

Mitigation in Agriculture: Main Findings of IPCC AR4

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Agriculture

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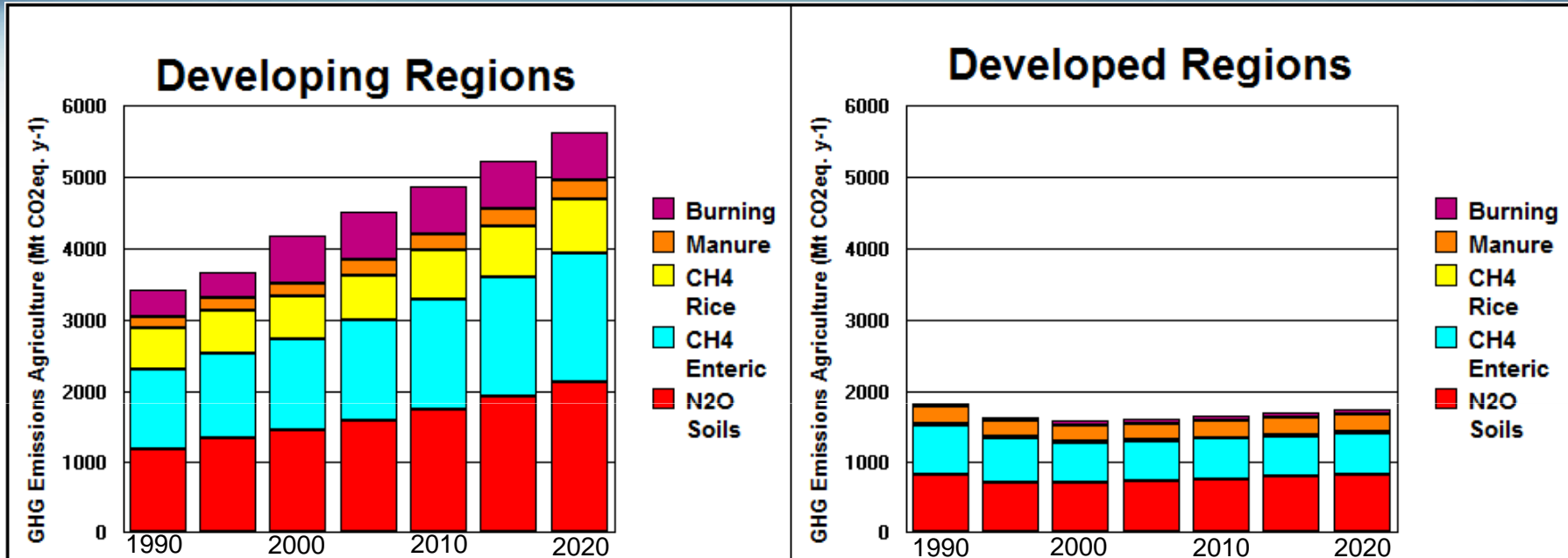
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www.mnp.nl/ipcc

Baseline emissions: Agriculture



Main drivers for trends

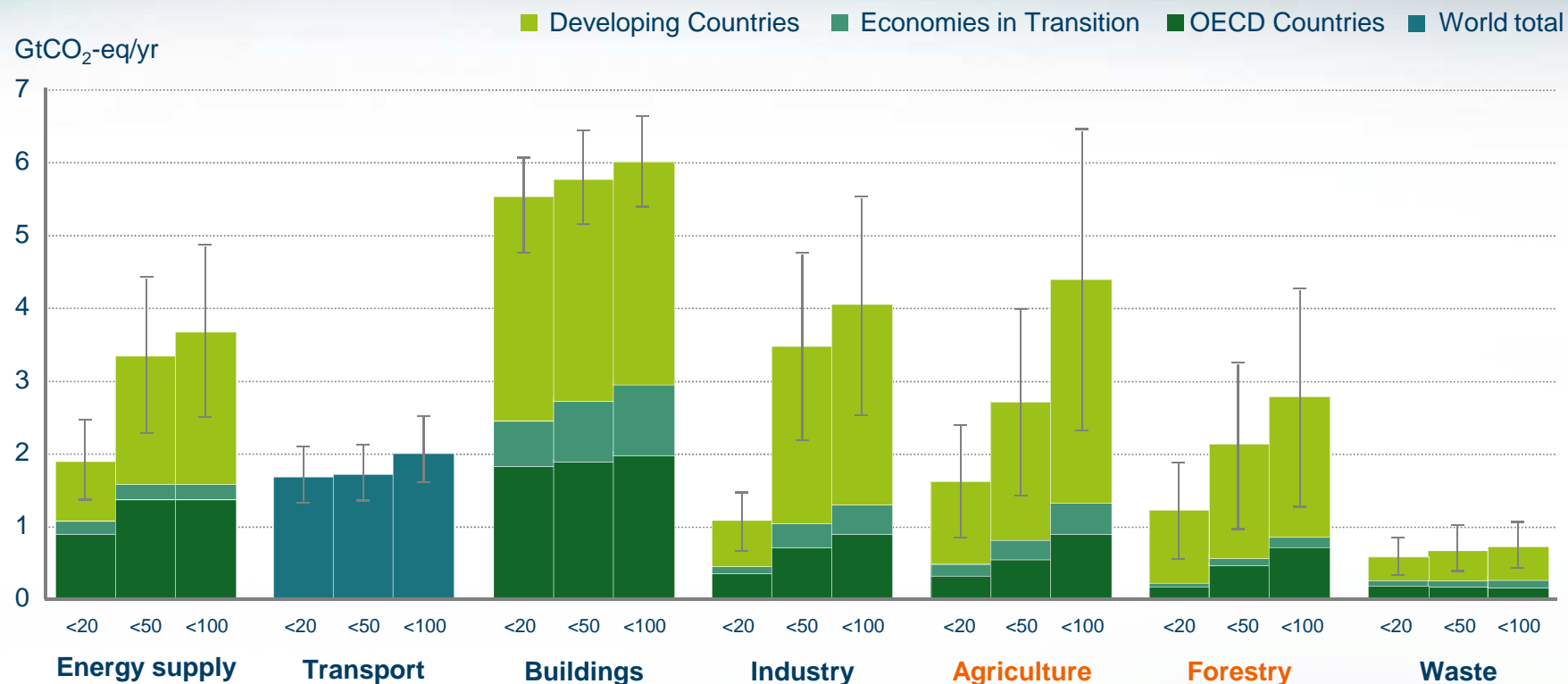
1990-2005:

Developed countries, EIT: **-12%**

Developing countries: **+32%**

- Increase in GHGs: population pressure, income increase, diet changes, technological changes
- Decrease in GHGs: increased land productivity, conservation tillage, non-climate policies

Mitigation Potentials by Sector

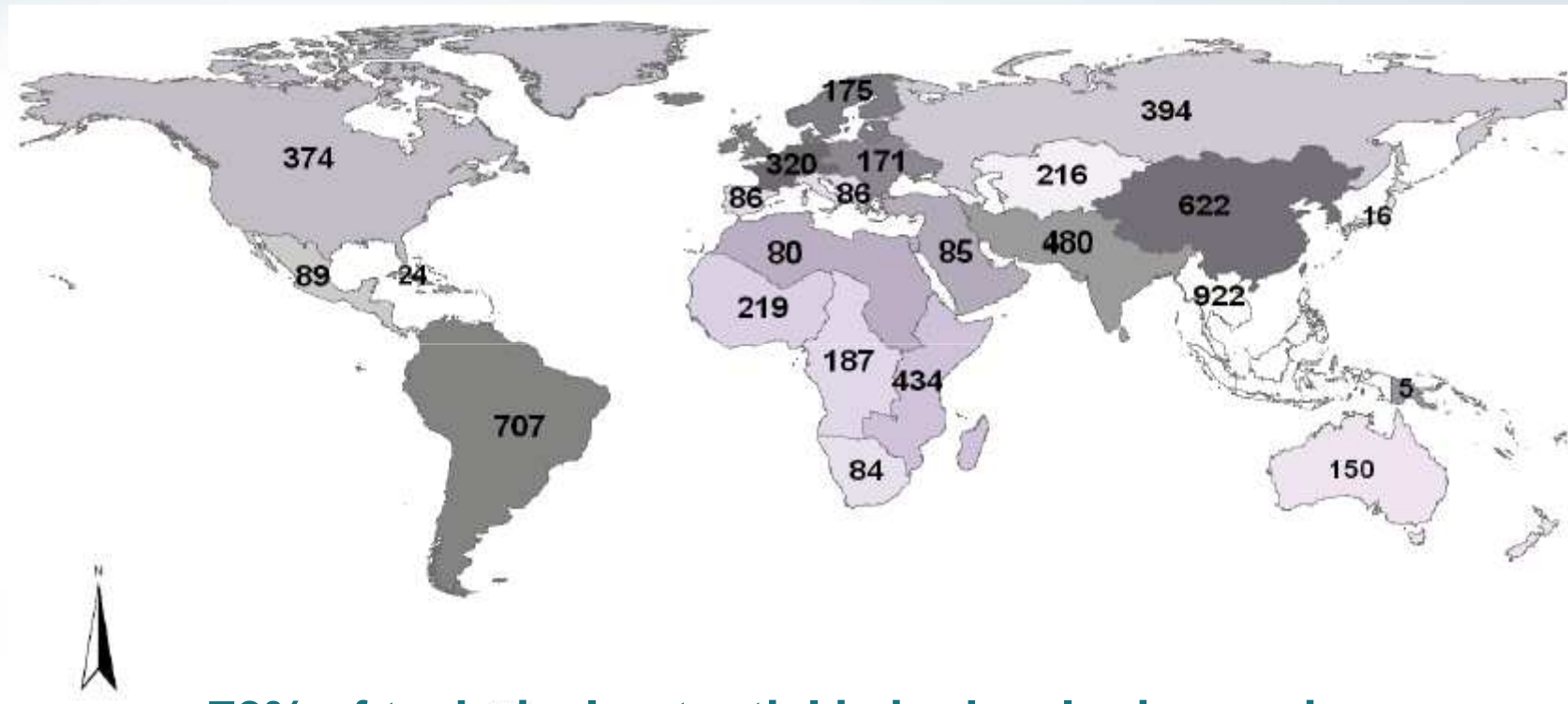


Relative contribution of Agriculture + Forestry to total mitigation potential

US\$ 20/tCO₂ – 21%
 US\$ 50/tCO₂ – 32%
 US\$ 100/tCO₂ – 45%

Agriculture: Regional Distribution of Technical Potential

IPCC
Intergovernmental Panel
on Climate Change

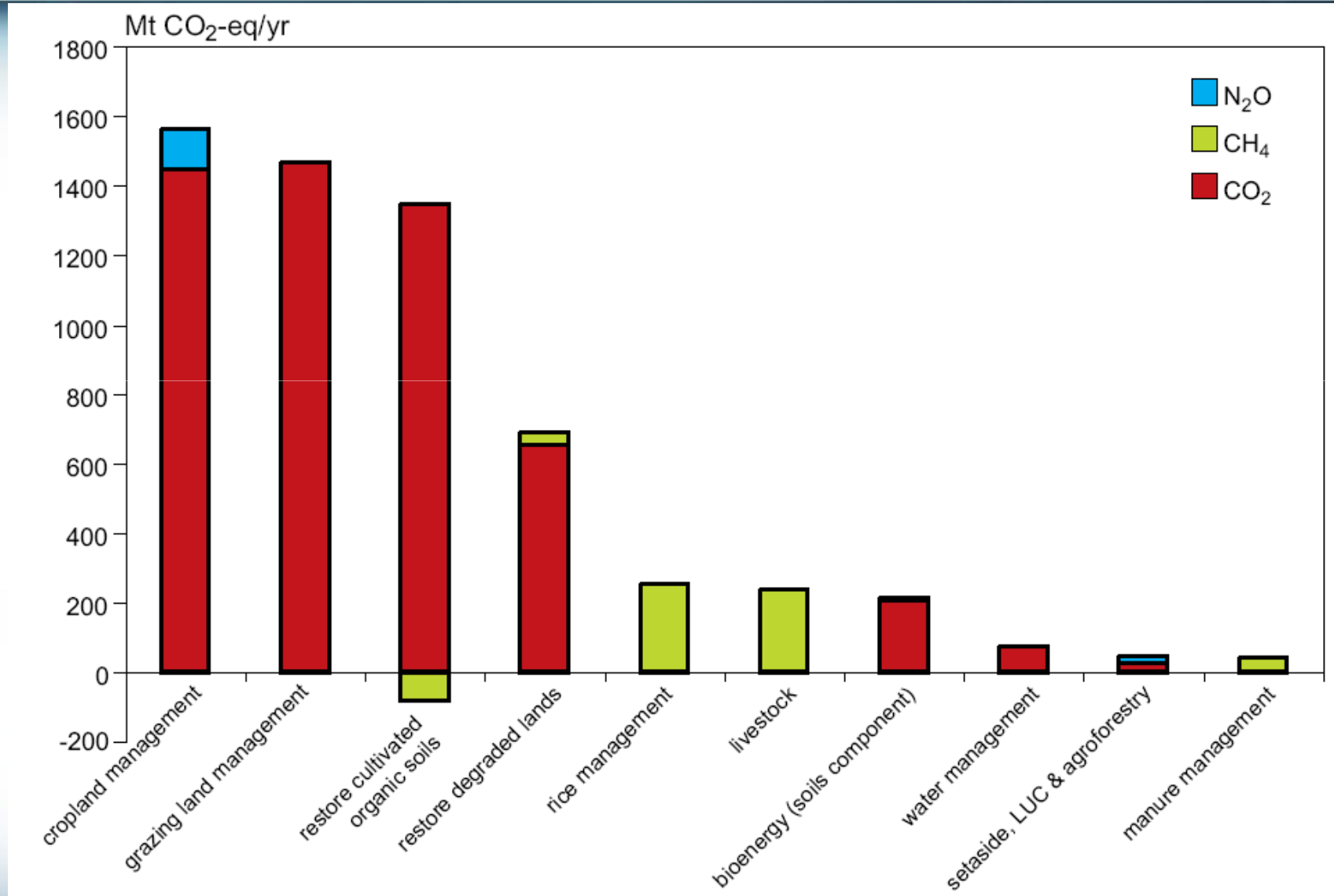


70% of technical potential is in developing regions

90 of potential is carbon sequestration

Technical Mitigation Potential

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Contribution to Energy Sector

- **Biomass as energy feedstock** produced in agricultural land may cause indirect emissions reductions of **70-1,260 Mt CO₂-eq./yr** (at US\$ 20/tCO₂) by 2030.
- In addition, emissions reductions of **770 Mt CO₂-eq./yr** can be achieved through **energy efficiency**
- Associated impacts:
 - Competition with other land uses, positive or negative environmental impacts, implications for food security

Limitations of the Assessment

- Mitigation potential in livestock systems may have been underestimated. Emphasis was on per-head emissions, but relevance of **per-unit-product emissions** (i.e., getting certain amount of products with lesser animals) was overlooked.
- Some possible **synergies between mitigation options** were not quantified (e.g., grazing land/cropland productivity and reduced deforestation)
- Estimates of some options with possibly good potential (lifestyle changes) are not provided
- Sink enhancement or reversal due to climate change are identified, but uncertainties remain high

Key Messages

- Carbon sequestration in agricultural soils has a mitigation potential of **1 to 4 billion t CO₂/yr** at carbon prices of 20 to 100 US\$/tCO₂
 - This represents between **11 and 17% of total mitigation potential**
 - C stock in soils is highly correlated with productivity/resilience and soil conservation
 - Historical transfer of C from terrestrial ecosystems: 500 billion t CO₂
- **70%** of mitigation potential is in developing regions
 - This potential was neglected by Kyoto, thus wasting an opportunity for adaptation and sustainable development benefits.
 - The other 30% is also not explored by Kyoto, since very few Parties selected cropland/grassland management under Art. 3.4
- Potential of mitigation of livestock emissions may have been underestimated (especially for grazing systems in warm regions).

The background of the slide is a dark blue world map. Overlaid on the map are several light blue wavy lines that sweep across the frame. Scattered throughout the background are numerous small, light blue squares of varying sizes, creating a digital or data-like aesthetic.

www.ipcc.ch

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Economic Mitigation Potential in 2030

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Carbon price (US\$/tCO₂-eq)	Mitigation Potential (Gt CO₂-eq/yr)
20	1.6 (0.3-2.4)
50	2.7 (1.5-3.9)
100	4.4 (2.3-6.4)
Tech. Potential	5.8
Emissions 2030	8.2

Relative contribution of Agriculture to total mitigation potential

US\$ 20/tCO₂ – 12%

US\$ 50/tCO₂ – 14%

US\$ 100/tCO₂ – 19%