

**UNEP Workshop on Biofuels for Eastern and  
Southern Africa  
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***Biofuels Issues for Africa***

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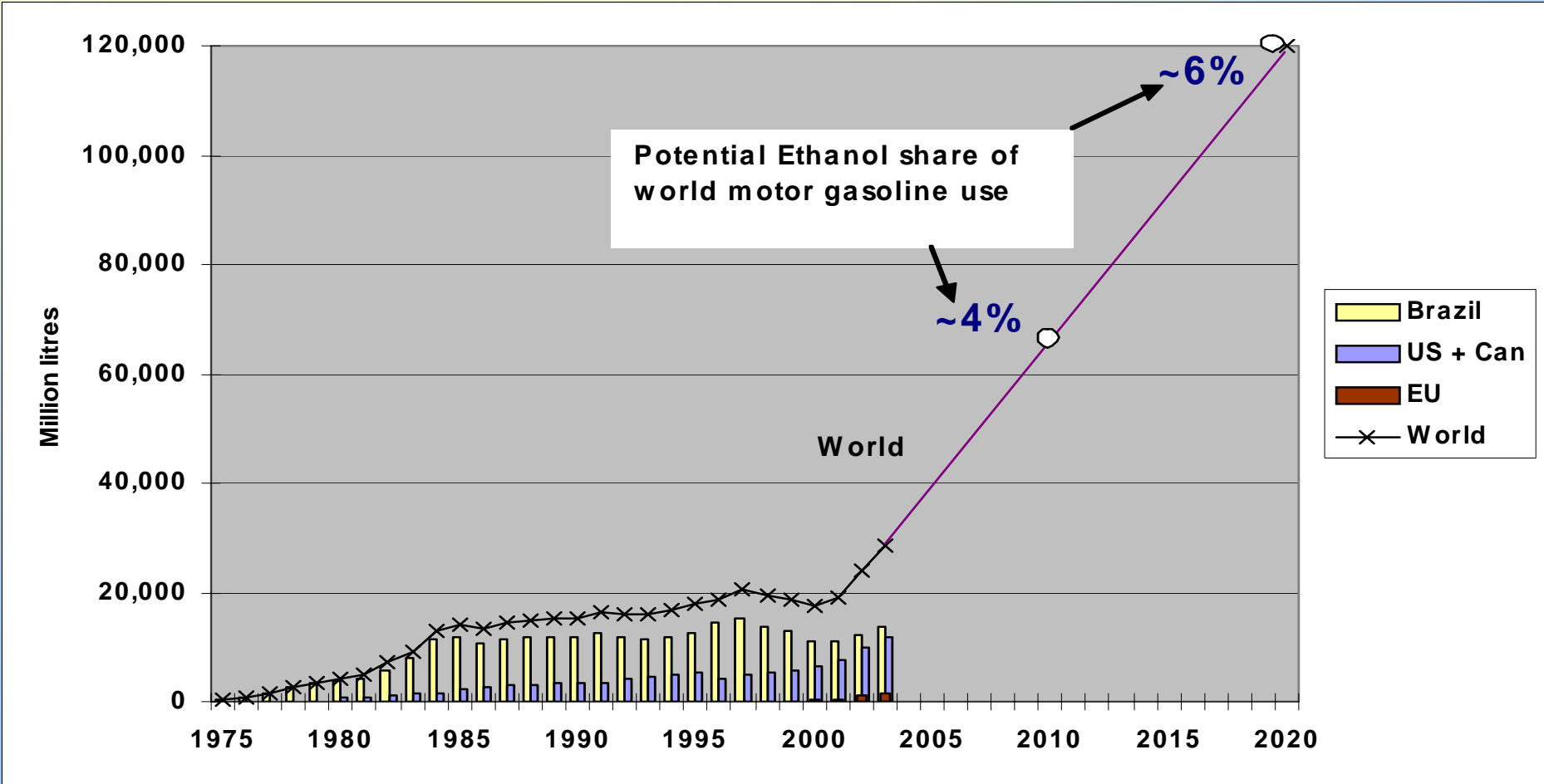
**UNEP GEF Climate Change Division  
Nairobi, Kenya**

# Biofuels: Overarching Questions

- **Can African countries “afford” to produce liquid biofuels for transport?**
  - **Impacts on food supply?**
  - **Possible negative impacts on environment such as land degradation, loss of natural habitats, biodiversity**
- **Can they afford not to?**
  - **High cost and insecurity of petroleum imports**
  - **Opportunities for farming and rural development**
  - **Possible positive impacts on environment (reductions in vehicle emissions of pollutants and GHGs)**
- **So, to proceed: how to maximize the good and minimize the bad?**

# Ethanol Production: Past...and Future?

Million litres per year



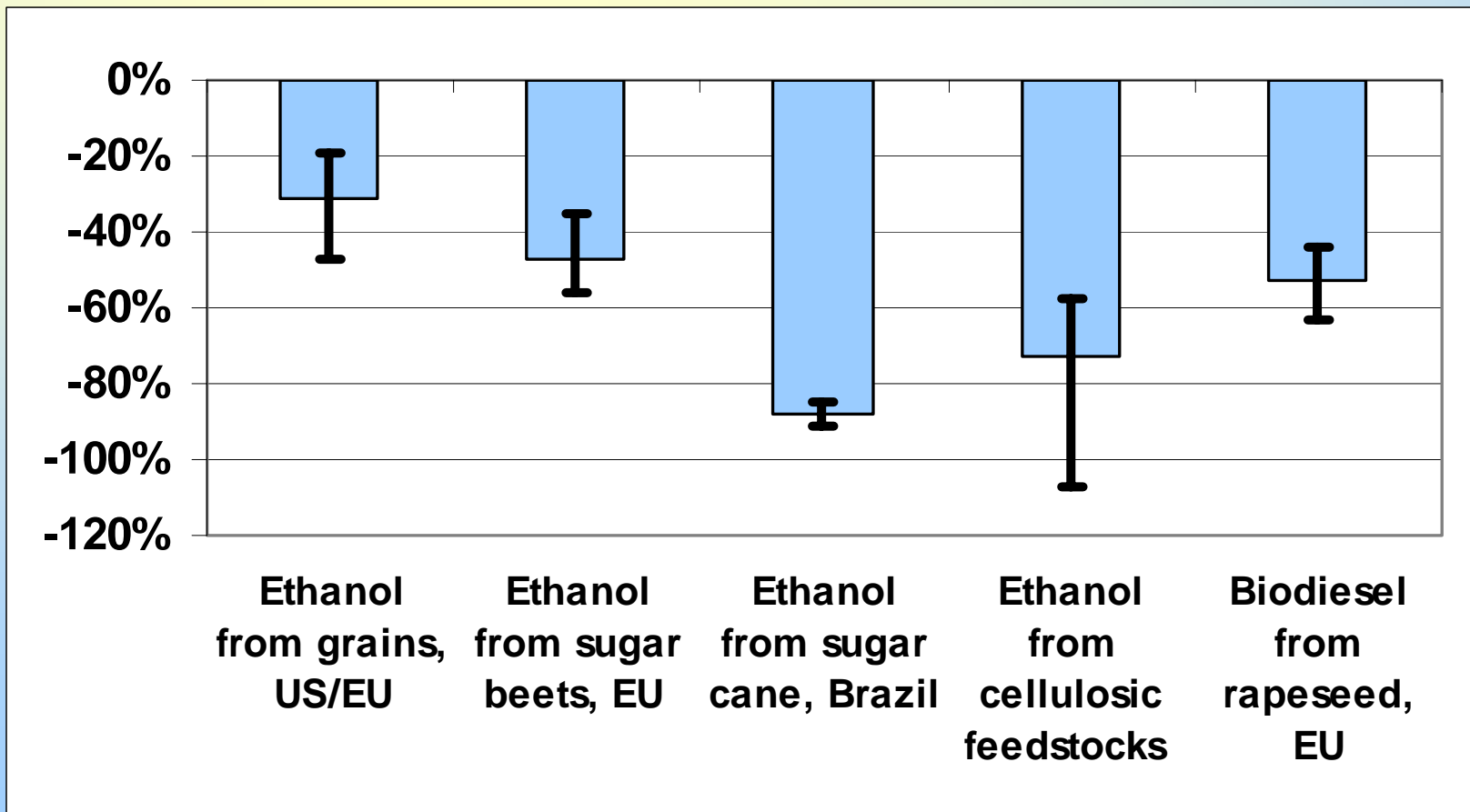
Source: IEA, 2004, Biofuels for Transport: An International Perspective

# A typology of liquid biofuels

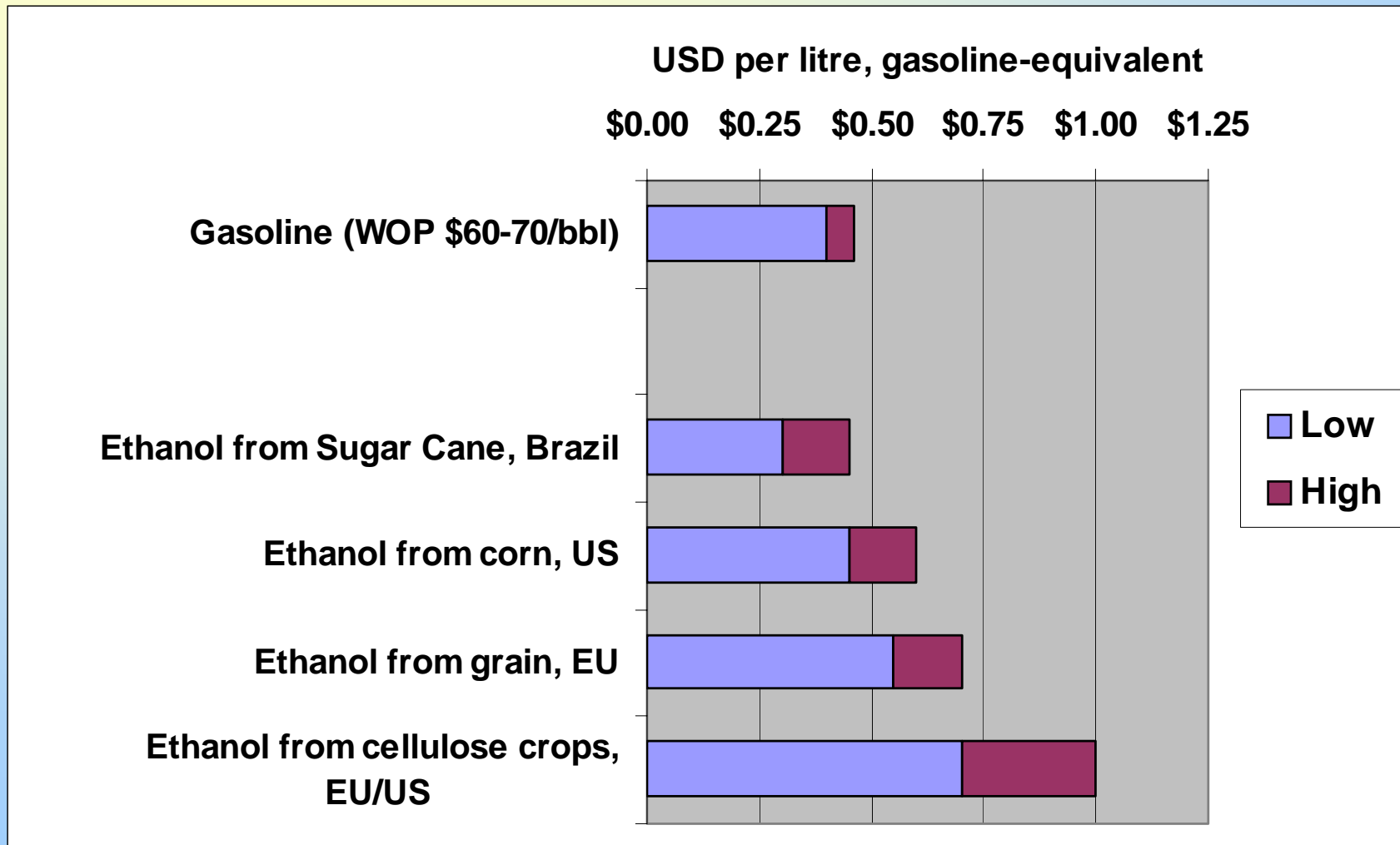
Fuel	Feedstock	Regions where currently produced	GHG reduction impacts v. petroleum fuel	Costs	Biofuels yield per hectare of land	Land types
Ethanol	Grains (wheat, maize)	US, Europe, China	low-moderate	moderate	moderate	croplands
Ethanol	Sugar cane	Brazil, India, Thailand	high	low	high	croplands
Ethanol	biomass (cellulose)	none	high	high	high	croplands, marginal lands
Biodiesel (FAME)	oil seeds (rape, soy)	US, Europe	moderate	moderate	low	croplands
Biodiesel (FAME)	Palm oil, jatropha	South/SE Asia, Africa	Moderate-high	low-moderate	Moderate-high	Coastal (palm)/various (jat.)
Biodiesel (BTL)	biomass	none	high	high	high	croplands, marginal lands

# GHG Emissions Impacts of Biofuels

Well-to-wheel CO<sub>2</sub>-equivalent GHG emissions from biofuels, per km, relative to base fuel



# Ethanol Production Costs in Selected Countries



Source: based on IEA, 2004

# Key Questions for Africa

- **What are the costs of production for different feedstock/fuel pathways at small and large scale in African countries?**
- **Do we understand the full environmental impacts (e.g. life-cycle GHG emissions) of feedstocks and fuel pathways in the African context?**
- **Do we understand other environmental impacts? Social Impacts Land use change?**
- **Should production for national use take precedence over production for international trade?**

# Points for discussion

- **Sharing experiences on existing biofuel programmes in your country**
- **Identifying policies and tools available for bioenergy planning and management in order to minimize negative social and environmental impacts and maximize benefits**
- **Identifying capacity building and technology support needs and ways to address these**

# Points for discussion (cont.)

- **Policy aspects and national strategies**
  - **what are some of the barriers to development of biofuels in your country and region? How might these be overcome?**
  - **What are some specific criteria you would recommend for ensuring biofuels are produced in an environmentally and socially sustainable manner?**