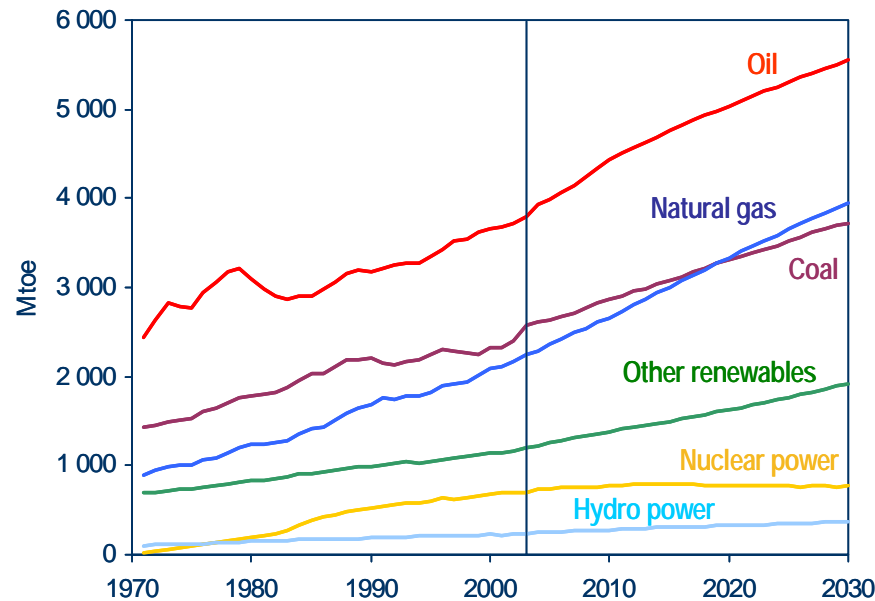


potential contribution to energy security

Global energy demand is projected to grow by more than half by 2030, with oil, gas and coal together accounting for 83% of the growth in energy demand



Source: IEA

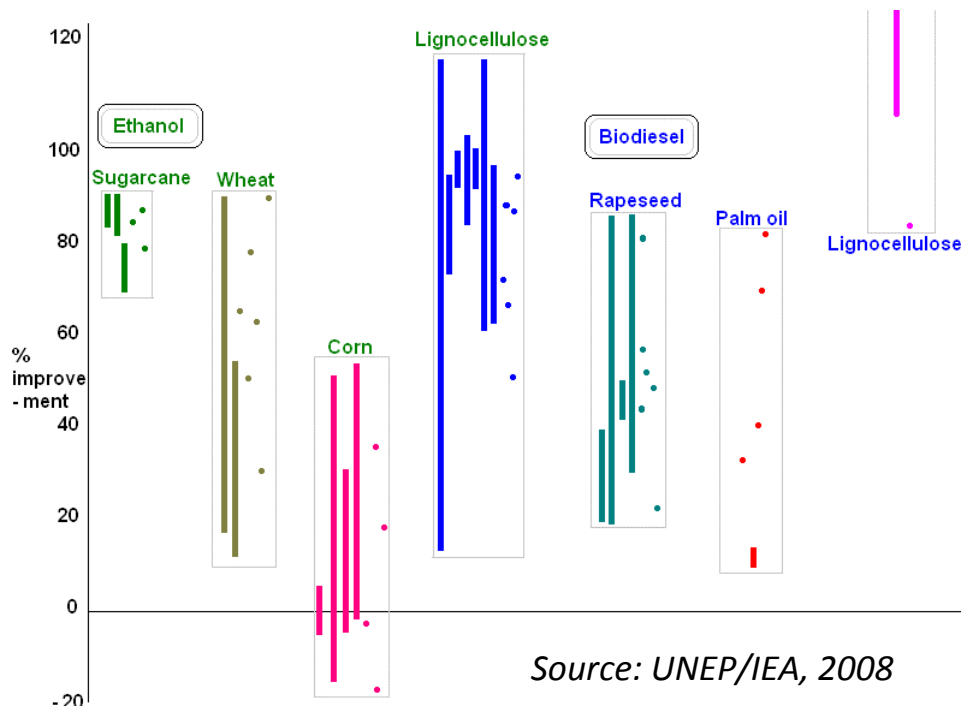
Bioenergy contributes to energy security by diversifying sources, increasing the number of producing countries and a potential to 'homegrow' energy lowering import bills which are particularly a drain on developing country budgets.

The IEA estimated that bioenergy can provide about 25% of world primary energy in 2050.

potential contribution to climate change mitigation

IPCC 4th assessment report confirms the need to dramatically reduce CO₂ emissions

Absorbing CO₂ during the growth of the bioenergy feedstocks, CO₂ emissions CAN be considerably lower as compared to fossil fuel



GHG reduction potential varies from crop to crop and with agricultural practices, geo-climatic conditions, conversion processes and end-use practices; LCA necessary

potential contribution to development



*expanding energy access in developing regions:
eliminating energy poverty; reduced health impacts
from indoor air pollution*



*revalorizing
agriculture:
improved
productivity and
incomes
(incl. trade
opportunities)*



*powering secondary
industries, businesses,
infrastructure:
economic
diversification, growth
and sustainability*

potential risks



- *increased GHG emissions, exacerbating climate risks, particularly impacts on vulnerable regions and people*
- *loss of biodiversity, which provides the basis for ecosystems and the services they provide*

due to

- *direct land use changes*
- *indirect land use changes*

risk mitigation measures:

- *no go areas*
- *agro-biodiversity*



Additional risk: invasive species, GMOs

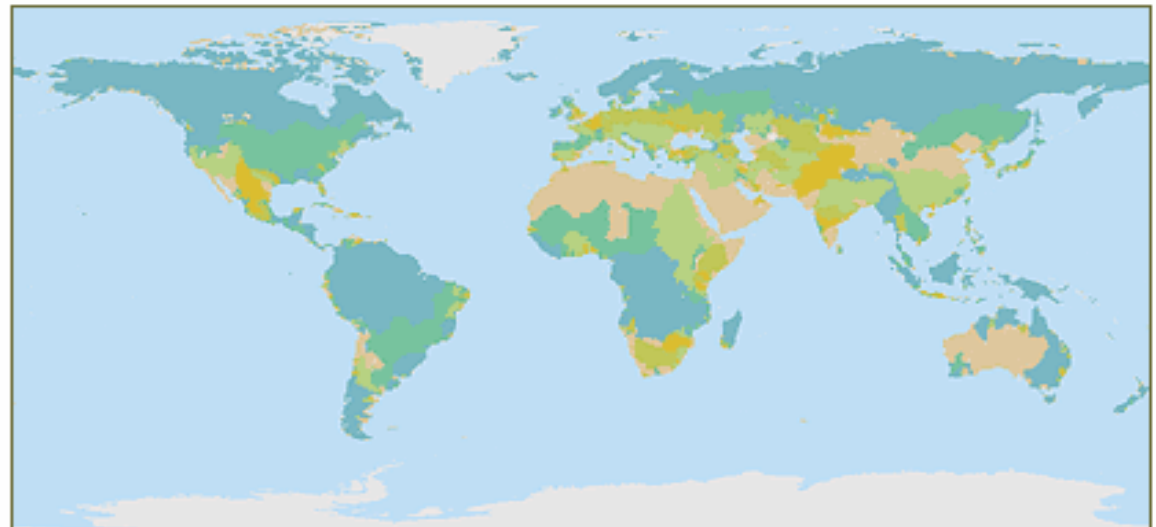
potential risks

- competition for water
(food production,
drinking)

agriculture currently uses
70% of the world's (85%
of the developing world's)
fresh water, and climate
change impacts will
create further pressure in
areas that are already
suffering from droughts

risk mitigation measures:
- efficient use of water
- rainwater harvesting
- adequate crop choices

Risk also for other natural
resources – soil and air



Annual renewable water
(m³/person/year)

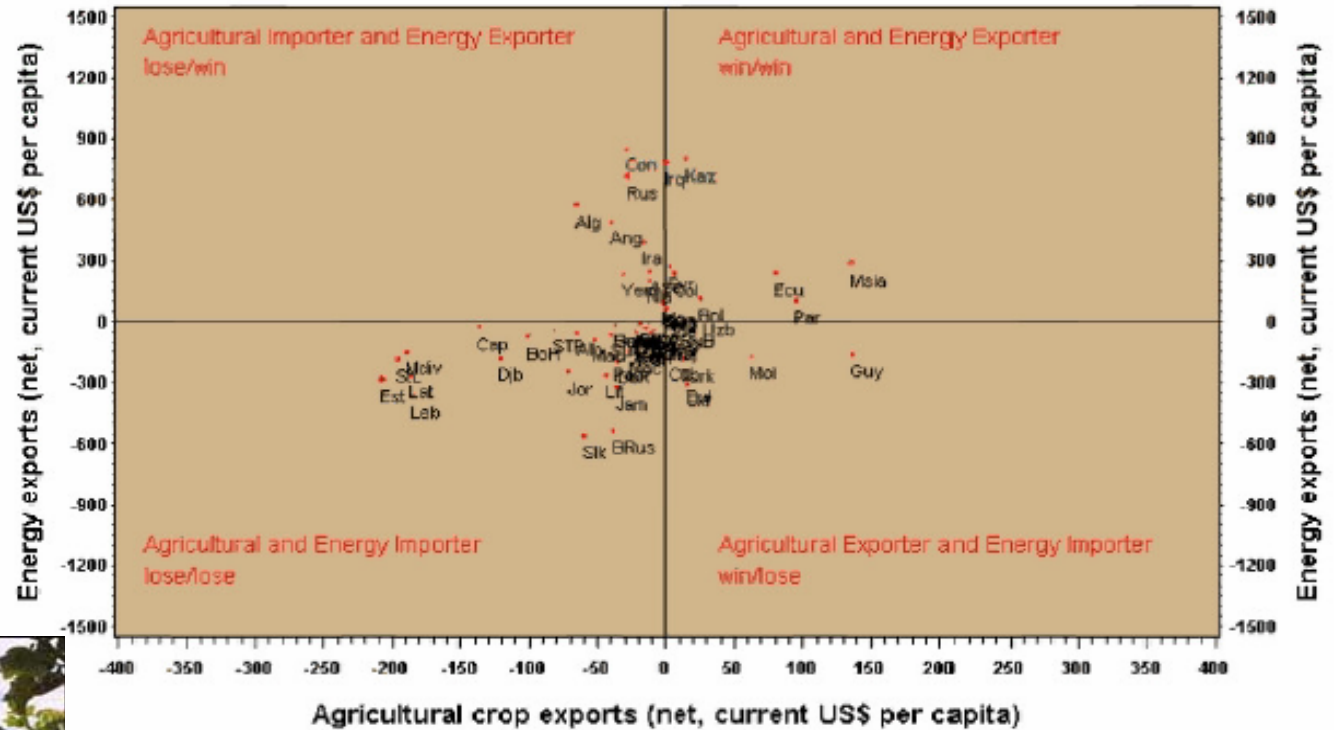


potential risks

*Food security:
Concern and political*

Food prices

FAO HLC



Data: FAO, OECD-IEA and US-EIA
Agriculture crops without coffee, cocoa, tea, cotton, and other fibres



risk mitigation measures:

- *productivity increases where possible*
- *use of marginal lands for bioenergy production*
- *cascading use of biomass*

potential risks



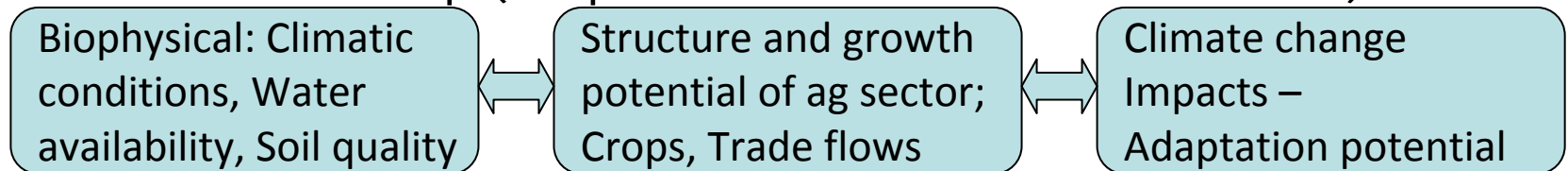
Land tenure - If bioenergy crops become more valuable, the consolidation of land into larger holdings may favour larger landowners and displace small farmers.

*Labour creation vs. mechanisation
Labour conditions*

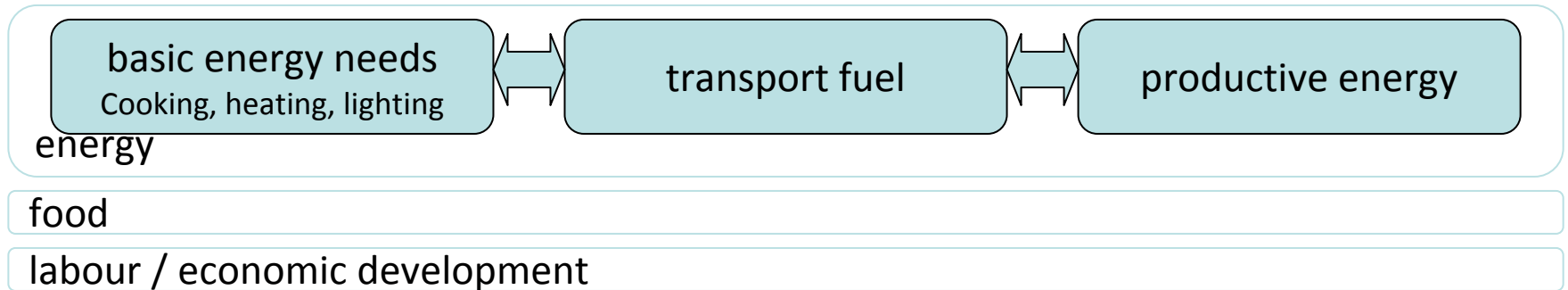
*Development benefits bypassing
local communities*

need for good planning and management

- Choice of the area ('no go areas', e.g. PA, HCVA; 'no regrets', e.g. marginal land – need for definitions)
- Choice of the crop (adapted to local conditions and needs)



- Good agricultural practices (water, soil, new technologies, methods serving double purpose – awareness raising and capacity building)
- Choice of the end use (local – national – international markets)



- Involvement of local communities in planning, production (business models incl. equity, outgrowers concepts) and use

tools to ensure social and environmental benefits materialize

- appropriate policies, institutional and legal frameworks
 - Bioenergy plans, developed involving different ministries (agriculture, energy, environment, transport, economics, trade)
 - Water conservation and protection
 - Biodiversity conservation
 - Climate regime
- enforcement of environmental laws and regulations
- institutional capacity building
- internationally agreed system (standard, certification) to ensure sustainability of biomass intended for biofuels production
- harmonised methodology for LCAs for biofuels
- land use mapping
- ecosystem service values / internalizing externalities / cost benefit analysis taking into account co-benefits
- near-term research involving developing countries
- technology transfer (N-S-S)

International developments

- FAO HLC
- UN SG's Task Team on Global Food Crisis
- CBD COP Bonn
- UN Energy

Roundtable on Sustainable Biofuels

Multi-stakeholder initiative to develop a sustainability standard:

- **Simple, accessible** and implemented worldwide
- **Generic** to all crops
- **Adaptable** to new information
- **Efficient and cheap** to measure
- **In line with WTO rules** (use ISEAL code)

Governance

- **Steering Board** composed of international stakeholders
- **Secretariat** based at EPFL. Coordination of the RSB.
- **4 Working Groups** to make recommendations to the Steering Board. 270 participants from IGOs, NGOs, private sector and academic institutions.
- **Global stakeholder feedback** at every step (blogs, meetings, wiki technology, pilot projects, regional outreach meetings - Latin American outreach, Brazil, 2007 during Ecolatina, with sponsorship from Petrobras; East Asian outreach, China, 2007 during Challenge Bibendum with sponsorship from Michelin, S-A outreach with Cures, South Africa, 2008, South-Asian Outreach, India with sponsorship from Daimler, 2008)

Preliminary standard available

Roundtable on Sustainable Biofuels

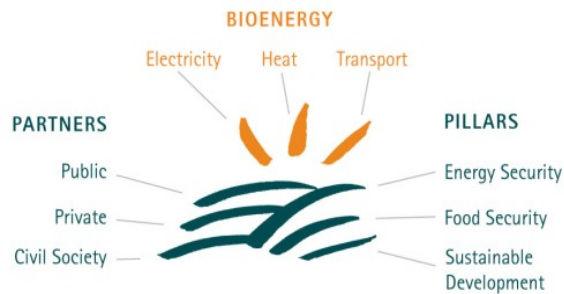
Principles :

- 1. Biofuel production shall respect all applicable laws of the country in which they occur, and all international treaties and agreements to which the country is a signatory.**
- 2. Biofuels projects shall be designed and operated under appropriate, comprehensive, transparent, consultative, and participatory processes that involve all relevant stakeholders.**
(environmental and social impact assessment, strategy, and impact mitigation plan (ESIA) covering the full life cycle of the project)
- 3. Biofuels shall contribute to climate stabilization by reducing GHG emissions as compared to fossil fuels.** (consistent approach to lifecycle assessment, with system boundaries from well to tank)
- 4. Biofuel production shall not violate human rights or labor rights, and shall ensure decent work and the well-being of workers.**
- 5. Biofuel production shall contribute to the social and economic development of local, rural and indigenous peoples and communities.**
- 6. Biofuel production shall not impair food security.**

Roundtable on Sustainable Biofuels

- 7. Biofuel production shall avoid negative direct and indirect impacts on biodiversity, ecosystems, and areas of High Conservation Value.** (Identification and mapping of HCV, Ecosystem functions and services must be preserved, buffer zones, ecological corridors)
- 8. Biofuel production shall not degrade soils. Soil management practices that seek to improve soil health shall be implemented.**
- 9. Biofuel production shall not directly or indirectly contaminate or deplete water resources, nor violate existing water rights both legal (formal) and customary .**
- 10. Biofuel production shall seek to minimize its contribution to air pollution**
- 11. The use of any technology must improve production efficiency and environmental performance in the long term and in all stages of the biofuel value chain.**

GBEP



Mission:

In the July 2005 Gleneagles Plan of Action, the G8 +5 (Brazil, China, India, Mexico and South Africa) agreed to "... promote the continued development and commercialisation of renewable energy by: [...] d) launching a Global Bioenergy Partnership to support wider, cost effective, biomass and biofuels deployment, particularly in developing countries where biomass use is prevalent".

Partners:

Brazil, Canada, China, France, Germany, Italy, Japan, Mexico, Netherlands, Russian Federation, United Kingdom, United States of America, FAO, IEA, UNCTAD, UN/DESA, UNDP, UNEP, UNIDO, United Nations Foundation, World Council for Renewable Energy (WCRE) and European Biomass Industry Association (EUBIA).

Activities:

- Review of the Current State of Bioenergy Development in G8 + 5 countries
- Facilitation of sustainable development of bioenergy and collaboration on field projects
- Harmonization of methodologies on GHG emission reduction measurement
- Awareness raising and information management

UNEP Roundtable on Bioenergy

Enterprise development – Jatropha and alike

Jatropha has generated a lot of interest and investment, however there is **insufficient validated information and neither quality nor sustainability standards**, as to:

- Plant requirements / agricultural practices
- Conversion technologies
- Business models

Roundtable gathering centers of Excellence to:

- Collect information and share good practice
- Identify barriers and ways to address them
(agronomical/technical, set up/planning/management, financial, research/information/outreach, policy/regulatory)
- Provide handholding services to entrepreneurs / farmers

ALL THIS HAPPENS WITHIN AN ENVELOPE OF SUSTAINABILITY

Demand side pull

Energy access
(e.g. Garalo)

Oil import
substitution

Global demand for
bio-oil

Seed capital
Risk burden
Info gaps
Capacity gaps

Policy instruments
AREED type interventions
Identify and cater for
country needs
(lighting, cooking,
electricity, other)
Local FI involvement

Bottom line business case
for crop & fuel switching

Energy requiring businesses
as a trigger for investment
(hotels, ICT, etc.)
Centres of excellence
Mali Renewable Energy
Commission type activities

Rules of the game

Control of environmental &
social impacts

Development focused use
of natural resources

Community involvement

Small farmers

Scale

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