

# Strategic Plan 2015-2020



IEA Bioenergy's vision is that bioenergy will continue to be a substantial part of the sustainable use of biomass in the bio-based economy and that by accelerating the sustainable production and use of biomass, the economic and environmental impacts will be optimised resulting in more cost-competitive bioenergy and reduced greenhouse gas emissions.

IEA Bioenergy



## INTRODUCTION

IEA Bioenergy, also known as the Implementing Agreement for a Programme of Research, Development and Demonstration on Bioenergy, functions within a Framework created by the International Energy Agency (IEA). IEA Bioenergy comprises a world-wide network of experts in every aspect of the value chain of biomass for energy, who are from the research community, institutions of higher education, government agencies and industry. IEA Bioenergy has a rich and excellent history of encouraging and perpetuating the use of biomass as an energy source, to help lessen dependence on fossil fuels, both within and outside its member countries.

Biomass is material produced by photosynthesis, such as wood or plants. Biomass feedstocks used for energy include forestry and wood industry residues, agricultural residues, energy crops and the biogenic fraction of related municipal wastes. Bioenergy technologies use these resources to produce heat, electricity or solid, liquid, and gaseous biofuels which can substitute for fossil-based fuels.

In developing this fifth Strategic Plan, IEA Bioenergy has taken due cognisance of the IEA Committee on Energy Research and Technology (CERT) Strategic Plan 2012-2016 and the IEA Renewable Energy Working Party (REWP) Strategic Plan 2013-2015. The drivers of the fifth Strategic Plan of IEA Bioenergy include the following:

- The security of energy supply needs large scale development and deployment of new or improved bioenergy technologies that are environmentally sound and socially acceptable in order to gradually reduce dependence on fossil fuels. By increased private sector participation in the Tasks of this IA, deployment will be supported
- The politically accepted maximum 2°C temperature rise target<sup>1</sup> requires measures as described in IEA's "2°C Scenario"<sup>2</sup>, where a major contribution from bioenergy is foreseen

- There is a need to support energy policy and provide clear communication of the benefits of bioenergy in the bio-based economy. This includes, as a minimum, the role of biomass: in energy production; in material production, in chemicals production; in displacing the use of coal and petroleum; in Land Use Change; in carbon accounting and the contribution of each sector to climate change
- The need for increased quantities of sustainable biomass production at a global level for energy, materials and biochemicals requires an integrated approach to biomass production in forestry, agriculture, algae and waste and residue streams
- The limited global land area for biomass production urges the biomass community to develop new processes to capture solar radiation and transform it into biomass for energy and products
- IEA Bioenergy is an independent body to give clear and verified information on bioenergy within the wide spectrum of organisations involved in biomass and bioenergy, supporting IEA bodies and national governments in their bioenergy strategy development and collaborating with other international bodies to realise these aims in the most effective way
- IEA Bioenergy continues to act in a responsive mode to resolve urgent questions and provide scientific and fact based policy advice, which includes the experiences of Executive Committee Members and from within the Tasks.

Compared to the preceding IEA Bioenergy strategic plan, this plan will place greater emphasis on optimising the economic, environmental and social value of sustainable bioenergy, including some focus on biorefinery value chains.

<sup>1</sup>Climate Change 2014 – Mitigation of Climate Change, Intergovernmental Panel on Climate Change, 2014

<sup>2</sup>Energy Technology Perspectives 2014 – Harnessing Electricity's Potential, International Energy Agency, 2014

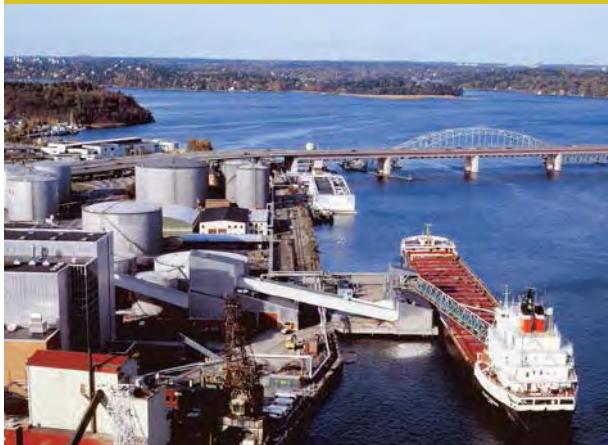
# THE POTENTIAL OF BIOENERGY

The development of bioenergy is happening in a dynamic environment. Increased deployment of renewable energy is required to support the transition to a low-carbon, energy secure economy, and bioenergy has the potential to make a significant contribution. Estimates indicate that bioenergy could sustainably contribute between 25% and 33% to the future global primary energy supply (up to 250 EJ) in 2050<sup>3</sup>. It is the only renewable source that can replace fossil fuels in all energy markets – in the production of heat, electricity, and fuels for transport.

At the same time, bioenergy development is intrinsically interconnected with the growing demand for food, feed and fibre to meet the needs of an increasing world population. In addition, the emerging bio-based economy, producing

a broad range of products from biomass to replace those derived from conventional fossil raw materials, adds a further dimension to the determination of the optimal deployment of bioenergy.

The potential for competition for land and for raw material with other biomass uses must be carefully managed. Bioenergy must compete with other energy sources and options. Logistics and infrastructure issues must be managed, and there is a need for further technological innovation leading to more efficient and cleaner conversion of a more diverse range of feedstocks. Policy makers and the public at large will need to be confident that expansion of bioenergy is sustainable.



## IEA BIOENERGY VISION, MISSION AND STRATEGY

The vision, mission, and strategy statements for IEA Bioenergy focus on overcoming the environmental, institutional, technological, social, and market barriers to the near- and long-term deployment of bioenergy technologies.

**Vision:** Bioenergy is, and will continue to be a substantial part of the sustainable use of biomass in the bio-based economy. By accelerating the sustainable production and use of biomass, the economic and environmental impacts will be optimised resulting in more cost-competitive bioenergy and reduced greenhouse gas emissions.

**Mission:** To increase knowledge and understanding of bioenergy systems in order to facilitate the commercialisation and market deployment of environmentally sound, socially acceptable, and cost-competitive bioenergy systems and technologies, and to advise policy and industrial decision makers accordingly.

**Strategy:** To provide platforms for international collaboration and information exchange in bioenergy research, technology development, demonstration, and policy analysis. This includes the development of networks, dissemination of information, and provision of science-based analysis and advice, as well as support to policy makers, involvement of industry, and encouragement of membership by countries who are actively interested in the IEA Bioenergy Implementing Agreement.



<sup>3</sup> Bioenergy – a sustainable and reliable energy source. A review of status and prospects, IEA Bioenergy:ExCo:2009:06



## OBJECTIVES AND ACTIONS

**Objective 1:** To promote the market deployment of technologies and systems for sustainable energy production from biomass.

### Actions:

- Provide a realistic overview of the readiness level of different conversion technologies as well as potential benefits and impacts on the market
- Provide an integrated technologies approach (synergy) with regard to the use of biomass for energy purposes as well as the use of co-products (chemicals, fodder, fibre, mechanical wood / biomass products)
- Identify and characterise the R&D priorities for bioenergy, including the scientific and technical innovations needed for new and growing markets. Encourage joint actions on technological innovation in the area of bioenergy including energy driven biorefineries
- Identify the most promising bioenergy technologies and most efficient public policies and investigate technical and non-technical barriers and incentives to the market deployment of these technologies in the context of the scenarios of the 2020-2050 low carbon society<sup>4</sup> and investigate the emerging technologies for this
- Encourage and promote the sustainable deployment of technologies with important local, regional, and global socio-economic and environmental benefits that will contribute to a secure energy supply and job creation
- Show the potential of bioenergy to contribute to a sustainable environmental footprint e.g. by GHG reductions, soil improvement and nutrient balance, water footprint, material recycling, resource sufficiency.



<sup>4</sup>Co-generation and renewables - Solutions for a low carbon energy future, International Energy Agency, 2011.



**Objective 2:** To raise public awareness through communication with key stakeholders for the use of biomass as an energy source and to provide clear and verified information on bioenergy.

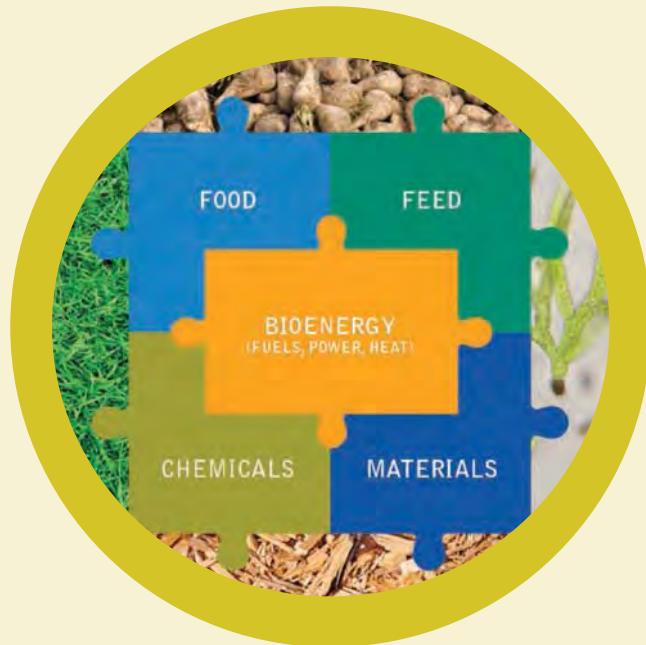
#### **Actions:**

- Provide scientifically sound and politically and commercially independent data and information for policy makers, industry and IEA bodies in a format appropriate to the specific audience
- Take a leading role in the discussion of current topics in the field of biomass energy
- Ensure communication on different levels and with different means, e.g. scientific and easy to read policy oriented reports, strategy papers, website, newsletters etc.
- Develop mechanisms for exchanging feedback with the relevant target groups, to gauge visibility and impact
- Encourage other sectors of the bio-based economy to apply the same stringent rules of sustainability in using biomass as in the case of biofuels and bioenergy.

**Objective 3:** To strengthen the outreach efforts of the Implementing Agreement to involve interested new member countries, industry and multilateral organisations.

#### **Actions:**

- Actively involve relevant industry players by organising topical workshops with panel discussions at both the ExCo and the Task level
- Continually adjust the Task work programmes to reflect industry's needs, and promote cooperation with industry
- Actively seek new member countries. Educate possible participants about the benefits of IEA Bioenergy through invitations to observe Executive Committee meetings and Task events such as workshops, study tours, and seminars
- Encourage industry associations to contribute to Task work where appropriate
- Initiate new tasks where new topics emerge that are in accordance with the needs of the members, and close completed tasks
- Strengthen the exchange of information and technology transfer with multilateral organisations (e.g. FAO, GBEP, etc.) within the biomass sector to develop global energy and environmental policies with regard to the use of biomass
- Encourage the information exchange and possible joint research projects at ExCo and at Task level with other IEA Implementing Agreements which are topically close to IEA Bioenergy



- Support the development of global, sustainable, bioenergy policies by designing mechanisms that enable the involvement of countries with less developed bioenergy infrastructure and expertise, while maintaining a collaboration which is attractive to internationally leading countries and experts
- Identify strategies that encourage existing Contracting Parties to expand their Task participation.

**Objective 4:** To increase the dissemination of information.

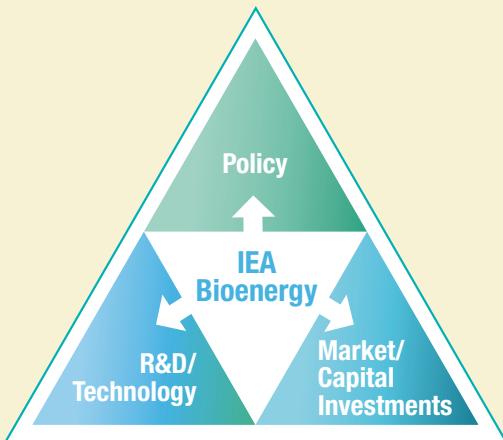
#### **Actions:**

- Keep the website of IEA Bioenergy and the Tasks' websites up-to-date and work towards their increased integration
- Encourage member countries to create a national distribution list and take responsibility for periodically providing information on relevant IEA Bioenergy publications, newsletters, events etc. by the national delegate.
- Encourage members who have an expert's presentation at international conferences also to briefly mention the work of IEA Bioenergy (where appropriate)
- Strengthen the exchange with IEA Headquarters and get actively involved in the development of road maps, ETGs etc.
- Improve interaction with other IEA Implementing Agreements through information exchange
- Present IEA Bioenergy and its results at national and international meetings.



## REALISING THE IEA BIOENERGY VISION

IEA Bioenergy seeks to inform policy, contribute to the evolution of technology and facilitate market development.



A key objective of IEA Bioenergy is to provide scientifically sound and politically and commercially independent data and information for policy makers, industry and IEA bodies in a format appropriate to the specific audience.

### Work programme

The work programme of IEA Bioenergy, which is carried out through Tasks and strategic projects, covers the full value chain from biomass feedstocks to final energy product (Scope of Bioenergy RD&D).

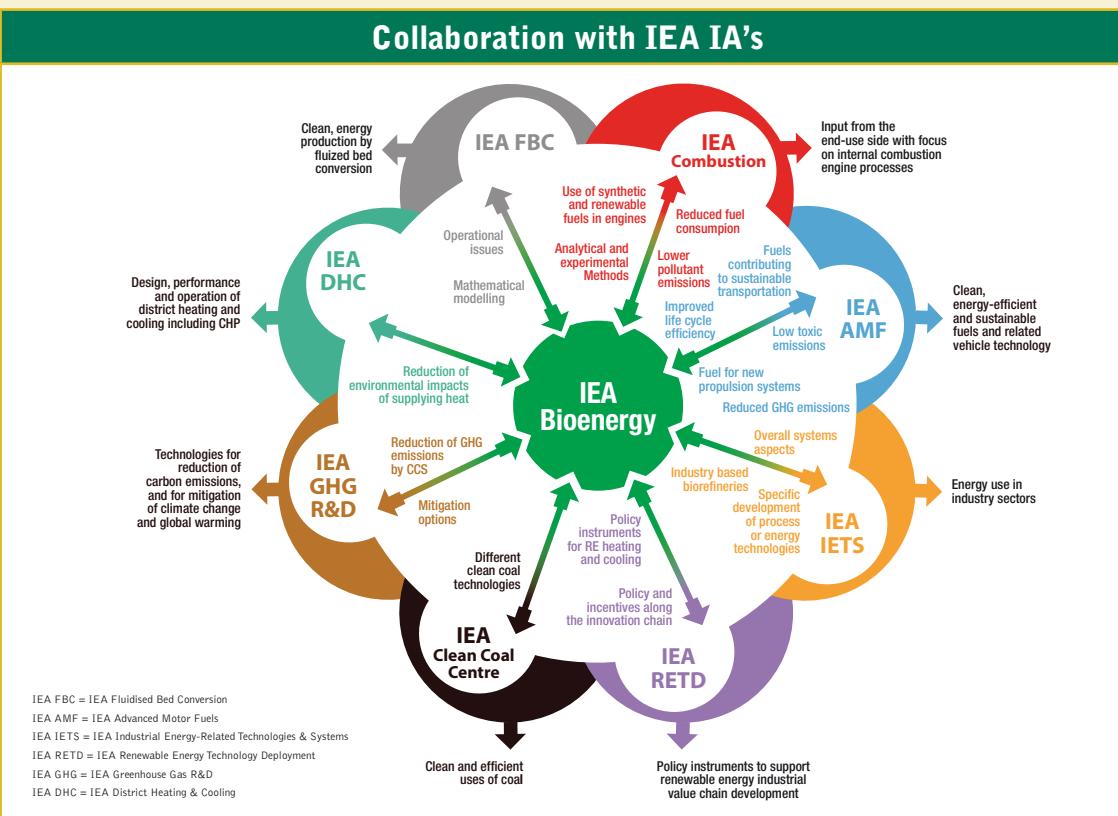
In IEA Bioenergy, national experts from research, government, industry and other stakeholders work together with experts from other Member (and non-Member) Countries. This co-operation offers many benefits:

**For research** – to exchange information on recent developments in R&D, through meetings or state-of-the-art seminars, and to provide opportunities for collaborative R&D.

**For industry** – to be informed of technological progress as well as new projects, to work together to develop databases, handbooks, or models and to offer early participation of industrial partners in RD&D work.

**For policy makers and decision makers** – to gain an international perspective on progress in bioenergy, and to compile guidelines and standards and develop appropriate policy supports and strategies.

**For all market participants and especially the private sector** – to identify and help remove technical and non-technical barriers to accelerate deployment of bioenergy technologies.

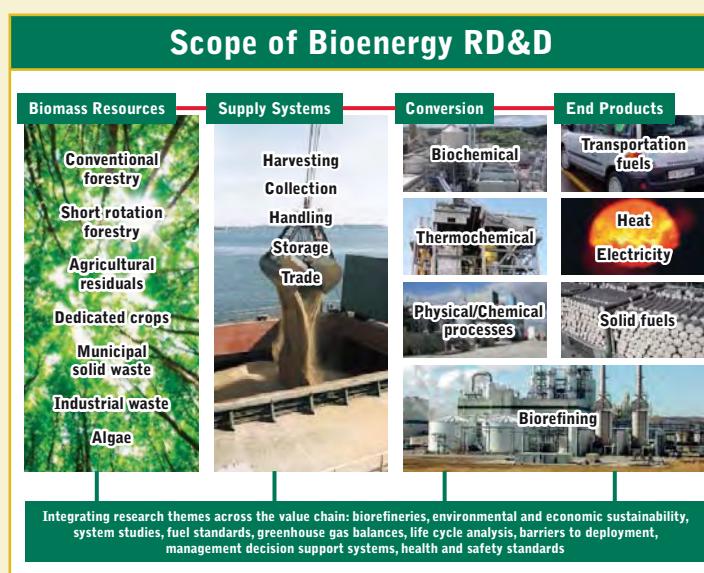


## The Strategic Plan 2015-2020 has an enhanced focus on:

- Collaboration with the IEA Secretariat, REWP and CERT
- Collaboration with other IEA Implementing Agreements (IA's) to leverage synergies
- Collaboration with international bodies including the FAO and the World Bank, and UN programmes such as the Intergovernmental Panel on Climate Change (IPCC), the Global Bioenergy Partnership (GBEP), and the International Renewable Energy Agency (IRENA), promoting joint research, information exchange and technology transfer
- Expansion of membership of IEA Bioenergy to incorporate new countries, particularly IEA non-member countries, which have a strong interest in bioenergy with an active RD&D approach
- Engagement with industry to underpin market relevance of the work of the Agreement
- New themes to increase biomass availability through aquatic biomass, algae and solar fuels
- Communication of the benefits of bioenergy to a wide audience
- Dissemination of the outputs of IEA Bioenergy in an accessible format and through communication modes that reach a broad stakeholder base.

## The implementation of the Strategic Plan 2015-2020 will:

- promote the optimisation of the economic, environmental and social value of bioenergy through
  - research and development collaboration*
  - identification of best practices in bioenergy policy*
  - pro-active communication with main stakeholders*
- increase participation in our Agreement, particularly by leading players in IEA non-member countries
- facilitate accelerated deployment of bioenergy globally.



# IEA Bioenergy

## Further Information

IEA Bioenergy Website  
[www.ieabioenergy.com](http://www.ieabioenergy.com)

Contact us:  
[www.ieabioenergy.com/contact-us/](http://www.ieabioenergy.com/contact-us/)



IEA Bioenergy, also known as the Implementing Agreement for a Programme of Research, Development and Demonstration on Bioenergy, functions within a Framework created by the International Energy Agency (IEA). Views, findings and publications of IEA Bioenergy do not necessarily represent the views or policies of the IEA Secretariat or of its individual Member countries.