Dilemmas related to tranforming the ways we use energy

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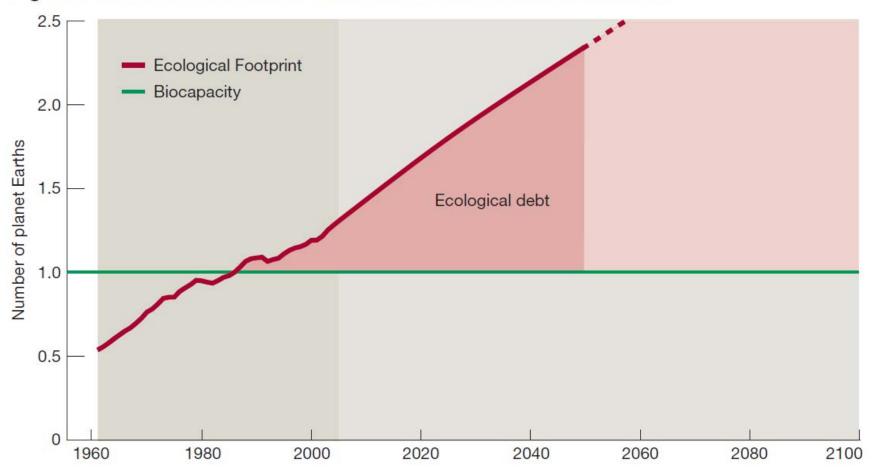
and

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Unica Green Academic Footprint 3-4 May, Un. of Oslo

Source: WWF

Fig. 31: BUSINESS-AS-USUAL SCENARIO AND ECOLOGICAL DEBT

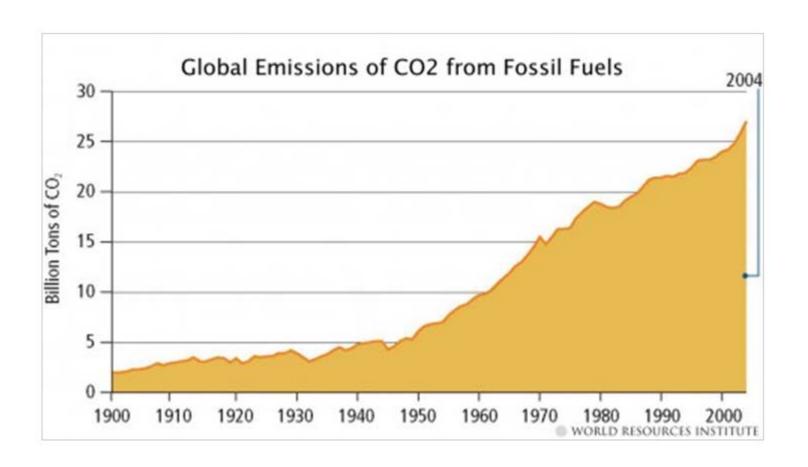


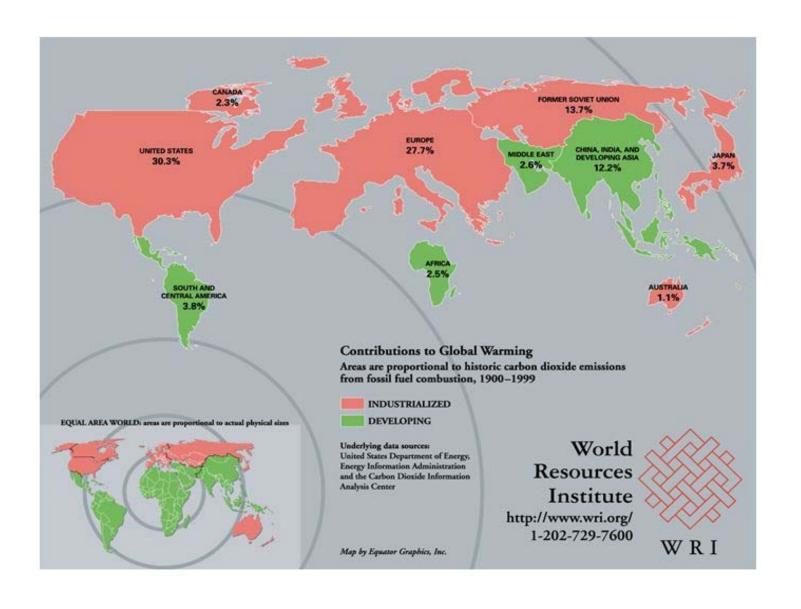


The energy dilemma

- Essential to development
- Finite resources
- Every form for energy use has environmental consequences
- Contribution to climate change

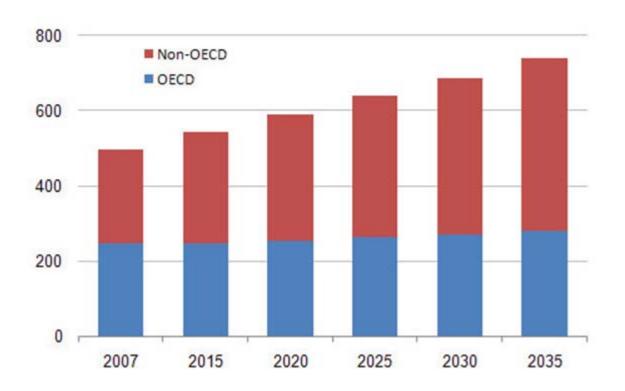
World GHG Emissions Flow Chart Sector End Use/Activity Gas Road 9.9% Transportation 13.5% 1.6% Rail, Ship, & Other Transport 2.3% Residential Buildings 9.9% C Electricity & Heat 24.6% Commercial Buildings 5.4% Unallocated Fuel Combustion 3.5% ___ Iron & Steel 3.2% Carbon Dioxide (CO₂) 77% Other Fuel Combustion 9.0% Chemicals 4.8% 3.8% Cement Other Industry 5.0% Industry 10.4% Fugitive Emissions 3.9% Oil/Gas Extraction, Refining 6.3% & Processing Industrial Processes 3.4% Deforestation 18.3% Afforestation -1.5% Reforestation -0.5% Land Use Change 18.2% Harvest/Management 2.5% HFCs, PFCs, SF₆ 1% Other -0.6% Agricultural Energy Use Methane (CH₄) 14% Agriculture Soils 6.0% Agriculture Livestock & Manure 5.1% Rice Cultivation Nitrous Oxide (N₂O) 8% **WORLD RESOURCES INSTITUTE**



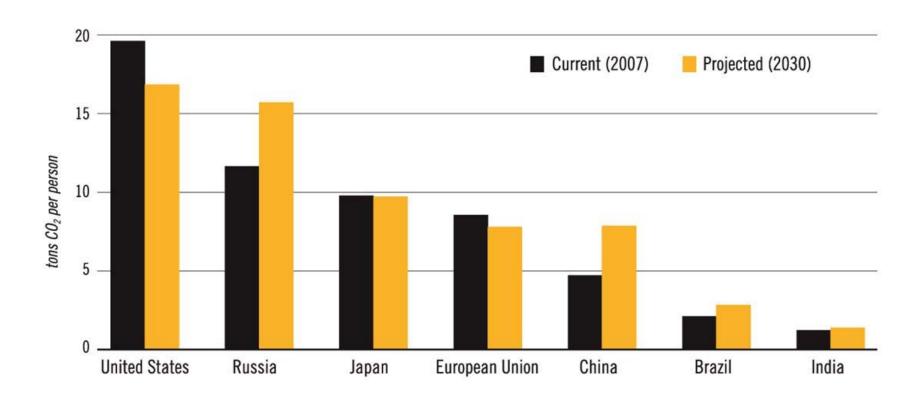


IEA 2010 energy outlook

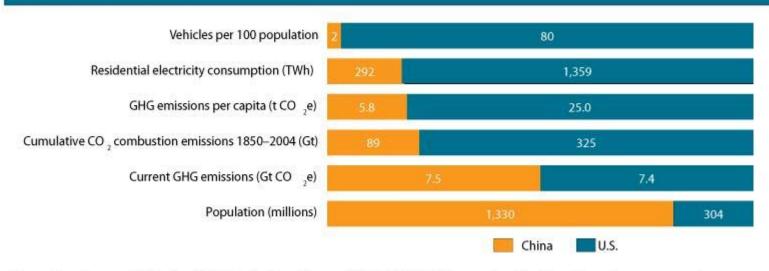
Figure 1. World marketed energy consumption



Per capita emissions, current and projected



Comparison of Chinese and U.S. Energy Statistics



Source: Data Sources: CIA Factbook, IEA CO₂ Emissions Report, WRI CAIT, IEA World Energy Statistics, http://www1.eere.energy.gov/vehiclesandfuels/facts/2007_fcvt_fotw474.html



Distribution of research and policy effort, production and consumption

Production:

Increase share of renewables
Increase technical efficiency
Clean or store end-of-pipe
pollutants

Reduce consumption



The consumer as conceptualized in energy savings research and policy



She is atomized, economically rational, fully reflexive, and fully agentive

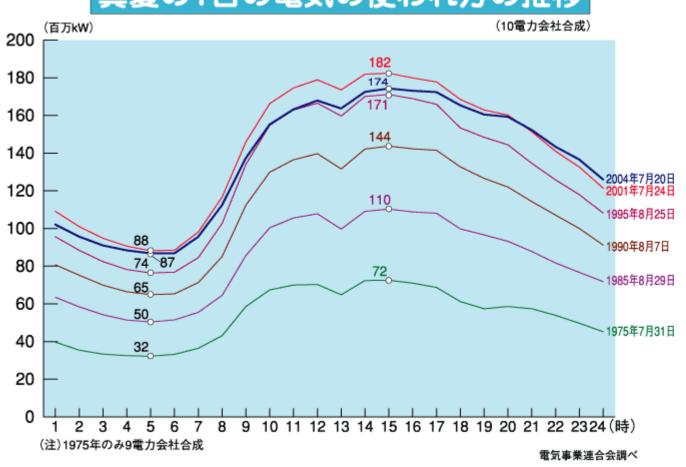
The little that has been done on consumption:

- Equates consumption with individuals
- Neglects the social and material contributions to demand (norms, performance, built environment, construction of choice)
- Neglects the power of routines and habits



Tokyo peak load, 1975 - 2004

真夏の1日の電気の使われ方の推移



The energy/climate dilemma demands

- (1) A greater sense of urgency and a longer term perspective
- (2) A more robust theory on consumption and change.
- (3) The participation of business. Sustainable products need to be made more available, attractive and affordable.