



IEA Bioenergy

Technology Collaboration Programme



Aktuelles aus IEA Bioenergy Task 44 (D)

Tagung Bioenergieforschung in der Schweiz

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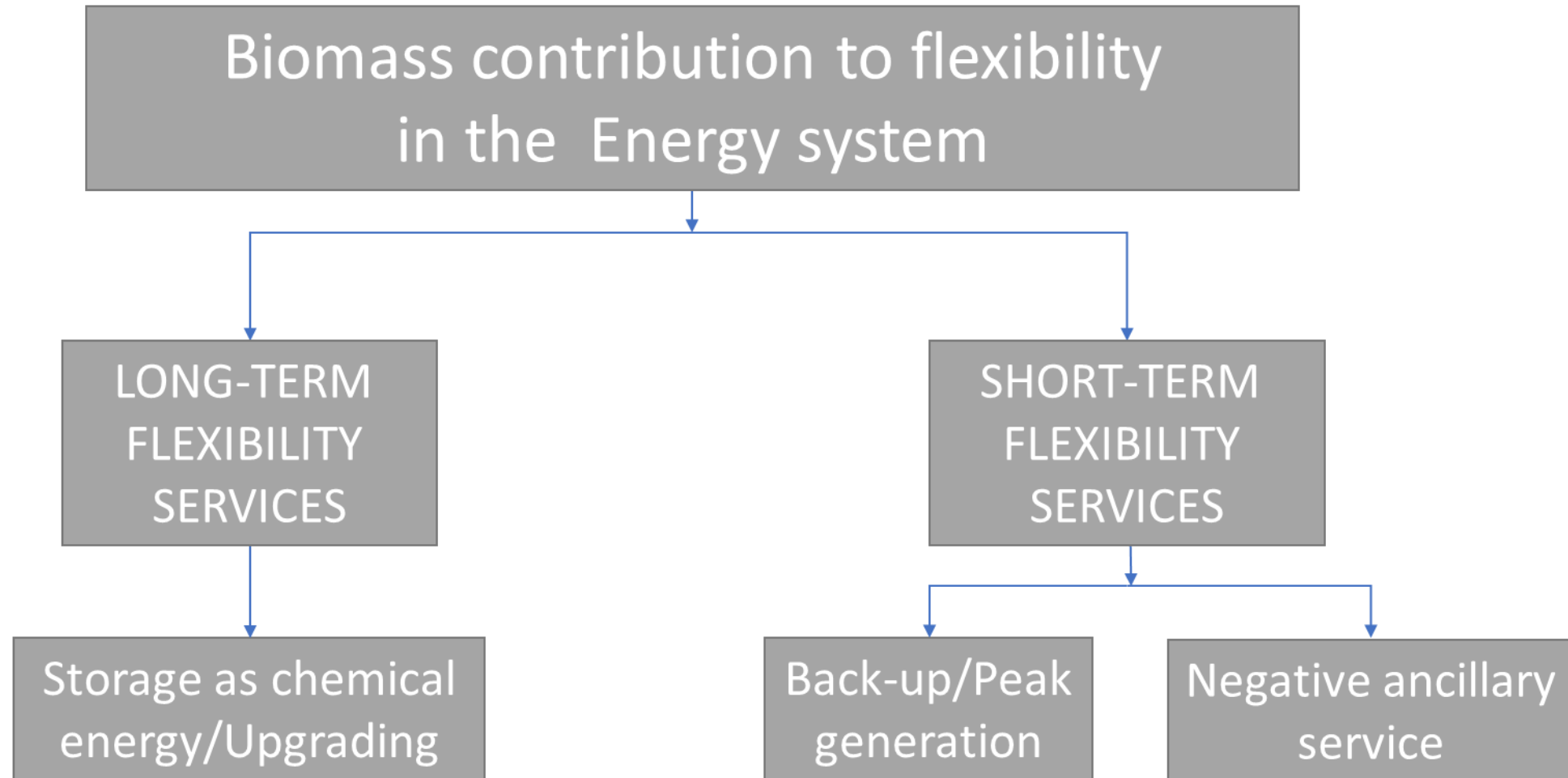
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Why flexible energy from biomass?

- With more renewable energy, more volatility enters the energy system
- Hydropower, wind and PV depend on weather and produce only electricity
- Biomass can be stored, has more transport options and provides more than one product: materials, chemicals, electricity and fuels
- **Task 44 Flexible Bioenergy** with seven countries SF, D, A, CH, S, NL, US represented by well known research organisations: VTT, DBFZ, BEST, PSI, Svebio, TNO-ECN, DoE
- Dimensions of flexibility
- “Map” of flexible bioenergy technologies
- Actual activities

Dimensions of bioenergy flexibility

iea bioenergy Task 44 «Flexible Bioenergy»



Flexibility in biomass related energy conversions

Feedstocks

Wet biomass
(usually not
storable)

Dry biomass
(storable)

Intermediates

(limited spatial and
temporal flexibility)

Energy carrier

(storable, large spatial and
temporal flexibility)

Application

(variable)

Chemicals

Transport &
Mobility

Heat (storage),
(flexible) Heat &
Power CHP

CO₂ for
BECCS

Flexibility in biomass related energy conversions

Feedstocks

Wet biomass
(usually not
storable)

Dry biomass
(storable)

Intermediates

(limited spatial and
temporal flexibility)

Product gas

Biogas

Pyrolysis oil

Energy carrier

(storable, large spatial and
temporal flexibility)

Liquid
Fuels

Methane
LNG

Pellets, Chips,
Bio-coal

Stabilised Oil

Application

(variable)

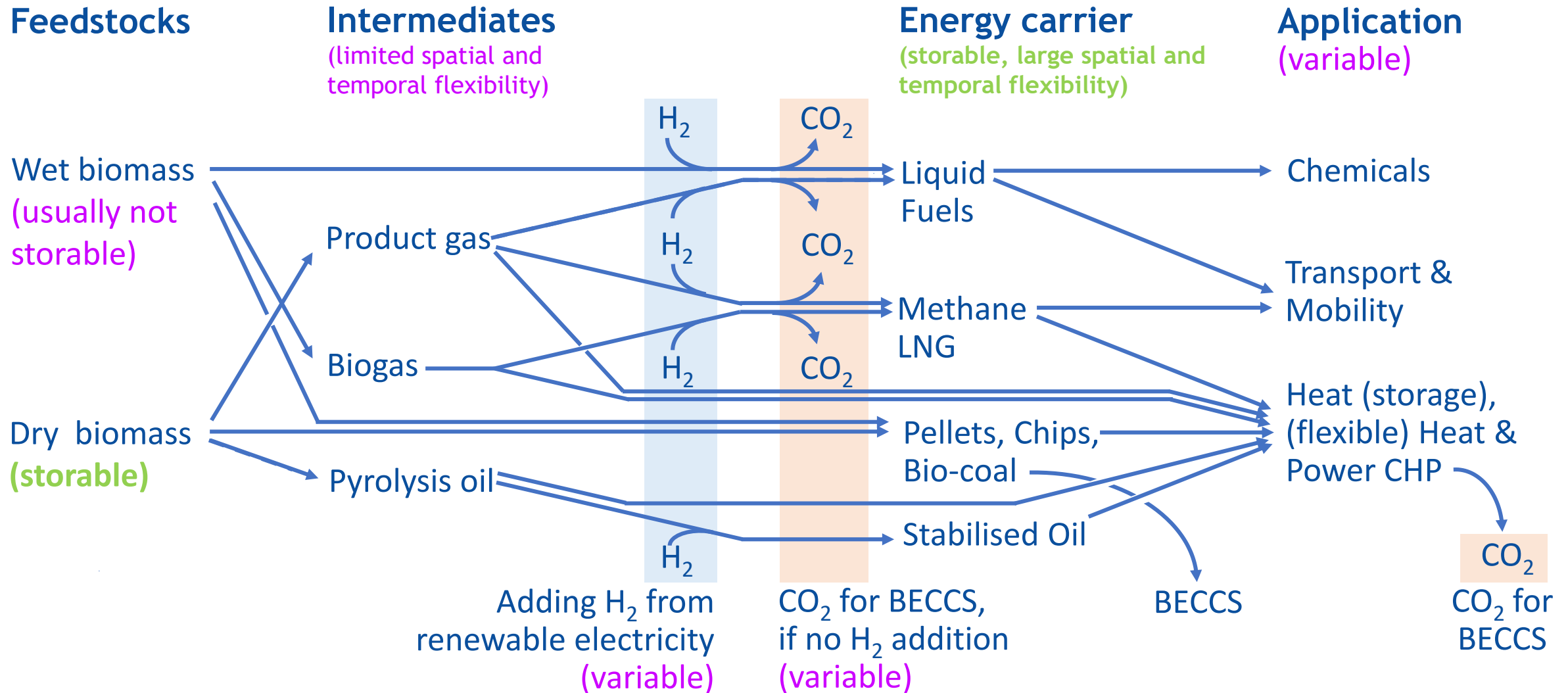
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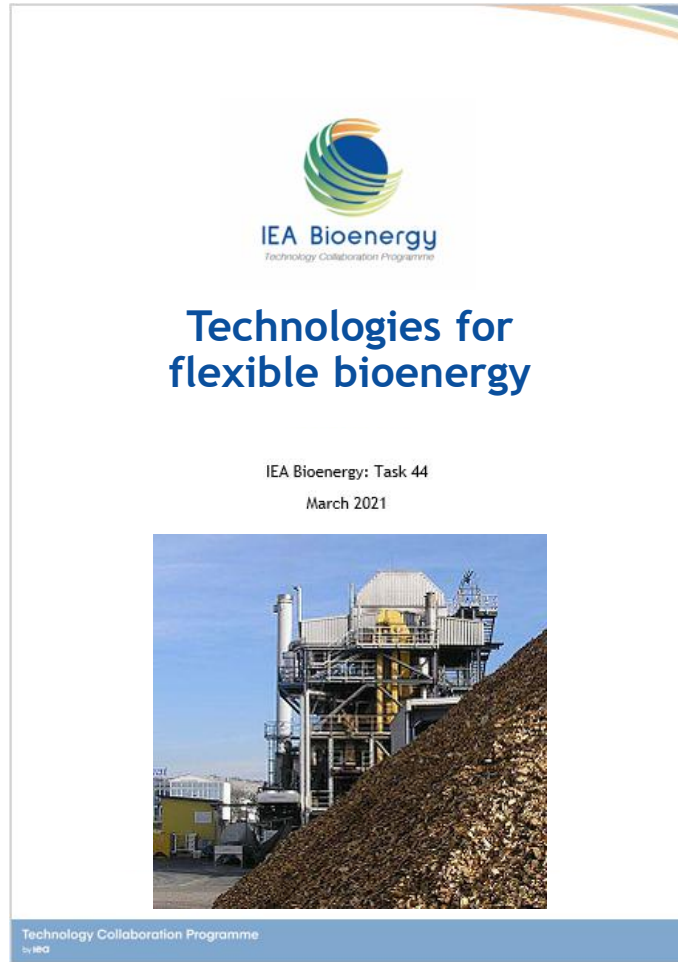
CO₂ for
BECCS

Flexibility in biomass related energy conversions



IEA Bioenergy Task 44

Report on Technologies for flexible bioenergy



Further:

- Workshops, Webinars
- Best practice collection
- Intertask projects on:
 - BECCUS (Bioenergy carbon capture, use, sequestration)
 - Synergies of Bioenergy/H₂

Best practice examples on <https://task44.ieabioenergy.com/>

https://task44.ieabioenergy.com/best-practices/



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Task 44: Flexible Bioenergy and System Integration

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Best Practices



E-GAS PLANT, Werlte, Germany

In Werlte, green hydrogen is initially produced from renewable electricity by electrolysis. The hydrogen is then converted to methane in a catalytic methanation process using carbon dioxide from a biogas plant operated with residual and waste materials. The plant preferably obtains electricity for electrolysis when there is an oversupply due to high feed-in quantities of wind or photovoltaic power. The final product is grid-ready synthetic natural gas (SNG) in a compressed (CNG) or liquefied (LNG) state.



[Task 44 Best Practice_e-gas Werlte_Germany](#)



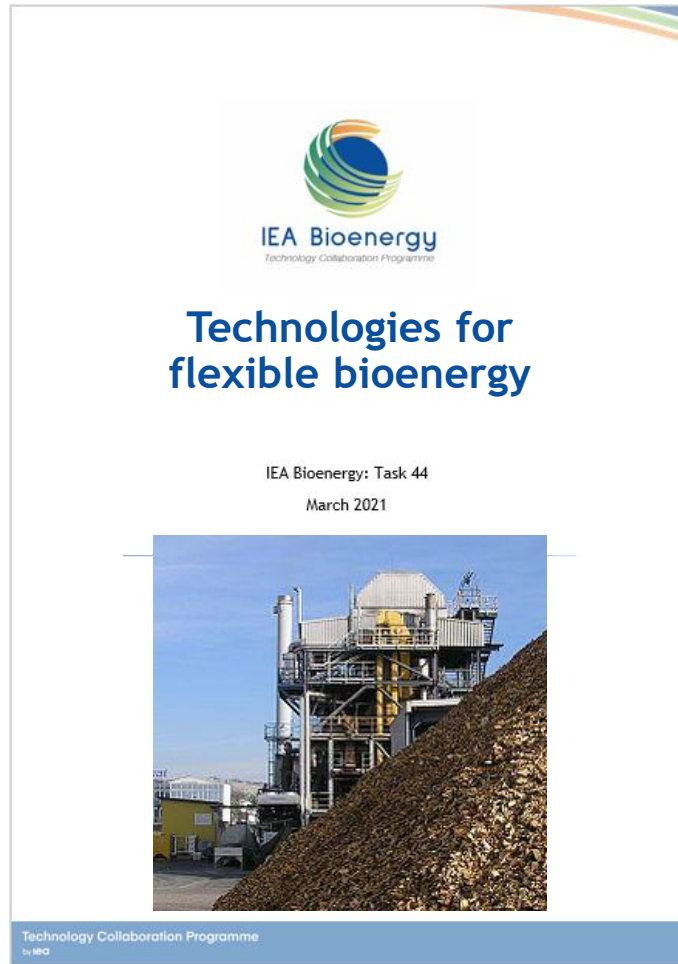
BIOMASS HYBRID DRYER, Jyväskylä, Finland

VTT's pilot hybrid dryer combines solar collectors and a heat pump in an efficient and flexible way. Various drying modes, such as solar alone, pump alone or solar and pump together, can be applied, depending on the availability of solar irradiation and electricity price. Especially, when electricity is cheap, this dryer is economical.



What can IEA Bioenergy do for you?

Review reports, webinars, workshops on technology and policy



Make use of experts' work of IEA Bioenergy!

- Task 32 Combustion
- Task 33 Gasification
- Task 34 Pyrolysis
- Task 37 Biogas
- Task 39 Biofuels
- Task 44 Flexible Bioenergy
- Intertask projects on «BECCUS» and «Synergies of Bioenergy/H2»