



IEA Bioenergy
Technology Collaboration Programme



<https://www.ieabioenergyreview.org>

IEA Bioenergy Technology Collaboration Programme

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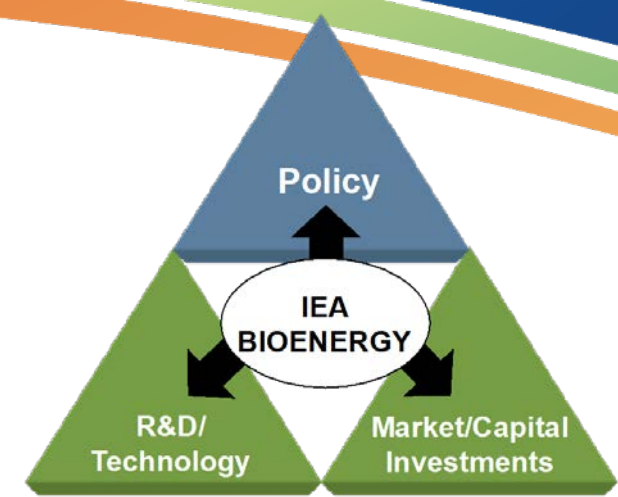
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Technology Collaboration Programme

by **iea**

IEA Bioenergy

Technology Collaboration Programme (TCP), functioning within a framework created by the International Energy Agency (IEA)



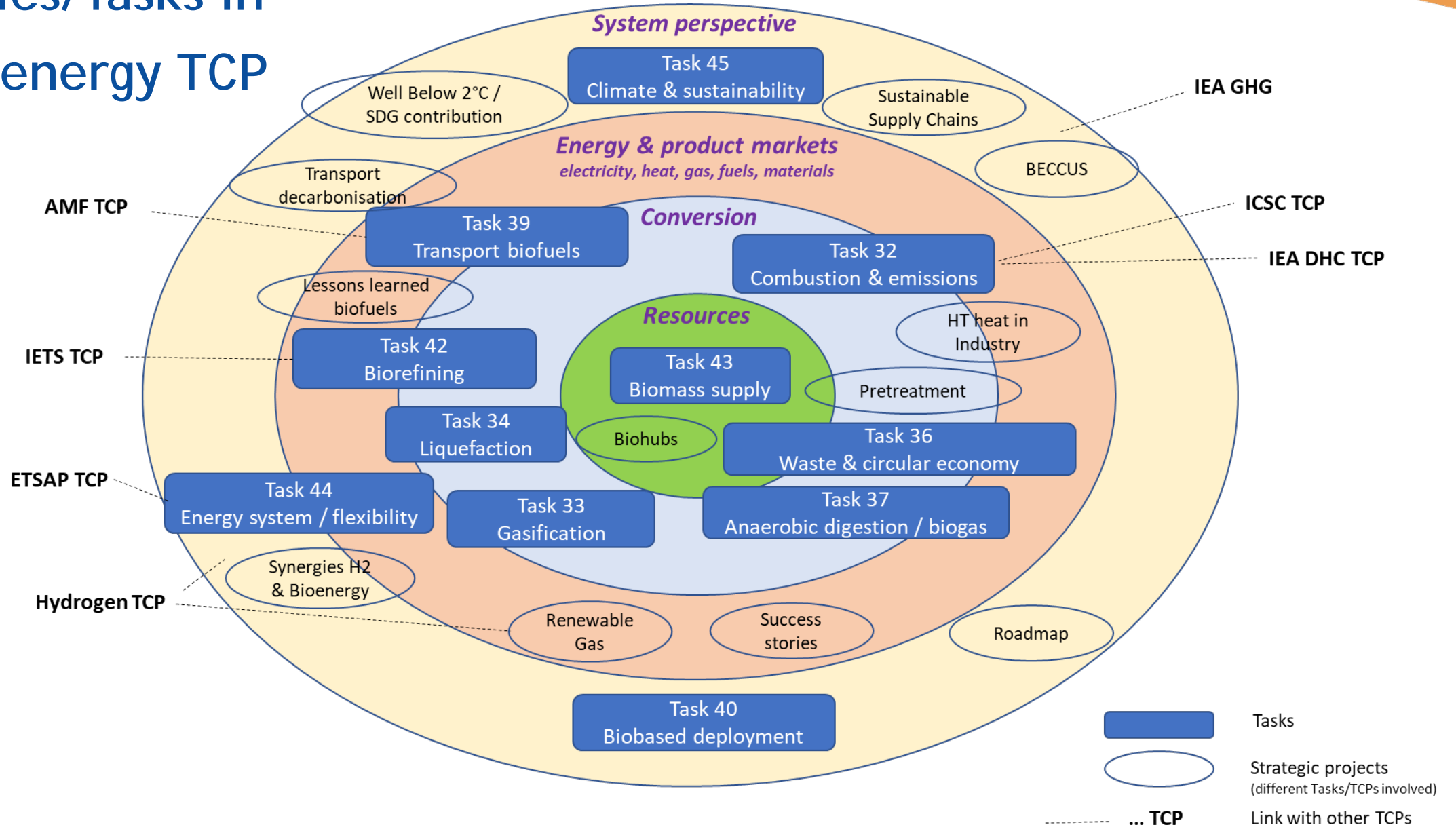
Goal:

- International **collaboration** and **info exchange** on bioenergy research, technology development, demonstration, markets, and policy analysis
- Facilitate the commercialization and market deployment of sustainable bioenergy systems = **climate positive, environmentally sound, socially acceptable** and **cost-competitive** (incl. external costs)

26 members: 15 European countries (including Norway) + EC, USA, Canada, Brazil, India, China, Japan, Korea, Australia, New Zealand, South Africa

Work programme carried out through **Tasks** and **Special Projects**, covering the full value chain from feedstock to final energy product

Activities/Tasks in IEA Bioenergy TCP



Bioenergy from wood contributes to Europe's energy security and is part of a sustainable energy mix

- Forest bioenergy is an important part of energy provision in Europe
- Over 90% of biomass used for energy in Europe is from Europe
- Sustainably managed forests continue to absorb carbon from the atmosphere
- Forest biomass used for energy are predominantly residues and low quality wood resources
 - 50% from secondary products (forest-based industry)
 - 17% treetops, branches and other residues
 - 20% stemwood - most of which is not suitable for sawmills or pulp and paper production
- Any harvesting of biomass should be done within sustainability boundaries

Bioenergy and Sustainable Development



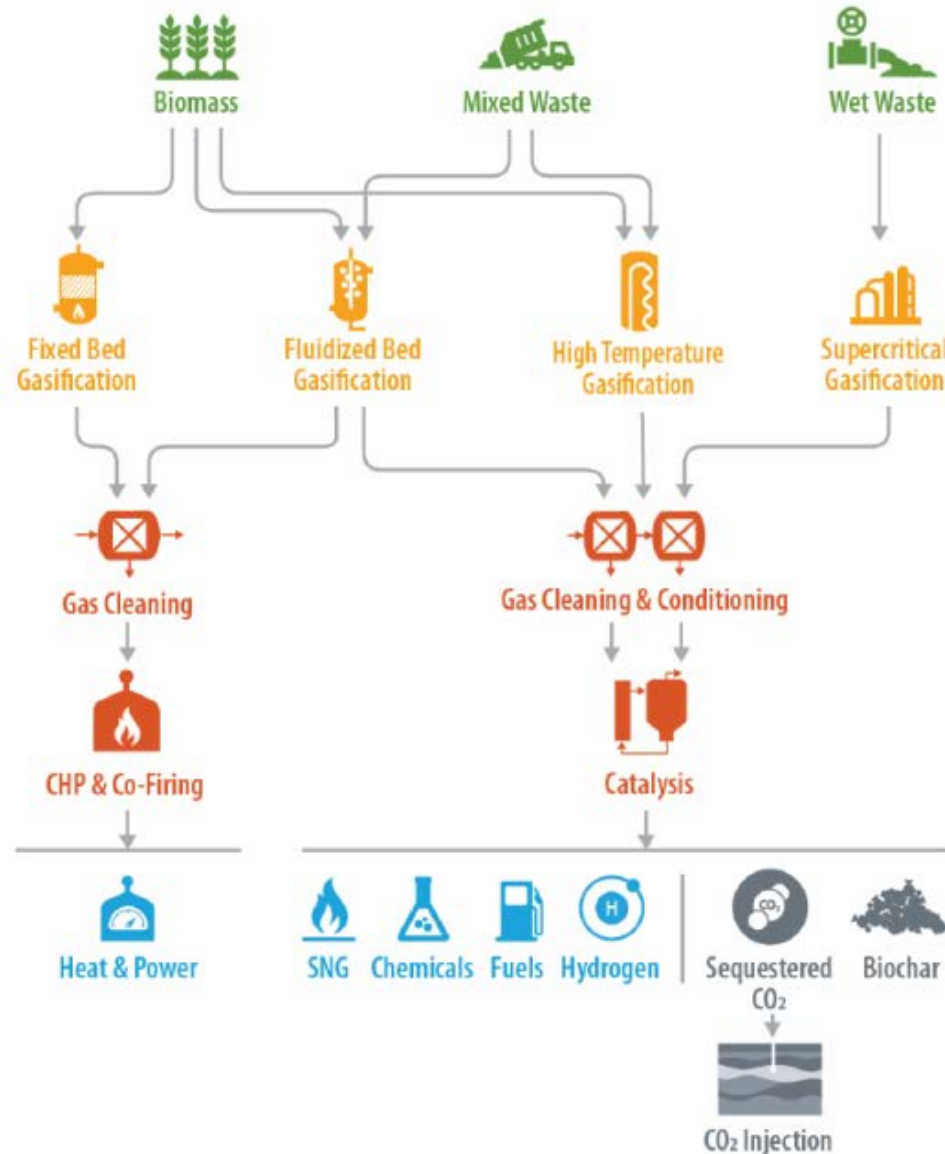
Pahlavanlu et al. (2022)

- Bioenergy is inherently multi-faceted and commonly part of land-based systems that provide multiple products along with other ecosystem services.
- Apart from climate change mitigation, bioenergy systems and biomass supply chains can have important environmental and socio-economic co-benefits that can be important motivation for bioenergy deployment.
- Communicating on good practice, good governance and win-win approaches is key!

Ethanol and biodiesel production in Argentina, Brazil, Colombia, and Guatemala

- Biofuel production could be doubled by transforming 5% of current pastures into arable land for raw materials
- Ethanol and biodiesel production provides considerable reductions in global warming (up to 84%) and ozone layer depletion
- GHG emissions closely connected to the use of fertilizers and fossil energy
- Policies that generate decarbonization certificates (e.g. CBIOs) are effective and encourage farmers and biofuel producers to adopt best management practices to reduce GHG emissions

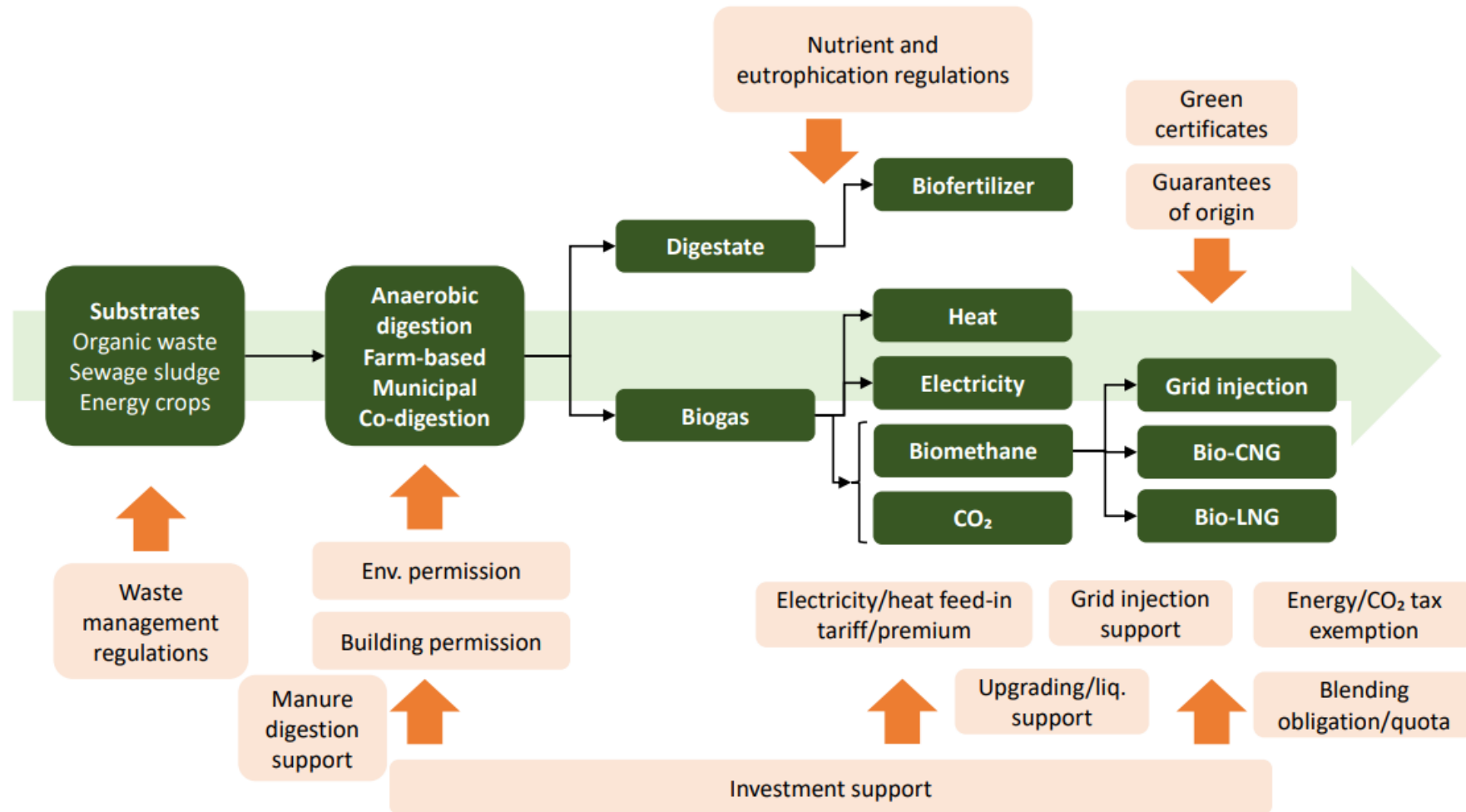
Valuable products and by-products of biomass gasification



- SNG can contribute to the European mandate of 35 bcm biomethane by 2030
- Fischer-Tropsch products and methanol can go into chemicals and fuels markets
- Hydrogen is booming
- CCUS coupled with biomass gasification can generate negative CO₂ emissions

Integrated Biogas Systems - Sustainable Solutions Beyond Energy

Biogas solutions = Systems for production and use of biogas, biomethane and digestate

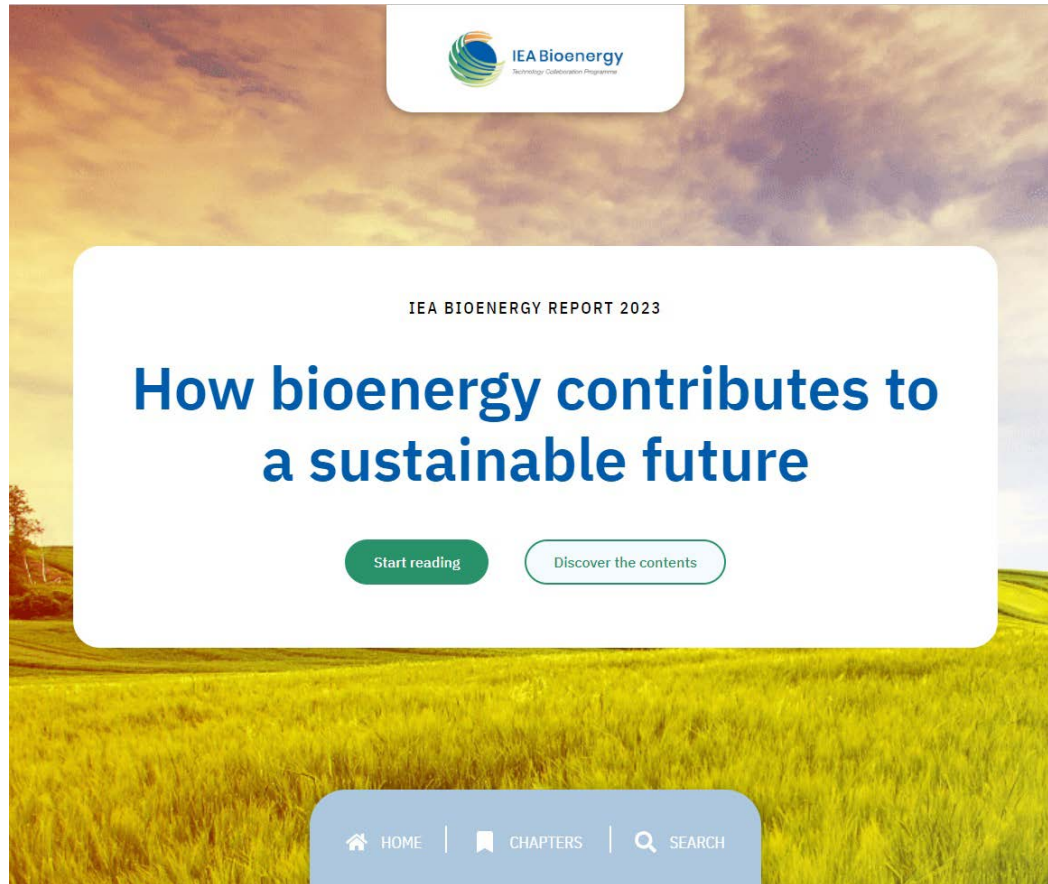


Material and Energy Valorisation of Waste in a Circular Economy

- ~~Waste management~~ → materials recycling, keeping molecules in use for longer
- Products:
 - Energy, chemicals, and feedstocks
- New technological approaches:
 - Gasification, pyrolysis, and biological processes
- New challenges:
 - Public acceptance, suitable regulatory and permitting processes

BIOENERGY REVIEW

New web-based report launched today!



- Key information on bioenergy and bioenergy technologies
- Easy to read
- Accordeon structure - main points and deep dives
- Interactive and heavily hyperlinked
- Infographics

Go to: www.ieabioenergyreview.org

Thank you!

Questions?

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Chair - IEA Bioenergy TCP



www.ieabioenergy.com