

SUBJECT 1: BIOMASS RESOURCES

1.1 Biomass potentials and biomass mobilisation

Assessments of biomass potentials and land availability at regional / national / international levels; Biomass mobilisation; Biomass logistics; Spatial modelling and remote sensing.

1.2 Biomass feedstock, residues and by-products

Supply of bio-wastes, residues and by-products from agriculture and forestry: mobilisation, characterisation, harvest technologies, logistics and storage.

1.3 Energy crops and energy grasses

Agricultural production of non-woody plant biomass: plant breeding, cultivation, characterisation, harvest technologies, logistics and storage; Novel crops and alternative cropping systems.

1.4 Short rotation forestry and short rotation coppice

Agricultural production of woody biomass: plant breeding, cultivation, characterisation, harvest technologies, logistics and storage.

1.5 Algae production systems

Identification, assessment and optimisation of algae strains; Technologies and systems for algae cultivation, nutrition and harvesting; Oil and chemical extraction.

SUBJECT 2: R&D ON BIOMASS CONVERSION TECHNOLOGIES FOR HEATING, ELECTRICITY AND CHEMICALS

2.1 Solid biofuel combustion for small and medium scale applications

Innovative concepts for stoves, boilers, micro-CHP, steam and stirling engines, organic rankine cycles, etc; Abatement of corrosion and fouling; Emission control; Auxiliary equipment; Tri-generation (power, heat and cooling).

2.2 Solid biofuel combustion in large utilities

Co-firing plants; Process monitoring; Control systems; Abatement of corrosion and fouling; Emission control.

2.3 Gasification for power, CHP and polygeneration

Fundamental studies; Technology development; Gas cleaning and upgrading; Gas utilisation and engine innovations; By-product utilisation.

2.4 Gasification for synthesis gas production

Fundamental studies; Technology development; Gas cleaning and upgrading; By-product

utilisation.

2.5 Pyrolysis and other biomass liquefaction technologies

Production of liquid bioenergy carriers from solid biomass: Fundamentals and studies; Technology development; Process characterisation and modelling; Bio-crude-oil upgrading and utilisation (combustion tests, chemical extraction, gasification, etc.); By-product utilisation.

2.6 Anaerobic digestion for biogas production

Characterisation and optimisation of anaerobic digestion; Plant and fermenter concepts; Anaerobic fermentation of innovative feedstocks; Biogas utilisation for power, CHP and poly-generation.

2.7 Biorefineries

Integrated multi-product approaches; (Combined) production of fuels, chemicals and materials from biomass; Sugar fermentation to other chemicals than ethanol; Drop in fuels, bioplastics, hydrogen, etc.

SUBJECT 3: R&D ON PROCESSES FOR SOLID, LIQUID AND GASEOUS FUELS FROM BIOMASS

3.1 Production and supply of solid biofuels

Technologies for solid biofuel production: chipping, pelletising, briquetting, etc.; Production, characterisation and combustion properties of solid biofuels from innovative feedstocks; Solid biofuel logistics and storage.

3.2 Advanced solid biofuels

Thermal upgrading of solid biofuels: torrefaction, (hydrothermal) carbonisation, charcoal production, etc.

3.3 Oil-based biofuels

Innovative processes for the production of oil-based fuels (biodiesel, jet fuel, etc.) from oilseeds, algae, wastes, etc.

3.4 Production and supply of biomethane

Upgrading of methane rich gases (biologically and thermochemically produced) and biomethane grid injection.

3.5 Bioethanol production and sugar release from lignocellulosic biomass

Lignocellulosic ethanol: Pre-treatment of lignocellulosic biomass, cellulose hydrolysis, C6 and C5 fermentation; Innovations in bioethanol production from starch / sugar plants.

3.6 Biofuel production from synthesis gas

Production of fuels (FT-diesel, aviation fuels, etc.) and chemicals from syngas.

SUBJECT 4: INDUSTRIAL DEMONSTRATION AND BUSINESS CONCEPTS

4.1 Biofuels utilisation for heating and cooling

Bio-heat integration into household heating; District heating; Heat and cool supply to industry; Recovery of process heat and waste heat.

4.2 Biofuels utilisation for power generation

Biomass use by utilities; CHP projects; Innovative business concepts such as virtual power plants pooling decentralised micro-CHP plants and stationary engines.

4.3 Biofuels for transport

Liquid and gaseous biofuel utilisation in cars, heavy transport, aviation; Transportation fuel markets; Biofuel blending, distribution and logistics.

4.4 Industrial biorefineries and bio-products

Industrial initiatives on biorefineries and utilisation of lignocellulosic biomass; Integration into existing industrial processes; (Combined) production of fuels, chemicals, materials, bioplastics, fertilizers, etc.

SUBJECT 5: BIOMASS POLICIES, MARKETS AND SUSTAINABILITY

5.1 Markets, Investments & Financing

Global bioenergy markets; Bioenergy commodities trading, contracting and long distance transport; Externalities assessment; Economic viability of bioenergy projects; Financial support schemes; Market stimulation policies.

5.2 Sustainability assessment and criteria

Life cycle analyses, sustainability schemes, certification, national and international standards related to sustainability; labelling for bioenergy and bio-products; support programmes; scientific monitoring; Sustainable resource management.

5.3 Environmental impacts of bioenergy

Indirect land use change (ILUC); Agricultural intensification; Assessment of GHG reduction and carbon capture; Estimated contribution to the mitigation of climate change; Agro-environmental assessments in temperate and tropical regions.

5.4 Policies for cooperation & training

Awareness campaigns, communication methods and tools, education and training, specific skills requirements and job creation; R&D strategies for international cooperation; Partnerships programmes for supply security.

5.5 Resource efficient bioeconomy

Innovation, growth, job creation; Socio-economic opportunities, competition and risk mitigation of the increased use of biomass for food, feed, fibre, fuel, health, bio-materials and green chemistry.

5.6 Biomass strategies and policies

National, regional, local bioenergy and bioeconomy strategies; Biomass utilisation concepts for bioenergy and biobased products; National Renewable Energy Action Plans; Integration of bioenergy with other renewable sources; Public perception and acceptance.