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Potential and Opportunities for Biomass Deployment

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About IRENA

Foundation:	26 January 2009 International Agency since April 2011 The only international RE agency worldwide
Members:	101 countries and EU; 50 ratified members; 7 applicants
Mandate:	Sustainable deployment of all RE resources (Biomass, Geothermal, Hydro, Ocean, Solar, Wind)
Location:	Headquarters in Abu Dhabi, United Arab Emirates Innovation and Technology Centre (IITC) in Bonn
Staff:	Director-General Adnan Amin; about 72 staff.

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How long will the world's oil reserves last ?

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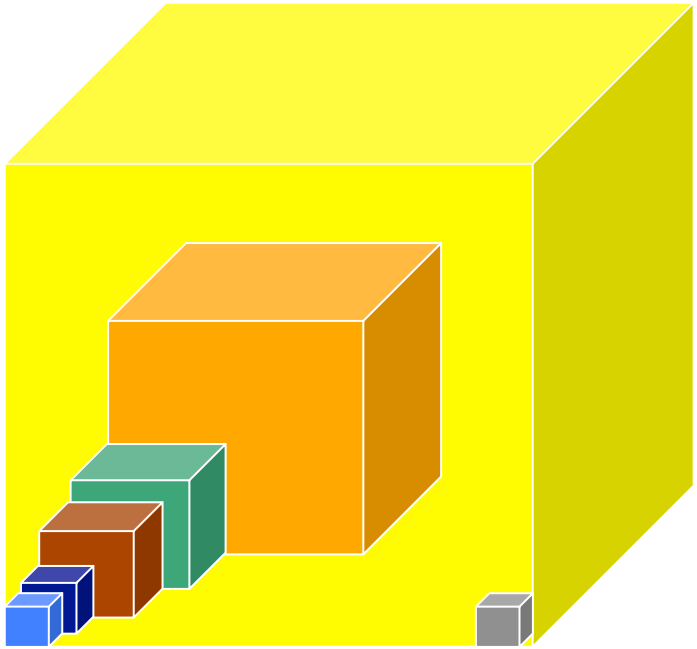
Sheik Ahmed Zaki Yamani, former Saudi Oil Minister:

"The Stone Age didn't end for lack of stone, and the oil age will end long before the world runs out of oil."

The various types of Renewable Energy and their potential.

Mobilise this huge potential!



- Current Global Primary Energy Consumption (GPEC)
- Solar Radiation (continents) 1800 · GPEC
- Wind Energy 200 · GPEC
- Biomass 20 · GPEC
- Geothermal Energy 10 · GPEC
- Ocean and Wave Energy 2 · GPEC
- Hydro Energy 1 · GPEC

Source: Nitsch, F.: Technologische und energiewirtschaftliche Perspektiven erneuerbarer Energien. German Aerospace Center. 2007.

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How much will oil cost in 2020?

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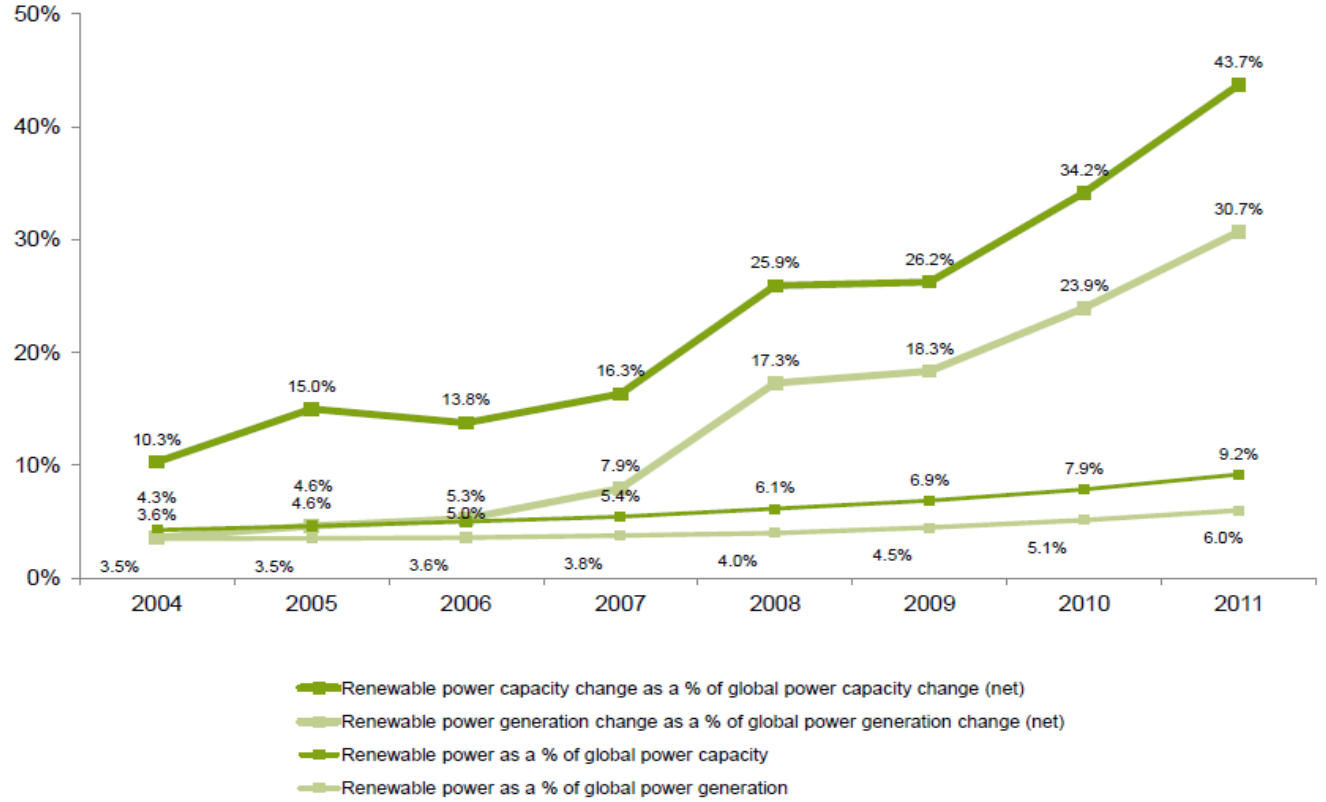
Renewables, excluding large hydro, accounted for 44% of new generation capacity added worldwide in 2011; up from 34% in 2010; and 31% of actual new power generated due to the variability of the wind and solar capacity added.



Sources: EIA, IEA, Bloomberg New Energy Finance

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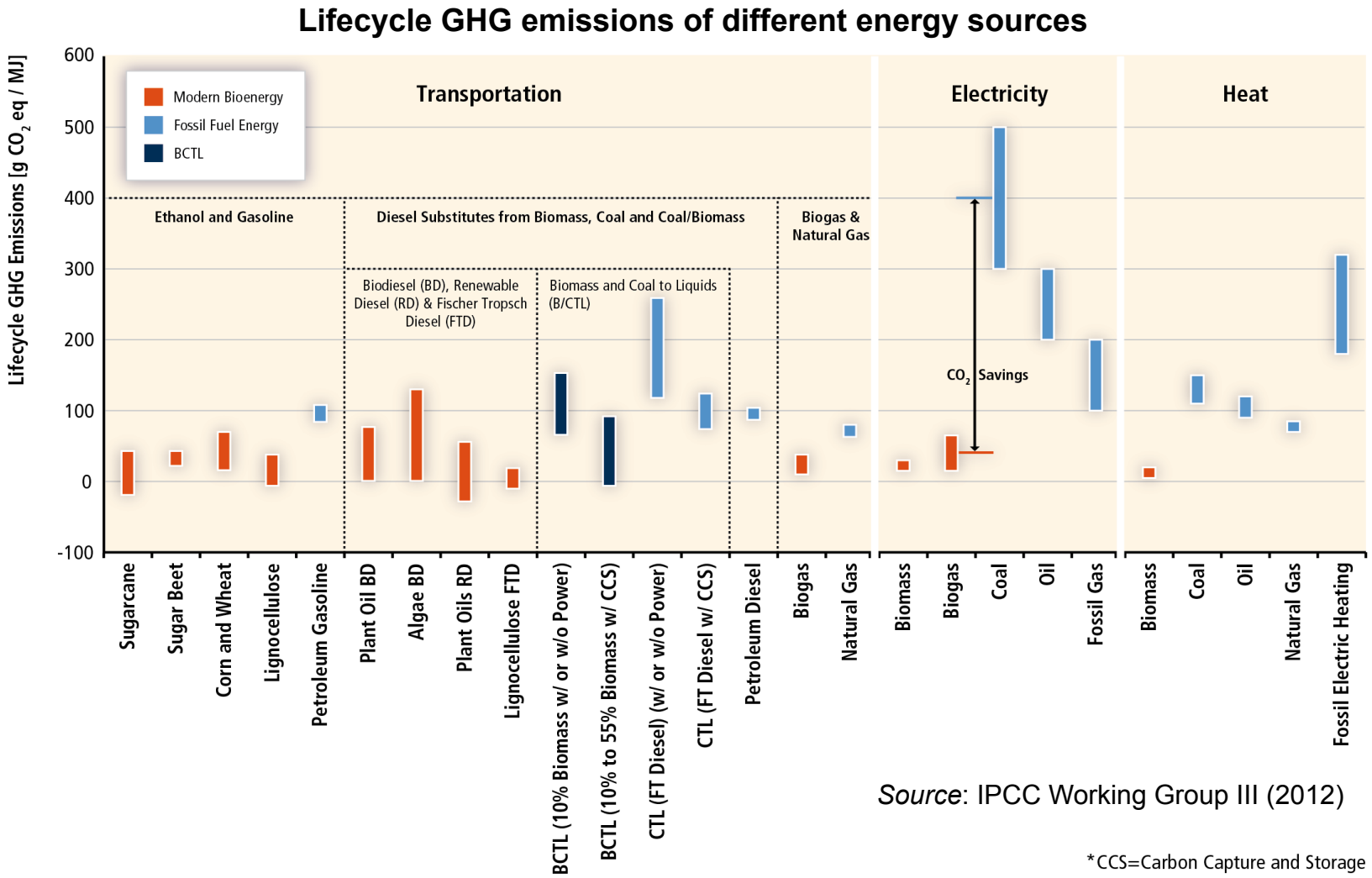
Contributing Factors to Global Warming



Source: IPCC Working Group III (2012)

*CCS=Carbon Capture and Storage

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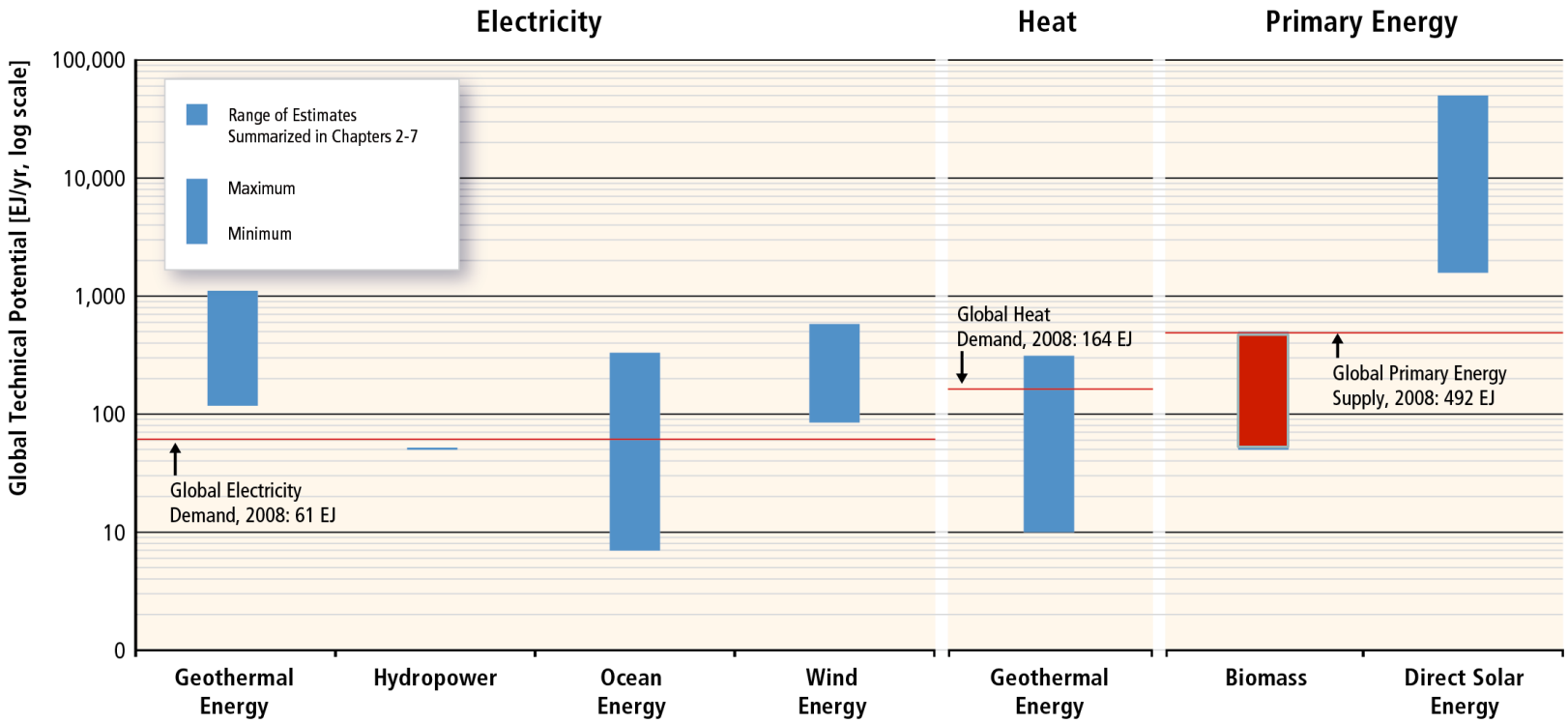
Potential of Biomass Use for Energy



Range of Estimates of Global Technical Potentials

Max (in EJ/yr)	1109	52	331	580	312	500	49837
Min (in EJ/yr)	118	50	7	85	10	50	1575

Source: IPCC Working Group III (2012)

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Current Cost of Biomass Use

Levelised cost of electricity (LCOE) for commercially available RE technologies

Source: IPCC Working Group III (2012) [$UScent_{2005}$/kWh]

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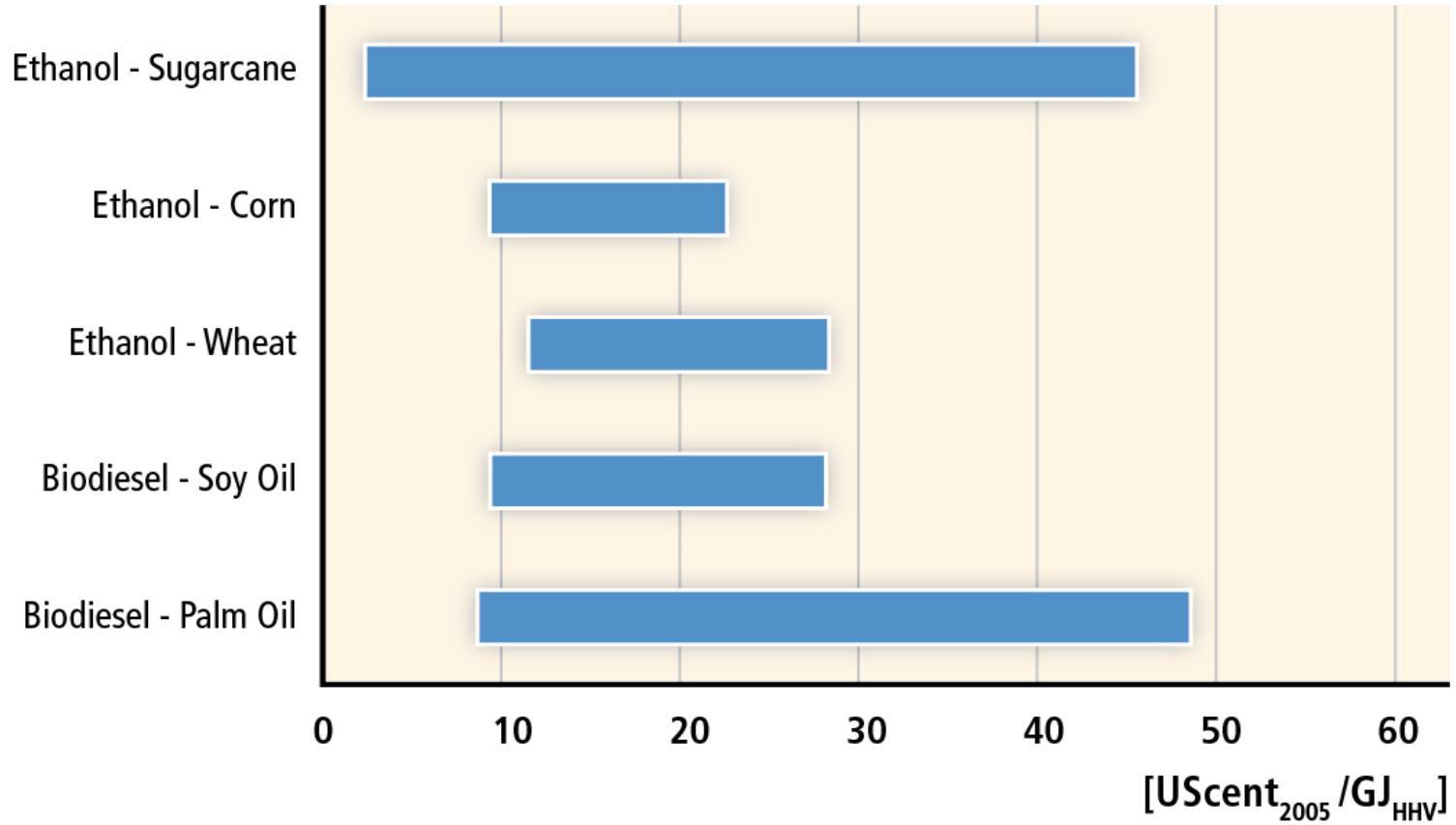
Current Cost of Biofuels

Levelised cost of fuels (LCOF) for commercially available biomass conversion technologies



Source: IPCC Working Group III (2012)

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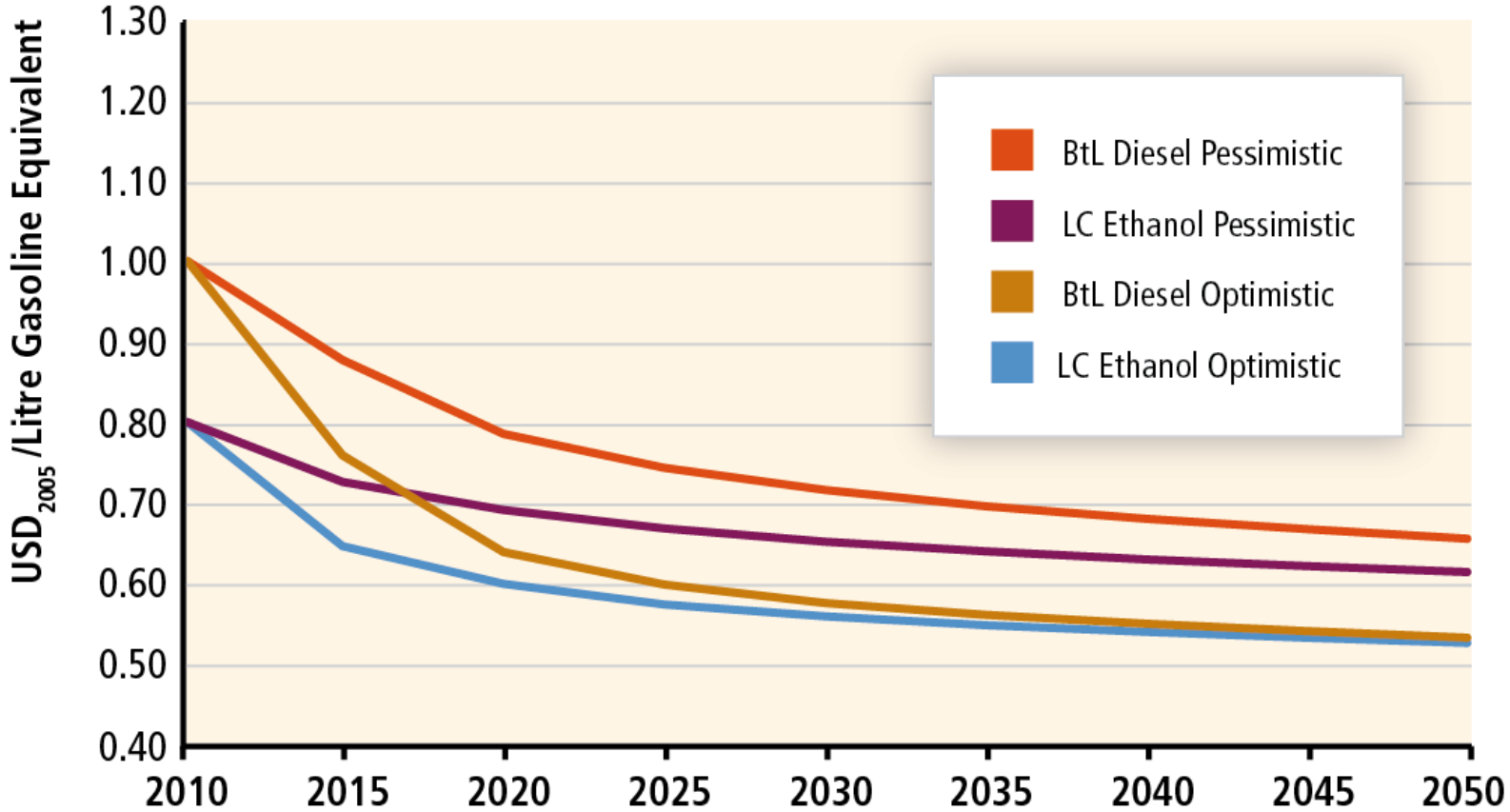
Cost Projection of Biomass Use

Cost projections for lignocellulosic ethanol and biomass-to-liquids diesel



Source: IPCC Working Group III (2012)

Note: BtL = Biomass-to-Liquids; LC = Lignocellulose

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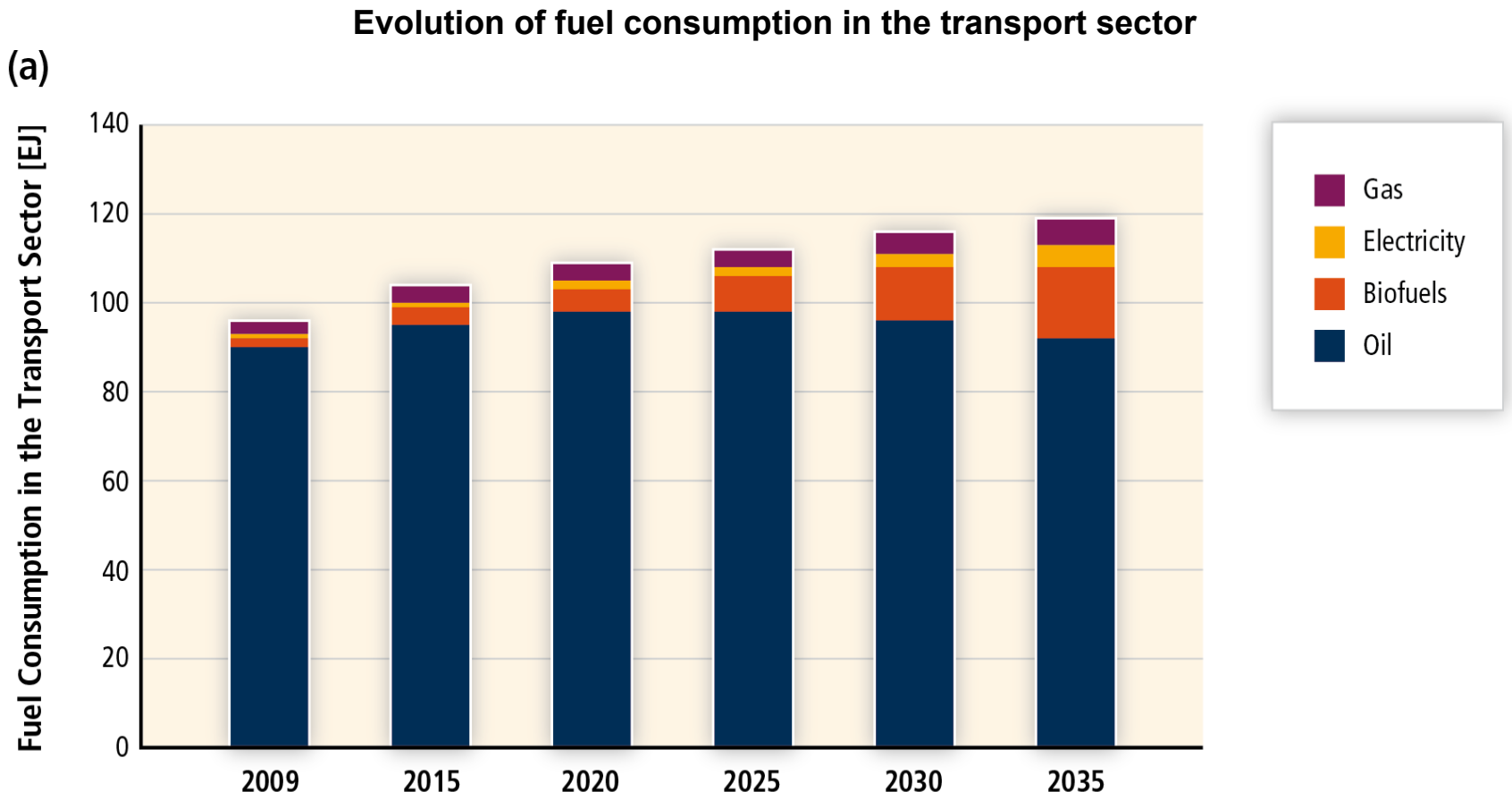
Potential of Biofuels for Transport



Source: IPCC Working Group III (2012)

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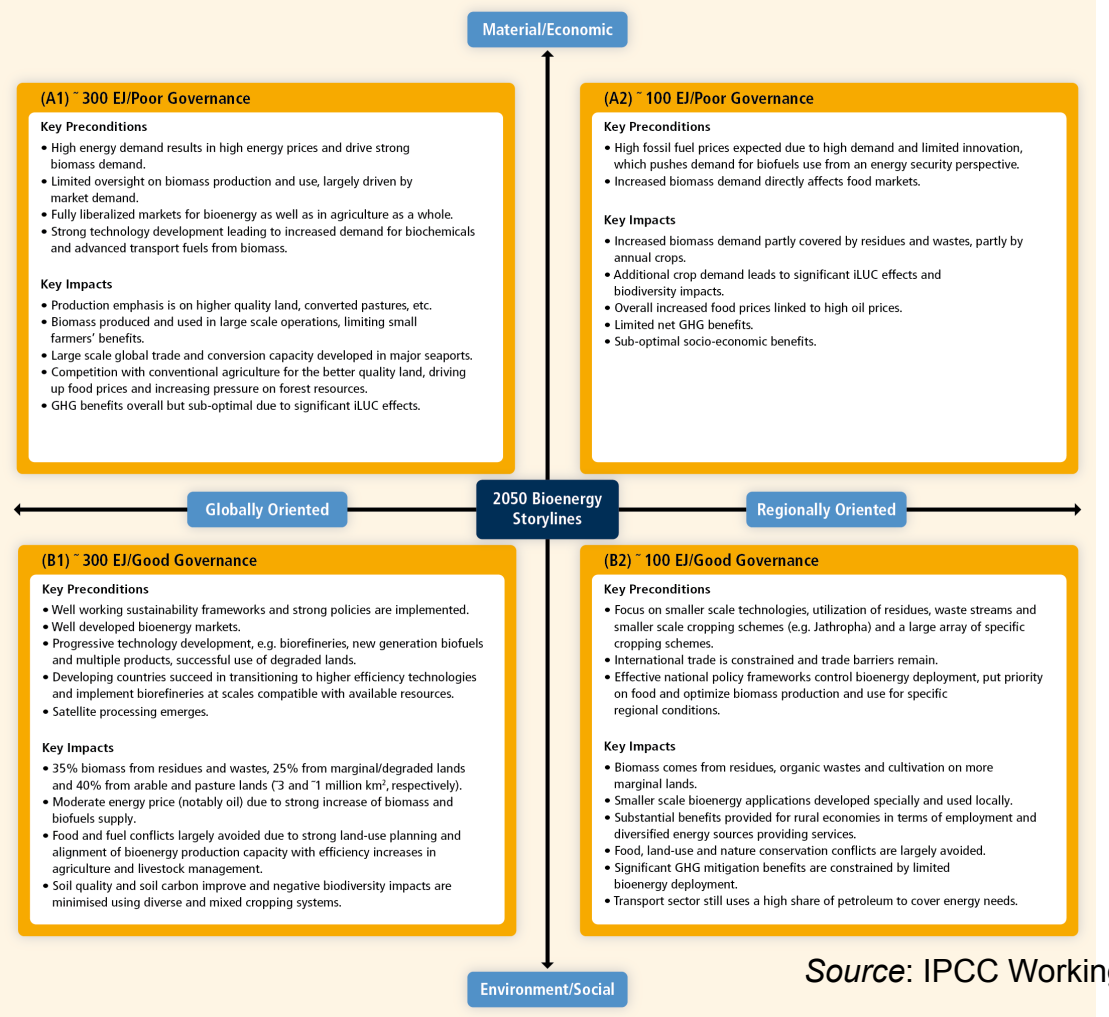
4 Scenarios for Biomass Deployment



Source: IPCC Working Group III (2012)

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Key Issues for Considering Biomass Deployment

- High mitigation potential from modern biomass
- Contribute to improving energy security
- Diverse applications compared to other renewables – electricity, heat and transport
- The only viable green alternative in transport
- Can provide the largest small-scale business and local employment opportunities
- Water-food-energy nexus is an important consideration and there are efforts to overcome constraints by using algae, etc.

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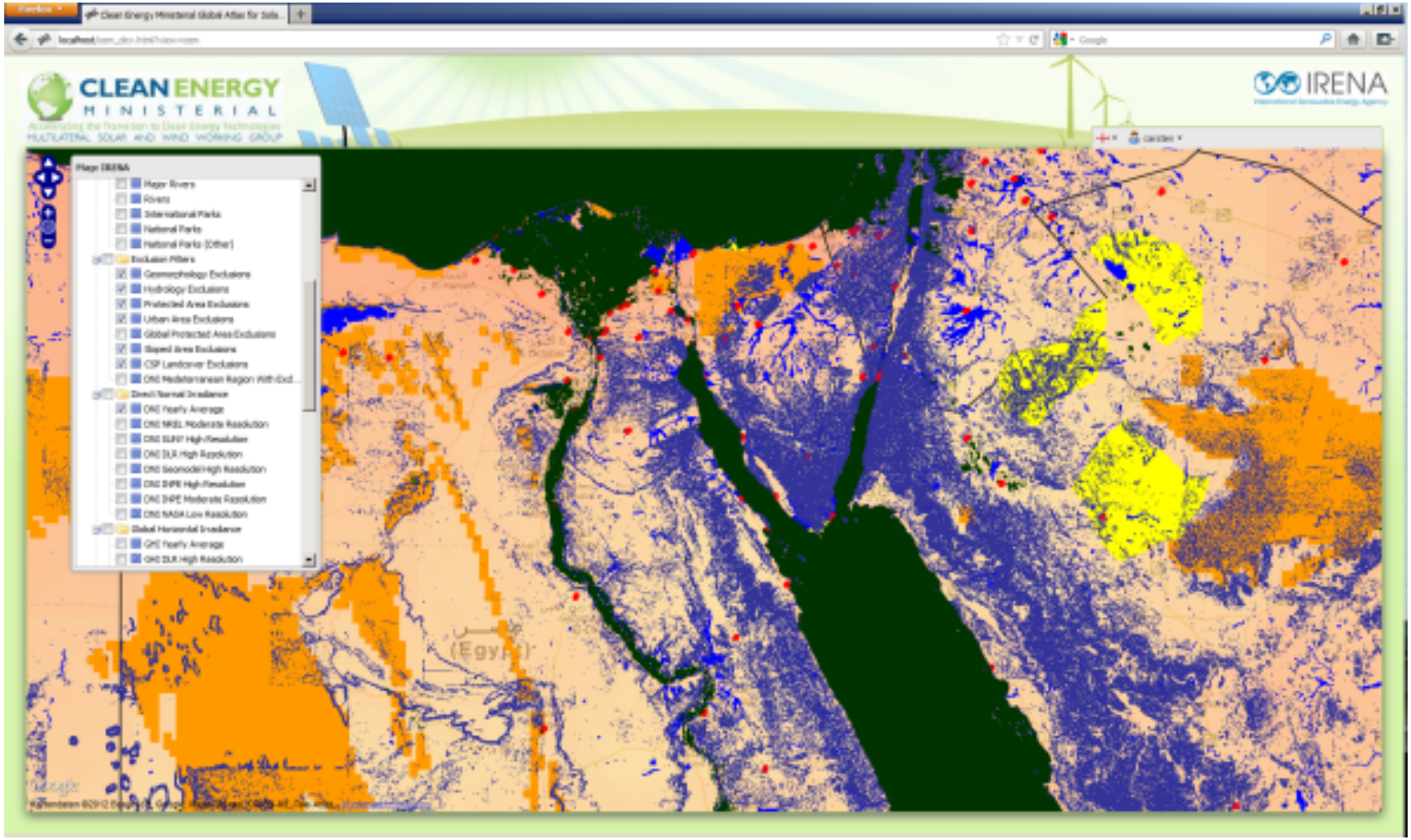
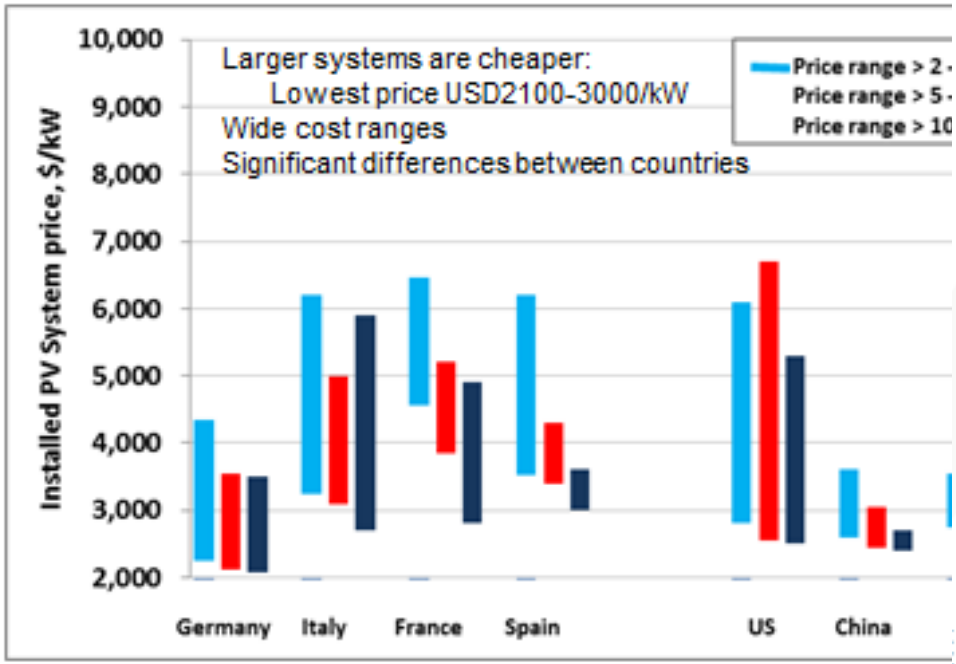


Residential installed PV system prices, firs



Source: IRENA Study, 2011

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SUMMARY FOR POLICY MAKERS:

Renewable Power Generation Costs

November 2012


Biomass for Power Generation


Concentrating Solar Power


Hydropower


Solar Photovoltaics


Wind Power

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Policy Assessment

- RE tariffs setting
- RE targets setting
- RE Policy evaluation

Renewable Energy Employment

- Report on Renewable Energy Employment: Analysis, Trends and Markets

Renewable Energy Economic Value

- Analysis of economic value creation from RE
- Policy recommendation to maximize value creation
- Policy tools and case studies

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IRENA Handbook on Renewable Energy Nationally Appropriate Mitigation Actions (NAMAs) for Policy Makers and Project Developers

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Objective

- Focus on scaling-up of off-grid renewables
- Identification of key barriers
- Sharing Lessons Learnt and best practices

Participants

- 350 delegates from more than 80 countries
- 35+ Representatives from African Rural Electrification Agencies
- Speakers with experience from over 25 countries

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Thank You!

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