

# Global Bioenergy Partnership (GBEP)

**WORKING TOGETHER FOR SUSTAINABLE DEVELOPMENT**

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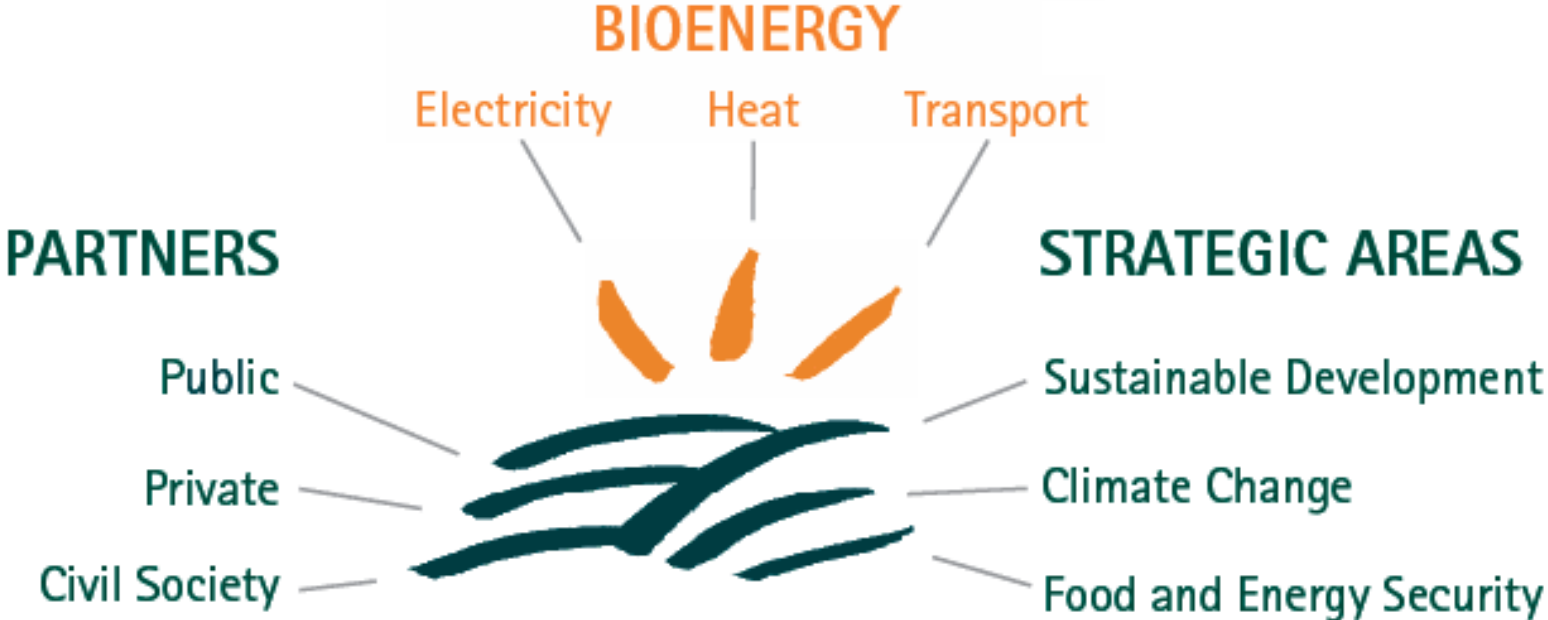
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# THE GLOBAL BIOENERGY PARTNERSHIP

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# G8 Commitments and Mandates

## 2005 Gleneagles Plan of Action

- “We (the G8) will 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”.

## 2008 Hokkaido Toyako Summit

- “We support the work of the Global Bioenergy Partnership (GBEP) and invite it to work with other relevant stakeholders to develop science-based benchmarks and indicators for biofuels production and use”

## 2009 L’Aquila Summit

- “We[...]invite GBEP to accelerate its work in developing science-based benchmarks and indicators for sustainable biofuel production and to boost technological cooperation and innovation in bioenergy”

## 2010 Muskoka Summit

- “We welcome the work of the Global Bioenergy Partnership (GBEP) and commit to facilitating swift adoption of voluntary sustainability criteria and indicators, as well as [agreement] on capacity building activities“

## 2011 Deauville Summit

- “We believe that it is also crucial to employ a range of measures to encourage efficient and sustainable resource use, including renewable energy, by national and other actors. We will keep on supporting international initiatives launched by the G8, notably [...] the Global Bioenergy Partnership (GBEP)”

**2011 G20 Ministers of Agriculture:** “We continue to support the work of the Global Bioenergy Partnership”.

18 January 2007 - GBEP was registered as a CSD Partnership for Sustainable Development

# GBEP Partners and Observers

## 36 Partners (23 governments – 13 organizations):

G8 Governments (CA, DE, FR, IT, JP, RU, UK, US) plus AR, BR, CH, CN, CO, ES, FJ, GH, MR, MX, NL, PY, SD, SE, TZ and ECOWAS, EU, FAO, IDB, IEA, UNCTAD, UNDESA, UNDP, UNEP, UNIDO, UNF, WCRE and EUBIA.

## 32 Observers (22 governments – 11 organizations):

AO, AT, AU, CL, EG, GM, IN, ID, KY, LA, MA, MG, MY, MZ, NO, PE, RW, SV, TH, TN, ZA, and AfDB, ADB, ECLAC, EEA, GEF, IFAD, IRENA, OAS, UEMOA, World Bank, and WBCSD.

Italy and Brazil are currently Chair and co-Chair of the Partnership.  
The Secretariat is hosted at the FAO in Rome.

# GBEP's Objectives

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- Promote global high-level policy dialogue on bioenergy and facilitate international cooperation;
- Support national and regional bioenergy policy-making and market development;
- Favour the transformation of biomass use towards more efficient and sustainable practices; and
- Foster exchange of information, skills and technologies through bilateral and multilateral collaboration.

GBEP is a forum where voluntary cooperation works towards consensus amongst its partners in the areas of the sustainable development of bioenergy and its contribution to climate change mitigation.

It also provides a platform for sharing information.

# GBEP Programme of Work

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GBEP's current priorities are:

- 1. Piloting the GBEP Common methodological framework on GHG emission reduction measurement from the use of bioenergy (Task Force on GHG Methodologies);**
- 2. Facilitating the sustainable development of bioenergy (Task Force on Sustainability);**
- 3. Facilitating Capacity Building for Sustainable Bioenergy (newly established Working Group on Capacity Building for Sustainable Bioenergy);**
- 4. Raising awareness and facilitating information exchange on bioenergy.**

# GBEP Common Methodological Framework for GHG LCA of Bioenergy (GHG Task Force)

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The GHG Task Force developed a methodological framework as a checklist that comprises ten steps in the full lifecycle analysis of GHG emissions from bioenergy production and use:

1. GHGs covered
2. Source of biomass
3. Land-use changes due to bioenergy production
4. Biomass feedstock production
5. Transport of biomass
6. Processing into fuel
7. By-products and co-products
8. Transport of fuel
9. Fuel Use
10. Comparison with replaced fuel

For each step, a set of questions was developed to ascertain which sources of emissions (or sinks) were considered and through which methods, and which assumptions were made.

# GBEP GHG LCA of Bioenergy Web Tool

methodologies - Windows Internet Explorer

g/toolkit/clearing-house-on-ghg-methodologies/en/ GBEP - Website: Clearing Ho... x



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† Clearing House on GHG methodologies  
† Analytical tools for bioenergy  
† Financing options for bioenergy

## The GBEP Clearing House on GHG methodologies for lifecycle analysis of bioenergy

This tool has been developed as a platform to exchange information on the implementation and testing of the GBEP "common methodological framework for GHG lifecycle analysis of bioenergy" and to allow users to share documents and studies as well as to learn from other users' experience.



The GBEP common methodological framework for GHG lifecycle analysis of bioenergy is a flexible "checklist" designed to provide a reference of pertinent questions for countries and institutions to compare the various existing methodologies dedicated to assessing GHG emissions of bioenergy systems in a transparent way. This in turn will indicate where discrepancies in reported GHG emissions could have arisen from methodological differences and hence a fair comparison is not possible.



**Start the online testing**

- GBEP GHG Methodological Framework - Version 1 (pdf) [EN] - [FR] - [ES] - [PT] - [JP] - [AR] - [IT]
- Relevant regional, national and international rules and regulations
- Relevant documents and studies
- Related institutes and research centres
- Compiled questionnaires and statistics
- Provide your feedback/suggestion

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# GBEP Task Force on Sustainability

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**Task Force established in June 2008, led by UK until Oct. 2010, then by SE  
3 sub-groups established (ENV, ECO, SOC)**

## **SCOPE**

- To provide relevant, practical, science-based, voluntary sustainability criteria and indicators to guide any analysis undertaken of bioenergy at the domestic level.
- To be used with a view to informing decision making and facilitating the sustainable development of bioenergy and not to be applied so as to limit trade in bioenergy in a manner inconsistent with multilateral trade obligations.

## **ACHIEVEMENT**

**In December 2011 GBEP finalized the report “The GBEP Sustainability Indicators for Bioenergy”.**

It presents the GBEP set of 24 sustainability indicators and its methodology sheets that include supporting information relating to the relevance, practicality and scientific basis of each indicator, including suggested approaches for their measurement.

# What makes this work unique

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- The only initiative seeking to **build consensus among a broad range of national governments and international institutions on the sustainability of bioenergy**
- Emphasis on providing **science-based measurements useful for informing national-level policy analysis**
- **No directions, thresholds or limits, no legally binding on GBEP Partners in any way.** Measured over time, the indicators will show progress towards or away from a sustainable development path as determined nationally
- Addresses **all forms of bioenergy**, not just liquid biofuels.

# 24 Sustainability Indicators

agreed by 23 countries & 13 international organizations  
involving a total of 45 countries and 23 int. organizations (Ps & Os)

Environmental	Social	Economic
1. Life-cycle GHG emissions	9. Allocation and tenure of land for new bioenergy production	17. Productivity
2. Soil quality	10. Price and supply of a national food basket	18. Net energy balance
3. Harvest levels of wood resources	11. Change in income	19. Gross value added
4. Emissions of non-GHG air pollutants, including air toxics	12. Jobs in the bioenergy sector	20. Change in consumption of fossil fuels and traditional use of biomass
5. Water use and efficiency	13. Change in unpaid time spent by women and children collecting biomass	21. Training and re-qualification of the workforce
6. Water quality	14. Bioenergy used to expand access to modern energy services	22. Energy diversity
7. Biological diversity in the landscape	15. Change in mortality and burden of disease attributable to indoor smoke	23. Infrastructure and logistics for distribution of bioenergy
8. Land use and land-use change related to bioenergy feedstock production	16. Incidence of occupational injury, illness and fatalities	24. Capacity and flexibility of use of bioenergy

# Environmental Indicators

INDICATOR NAME	INDICATOR DESCRIPTION
1. Lifecycle GHG emissions	Lifecycle greenhouse gas emissions from bioenergy production and use, as per the methodology chosen nationally or at community level, and reported using the GBEP Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy 'Version One'
2. Soil quality	Percentage of land for which soil quality, in particular in terms of soil organic carbon, is maintained or improved out of total land on which bioenergy feedstock is cultivated or harvested
3. Harvest levels of wood resources	Annual harvest of wood resources by volume and as a percentage of net growth or sustained yield, and the percentage of the annual harvest used for bioenergy
4. Emissions of non-GHG air pollutants, including air toxics	Emissions of non-GHG air pollutants, including air toxics, from bioenergy feedstock production, processing, transport of feedstocks, intermediate products and end products, and use; and in comparison with other energy sources
5. Water use and efficiency	<ul style="list-style-type: none"> <li>▪ Water withdrawn from nationally-determined watershed(s) for the production and processing of bioenergy feedstocks, expressed as the percentage of total actual renewable water resources (TARWR) and as the percentage of total annual water withdrawals (TAWW), disaggregated into renewable and non-renewable water sources</li> <li>▪ Volume of water withdrawn from nationally-determined watershed(s) used for the production and processing of bioenergy feedstocks per unit of bioenergy output, disaggregated into renewable and non-renewable water sources</li> </ul>

# Environmental Indicators

INDICATOR NAME	INDICATOR DESCRIPTION
6. Water quality	<ul style="list-style-type: none"> <li>▪ Pollutant loadings to waterways and bodies of water attributable to fertilizer and pesticide application for bioenergy feedstock cultivation, and expressed as a percentage of pollutant loadings from total agricultural production in the watershed</li> <li>▪ Pollutant loadings to waterways and bodies of water attributable to bioenergy processing effluents, and expressed as a percentage of pollutant loadings from total agricultural processing effluents in the watershed</li> </ul>
7. Biological diversity in the landscape	<ul style="list-style-type: none"> <li>▪ Area and percentage of nationally recognized areas of high biodiversity value or critical ecosystems converted to bioenergy production</li> <li>▪ Area and percentage of the land used for bioenergy production where nationally recognized invasive species, by risk category, are cultivated</li> <li>▪ Area and percentage of the land used for bioenergy production where nationally recognized conservation methods are used</li> </ul>
8. Land use and land-use change related to bioenergy feedstock production	<ul style="list-style-type: none"> <li>▪ Total area of land for bioenergy feedstock production, and as compared to total national surface and agricultural and managed forest land area</li> <li>▪ Percentages of bioenergy from yield increases, residues, wastes and degraded or contaminated land</li> <li>▪ Net annual rates of conversion between land-use types caused directly by bioenergy feedstock production, including the following (amongst others):               <ul style="list-style-type: none"> <li>○ arable land and permanent crops, permanent meadows and pastures, and managed forests;</li> <li>○ natural forests and grasslands (including savannah, excluding natural permanent meadows and pastures), peatlands, and wetlands</li> </ul> </li> </ul>

# Social Indicators

INDICATOR NAME	INDICATOR DESCRIPTION
9. Allocation and tenure of land for new bioenergy production	<p>Percentage of land – total and by land-use type – used for new bioenergy production where:</p> <ul style="list-style-type: none"> <li>▪ a legal instrument or domestic authority establishes title and procedures for change of title; and</li> <li>▪ the current domestic legal system and/or socially accepted practices provide due process and the established procedures are followed for determining legal title</li> </ul>
10. Price and supply of a national food basket	<p>Effects of bioenergy use and domestic production on the price and supply of a food basket, which is a nationally-defined collection of representative foodstuffs, including main staple crops, measured at the national, regional, and/or household level, taking into consideration:</p> <ul style="list-style-type: none"> <li>▪ changes in demand for foodstuffs for food, feed, and fibre;</li> <li>▪ changes in the import and export of foodstuffs;</li> <li>▪ changes in agricultural production due to weather conditions;</li> <li>▪ changes in agricultural costs from petroleum and other energy prices; and</li> <li>▪ the impact of price volatility and price inflation of foodstuffs on the national, regional, and/or household welfare level, as nationally-determined</li> </ul>
11. Change in income	<p>Contribution of the following to change in income due to bioenergy production:</p> <ul style="list-style-type: none"> <li>▪ wages paid for employment in the bioenergy sector in relation to comparable sectors</li> <li>▪ net income from the sale, barter and/or own-consumption of bioenergy products, including feedstocks, by self-employed households/individuals</li> </ul>
12. Jobs in the bioenergy sector	<ul style="list-style-type: none"> <li>▪ Net job creation as a result of bioenergy production and use, total and disaggregated (if possible) as follows: <ul style="list-style-type: none"> <li>○ skilled/unskilled</li> <li>○ temporary/indefinite</li> </ul> </li> <li>▪ Total number of jobs in the bioenergy sector and percentage adhering to nationally recognized labour standards consistent with the principles enumerated in the ILO Declaration on Fundamental Principles and Rights at Work, in relation to comparable sectors</li> </ul>

# Social Indicators

INDICATOR NAME	INDICATOR DESCRIPTION
13. Change in unpaid time spent by women and children collecting biomass	Change in average unpaid time spent by women and children collecting biomass as a result of switching from traditional use of biomass to modern bioenergy services
14. Bioenergy used to expand access to modern energy services	<ul style="list-style-type: none"> <li>▪ Total amount and percentage of increased access to modern energy services gained through modern bioenergy (disaggregated by bioenergy type), measured in terms of energy and numbers of households and businesses</li> <li>▪ Total number and percentage of households and businesses using bioenergy, disaggregated into modern bioenergy and traditional use of biomass</li> </ul>
15. Change in mortality and burden of disease attributable to indoor smoke	Change in mortality and burden of disease attributable to indoor smoke from solid fuel use, and changes in these as a result of the increased deployment of modern bioenergy services, including improved biomass-based cookstoves
16. Incidence of occupational injury, illness and fatalities	Incidences of occupational injury, illness and fatalities in the production of bioenergy in relation to comparable sectors

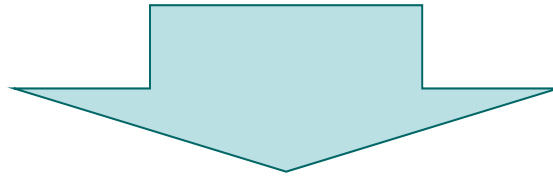
# Economic Indicators

INDICATOR NAME	INDICATOR DESCRIPTION
17. Productivity	<ul style="list-style-type: none"> <li>Productivity of bioenergy feedstocks by feedstock or by farm/plantation</li> <li>Processing efficiencies by technology and feedstock</li> <li>Amount of bioenergy end product by mass, volume or energy content per hectare per year</li> <li>Production cost per unit of bioenergy</li> </ul>
18. Net energy balance	Energy ratio of the bioenergy value chain with comparison with other energy sources, including energy ratios of feedstock production, processing of feedstock into bioenergy, bioenergy use; and/or lifecycle analysis
19. Gross value added	Gross value added per unit of bioenergy produced and as a percentage of gross domestic product
20. Change in the consumption of fossil fuels and traditional use of biomass	<ul style="list-style-type: none"> <li>Substitution of fossil fuels with domestic bioenergy measured by energy content and in annual savings of convertible currency from reduced purchases of fossil fuels</li> <li>Substitution of traditional use of biomass with modern domestic bioenergy measured by energy content</li> </ul>
21. Training and re-qualification of the workforce	Percentage of trained workers in the bioenergy sector out of total bioenergy workforce, and percentage of re-qualified workers out of the total number of jobs lost in the bioenergy sector
22. Energy diversity	Change in diversity of total primary energy supply due to bioenergy
23. Infrastructure and logistics for distribution of bioenergy	Number and capacity of routes for critical distribution systems, along with an assessment of the proportion of the bioenergy associated with each
24. Capacity and flexibility of use of bioenergy	<ul style="list-style-type: none"> <li>Ratio of capacity for using bioenergy compared with actual use for each significant utilization route</li> <li>Ratio of flexible capacity which can use either bioenergy or other fuel sources to total capacity</li> </ul>

# Next Steps

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GBEP already **started activities for piloting** the agreed indicators on the national level, including through **capacity building activities**.



**WG on Capacity Building for Sustainable Bioenergy**

# GBEP Working Group on Capacity Building for Sustainable Bioenergy

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The WGCB established by the Steering Committee (20 May 2011).

Co-chaired by Netherlands and US, 1<sup>st</sup> meeting last November in Tokyo.

## SCOPE

- **To develop capacity building activities and projects for sustainable bioenergy, through collaborative work among GBEP Partners and Observers. It aims to develop a repository of information and insights gained from experiences and outcomes from these activities and projects.**
- **Activities and projects will build upon, but not limited to, the work of the GBEP TFs on GHG Methodologies and on Sustainability.**
- **Activities and projects will be country driven.**

# Piloting the GBEP Indicators

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The GBEP sustainability indicators for bioenergy need to be pilot tested in a diverse range of national contexts to establish their feasibility and enhance their practicality as a tool for policymaking. Some GBEP Partners will require technical and financial assistance in order to achieve this.

FAO is managing a pilot project, funded by the German Federal Ministry of Environment, which will last one year (ends Sept. 2012). It aims to:

- assess and enhance the capacity of Colombia and Indonesia to measure the GBEP indicators and use them to inform bioenergy policymaking; and
- learn lessons about how to apply the indicators as a tool for sustainable development and how to enhance th

Other GBEP partners started similar pilot projects in African and South East Asian countries. Also, Germany and Netherlands, among others, will pilot test the indicators nationally.

# Further information

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**For further information please contact:**

**[GBEP-Secretariat@fao.org](mailto:GBEP-Secretariat@fao.org)**

**Further information are available at:**

**[www.globalbioenergy.org](http://www.globalbioenergy.org)**

- **Info on sustainable bioenergy**  
**[www.oeko.de/service/bio](http://www.oeko.de/service/bio)**
- **Contact: [u.fritsche@oeko.de](mailto:u.fritsche@oeko.de)**