Bioenergy - Where Do We Stand and Some Examples of FAO's Work

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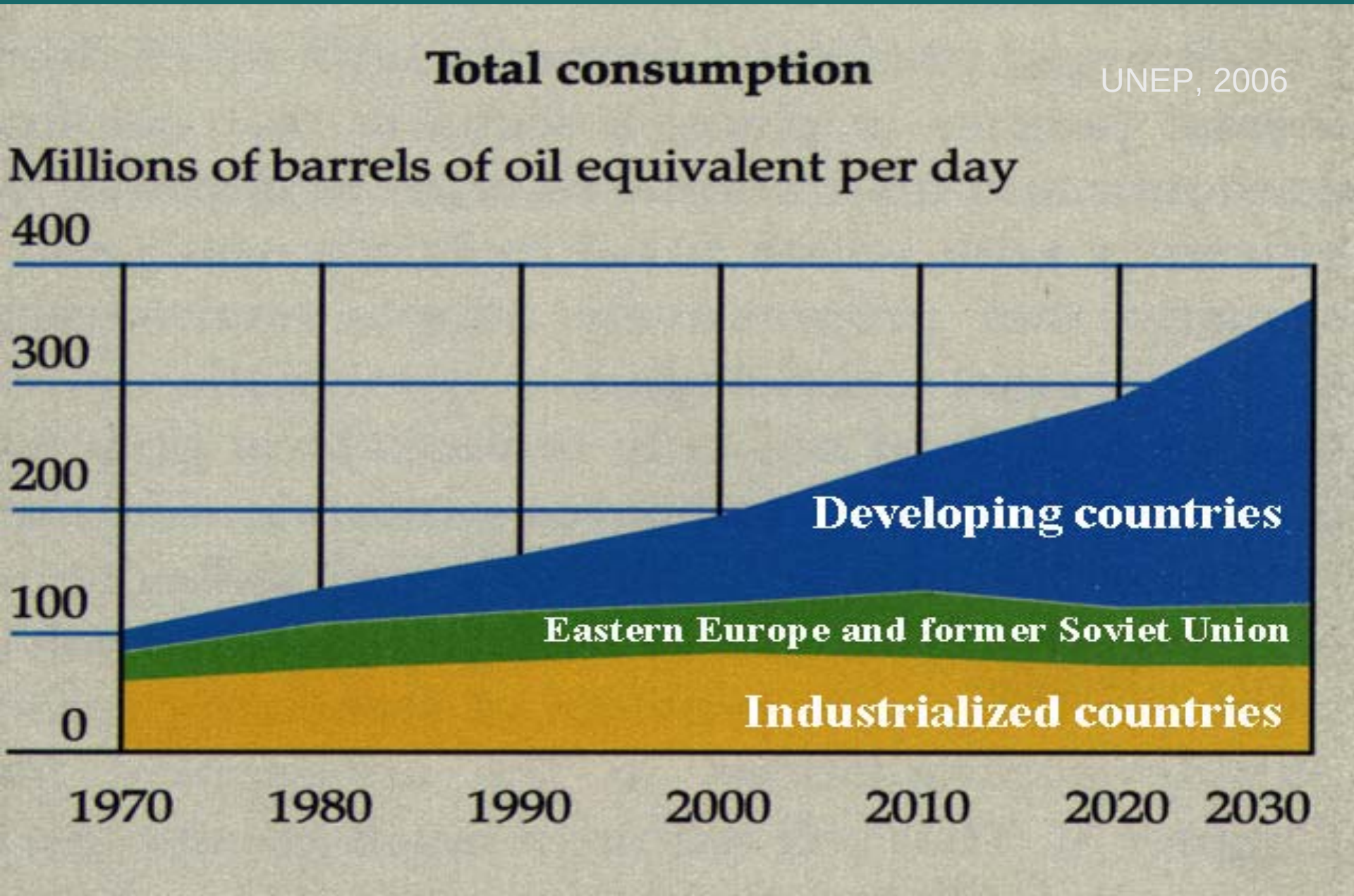
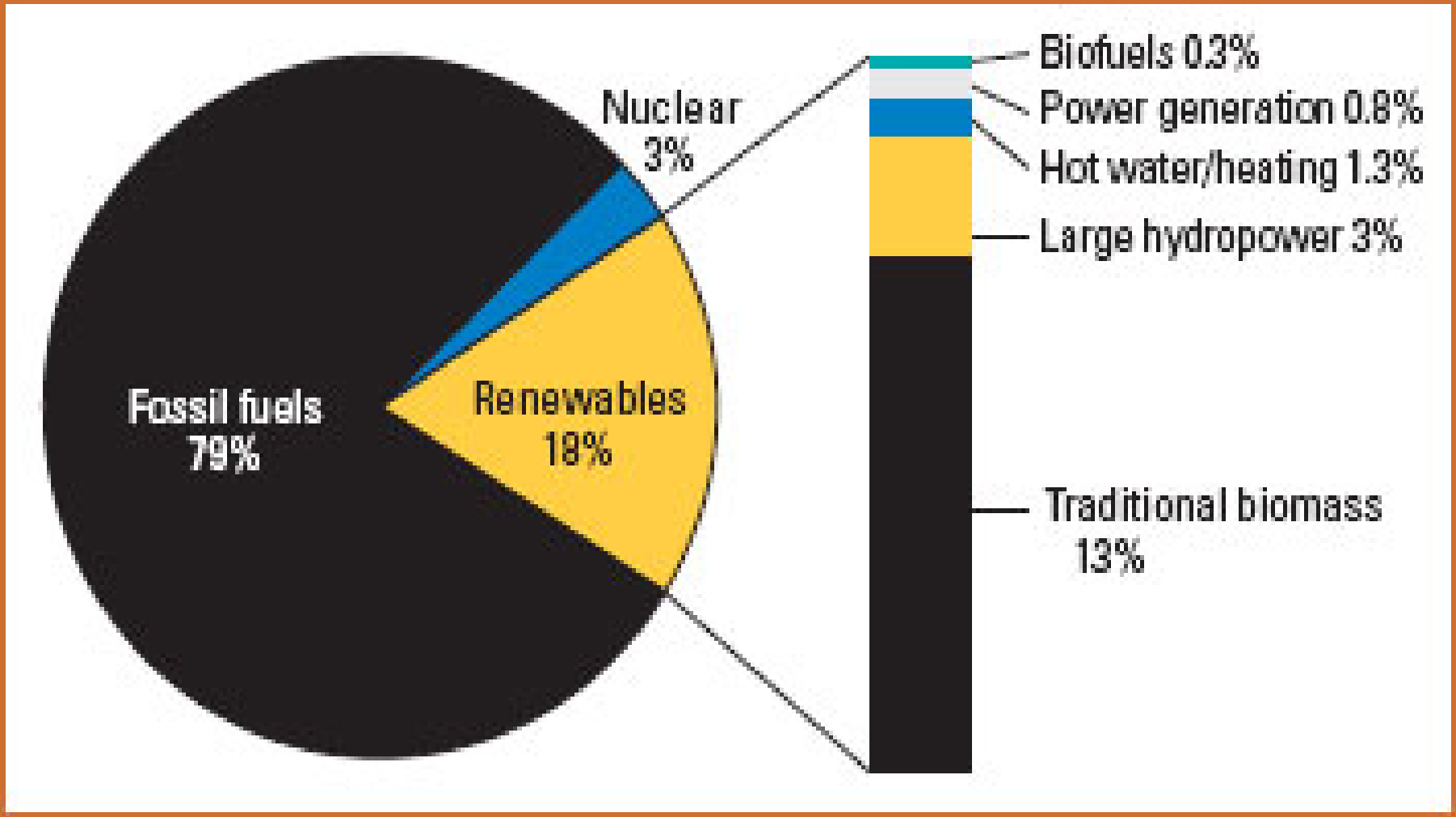
Putting Biofuels into Perspective

Evolution of sources of energy demand

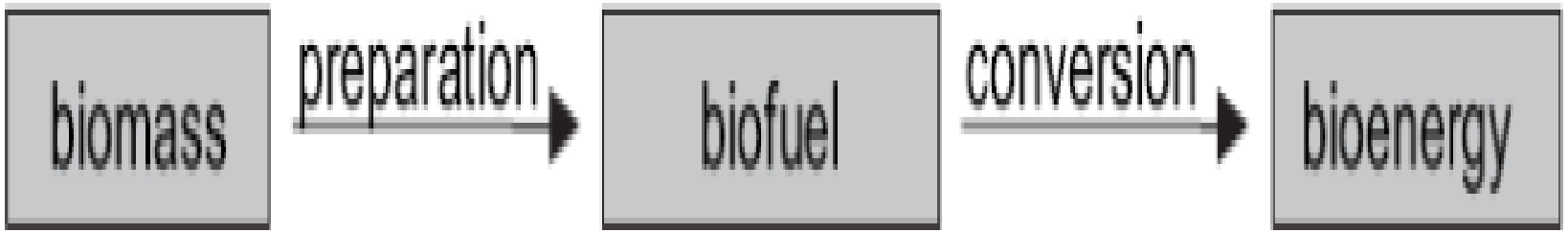


Bioenergy: largest renewable energy contributor to global energy needs but most of it inefficiently (REN21,WWI, 2008)



What are we talking about

- **Biomass:** non-fossil material of biological origin
- **Biofuel:** fuel produced directly or indirectly from biomass
- **Bioenergy:** energy derived from biofuels



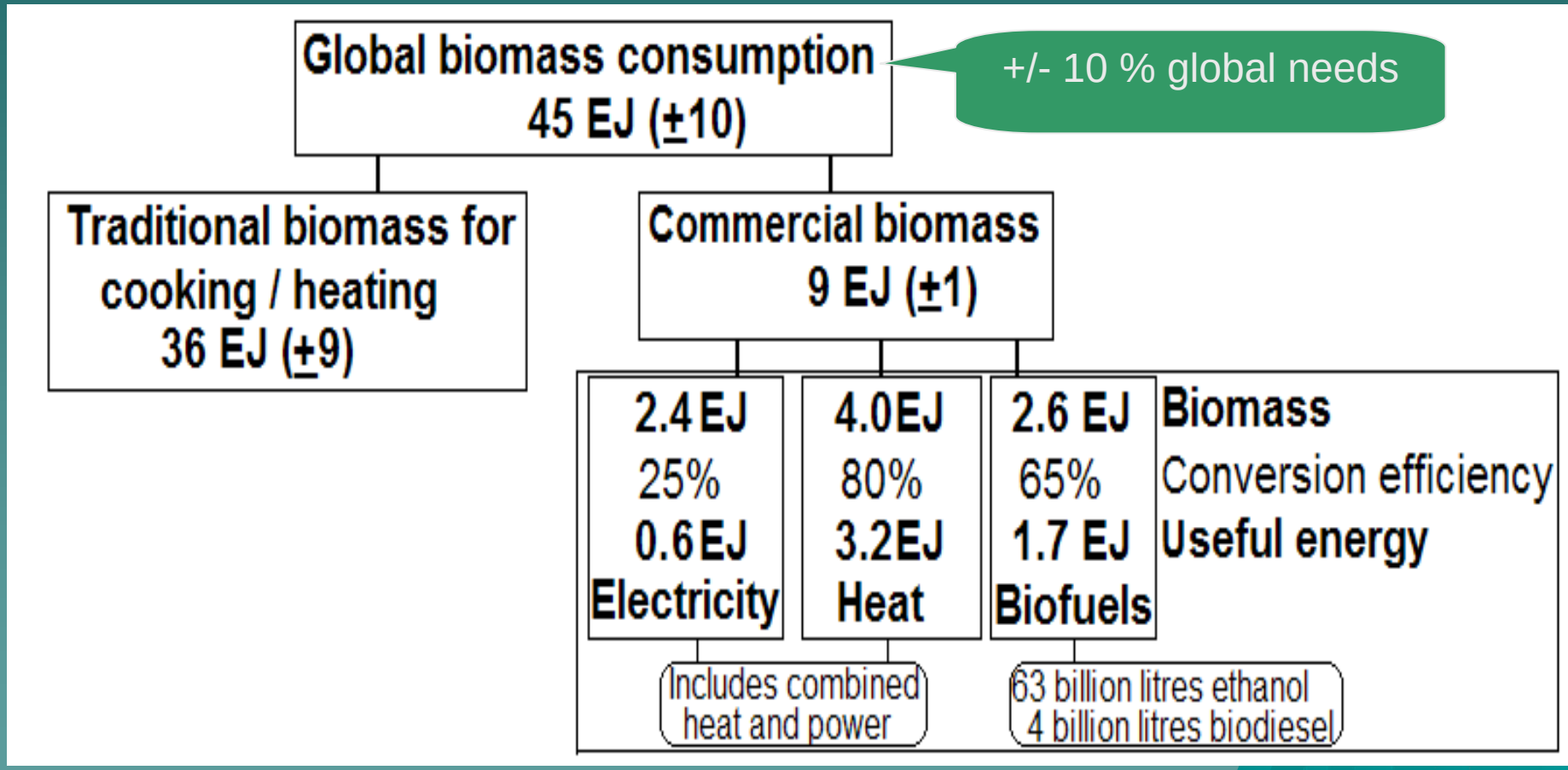
Biofuels by source and type

Production side, supply	Biofuel type	Users side, biofuel examples
Direct woodfuels	WOODFUELS	**Solid:** fuelwood (roundwood, chips, sawdust), charcoal
Indirect woodfuels		**Liquid:** black liquor, ethanol
Recovered woodfuels		**Gaseous:** pyrolysis gas
Fuel crops	AGROFUELS	**Solid:** straw,stalks, huks,bagasse
Animal by-products		**Liquid:** ethanol, oil diester
Agroindustrial by-products		**Gaseous:** pyrolysis gas
	MUNICIPAL BY-PRODUCTS	**Solid:** municipal solid wastes
		Liquid: sewage sludge, pyrolytic oil
		Gases: biogas, pyrolytic gas

Examples of bioenergy-rural livelihood links

Putting bioenergy into perspective - 2007

Contribution of biomass to global primary and consumer energy supplies in 2007 (IEA, 2008)



Putting bioenergy into perspective - 2007

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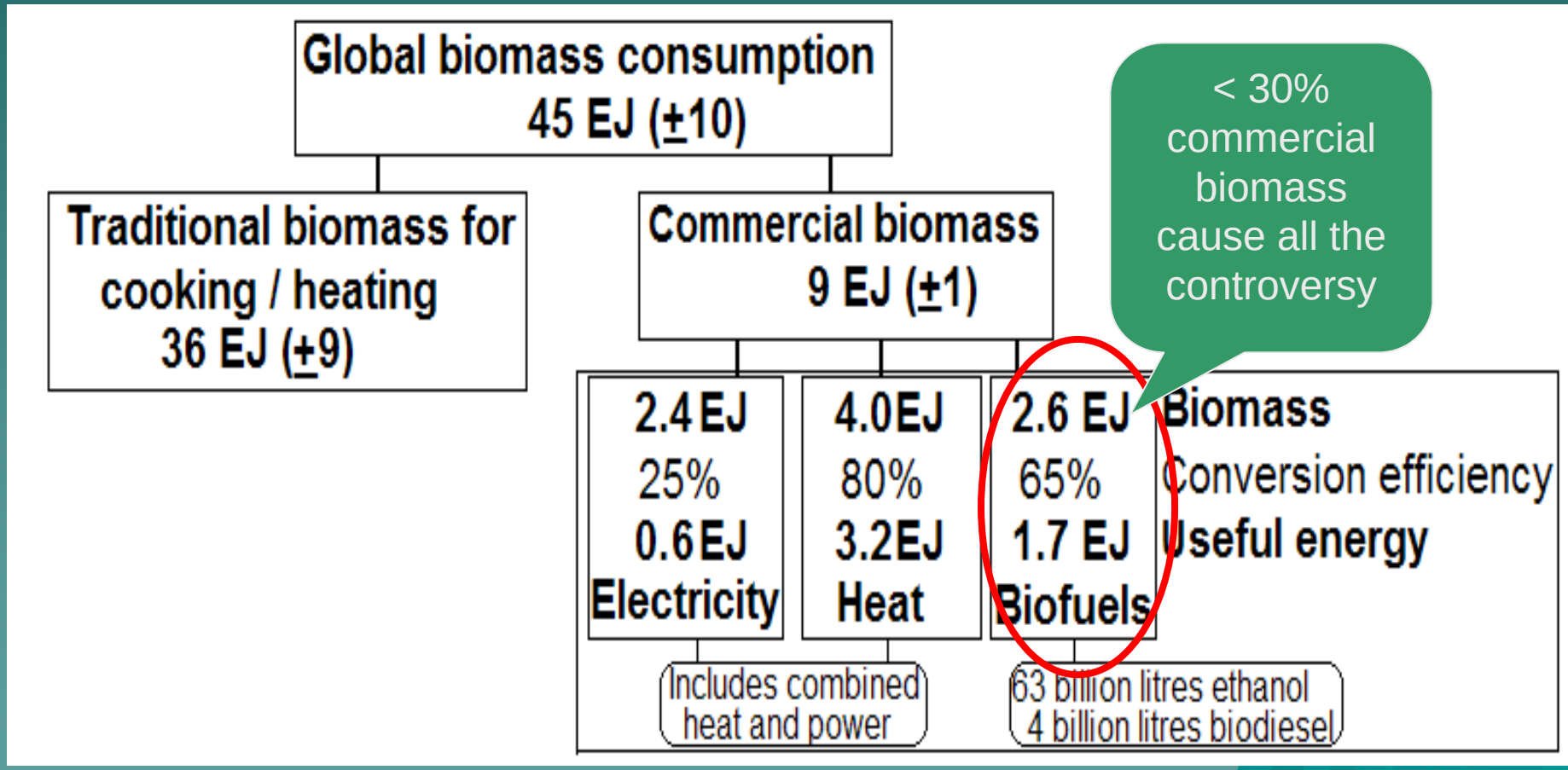
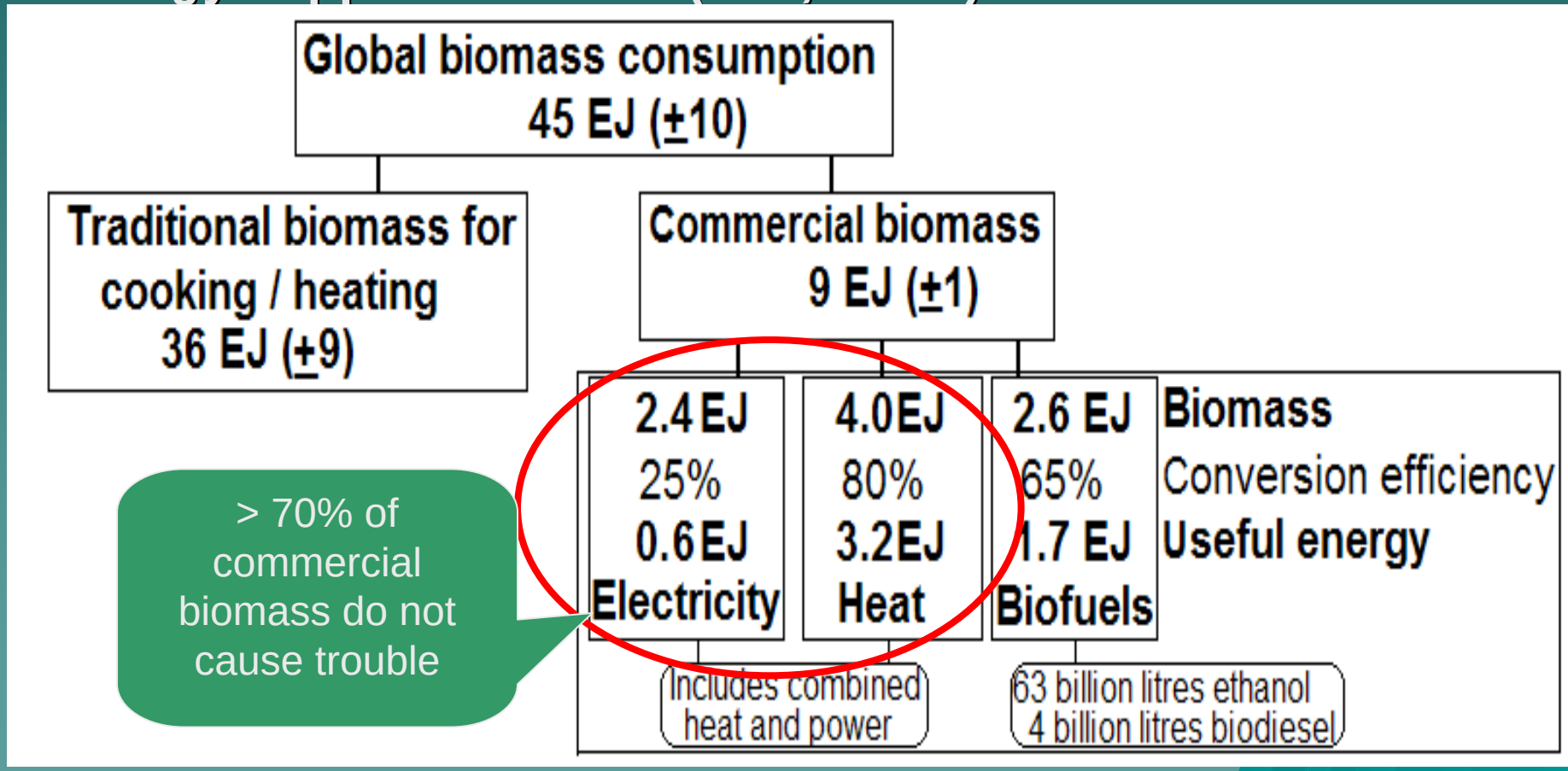
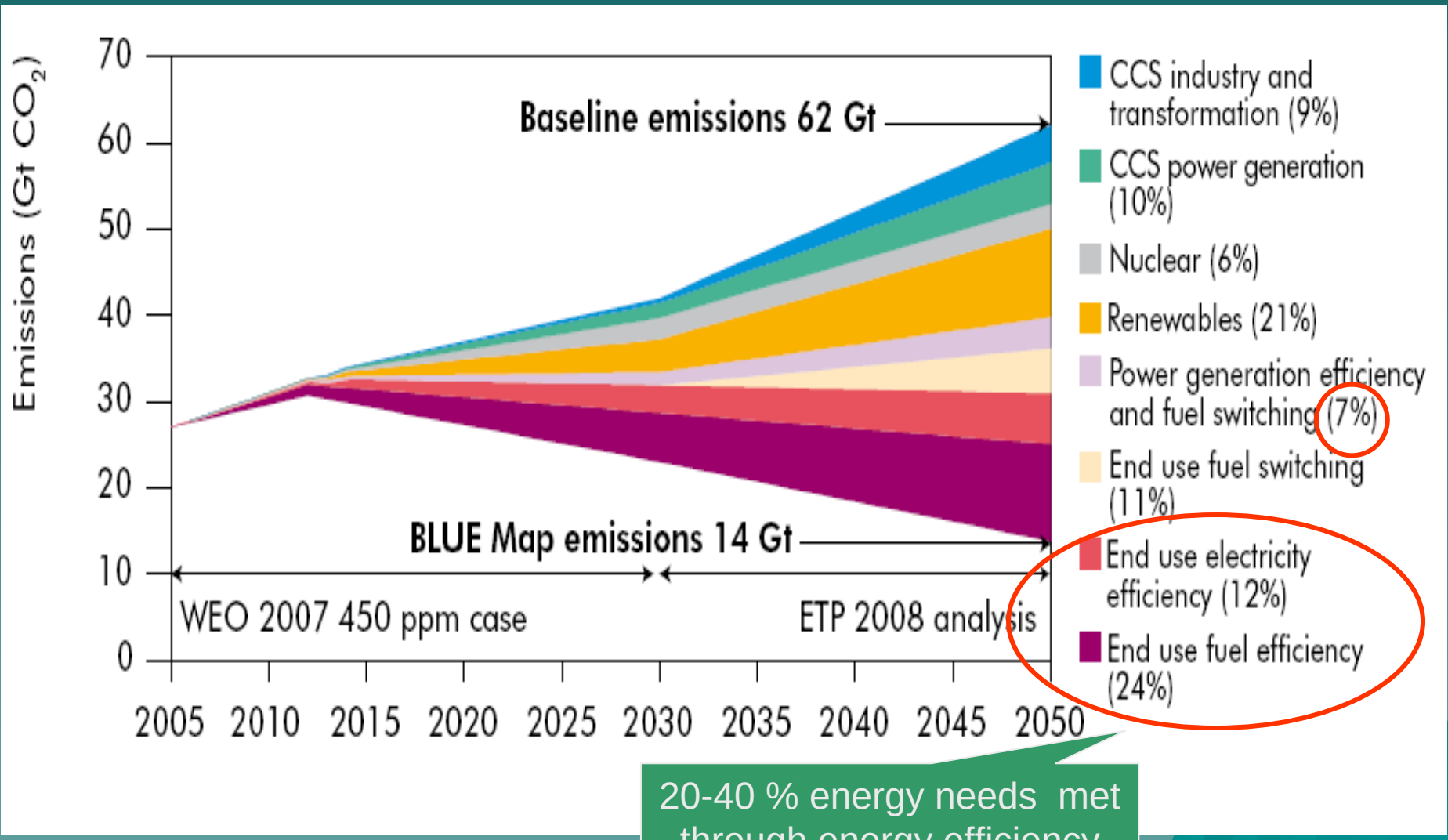


Let's not forget energy productivity & the harmless modern biofuels!

Contribution of biomass to global primary and consumer energy supplies in 2007 (IEA, 2008)



Energy saving & efficiency: Most cost effective way to address Global Energy Challenges

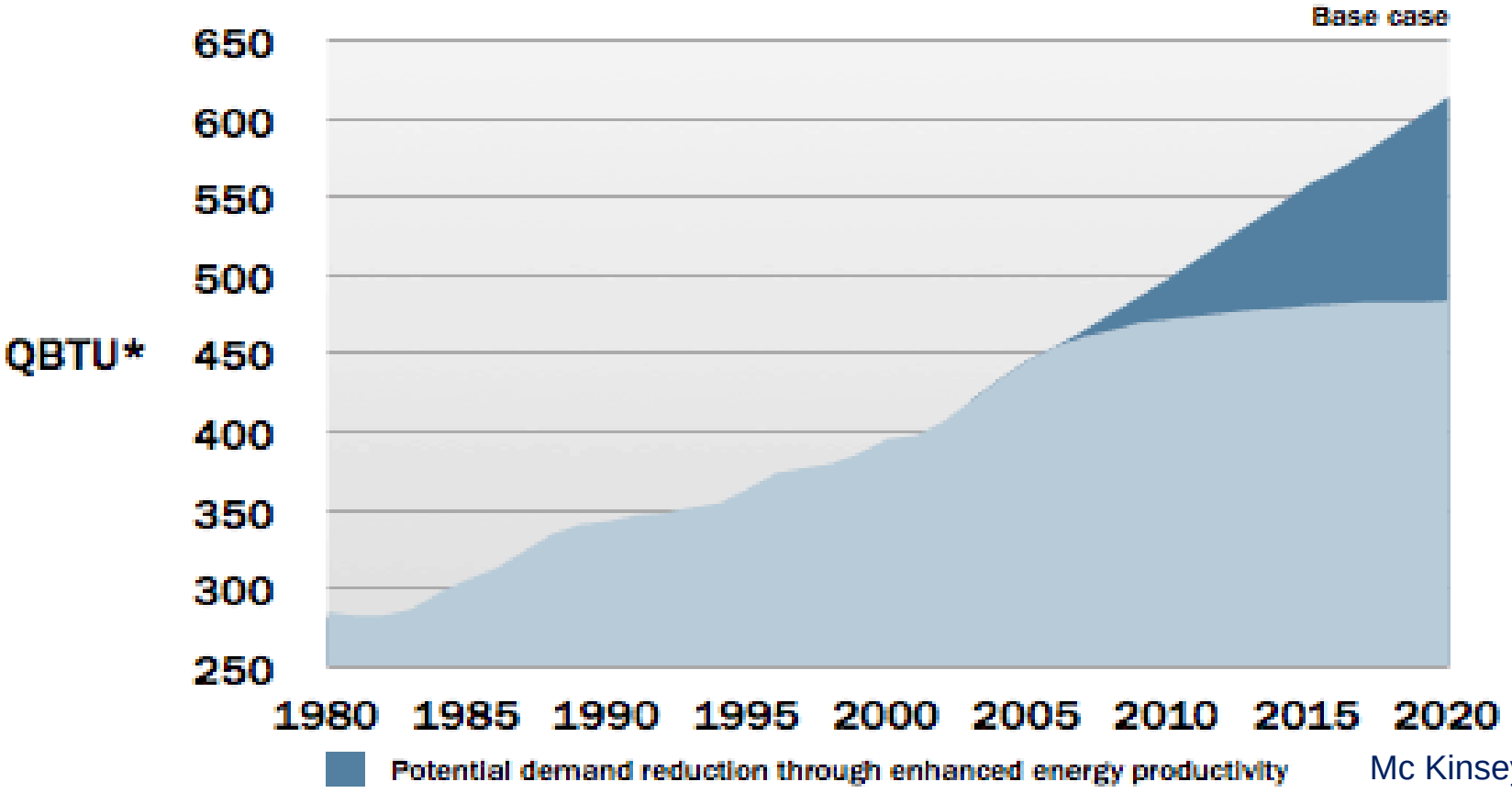


20-40 % energy needs met through energy efficiency depending on the scenario

IEA, 2008

Energy productivity: Best way to address Global Energy Challenges

CAPTURING THE ENERGY PRODUCTIVITY OPPORTUNITY COULD CUT GLOBAL ENERGY DEMAND GROWTH BY HALF OR MORE OVER THE NEXT 15 YEARS



Mc Kinsey, 2007

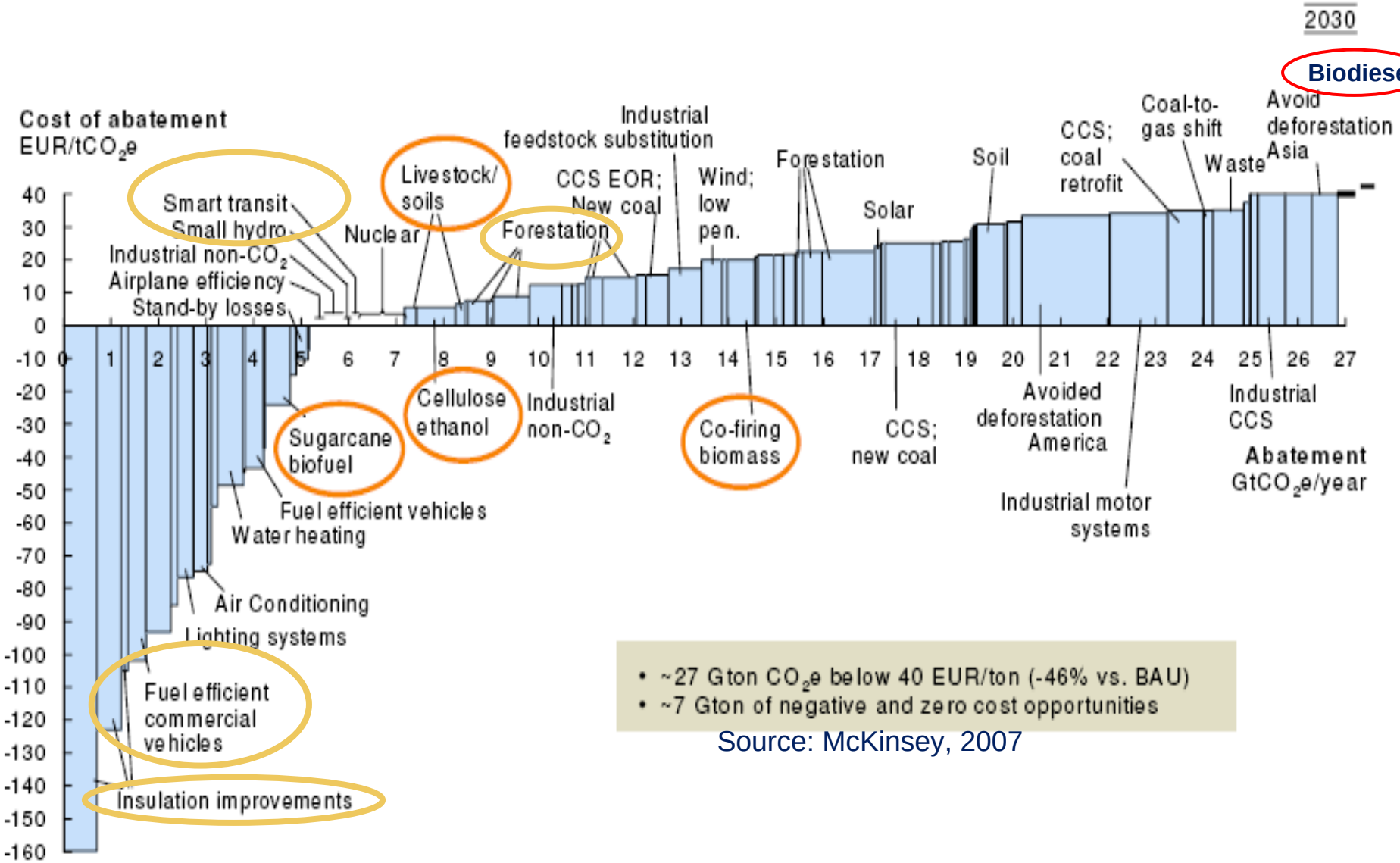
* Quadrillion British Thermal Units
Note: Transformation losses (power generation and refining) allocated to end-use segments.
Source: MGI Global Energy Demand Model

“We are not waiting for fuel to fall from the sky, because we have discovered fortunately, something much more important – energy conservation and efficiency- which is like finding a great oil deposit”

(Fidel Castro, 2006)

Biofuels cost-effective in GHG abatement ?

Global cost curve of GHG abatement opportunities beyond business as usual



- ~27 Gton CO_2e below 40 EUR/ton (-46% vs. BAU)
- ~7 Gton of negative and zero cost opportunities

Source: McKinsey, 2007

Liquid biofuels even not always the best alternative to fossil fuel for transport

- We can stabilise GHG emissions if we improve fuel economy by 2050- and this is possible with existing technologies if widespread
- Bioelectricity achieves better energy and GHG balances than liquid biofuels
- Biogas for cars is more energy and GHG performant – Already used but still a bit expensive

What share for biomass-energy in future global energy needs ?

- Many people consider a 10% share as reasonable to reduce risks – same % as today

- But this still implies a significant increase to cope with increase in global demand for energy

Putting bioenergy into perspective – In short

- If current trends continue, liquid biofuels will use a lot of natural resources and can compete with food production
- Bioenergy and biofuels alone won't solve the world's energy problems – To do so, we need to:
  - First reduce energy consumption
  - Then improve technology (fuel efficiency)
  - Then use renewable energy including all types of biofuels not only liquid biofuel for transportation

Examples of FAO's WORK

Thrust of FAO's work

- Promote small-scale bioenergy
- Address the risks and opportunities related to large-scale liquid biofuel production

FAO's work on Energy

- **Up to recently:** Rural energy (policies, planning, methods), wood energy and uptake of technologies (including biogas) in Asia and Africa

- **In the last 2-3 years:** Much more focused on bioenergy, in particular liquid biofuel for transportation due to its recent increased importance

International Bioenergy Platform (IBEP) - Four Pillars

Component 2: Country level

- Situation analysis
- Policy formulation
- Programme implementation
- Capacity building

Component 3: International level

- Global trends/issues/debate
- Information dissemination
- Partnerships

Component 1: Knowledge Management

- Resource basis
- Food security
- Climate change and natural resource management
- Towards sustainable bioenergy
- Integrated food-energy systems (IFES)
- Small-sale bioenergy for rural livelihoods
- ....

Component 4: Bioenergy Facility

Operationalising IBEP through a multi-donor Bioenergy Trust Fund

Component 1. Knowledge Management

- **Resouce basis**
  - WISDOM: Tool to map the biomass resources (wood and agricultural)
  - Residues: Awareness paper on what is really available
  - ECOCROP: Information database on feedstock characteristics and requirements

- **Food Security: BEFS – Bioenergy and Food Security** Analyzes linkages between bioenergy potentials and food security risks, based on four country realities

- **BIAS – Bioenergy Impact Assessment –** Analytical framework for assessing environmental impacts of bioenergy development

- **SOFA 2008**: Liquid Biofuels: prospects, risks and opportunities

Component 1: Knowledge Management

- **Towards sustainability**
  - Towards sustainability principles & standards/food security
  - Decision support tool (strategies and investments) – with UNEP

- **Integrated Food-Energy Systems (IFES):**
  - Combination food-energy crops on same plot
  - 'Closed loop' systems: Use of residues of one type of product to produce the other

- **Small-scale livelihood-oriented bioenergy**
  - Lessons learned from 15 case studies on small-scale bioenergy initiatives
  - How to assess success and replicate successful initiatives

Component 2: Country level

- **Situation analysis:** WISDOM > 10 countries, BEFS in 4 countries, ITAIPU/Brazil, DST, BiodieselFAO

- **Policies / Strategies / Programmes**
  - Decision support tool (DST) for sustainable bioenergy
  - Field projects (e.g. Angola, BEFS countries, Argentina, Colombia, Paraguay, Brazil)

- **Specific country-level support projects** (e.g. palm oil/Congo-Brazzaville, sunflower/Mozambique)

Component 3: International level

Global trensd/debate: FAO-OECD Outlook, HLC 2008

Partnerships

- **GBEP – Global Bioenergy Partnership** G-8 2005 International initiative bringing together public, private and civil society stakeholders to promote sustainable bioenergy development
- **UN-Energy** Secretariat till 2007, lead in UN-Energy bioenergy framework paper, Co-leader of renewable energy cluster (with UNEP)
- **Several other international fora** RSB, IEA task forces 40 and 39, IPCC, other events
- **Possibly IDB**

Thank you