IEA Bioenergy
Technology Collaboration Programme

IEA Bioenergy Task 44 Flexible Bioenergy

WP 2 Report «Expectation and implementation of flexible bioenergy in different countries»

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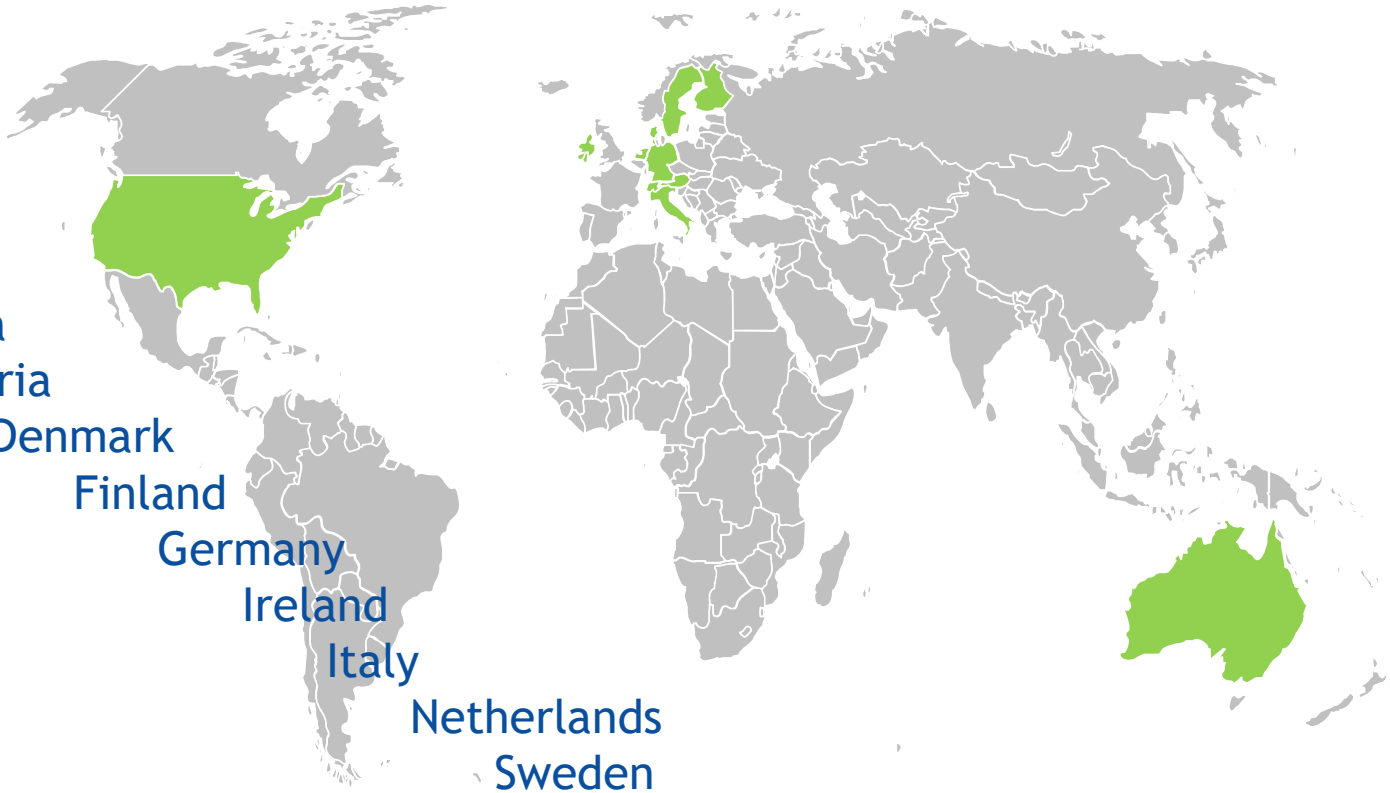
Approach

- Leading questions:
  - What is the status / state of the art of flexible bioenergy in the Member States?
  - What are the bottlenecks (technological, economic, and systemic) that limit the flexibility of bioenergy?
  - What type of market and policy measures are needed to support successful introduction of flexible bioenergy solutions to the energy system?

- Survey in IV/2019 and I/2020, review of survey in II/2020

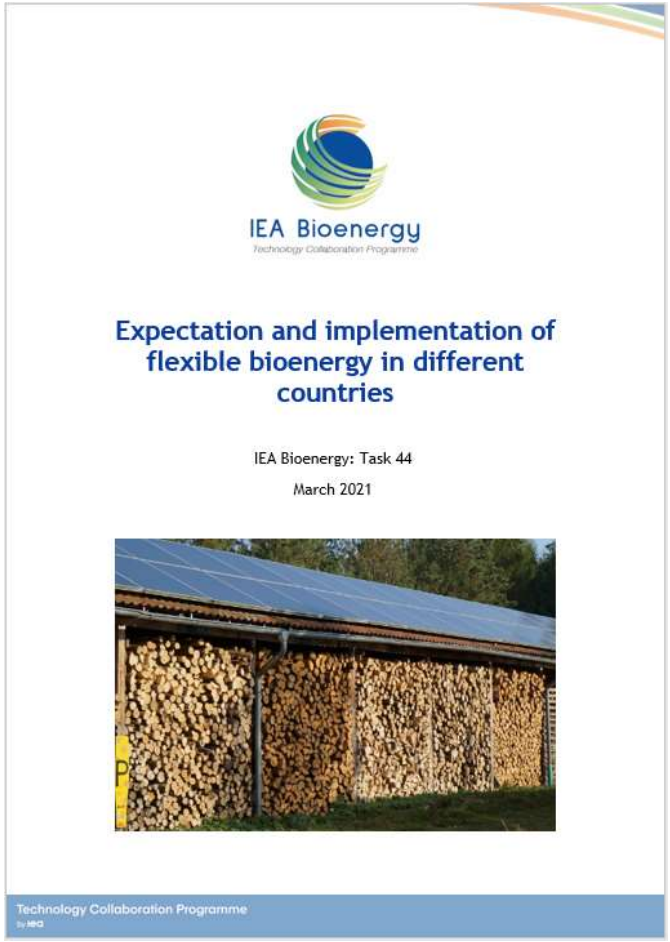
- Report available:
  https://task44.ieabioenergy.com/iea-publications/

Contributing countries



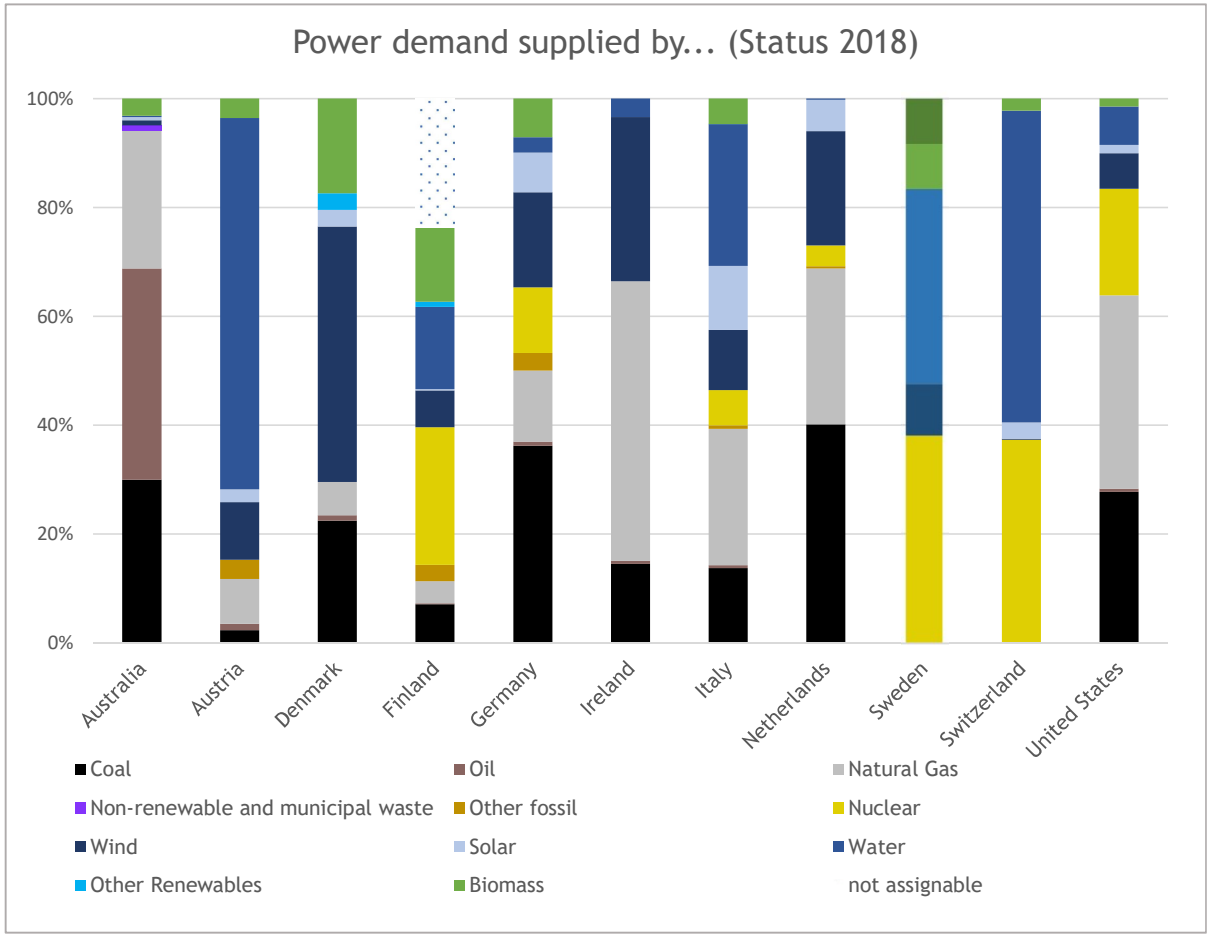
Australia
Austria
Denmark
Finland
Germany
Ireland
Italy
Netherlands
Sweden
Switzerland
United States

Report



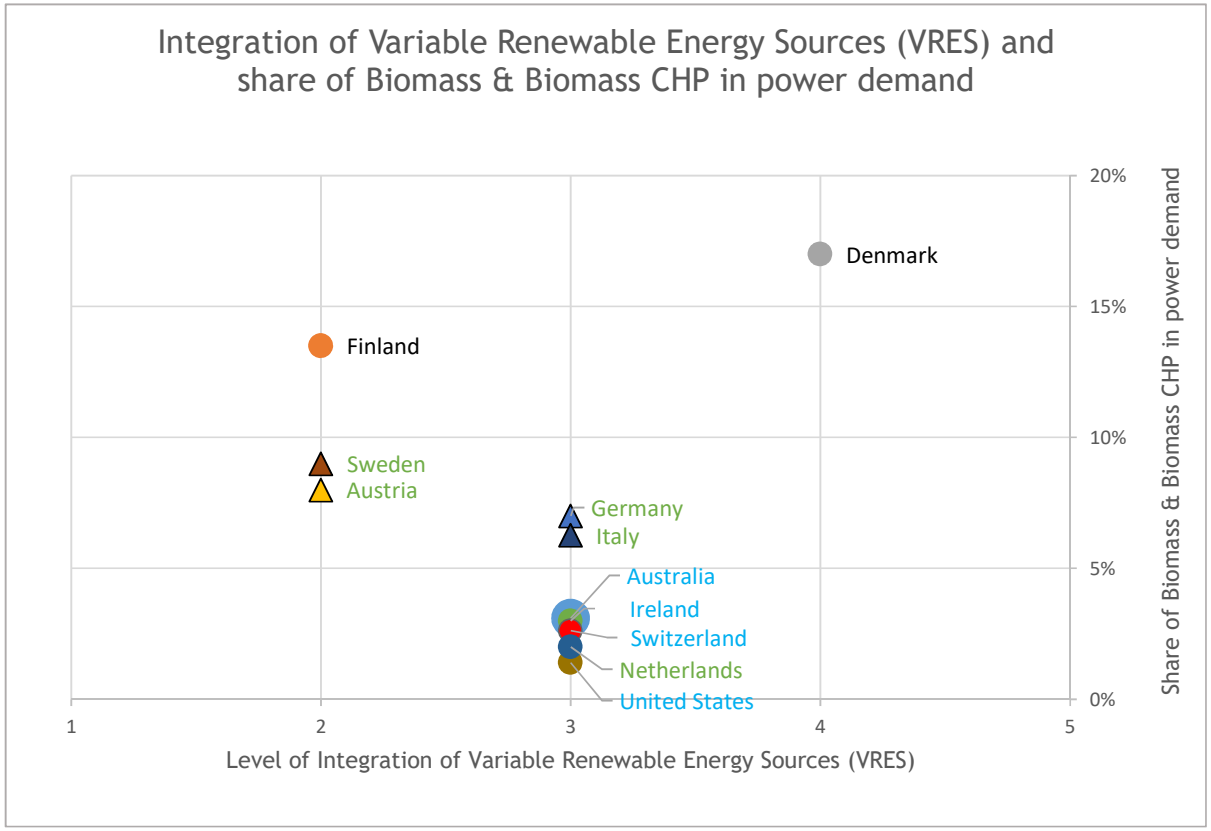
Energy transition in different countries

- Bioenergy is applied in all sectors
- Shares vary between sectors and countries
- But also the energy background varies, i.e. different coal exit strategies, different natural resource potential ….



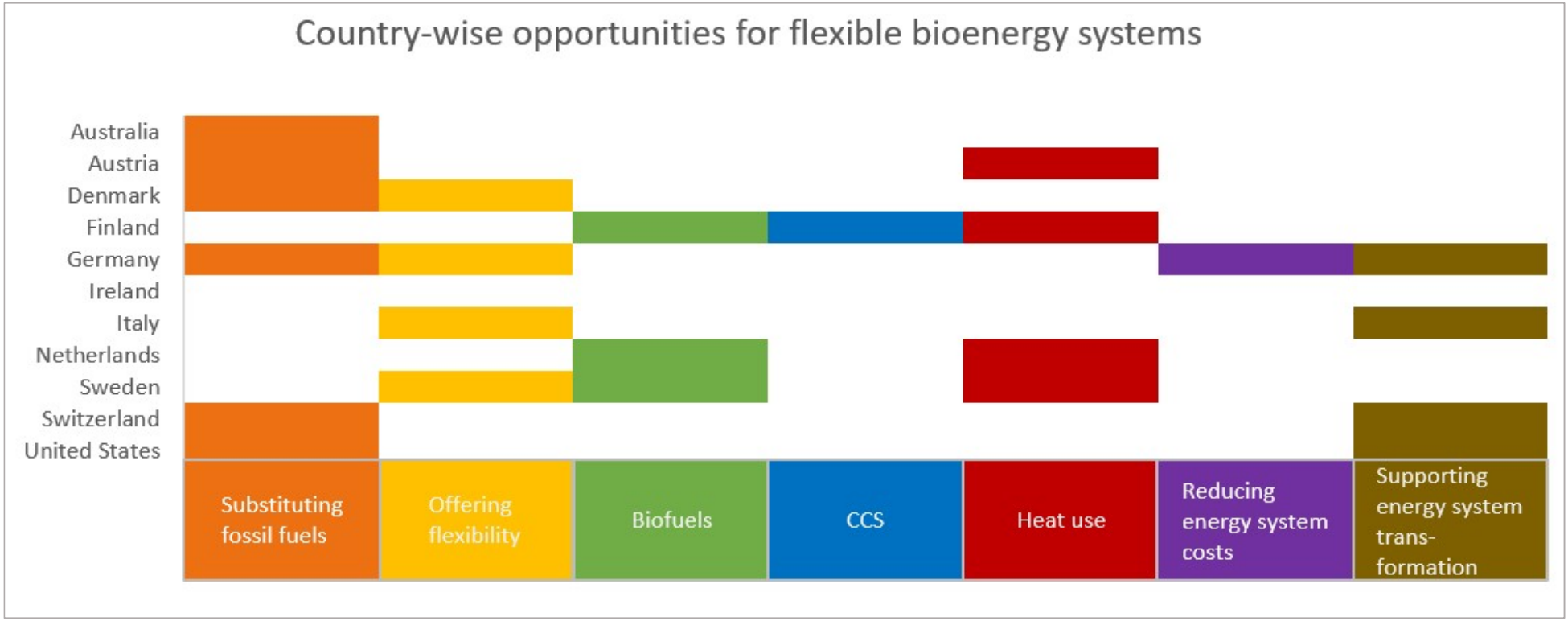
Flexibility role in different countries

- Countries are in different stages of integration of variable renewables
- The development of flexible power provision is not strongly related (i.e. amount and information)
- Expectation goes behind flexible power



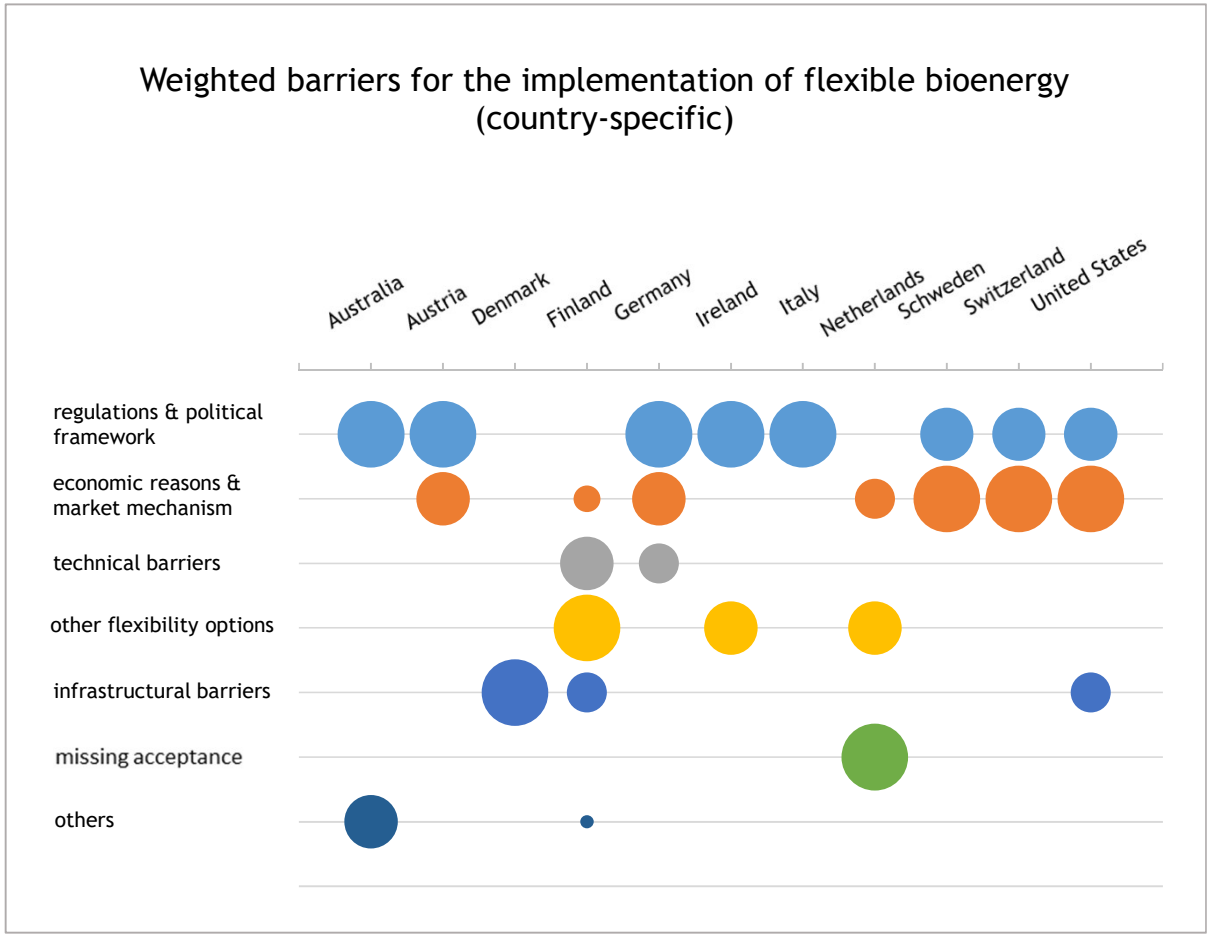
Color of country indicates if data on flexible bioenergy capacities are available, not available or not provided

Reasons for flexibility …



Hurdles

- Lack of regulation and policy
- Lack of information for energy sector and policy makers
- Market mechanisms & economic reasons



Best practices

- Examples cover temporal flexibility and product flexibility
- Adapted to regional policy, resources and energy infrastruture

Examples (selection)	Temporal	Product
Goulburn Bioenergy Project (AUS)	X	
MSM Milling Biomass Fuel Switch Project (AUS)	X	
Richgro Bioenergy Plant (AUS)	X	X
District Heating with CHP (AT)	X	X
Companies producing bio-oil from waste products (DK)		X
Aalborg University Pilot plant (DK)	X	
Energy Company St 1 & Q Power (FI)	X	
VTT & St 1 (FI)	X	
FLEXCHX H2020 (FI)	X	X
Heating in detached houses (FI)	X	X
AUDI e-gas plant Werlte (DE)	X	X
PtG plant Allendorf (DE)	X	
SLURRES (IRL)		X
Ards Friary (IRL)	X	
+Gas ENEA (IT)		X
Biogas Upgrading to natural gas (NL)		X
CHP based on biomass (NL)	X	X
District heating with heat storage (NL)	X	
Biorefinery in Norrköpping (SWE)		X
Falun Energy & Water (SWE)	X	X
Single domestic heating with pellets (CH)	X	
Biomass Swarm (CH)	X	X
Renewable gas generation from curtailed power (US)	X	

Conclusions

- Terminology and definition still not very established
- Chances and barriers are seen for integration of variable renewable energies but also beyond
- Lack of regulatory/policy and financing regulations are main barriers, but also politicians and energy sector need more information
- Best pratice examples given from all countries – very promissing starting point for accelation of implementation
- Research on system integration, sector coupling and economic aspects needed

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