

Drivers

(national objectives,
external influences)

- energy security
- energy access
- GHG emissions
- revitalizing agriculture
- rural economies
- trade balances

Risks and opportunities

(depending on how, where and what
bioenergy development)

- water
- biodiversity
- climate change
- food security
- labour
- other socio-economic

Responses

(on the national policy level
and the project level)

- holistic approaches that consider the different impact categories
- science-based bioenergy policies; land use planning; water management
- certification as a management tool ensuring sustainability on the project level

UNEP's approach to bioenergy:

Bioenergy is neither good nor bad per se; to avoid unintended consequences in the short and long-term, bioenergy development requires solid planning both on the national policy and strategy and the project levels.

UNEP's key activities:

working with UNEP collaborating centers and other centers of excellence, UN sister agencies, NGOs, the private sector and governments

scientific assessments

International Panel for Sustainable Resource Management: Assessing Biofuels report (2009)

The Bioenergy and Water Nexus, UNEP, IEA Bioenergy Task 43, Oeko Institut (2011)

Expert workshops on emerging issues:

- high conservation value areas/degraded land;
- indirect land-use change;
- water and bioenergy nexus

Issue Paper series on emerging issues:

- Land use and land use change
- Bioenergy and Water
- Invasive species
- Stakeholder consultation
- Group Certification

Assessments & Guidelines for Sustainable Liquid Biofuel Production in Developing Countries, funded by the GEF, jointly lead with FAO and UNIDO, providing guidance on environmental, social and economic performance of biofuel projects, using a settings approach.

tools

Global Bioenergy Partnership (GBEP):

- Methodological framework for GHG calculations
- Sustainability criteria & indicators (adopted)
- UNEP – co-leader of environmental sub-group

Roundtable on Sustainable Biofuels (RSB):

- solid multi-stakeholder process
- all major issues are covered
- pilot tested Sustainability Standard released
- Certification scheme developed and rolled out
- UNEP – active in working groups, chamber discussions and Steering Board

UN Energy Decision Support Tool for Sustainable Bioenergy (DST), developed by UNEP and FAO to provide stepwise guidance to decision makers in governments to develop sustainable bioenergy policies and strategies, and to assess investment proposals.

Mapping of land suitable and available for bioenergy development:

- Methodology refined (GIS and groundtruthing)
- completed in Kenya, Uganda, Senegal

finance

CASCADE: enhancing African expertise to generate carbon credits in the forestry and bioenergy sectors by providing technical assistance, institutional support and training workshops. The programme includes bioenergy projects based on jatropha oil, wood waste and green charcoal.

Jatropha-based PoA: assessing the feasibility of a CDM Programme of Activities for rural energy generation from Jatropha oil in Mali.

African Rural Energy Enterprise Development promoting rural energy enterprises, includes a bioenergy component that allows to demonstrate additional environmental and social benefits resulting from 'local production for local use' projects.

regional and national support

Bioenergy Policy Support Facility, providing advisory services to governments developing and implementing bioenergy policies, strategies and measures, mobilizing local and international experts: targeted consultations; science-based information for decision making; advice on legal frameworks, planning and management tools; and guidance on processes to facilitate integrated decision-making.



Options for more efficient and sustainable resource use

Improving the production of biomass :

- o Increasing yields and optimizing agricultural production
- o Restoring formerly degraded land

More efficient use of biomass:

- o Use of waste and production residues
- o Cascading use of biomass
- o Stationary use of bioenergy

Considering different pathways:

- o Mineral based solar energy systems

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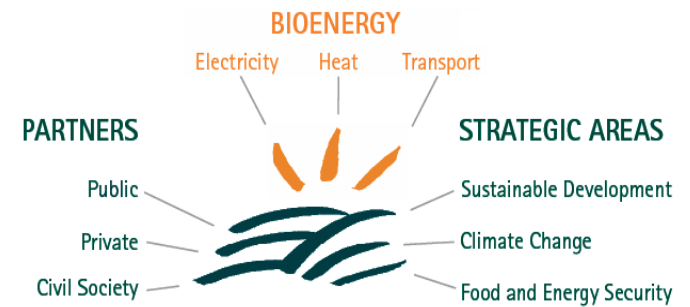
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Global Bioenergy Partnership

Sustainability indicators

(provisionally agreed)



environmental

- lifecycle GHG emissions
- soil quality
- emissions of non-GHG pollutants
- water use and efficiency
- water quality
- land use and land-use change related to bioenergy feedstock production
- biological diversity
- harvest levels of wood resources

social

- net job creation
- wages
- change in unpaid time spent by women and children collecting biomass
- bioenergy for access to modern energy services
- change in mortality and burden of disease attributable to indoor smoke from solid fuel use, incidence of occupational injury, illness and fatalities
- labour conditions
- food security
- access to land

economic & energy security

- productivity
- net energy balance
- total domestic consumption and production of bioenergy
- training and re-qualification of the workforce
- infrastructure and logistics for distribution of bioenergy
- capacity and flexibility of use of bioenergy
- change in foreign exchange reserves
- value added
- production costs
- bioenergy in energy diversification

Roundtable on Sustainable Biofuels



Developed in a multi-stakeholder process

Serve as management tool

Enables market access

12 Principles, covering comprehensively the different environmental and socio-economic concerns; goes beyond EU RED

- Legality
- Planning, Monitoring and Continuous Improvement
- Greenhouse Gas Emissions
- Human and Labor Rights
- Rural and Social Development
- Local Food Security
- Conservation
- Soil
- Water
- Air
- Use of Technology, Inputs, and Management of Waste
- Land Rights

Context Analysis. Objectives and Alternatives WHY, WHICH

Relevant Policies
and Strategies

Domestic Energy Needs
and Resources

Bioenergy "Status Quo"
and Lessons

Linkages and
Priorities

Stakeholder
Mobilization
and Task Force
Creation

Bioenergy Options and Resource Baseline: Assessment and Mapping with Guiding Questions WHAT, WHERE, HOW

Technology Options
WHAT

Land Suitability Assessments
WHERE

Implementation Options
HOW

Involving
Stakeholders

Assessment of Risks and Opportunities –
Guiding Questions and Mitigation Options and Approaches

Practical Implementation : Selecting Technical Priorities & Defining an Implementation Strategy:

Selection of Technology Options/ Priorities

Developing an Implementation Strategy

Task Force and
Stakeholder
Forum

Stakeholder Engagement – WHO