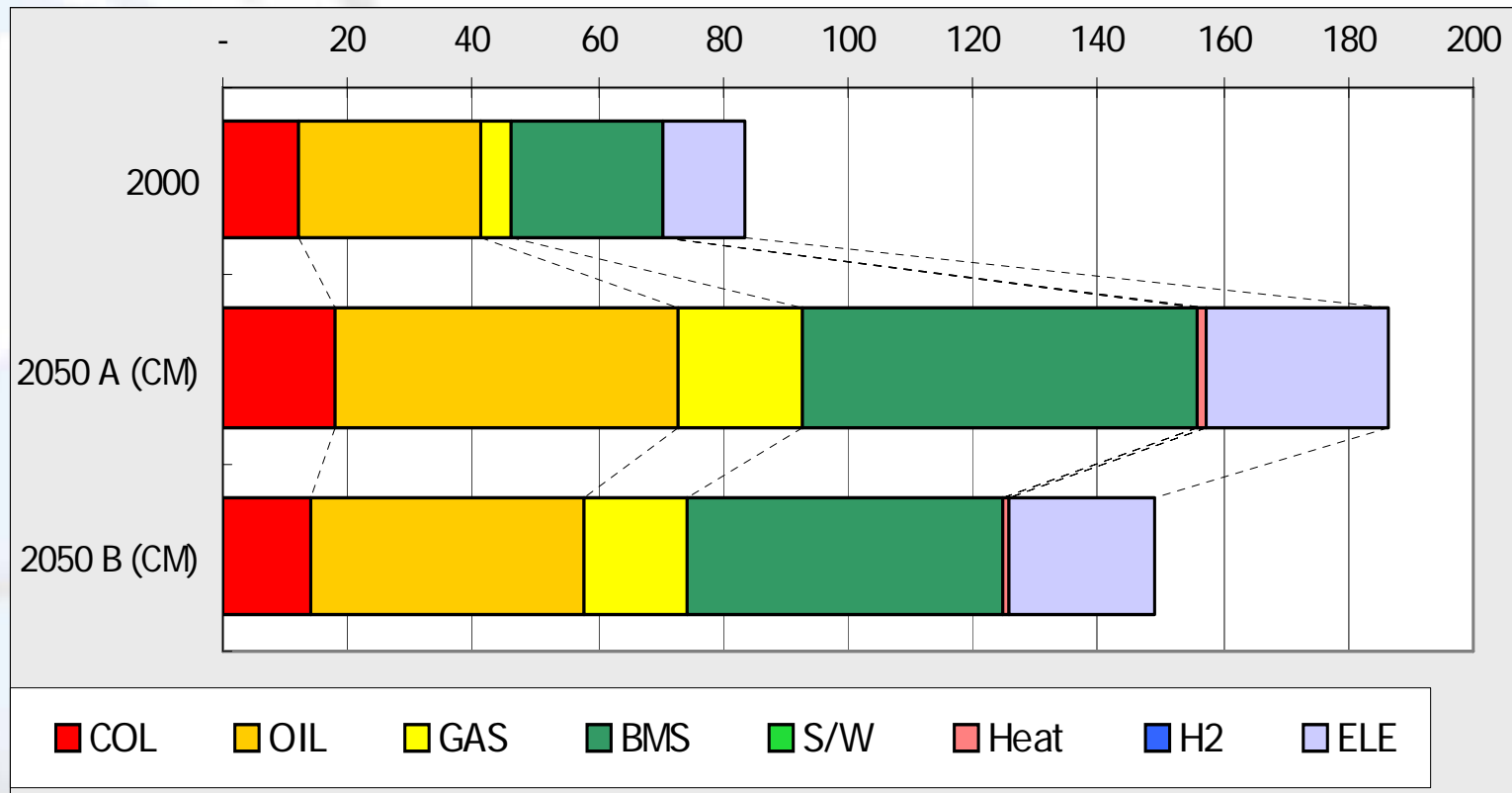
Sectoral Emissions



Carbon Intensity of Electricity

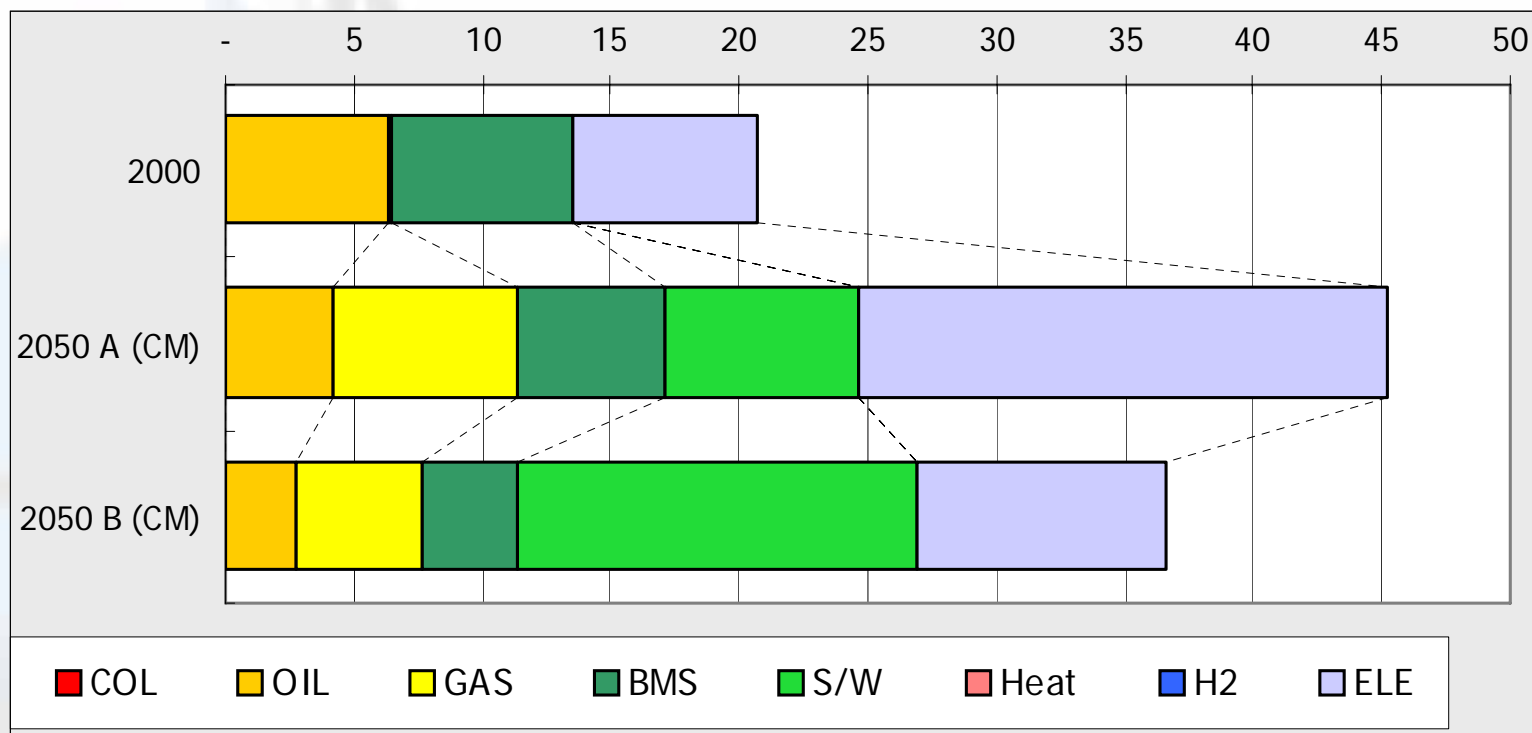


Energy Consumption in Industrial Sector - Mtoe



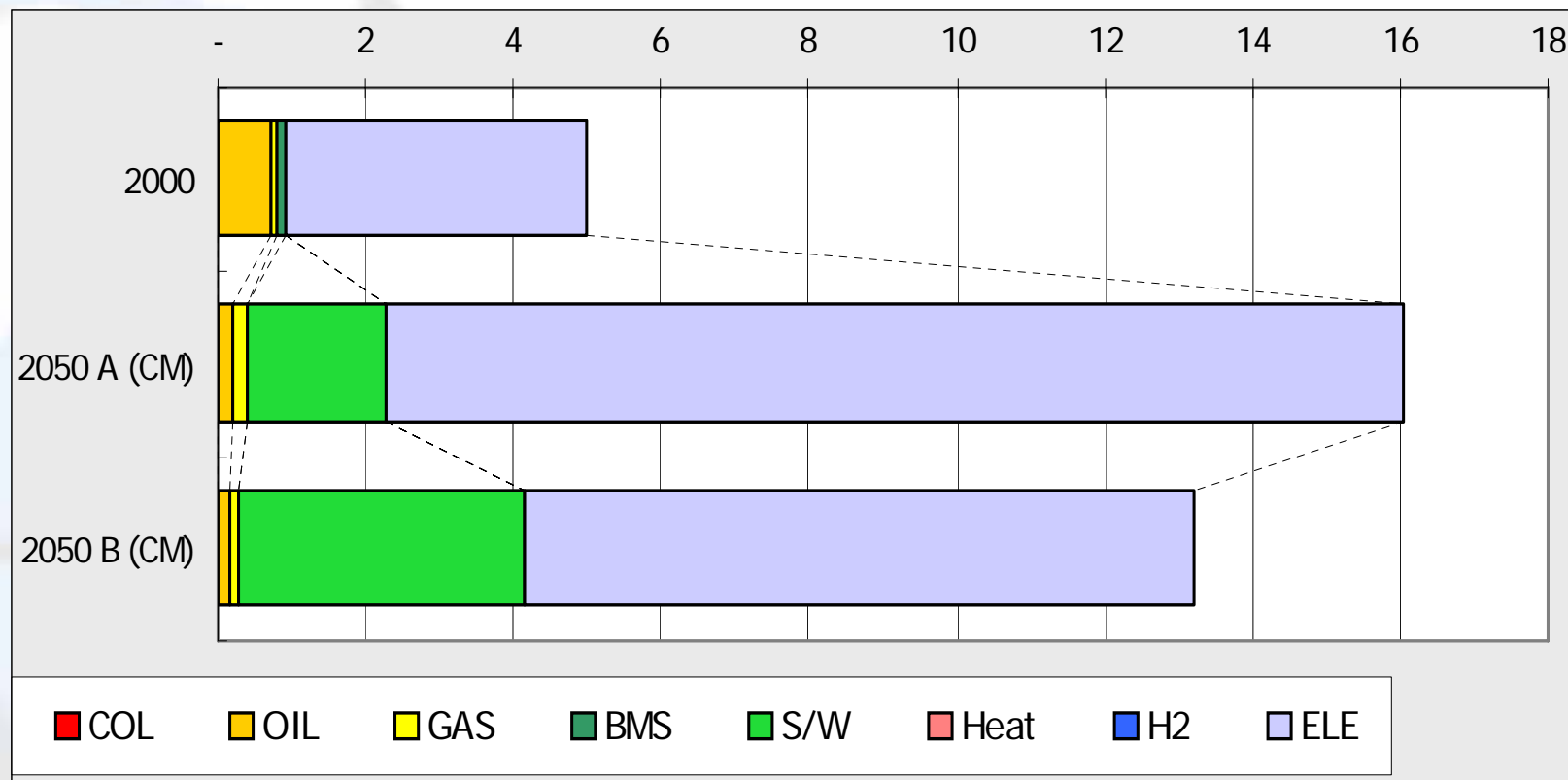
Note: these long term scenarios are based on rudimentary parametric estimates from short term scenarios. Studies regarding long term scenarios for Brazil still need to be developed.

Energy Consumption in Residential Sector - Mtoe



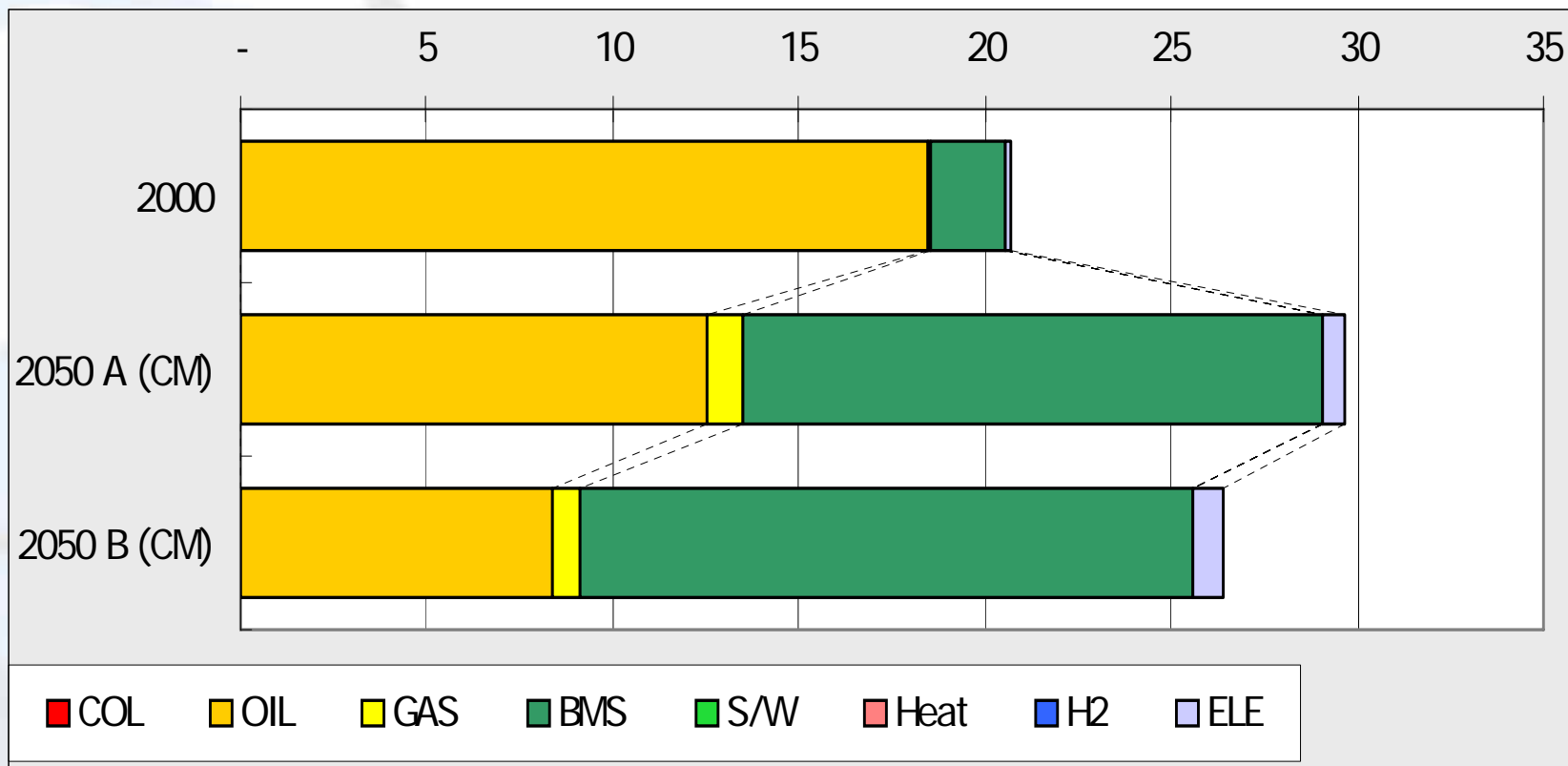
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Energy Consumption in Commercial Sector - Mtoe



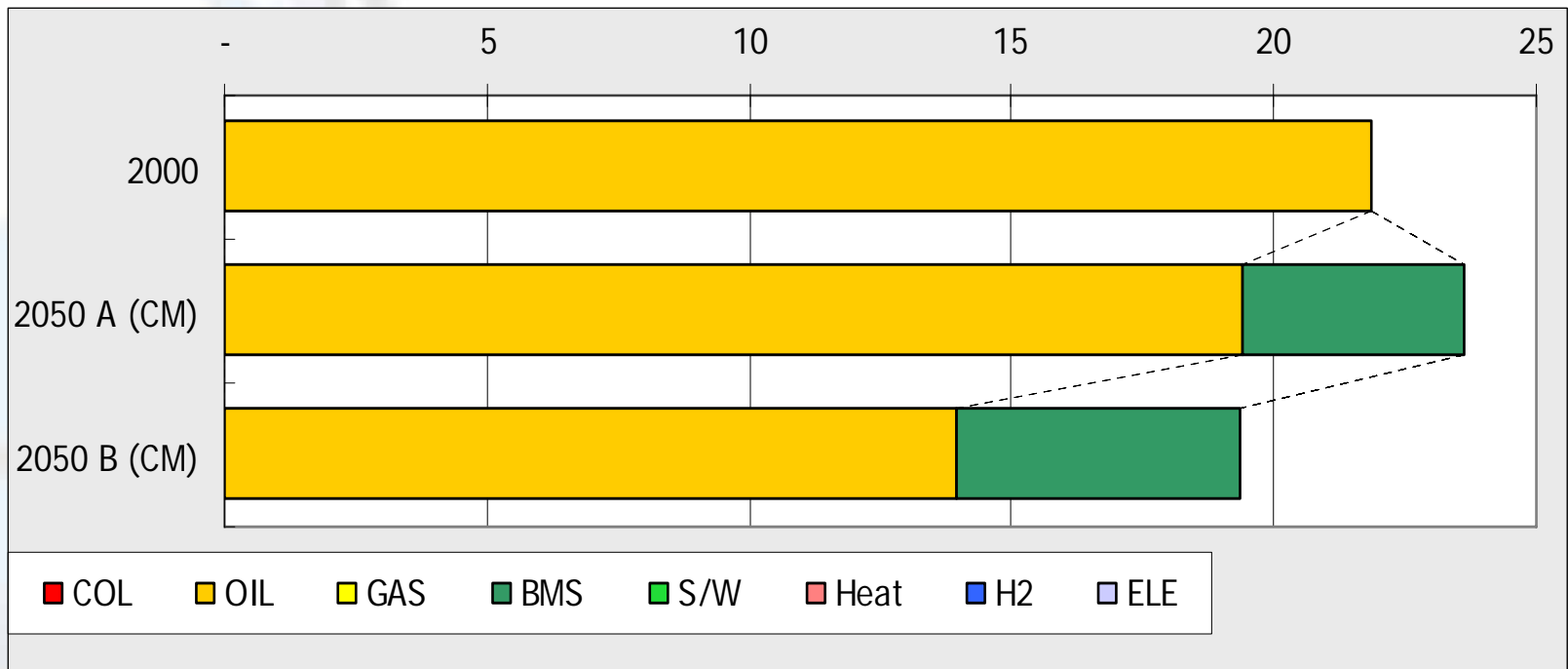
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Energy Consumption in Passenger Transportation Sector - Mtoe



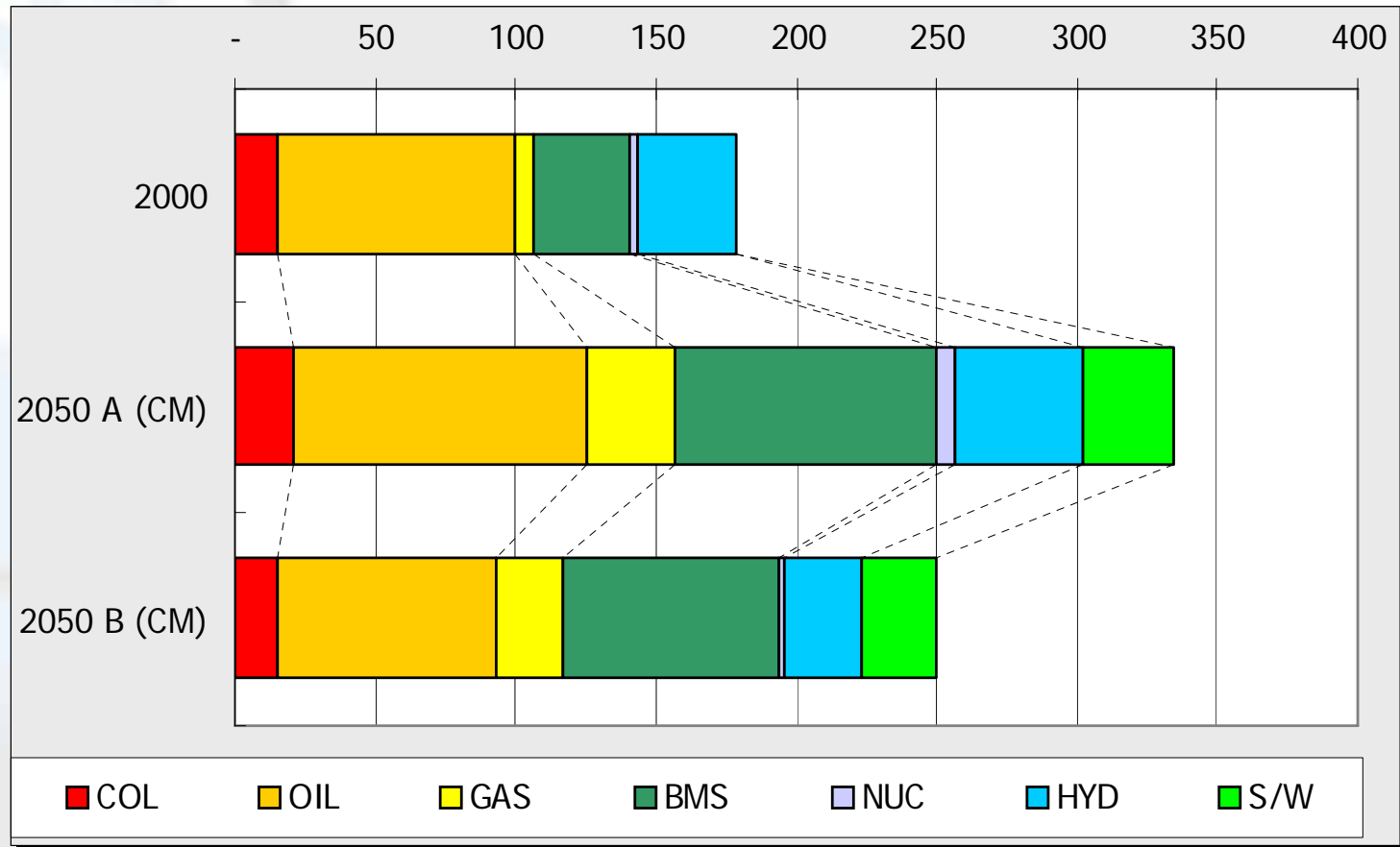
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Energy Consumption in Freight Transportation Sector - Mtoe



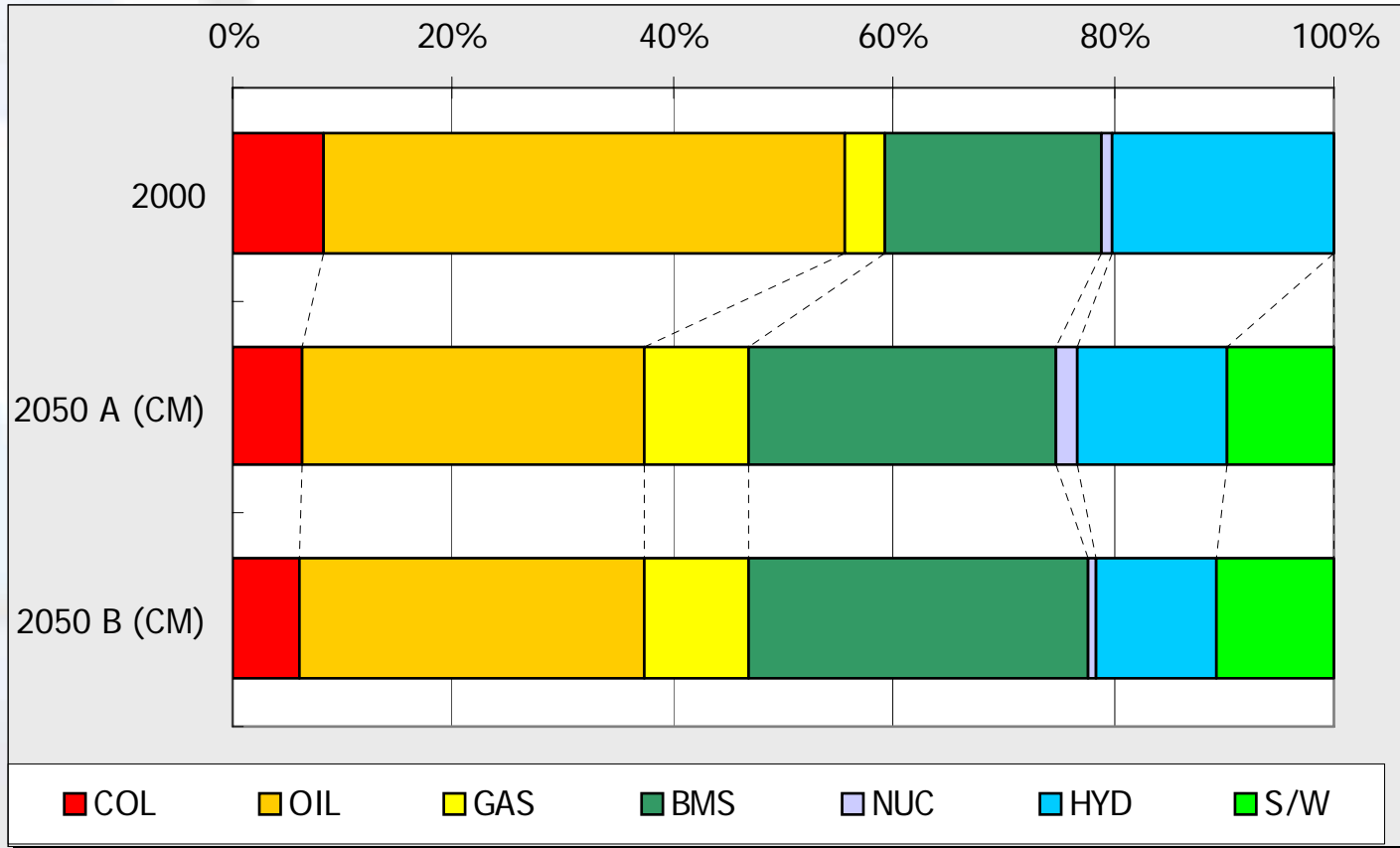
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Primary Energy Consumption - Mtoe



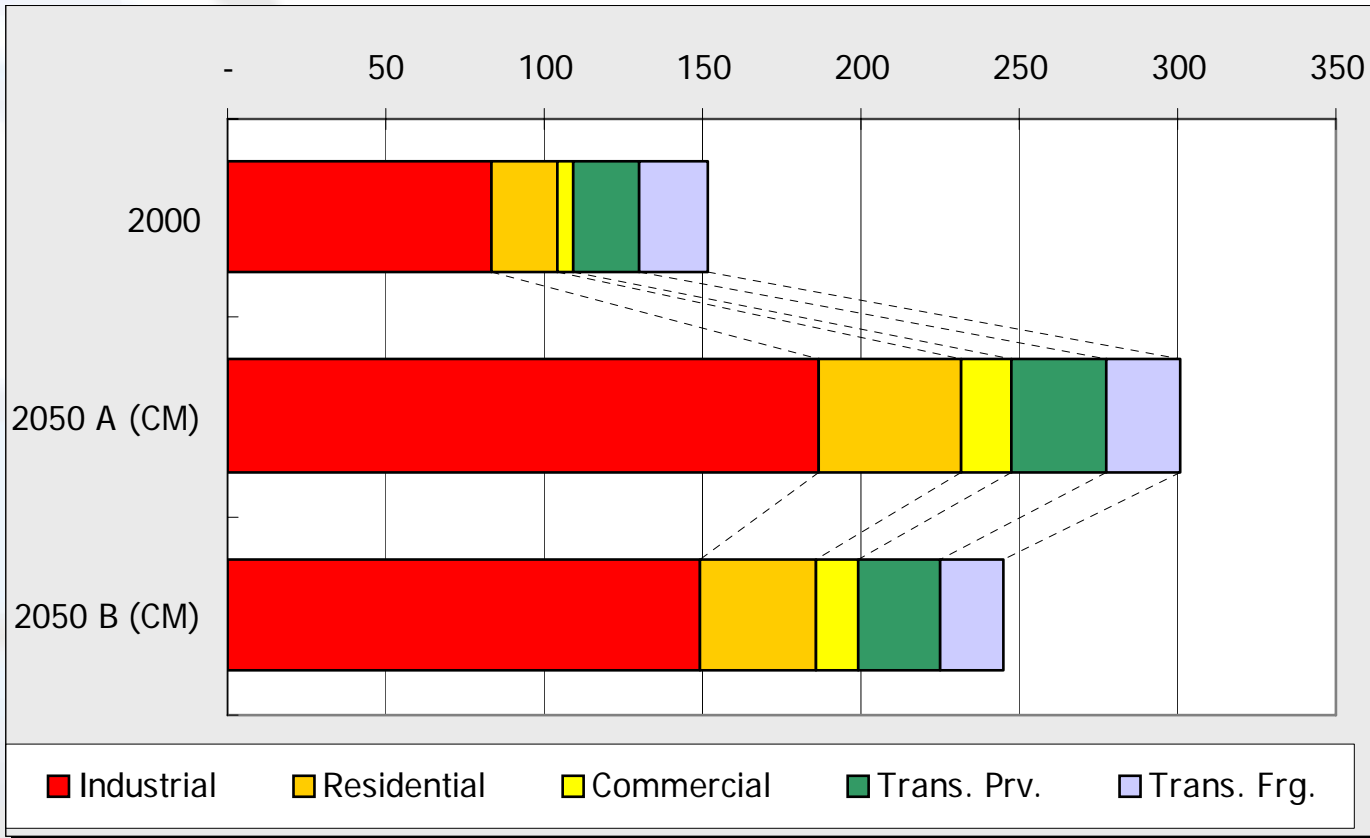
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Primary Energy Consumption



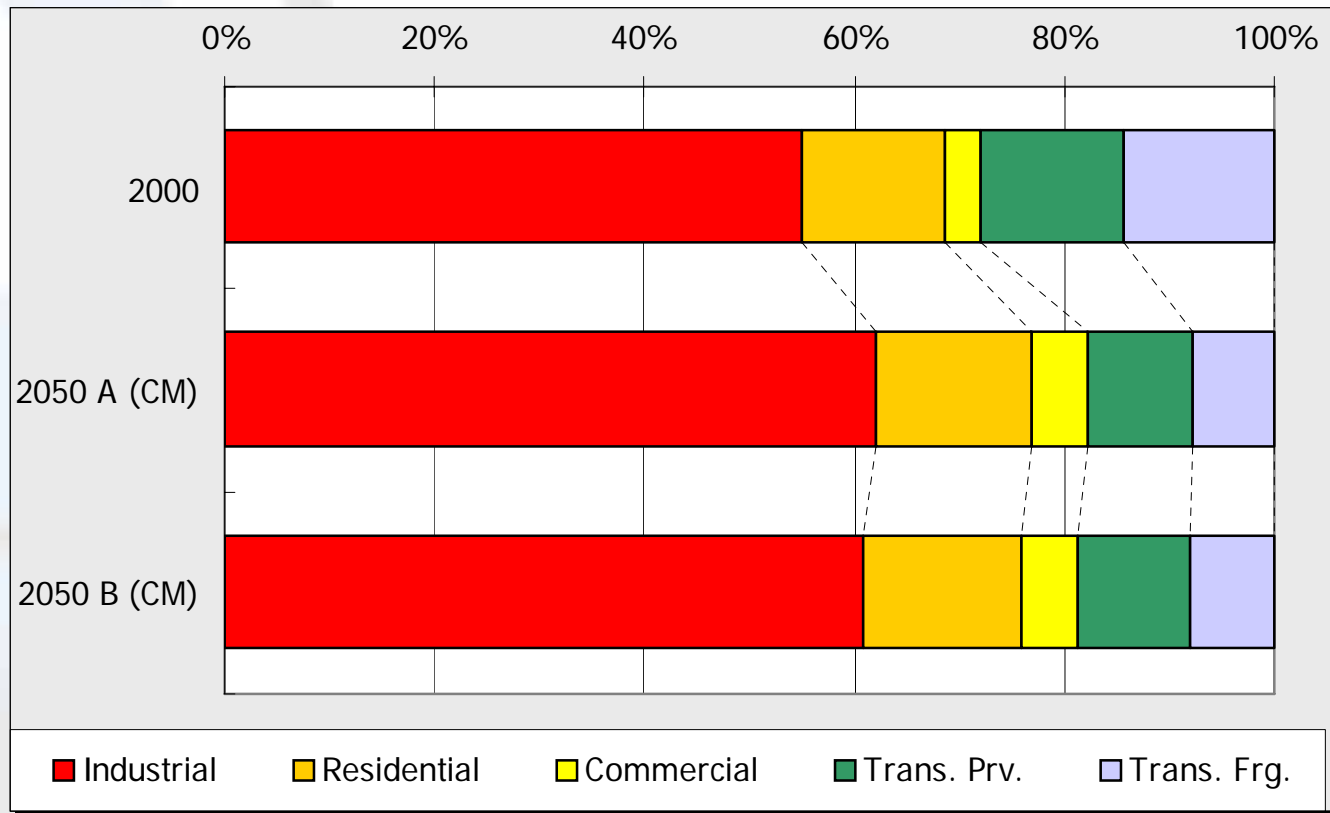
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Secondary Energy Consumption - Mtoe



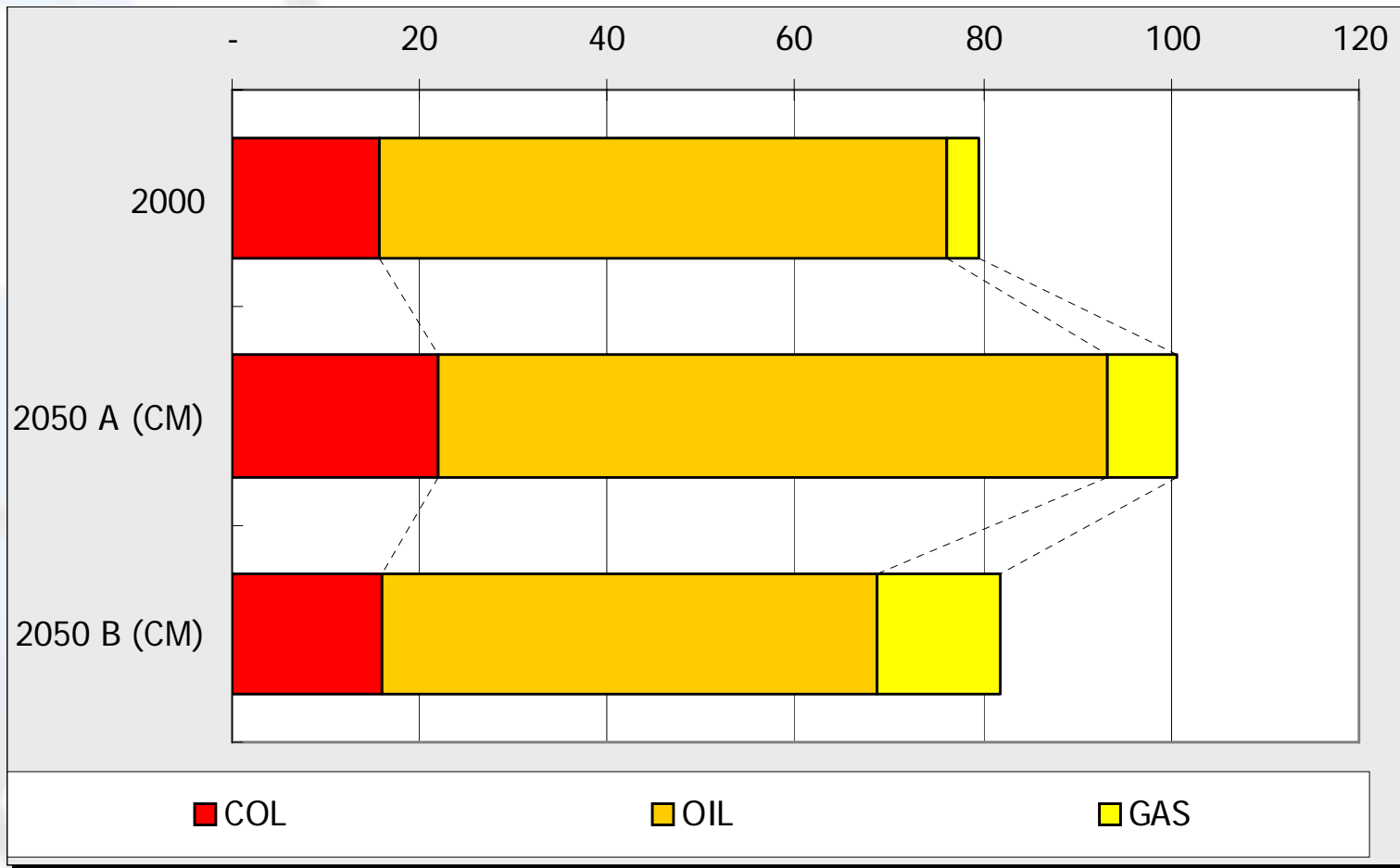
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Secondary Energy Consumption

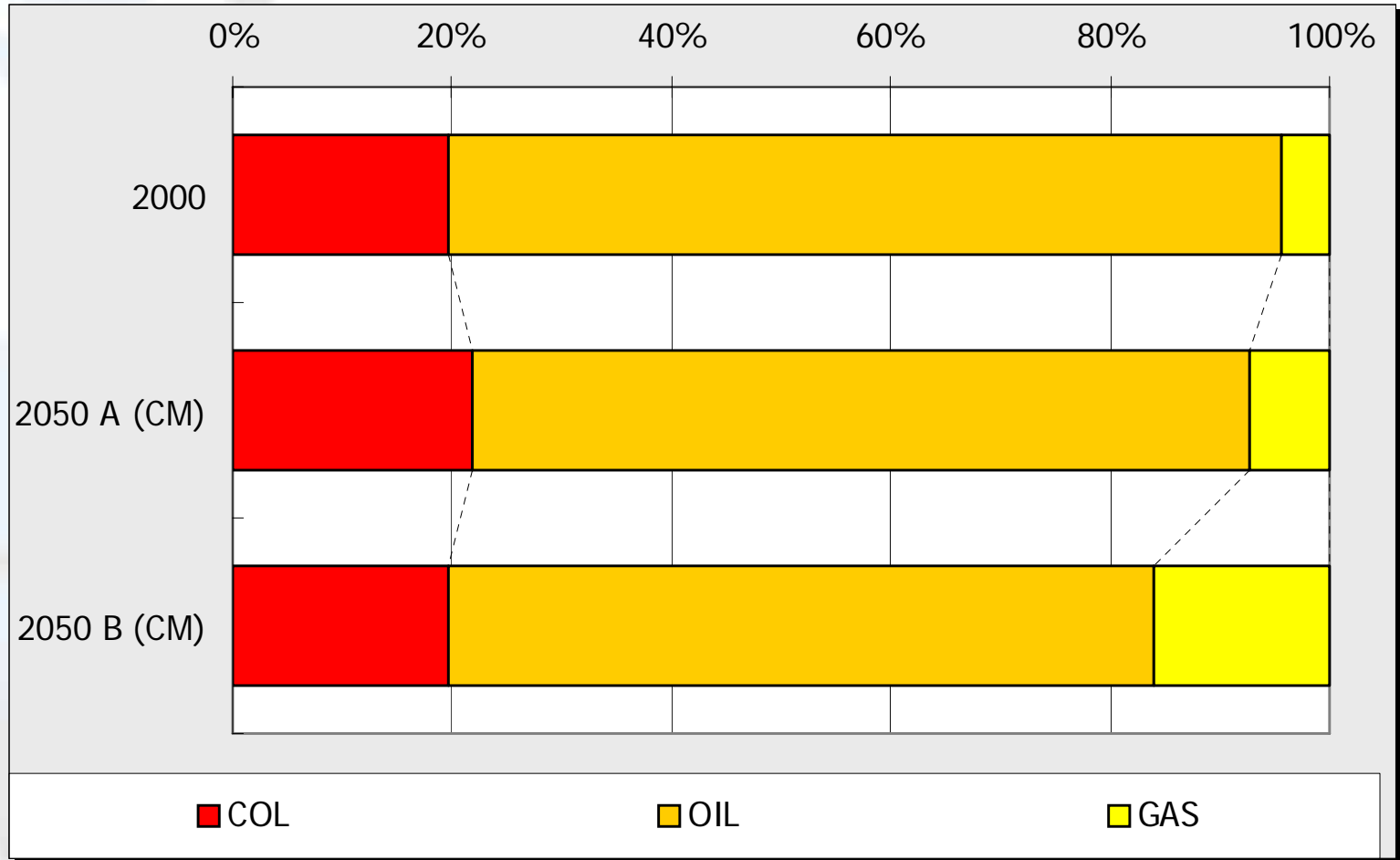


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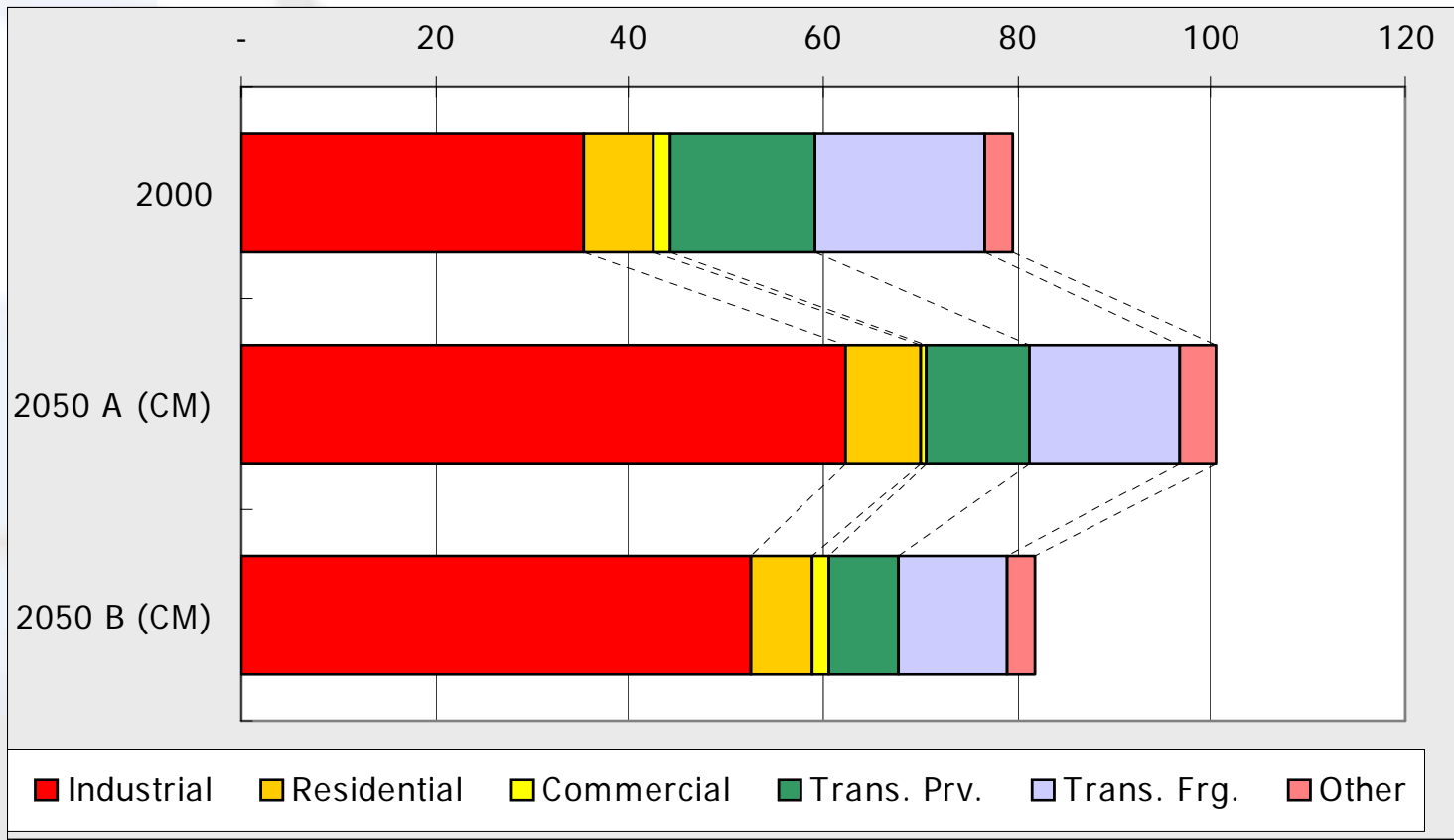
CO₂ Emission by Fuel - Mtoe



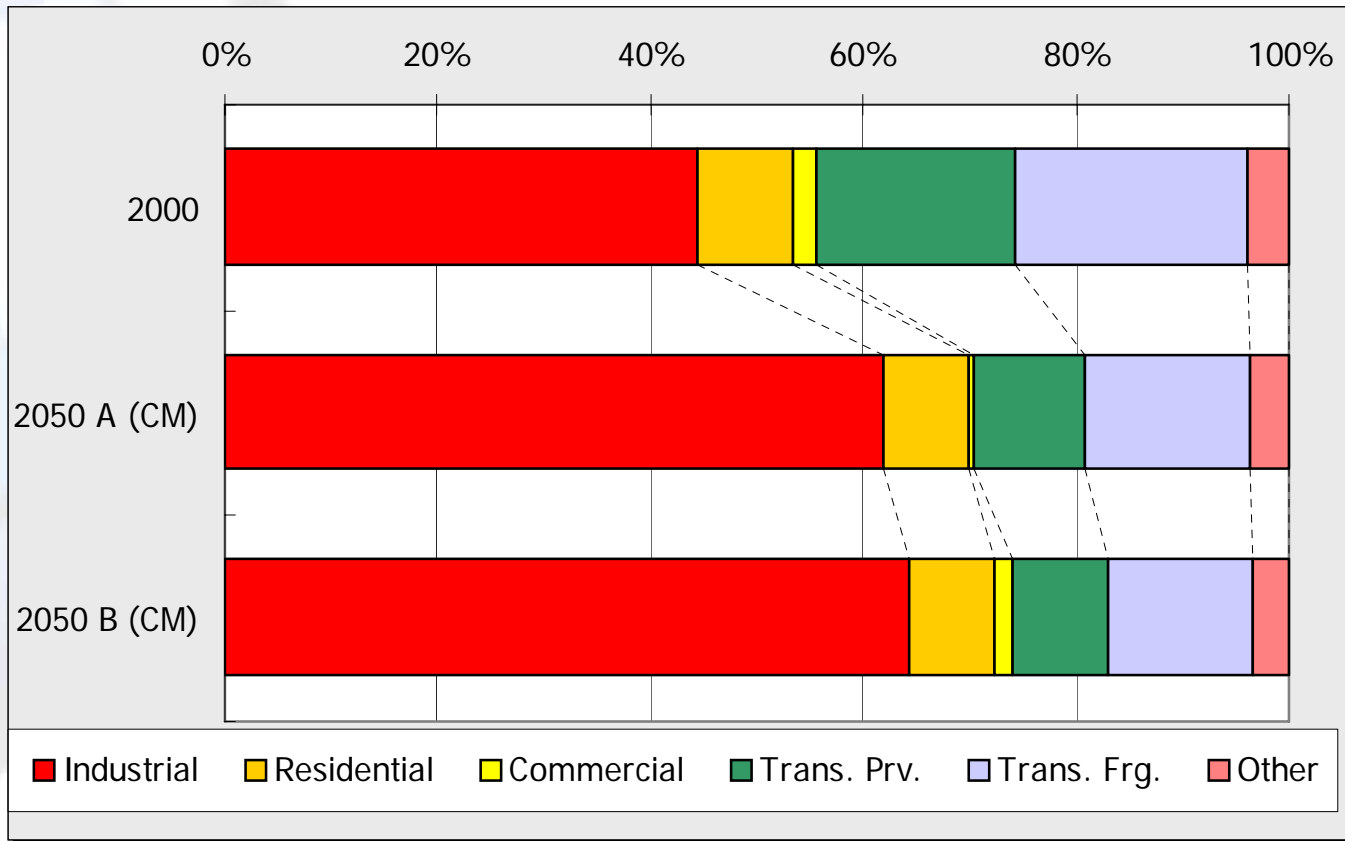
CO₂ Emission by Fuel



CO₂ Emission by Sector



CO₂ Emission by Sector





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