

## Ensuring Sustainability of Bioenergy Update on UNEP's activities

Conference on Cleaner Fuels and Vehicles for  
Eastern Europe, Caucasus and Central Asia (EECCA)

24-25 January 2008, Tbilisi/Georgia

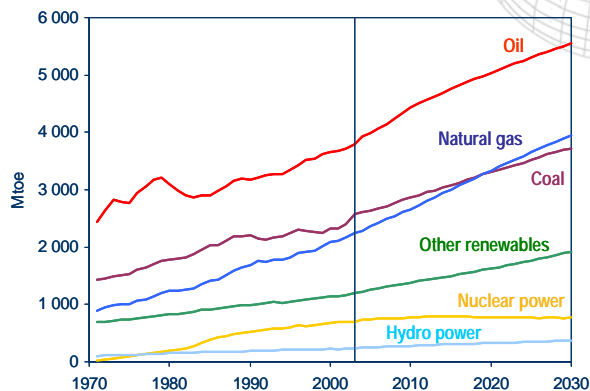
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United Nations Environment Programme



## Trajectory without change World primary energy demand

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 between now and 2030.

Almost 2 billion people are still without access to modern energy services – and this number is expected to grow.

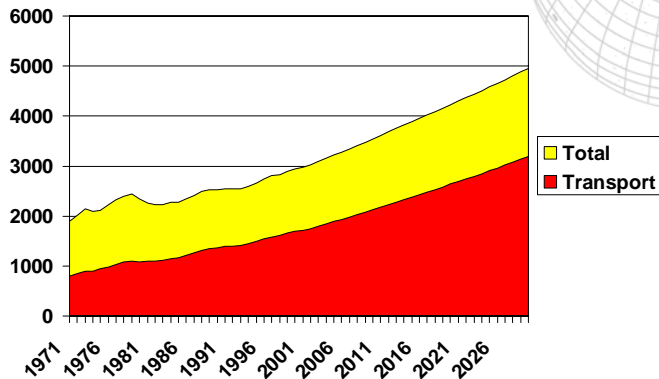


Source: IEA  
World Energy Outlook  
Reference Scenario



## Dependence on fossil fuels of the transport sector

World Oil Consumption, 1971-2030  
(Final Consumption, Mtoe)



Source: IEA historical data and projection from World Energy Outlook 2002



## Climate Change

- **Scientific consensus – latest IPCC reports**  
Between 1970 and 2004 global GHG emissions increased by 70%.  
With current mitigation policies and related development practices, global GHG emissions will continue to grow over the next few decades.  
Economic mitigation potential till 2030 could offset the projected growth of global emissions, or reduce them below current levels.
- **Economics - Stern report**  
Cost of non-action is higher than cost of GHG reduction measures.
- **Market development – new technologies**  
Global investments in renewable power-generation, biofuels and low carbon technologies rose from \$28 billion in 2004 to \$71 billion in 2006.  
Industry ceases the business opportunities of providing new, climate-responsive technologies.
- **Political dialogue**  
G8 Summits in Gleneagles and Heiligendamm, UN Security Council, UN SG's HLE, UNFCCC COP in Bali
- **Awareness of the public**  
The public is realising that life-style changes will be necessary.



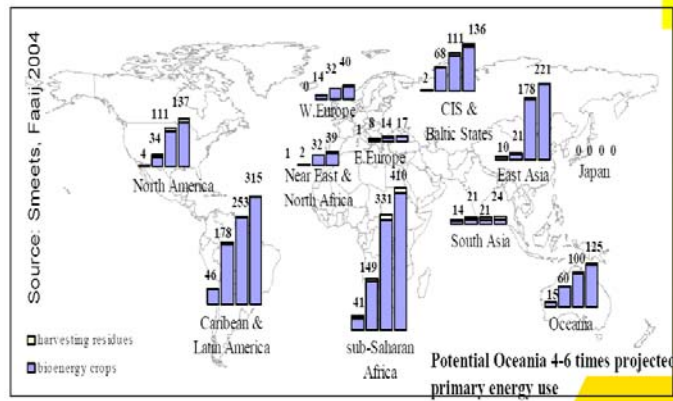
## Drivers of bioenergy development

- Energy Security
  - Diversified Energy Supply
  - Reduced Oil Import Spending
- Development
  - Access to energy
  - MDG achievement
  - Revalorisation of rural areas
  - Job Creation
- Climate change



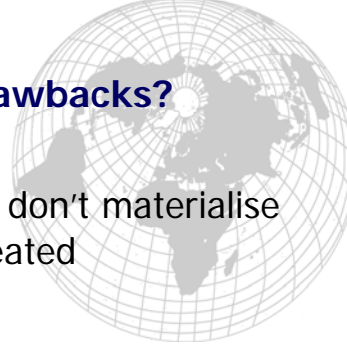
## Potential

Bioenergy production potential in 2050 for different levels of change in agricultural management



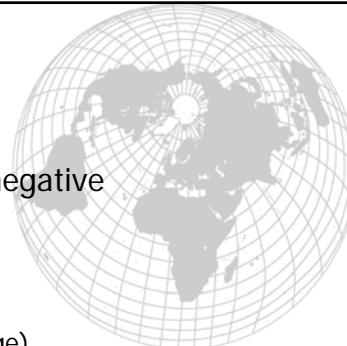
## Too good to be true – No energy source without drawbacks?

- Risk that the potential benefits don't materialise
- Risk that new problems are created



## Environmental risks

- Climate impacts can be positive or negative depending on:
  - Feedstock
  - Management Practices
  - Land Use Change (deforestation; leakage)
  - Process Energy
- Biodiversity - Expansion of Cropland onto Sensitive Areas
- Water - Overstressed Water Supplies, Water contamination
- Soil - Soil Degradation and Erosion
- Local Air Pollution – Harvesting methods



## Social Risks

- Land Conflicts
- Water
- Increased Food Prices for the Poor
- Human and Labour Issues (wages, safety, working hours)
- Industry concentration – Small farmers



## Maximizing opportunities – minimizing risks

For each of the issues, impacts can go both ways. Careful planning and management are crucial pre-conditions for sustainability of bioenergy production:

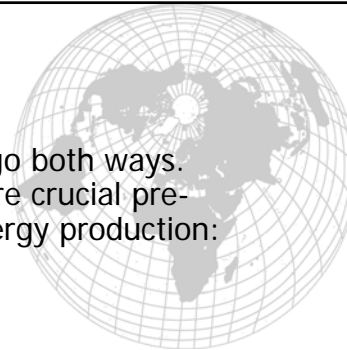
- Crop choices matching geo-climatic conditions
- Agricultural best-practice
- Schemes to allow small farmers to participate
- Exclusion of protected zones

Tradeoffs between the main drivers are country specific

- Different ministries need to work together: agriculture, energy, environment, economics, trade, etc.

Tradeoffs between the local and global agendas

- There can be a conflict between issues of global and local environmental concern. At the same time, local environmental concern can push global environmental achievements.



## Tools to ensure sustainability of bioenergy

- appropriate policies, institutional and legal frameworks
- enforcement of environmental laws and regulations
- institutional capacity building
- near-term research involving developing countries, where large production potentials exist
- knowledge and technology transfer
- an internationally agreed system (standard, certification or other assurance) to ensure sustainability of biomass intended for biofuels production



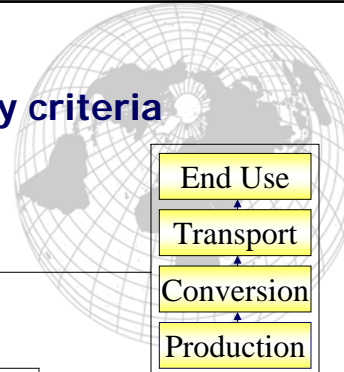
## UNEP's approach to bioenergy

UNEP is working with UN sister agencies, the private sector, NGOs and governments on:

- sustainability criteria and certification options (GBEP, RSB)
- bioenergy planning: research and tools to provide decision-makers in governments and the private sector with appropriate information
- development benefits: creating markets and developing sustainable business models for renewable energy development in developing countries



## Approach – Development of sustainability criteria



- 3 pillars of sustainable development
- Life cycle approach
- Building on existing initiatives as to avoid duplication and build synergies

### National/Internat.

- Netherlands
- UK
- Germany
- EU
- EPFL RSB
- UNEP/ DC Biofuels Initiative

### Commodity based

- RSPO
- Sugarcane
- Soy
- Jatropha (UNEP)

### Certification schemes

- Fair Trade
- FSC
- RA

- Multi-stakeholder outreach in the different regions



## Roundtable on Sustainable Biofuels (RSB)

Multi-stakeholder initiative to develop principles and criteria for sustainable biofuel production that are:

- **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. 170 participants from international organisations, NGOs, private sector and academic institutions. UNEP is part of all four working groups.
- **Global stakeholder** feedback at every step (blogs, meetings, wiki technology, pilot projects, regional outreach meetings)



## RSB

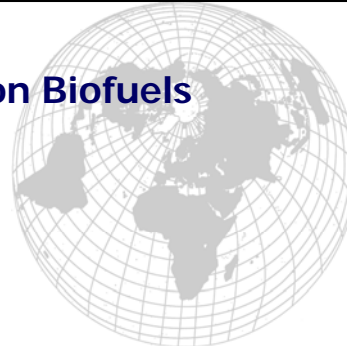


### Timeline

- 2<sup>nd</sup> draft of principles available for comments ([www.bioenergywiki.net](http://www.bioenergywiki.net))
- Working Groups recommend text for criteria to meet these principles (in progress)
- Outreach meetings (Latin American outreach, Brazil, October 2007 during Ecolatina, with sponsorship from Petrobras; East Asian outreach, China, November 2007 during Challenge Bibendum with sponsorship from Michelin)
- By end 2007, consensus on principles
- By June 2008, good draft of criteria, next steps defined (governance system, developing tools for implementation)



## UNEP/ Daimler cooperation on Biofuels



### Working paper that examined:

- Certification schemes - 12 labels
- Ongoing bioenergy initiatives
- National biofuels policies
- Requirements of energy crops – 18 crops



## Certification schemes reviewed



### Forestry Labels

- Forest Stewardship Council (FSC)
- Program for Endorsement of Forest Certification Schemes (PEFC)
- Canadian Standards Association (CSA)
- Sustainable Forestry Initiative (SFI)

### Bioenergy and Palm Oil Labels

- Green Gold Agriculture Label (GGLS2)
- Green Gold Forest Label (GGLS5)
- Roundtable for Sustainable Palm Oil (RSPO)

### Agriculture Labels

- Rainforest Alliance Certified (RA)
- Utz Certified
- Euro-Retailer Produce Working Group (EUREPGAP)
- International Federation of Organic Agriculture Movements (IFOAM)
- Naturland Association for Organic Agriculture

### Trade Labels

- Fairtrade Label Organization (FLO)



## Social criteria

No	Sector	FORESTRY				AGRICULTURE					Bio energy		TRADE
		FSC	PEFC	CSA SFM	SFI	RA	UTZ Certified	EUREPGAP	IFOAM	Naturland	GGL	RSPO	FLO
1	Labour conditions	x	x	x	x	x	x	x	x	x		x	x
2	Protection of human safety & health	x	x	x	x	x	x	x	x	x		x	x
3	Rights of indigenous people	x	x	x	x		x		x			x	
4	No discrimination against gender, race, etc	x	x	x	x	x	x		x	x		x	x
5	Elimination of child labour	x	x	x	x	x	x		x	x		x	x
6	Protection of women and reproductive rights	x		x	x	x	x		x	x		x	x
7	Access to resources ensuring adequate quality of life	x	x	x	x	x	x	x	x	x			x
8	Food and energy supply safety			x			x	x	x	x	x		
9	Capacity building	x	x	x	x	x	x	x	x	x		x	x
10	Combating poverty	x	x	x	x	x			x	x			x
11	Democratic participation of multi-stakeholders	x	x	x	x	x			x	x		x	x
12	Land ownership being equitable	x		x					x			x	x
13	Community well-being	x	x	x	x	x	x	x	x	x			x
14	Fair trade conditions			x		x		x	x				x
15	Allow employees to unionize	x	x	x	x	x	x		x	x		x	x
16	Promote educational benefits for employees and their families	x	x	x		x	x		x	x			x
17	Provide healthcare access for employees	x	x	x	x	x	x		x	x			x
18	Dispute resolutions mechanism for locals	x											
19	Social impact evaluations conducted and used to improve management planning	x											
20	Research				x								
21	Training of workers on safety and basic hygiene						x						



Source : UNEP, DaimlerChrysler and Ministry of Nutrition and Rural Affairs of the State of Baden-Württemberg, Germany

## Environment criteria

No	Sector → Ecological criteria	FORESTRY				AGRICULTURE					Bio energy		TRADE
		FSC	PEFC	CSA SFM	SFI	RA	UTZ Certified	EUREP GAP	IFOAM	Naturland	GGL	RSPO	FLO
1	Protection of the atmosphere		X		X	X	X	X	X	X	X	X	X
2	Preservation of existing sensitive ecosystems	X	X	X	X	X	X	X	X	X	X	X	X
3	Conservation of biodiversity	X	X	X	X	X	X	X	X	X	X	X	X
4	Conservation and improvement of soil fertility - avoidance of soil erosion	X	X	X	X	X	X	X	X	X	X	X	X
5	Conservation of ground and surface water	X	X	X	X	X	X	X	X	X	X	X	X
6	Combating deforestation	X	X	X	X	X	X		X	X	X	X	X
7	Combating desertification and drought	X	X		X	X	X			X	X		
8	Improve or preserve landscape	X	X	X	X	X	X	X	X	X	X	X	X
9	Conservation of non-renewable resources		X				X		X	X	X		X
10	Waste management and minimisation	X	X		X	X	X	X		X		X	X
11	Proper use of agrochemicals/ record keeping of its use	X	X		X	X	X	X			X	X	X
12	Reduce pollution and emissions						X	X	X	X	X	X	X
13	Prohibit or record genetically modified plants	X	X		X	X	X	X	X	X	X		X
14	Pest management control system	X	X		X	X	X	X	X	X	X	X	
15	Control and monitor exotic species	X			X								
16	Protection of rare, threatened, endangered species and their habitats / animals rights	X								X			
17	Prohibit or control the conversion of natural forest to plantation or non forest land use	X											
18	Fire management	X											
19	Re-use of process by-products as source of energy						X						
20	Prohibit the use of agrochemicals banned by the USA, EU and/or Japan and country of production						X						
21	No use of agrochemicals									X			

Source : UNEP, DaimlerChrysler and Ministry of Nutrition and Rural Affairs of the State of Baden-Württemberg, Germany

## Economic Criteria

No	Sector → Economic Criteria	FORESTRY				AGRICULTURE					Bio energy		TRADE
		FSC	PEFC	CSA SFM	SFI	RA	UTZ Certified	EUREP GAP	IFOAM	Naturland	GGL	RSPO	FLO
1	Viability of the business (business minimizes costs to ensure competitiveness and has adequate funding to sustain operations)	X	X			X					X	X	X
2	Long-term commitments, contracts, management plans	X	X		X	X					X	X	X
3	Strengthen and diversify local economy	X	X	X	X	X	X						X
4	Reliability of resources (guards against supply disruptions)	X	X		X			X			X		
5	Sustainable harvesting and yields (agricultural yields should be maintained on an economically viable and stable level)	X	X	X	X	X	X		X	X	X	X	X
6	No blocking of other desirable developments	X		X		X							X
7	Wage regulations		X		X	X	X		X	X		X	X
8	Fairtrade minimum price for most products ( cost covering and giving market access)												X
9	Fairtrade premium (in addition to the minimum price)												X

## UNEP Roundtable on Jatropha



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

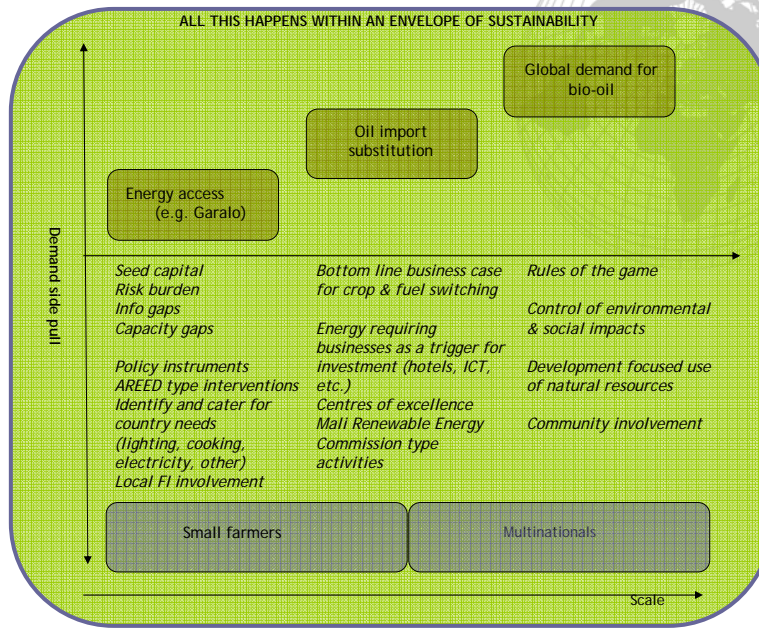
- Plant requirements / agricultural practices
- Conversion technologies
- Business models

### Roundtable gathering centers of Excellence to:

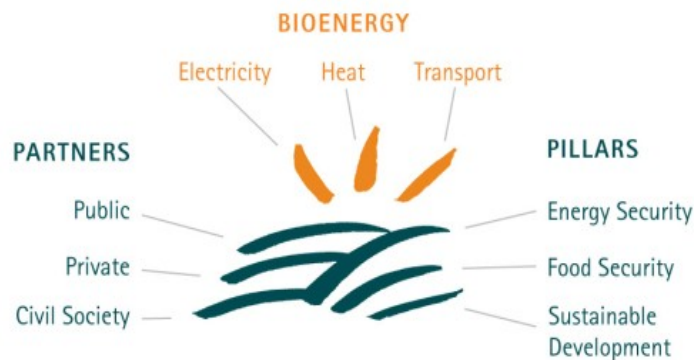
- Collect information and share good practice
- Identify barriers and ways to address them  
(agronomical/technical, set up/planning/management, financial, research/information/outreach, policy/regulatory)
- Provide handholding services to entrepreneurs / farmers



## sustainable jatropha upscaling – gaps, barriers, tools



## Global Bioenergy Partnership (GBEP)



## GBEP – Mission and Members

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".

### Current Partners:

Brazil, Canada, China, France, Germany, Italy, Japan, Mexico, Netherlands, Russian Federation, United Kingdom, United States of America, Food and Agriculture Organization of the United Nations (FAO), International Energy Agency (IEA), United Nations Conference on Trade and Development (UNCTAD), United Nations Department of Economic and Social Affairs (UN/DESA), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations Industrial Development Organization (UNIDO), United Nations Foundation, World Council for Renewable Energy (WCRE) and European Biomass Industry Association (EUBIA).



## GBEP – Programme of Work



- Update the [inventory](#) of existing networks, initiatives and institutions dealing with bioenergy;
- Identify **gaps in knowledge** or areas of weak understanding;
- Carry out scoping of **feasibility studies for market building activities**, in cooperation with interested developing countries;
- Establish mechanisms for **raising awareness** and dealing with **issues of international relevance** (e.g. environmental standards, food security, trade) and gaps in technology and policy;
- Formulate standard guidelines to measure the **greenhouse gas emission reductions** through the promotion and use of biofuels in the transport and energy generation sectors, including the development of baseline methodologies and monitoring tools to be used for project activities in the bioenergy field.

