

Fuel and Emissions Panel ITB

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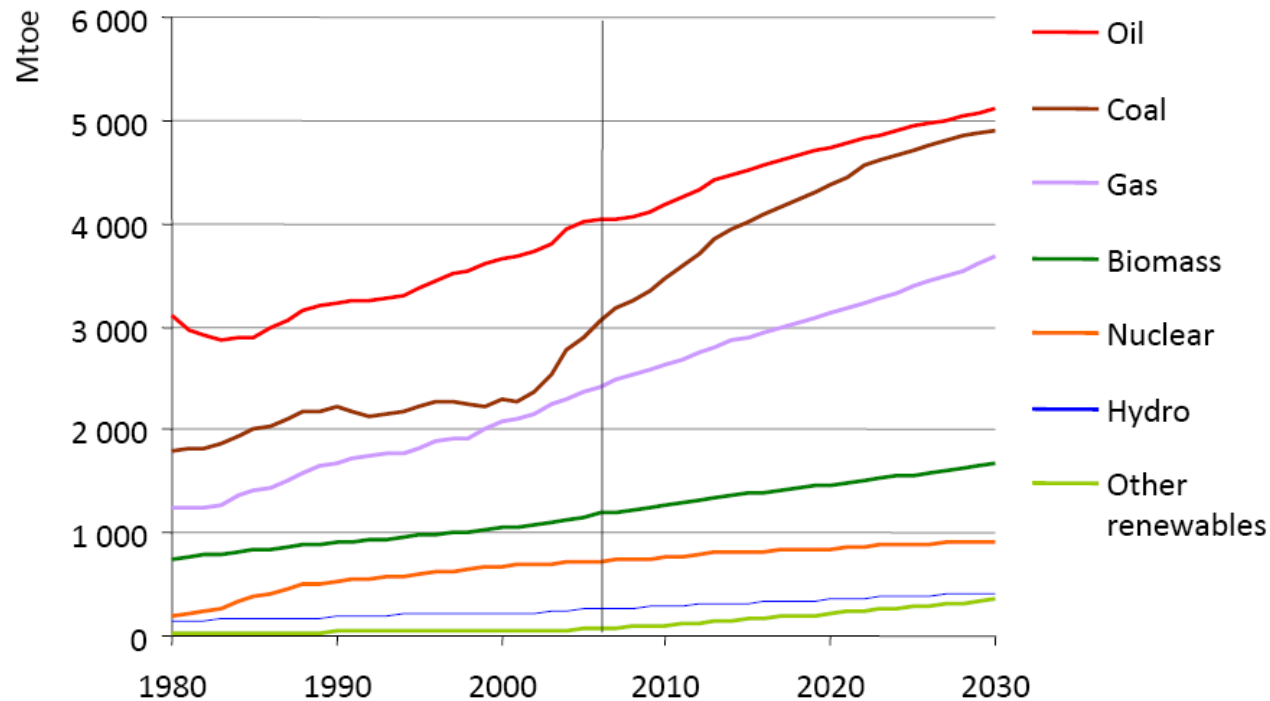
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1. Challenge: Fossil Fuel Scarcity

Facts on Energy

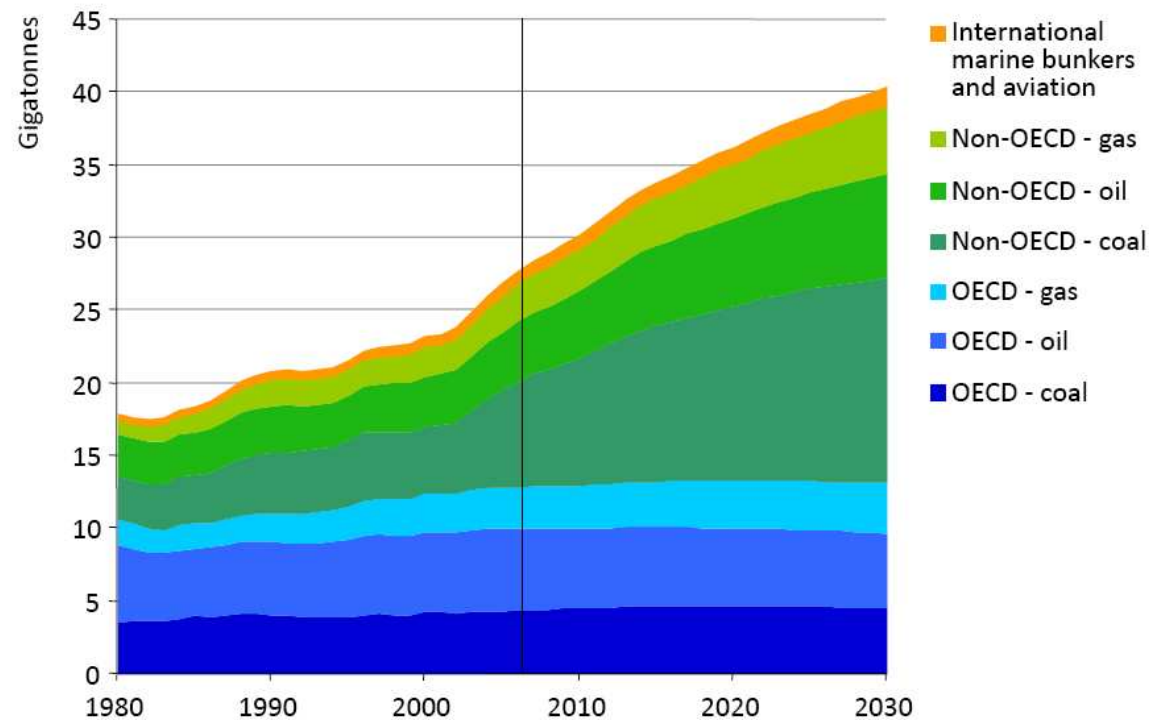
- Global Oil Supply can be enlarged up to 100 Mio. Barrel/day only with substantial investment in oil exploration
- If oil demand will increase substantially, peak oil might be reached in 2020
- Global energy demand will double by 2030
- Especially energy demand of fast growing countries like China and India will explode

Projection of World Energy Demand by 2030



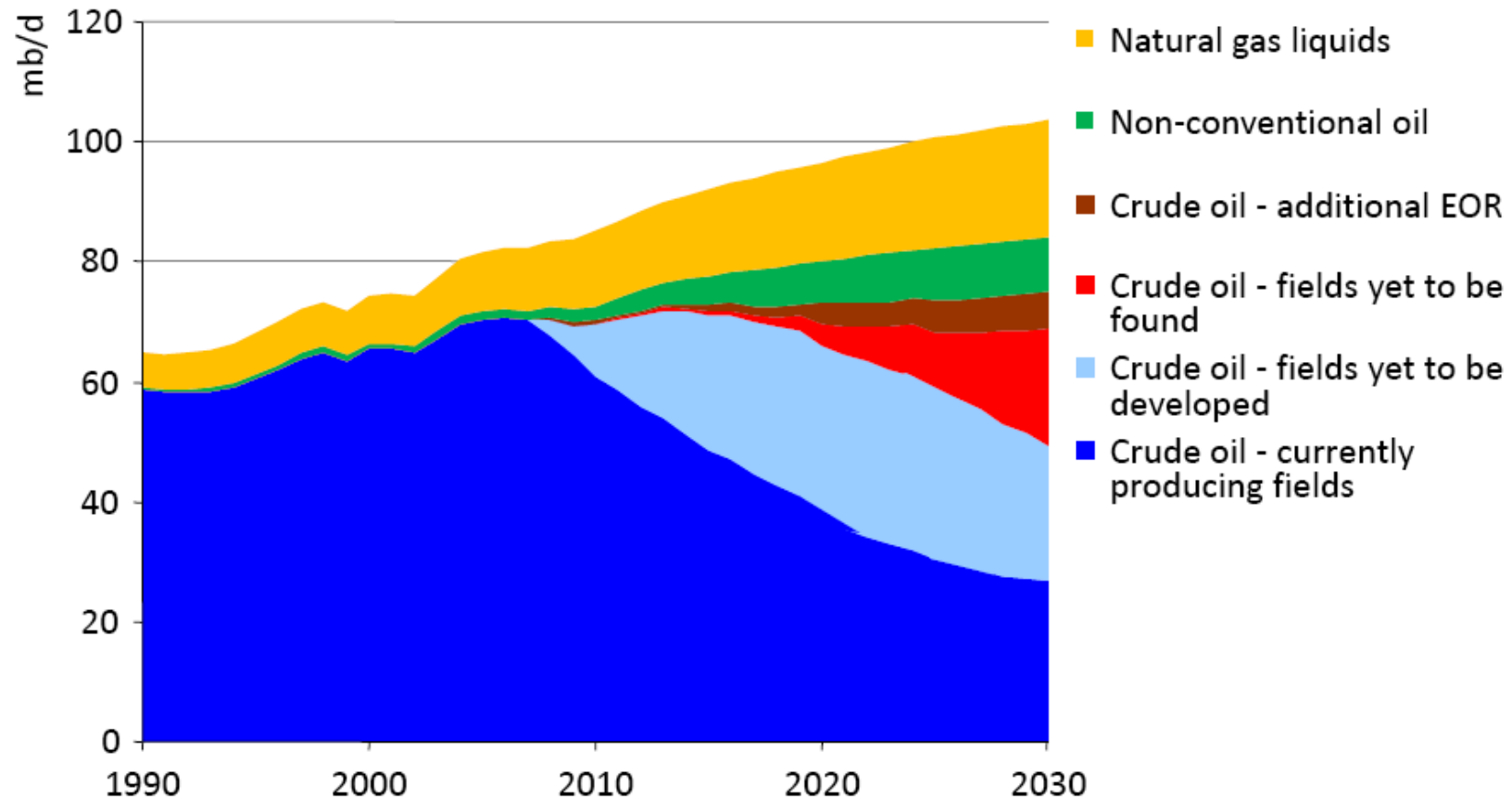
World energy demand expands by 45% between now and 2030 – an average rate of increase of 1.6% per year – with coal accounting for more than a third of the overall rise

Projection of World Energy Related CO2 Emissions



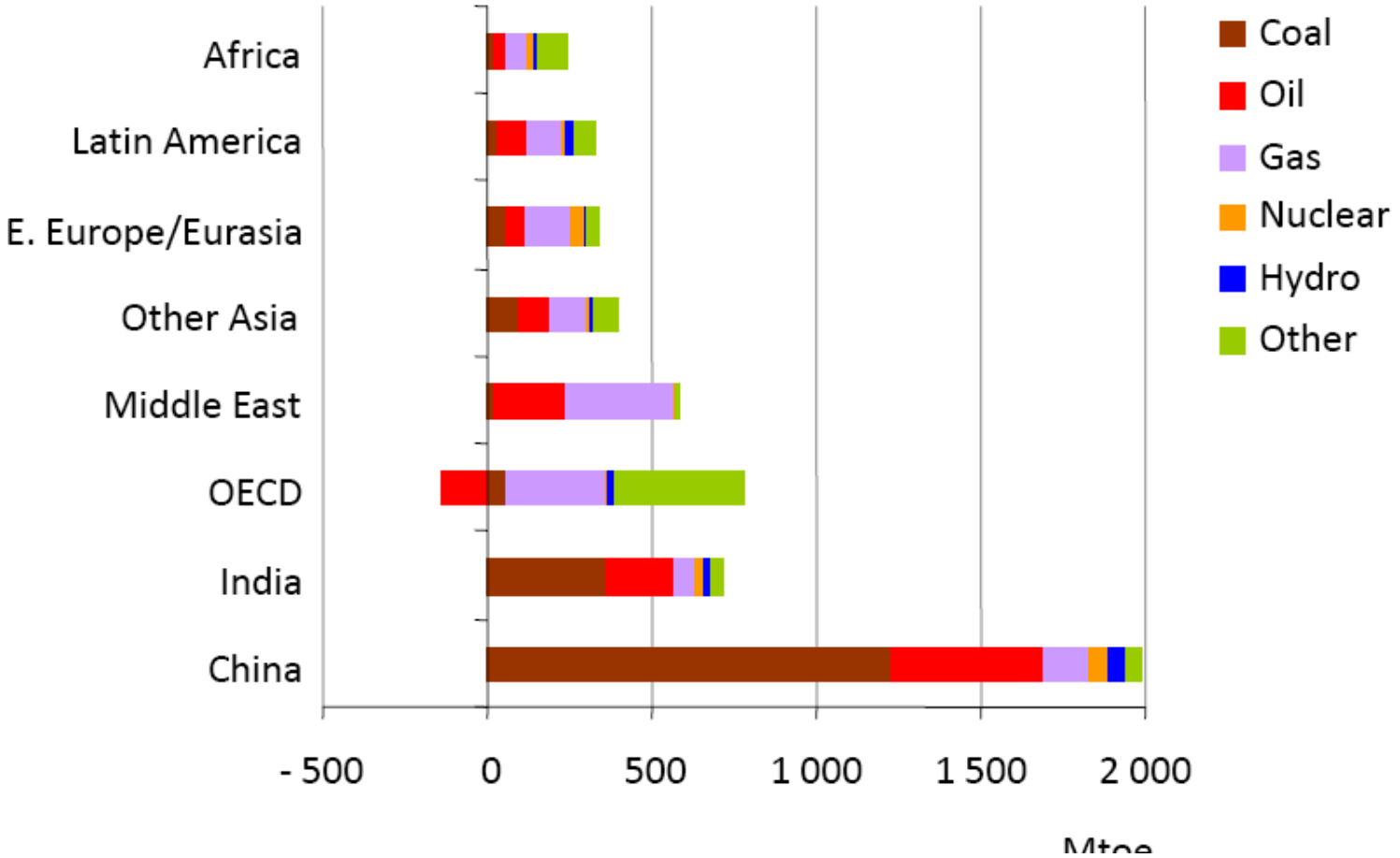
97% of the projected increase in emissions between now & 2030 comes from non-OECD countries – three-quarters from China, India & the Middle East alone

Global Oil Supply IEA 2008



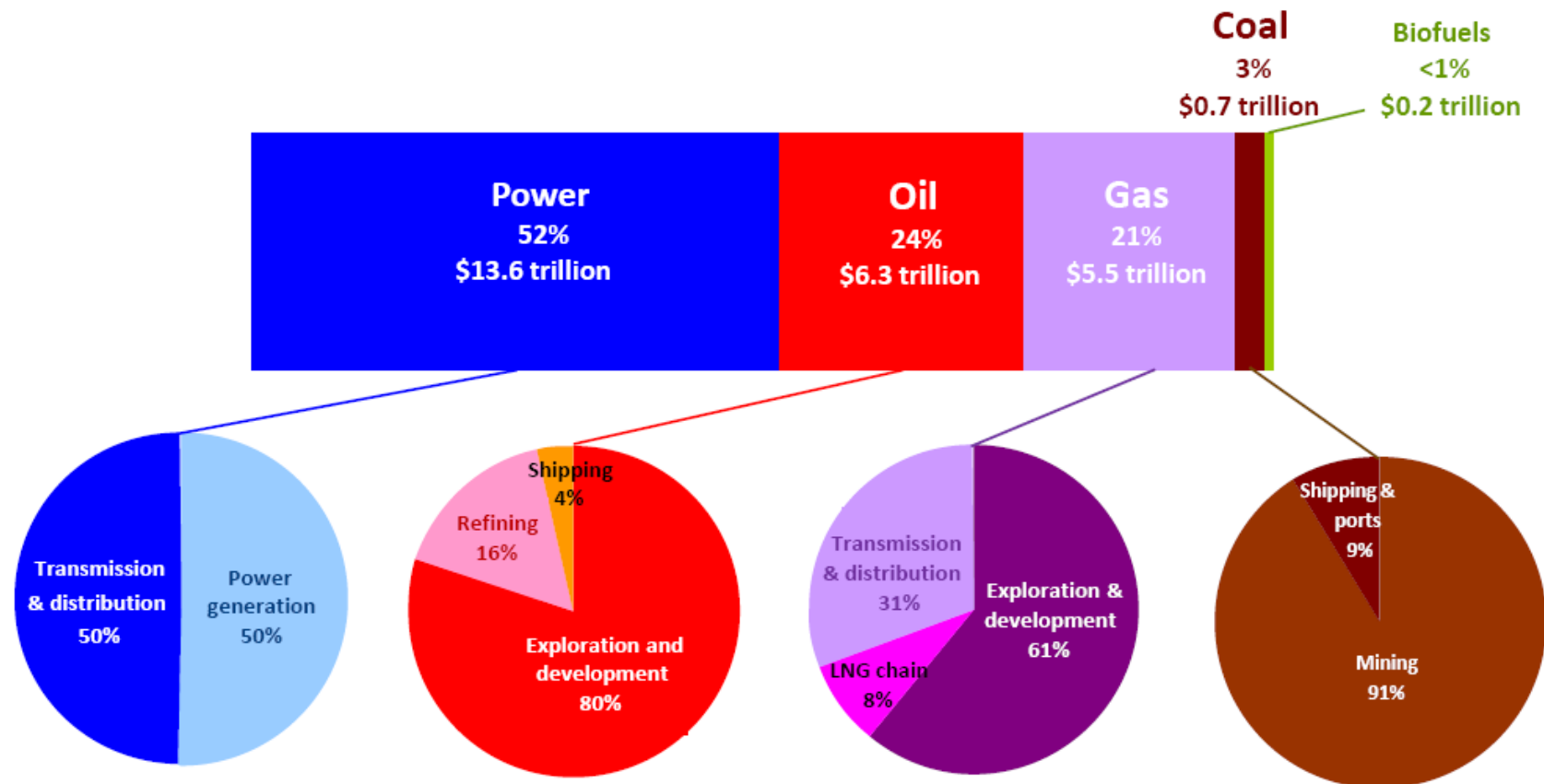
Global Energy Demand 2005-2030

- IEA 2008



Quelle: IEA World Energy Outlook 2008

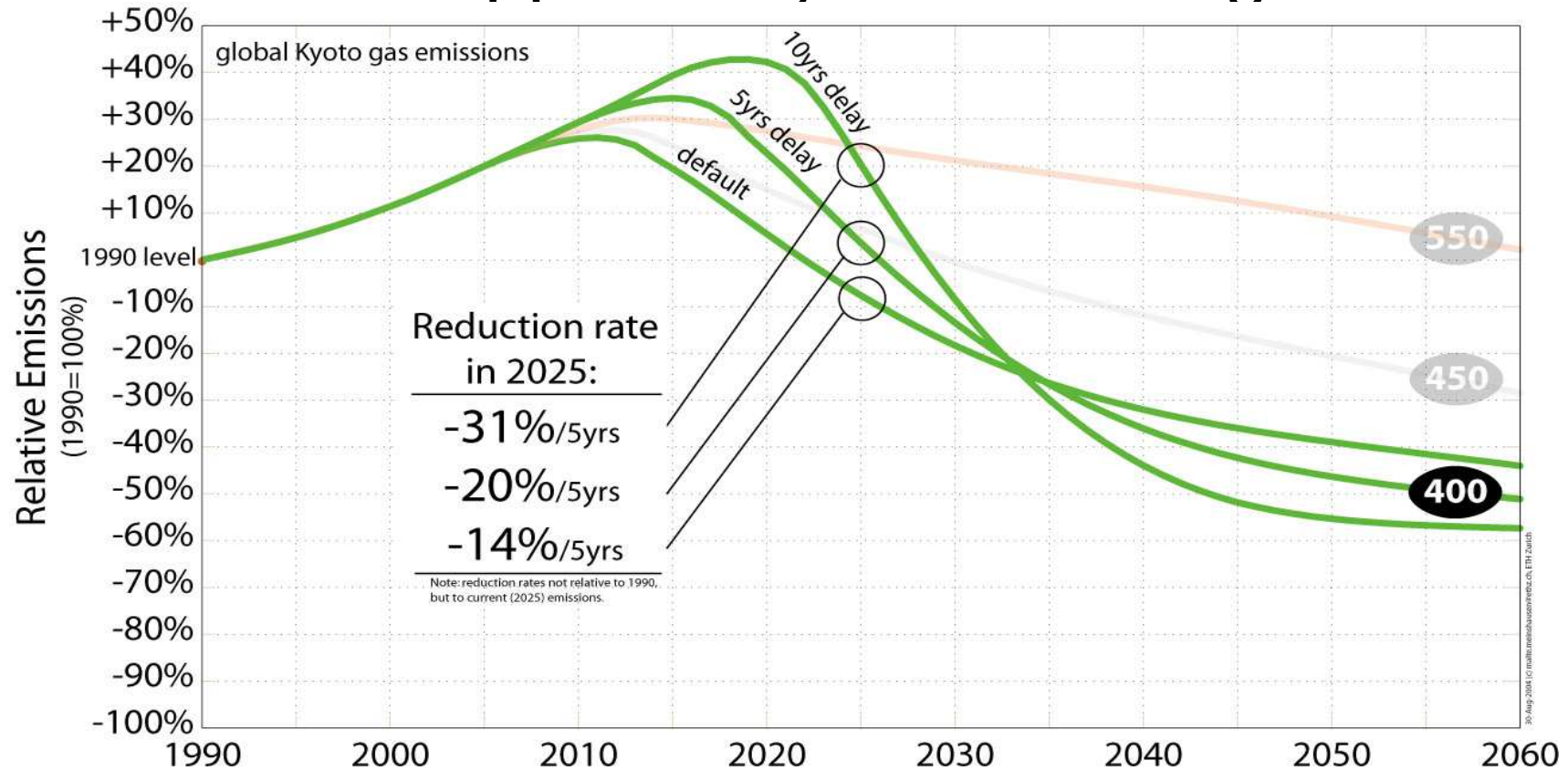
Necessary Investments 2007- 2030



Quelle: IEA World Energy Outlook 2008

2. Challenge: Climate Change

Climate Change : The window of opportunity is narrowing



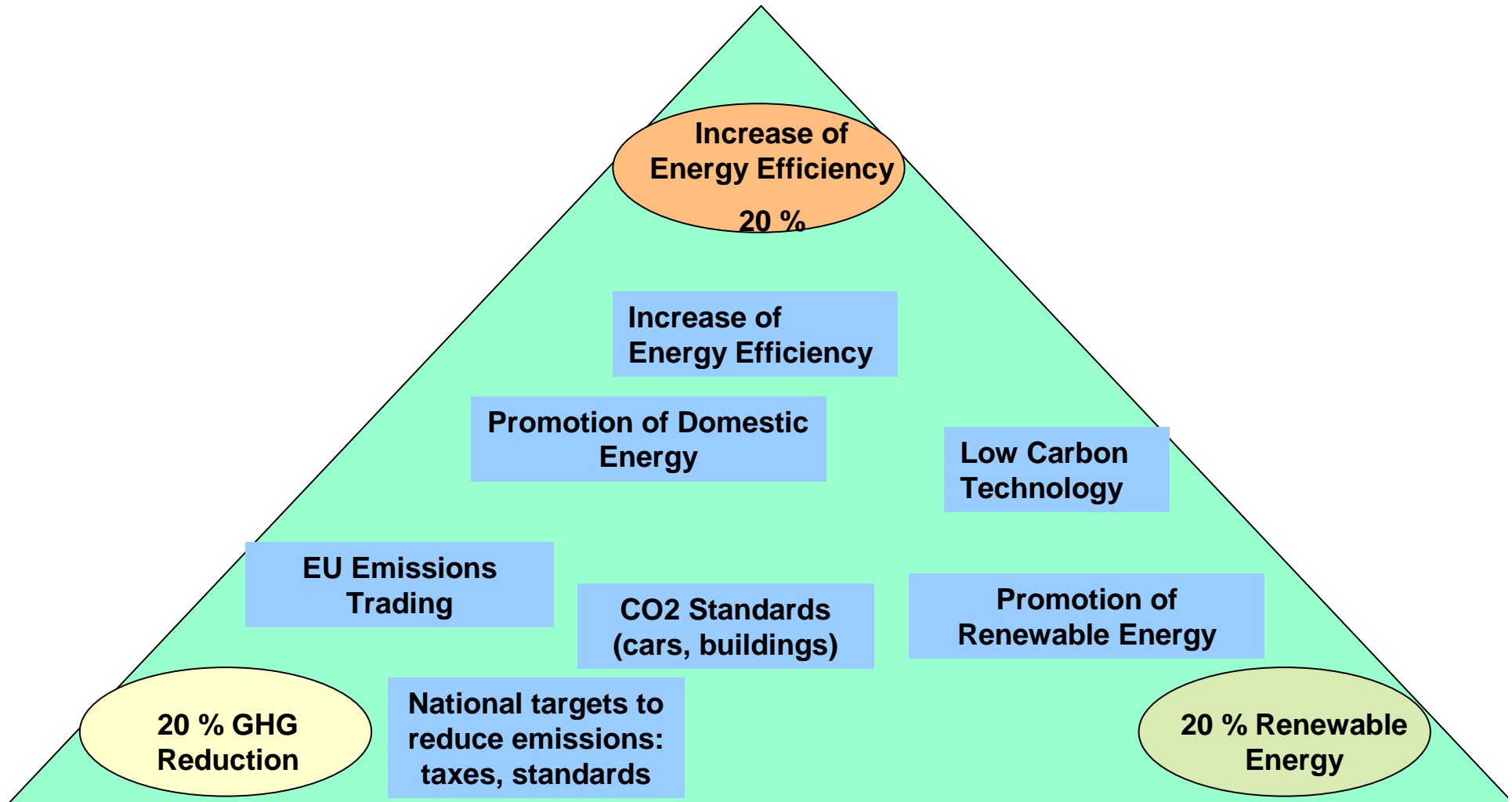
Note: (a) The 550C_e, 5450C_e, and 5400C_e stabilization scenarios are based on the EQW multi-gas emission pathways method, which builds on the gas-to-gas correlations within the pool of 54 SRES and Post-SRES scenarios (Meinshausen et al. submitted).
 (b) Landuse CO₂ emissions are sharply decreasing in the default scenarios. If constant CO₂ emissions from the landuse sector were assumed, the emission reductions of the Kyoto-gases (fossil CO₂, Methane, N₂O, HFCs, PFCs, SF₆) have to be more pronounced. Alternatively, if emission allowances were given to avoided landuse emissions, overall emission allowances for the Kyoto-gases would have to be reduced accordingly (solid line).
 (c) Delay profiles were calculated by assuming a 5 or 10 delay in global action. In the illustrative default scenarios, OECD and REF regions are assumed to enter stringent emission reductions by 2010, and ASIA and ALM by 2015.

Source: Malte Meinshausen 2006

Climate Policy will become more severe

- EU: 20-20-20
- USA: energy efficiency Improvement, Renewable Energy, drastic emission cut
- Australia, Canada, Japan: emissions reduction
- Fast Growing Countries will follow soon (China, India)
- Russia (?)

Targets and Instruments: EU 2007-2008



Sustainable Mobility

- Energy Efficiency Improvement
- Alternative Fuels
 - Second Generation Biofuels (Jatropha (?), Algae (?)-
important: sustainability criteria: not in competition to
food, no harm on environment
 - Fuel Cells (?)/ Battery (?)
 - Other?
- We urgently need technology Breakthrough
- More Investment in R&D !

The Challenge

- Time of cheap energy is over
- Danger: wait and see- high oil price will harm the economy; climate policy will make fossil fuel more expensive
- We urgently need CO₂ free, save and affordable energy!
- Technology Breakthrough necessary
- Competitive Advantage: to anticipate fuel scarcity and climate policy (bad example: car industry)



**INNOVATION
INSTEAD OF
DEPRESSION!**

**Thank you very much
for your attention!**

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