

Delivery of sustainable supply of non-food biomass to support a resource-efficient Bioeconomy in Europe

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Benchmarking country approaches for resource efficient use of biomass

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- **Base idea of renewable energy / bioenergy / biobased products =**
 - diminish the consumption of fossil (depletable) resources,
 - reduce impact on the climate,
 - support local economy
- **Safeguards for environmental resources**
 - biodiversity, biomass (extraction rates!), air, soil, water, ecosystem, climate
- **Utilisation**
 - closing the circle => carbon & nutrient cycles
 - extend the cycle life (“do more with less”)
 - conversion & end use efficiency
 - material hierarchy / cascading
- **Within economic reality !**
- **Level-playing field between fossil and renewable**

Policy framework

- Policy instruments and measures (energy & non-energy) related to biomass & value chains

Benchmarking

- Type of resource (forest, agri, waste); country clustering
- Mobilizing effect in relation to potential
- Key measures addressing sustainability & resource efficiency

Good practices and policy guidelines

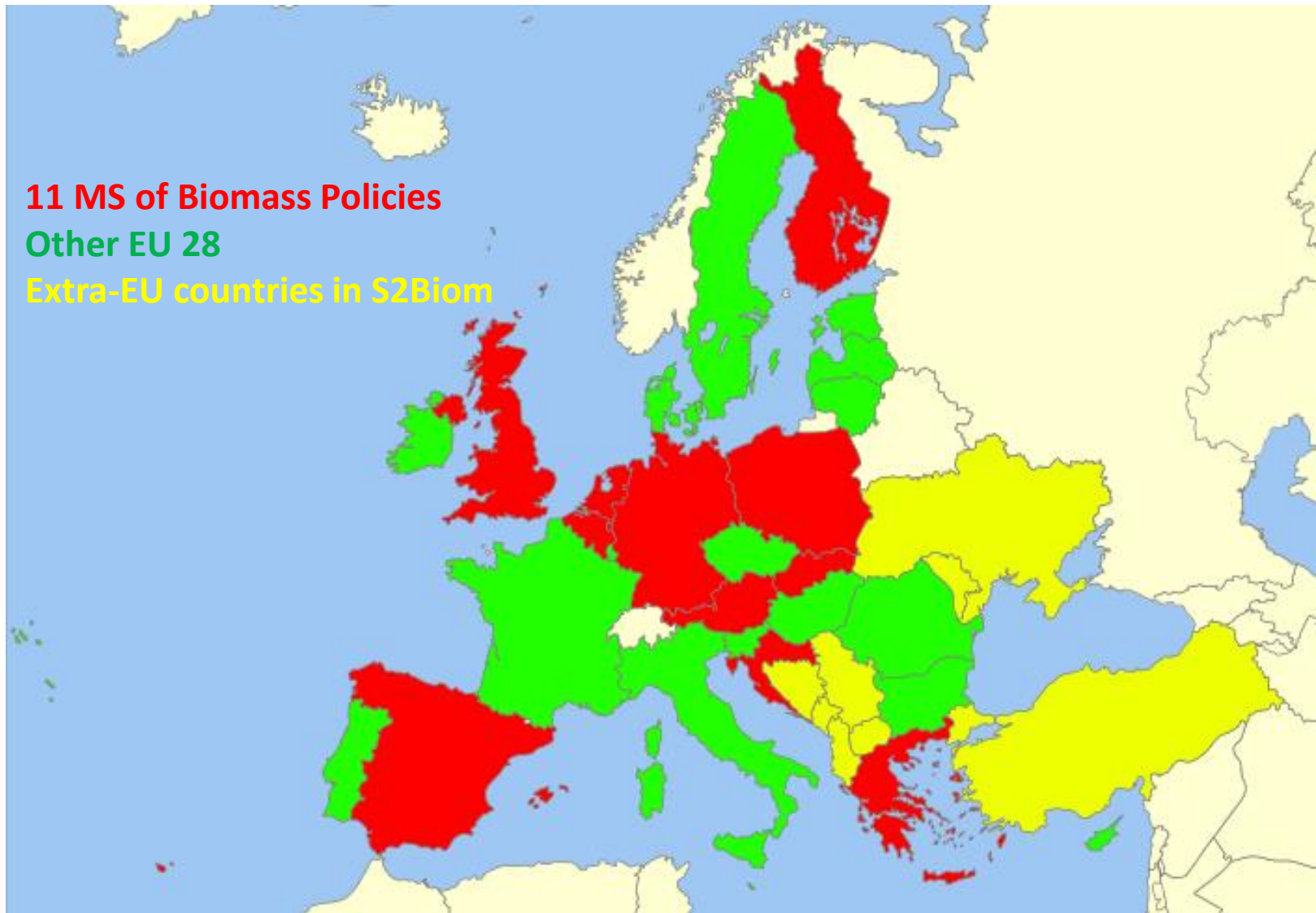
- Potential policy options, discussion of pros & cons, points of attention and guidelines

Integrated framework / policy recommendations

- focus on case studies

- **Database with factsheets of > 700 instruments and measures**
- **EU framework vs MS regulations. Types:**
 1. EU level is decisive (e.g. trade, standards),
 2. EU sets a framework for MS regulations (e.g. agriculture, environment, waste, climate, energy, transport),
 3. EU provides guidelines, but responsibility lies at MS level (e.g. forestry, procurement)
 4. MS responsibility, but check if support is in line with EU rules (e.g. enterprise, innovation). Can be complementary with EU actions (innovation).
- **Structure of regulations differs by MS, e.g. laws/decrees/decisions/communications/amendments, ...**
- **Level of responsibility is sometimes transferred to regions/federal states, e.g. BE, UK, AT, ES, DE, ...**

Country coverage



Search Instruments & Measures by information fields

Search here in a targeted way for Instruments & Measures that foster the development of regional bioeconomies. You can filter your search based on a set of differentiating information fields. For each Instrument & Measure a detailed factsheet will be provided. Some examples of how the tool can be used.



Country/Region

European Union

NETHERLANDS (NEDERLAND)

- None -

Type of Instrument or Measure

Economic/financial instruments

- None -

Sector/Topic targeted

Energy

Feedstock type targeted

- None -

Product type targeted

- Any -

Value Chain

- Any -

Search Terms

[Advanced options](#)

Short name of Instrument or Measure	ISO	Country/Region	Type of Instrument & Measure	Sector/Topic targeted
Energy investment allowance	NL	NETHERLANDS (NEDERLAND)	Tax Reduction	Taxation and Trade, Energy
Environmental investment allowance	NL	NETHERLANDS (NEDERLAND)	Tax Reduction	Environment (soil, water, air, nature, biodiversity,...), Energy, Mobility, transport and logistics, Taxation and Trade
Environmental protection tax	NL	NETHERLANDS (NEDERLAND)	Tax Reduction	Taxation and Trade, Energy
Renewable energy in transport order	NL	NETHERLANDS (NEDERLAND)	Substitution Obligation, Tradable Certificates	Energy, Environment (soil, water, air, nature, biodiversity,...)
Renewable energy production incentive scheme (SDE+)	NL	NETHERLANDS (NEDERLAND)	Premium	Energy

Factsheet: Renewable energy production incentive scheme (SDE+)

Renewable energy production incentive scheme (SDE+)

Key Information

Country/Region:
European Union > NETHERLANDS (NEDERLAND)

Full name of Instrument & Measure (English):
SDE+ Renewable Energy Production Incentive Scheme

Full name of Instrument & Measure (native language):
Besluit stimulerend duurzame energieproductie (SDE+)

Description:
The SDE+ scheme grants a premium to the producers of renewable energy to compensate for the difference between the wholesale price of electricity, heat or gas and the corresponding price of electricity, heat or green gas from renewable sources. The sum of the premium, paid on top of the market price, is variable and depends on the annual market price development and is adjusted by a correction value accordingly. The premium is paid for a period of up to 15 years (for biomass projects 12 years, for biomass co-firing 8 years and for other options 15 years). The support is made available in various stages (6 stages in 2013-2014, 9 stages in 2015) and is allocated on a 'first come, first serve' basis. In general, the SDE+ scheme gives an advantage to those applying for lower tariffs and at an early stage of the allocation process. The SDE+ is not an open ended system, there is a yearly dependent budget ceiling (e.g. 3.5 billion Euro in 2015). When the budget is used, the further stages can't apply anymore. SDE was first opened in 2008. In 2011 it was replaced by the SDE+.

Smaller modification to the SDE+ take place every year (see above); other technology categories are introduced; the number of phases changes; the budget changes per year.

Goal/Aim:
stimulate investments in renewable energy

Type (and subtype) :
Economic/financial instruments > Premium

Sector/Topic targeted:
Energy

Responsible Authority:
Rijksdienst voor Ondernemend Nederland

Status:
In force

Trade Relevance:
Since 2015 co-firing is in the SDE-. However, as agreed in the 'Energie Akkoord' overall co-firing can never be higher than 25 PJ Gross final consumption.

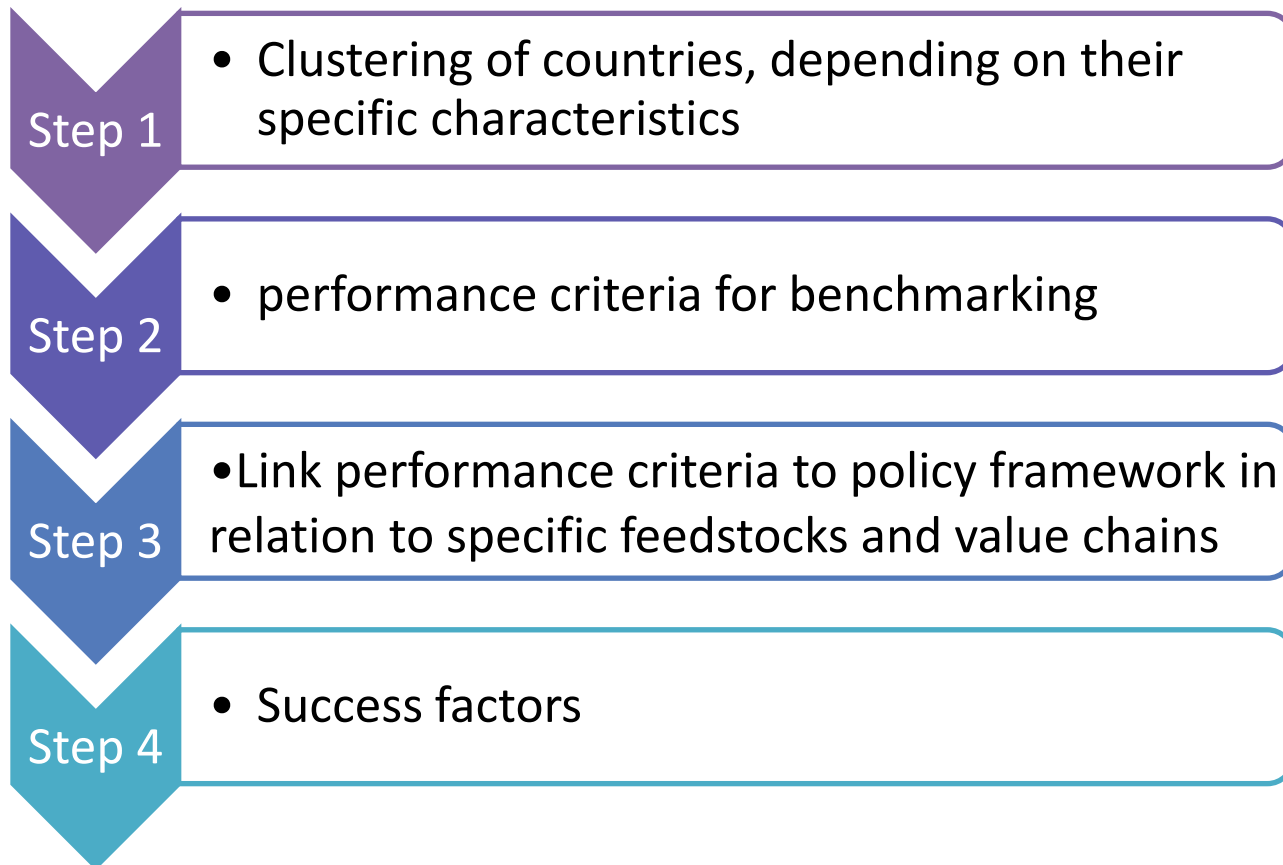
Year Instrument & Measure Started: 2008

Year Last Instrument & Measure was last Amended: 2015

Contact References

Advanced Information





Step 1: Country clustering

- **Role of country context !!**

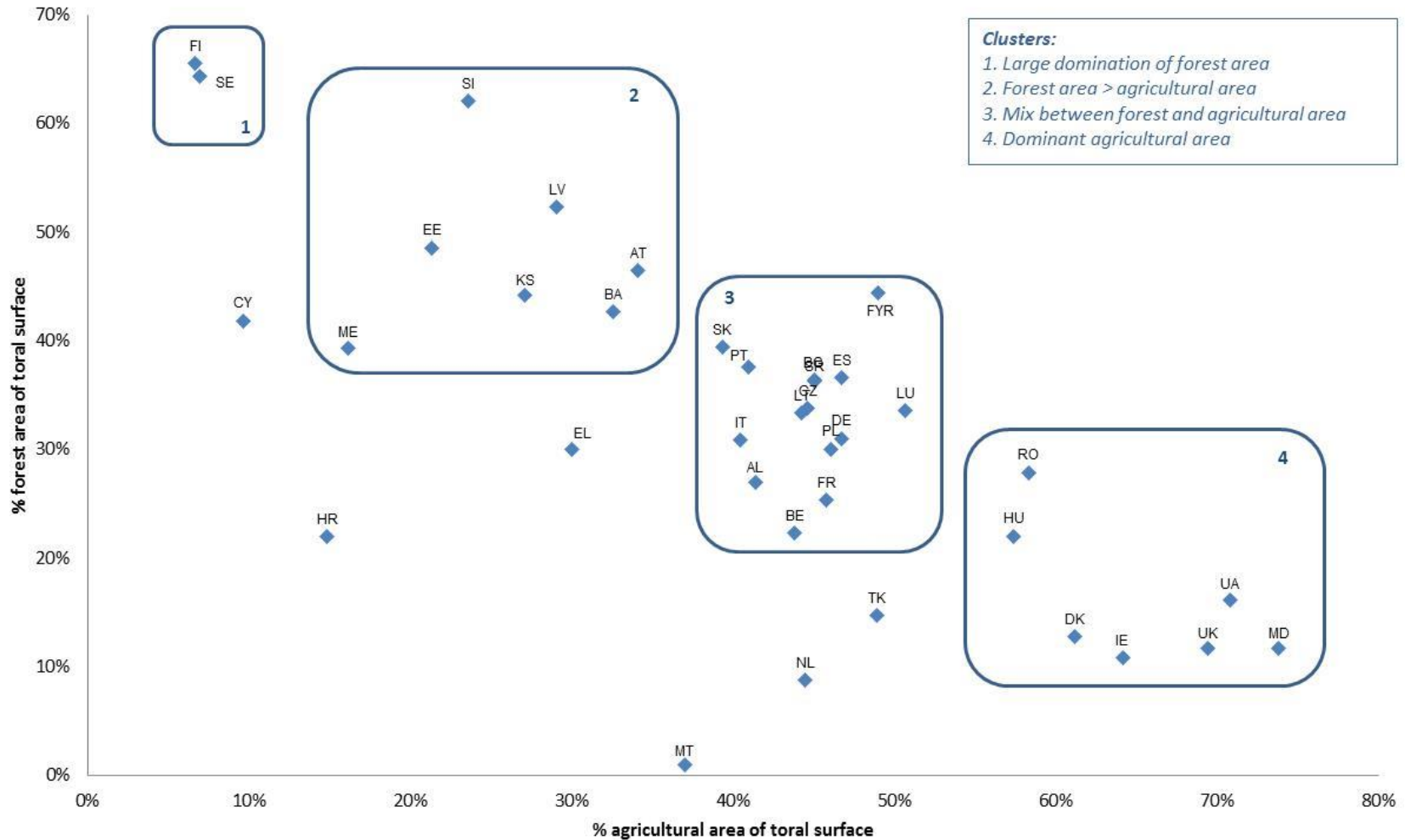
=> Compare countries with similar characteristics, e.g.

- Population density / land surface
- GDP and importance of trade
- Energy consumption & energy dependency
- Agriculture (area, yields, livestock density)
- Forestry (area, increment)

(based on Eurostat indicators)

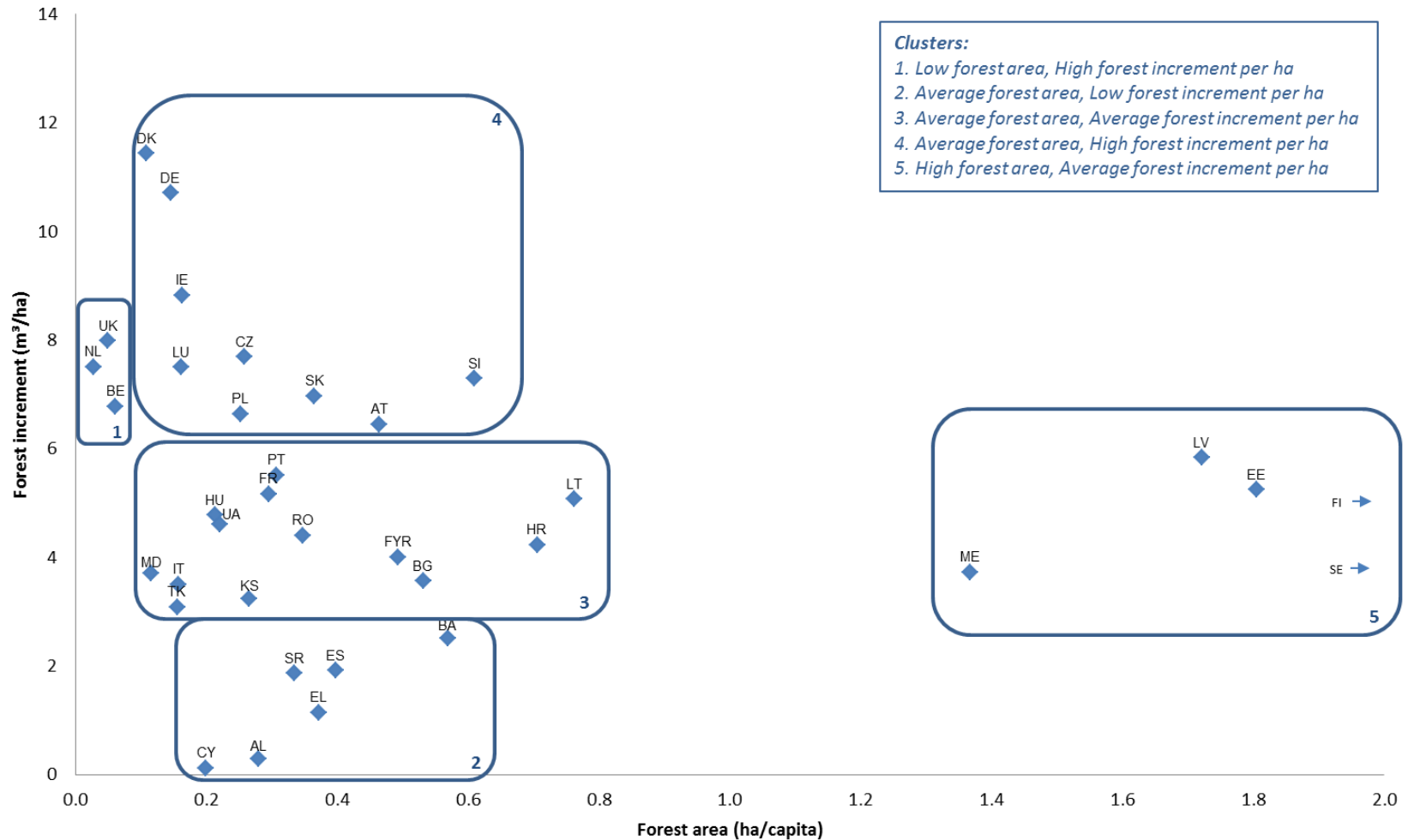
Country clustering

Agricultural land vs Forest land

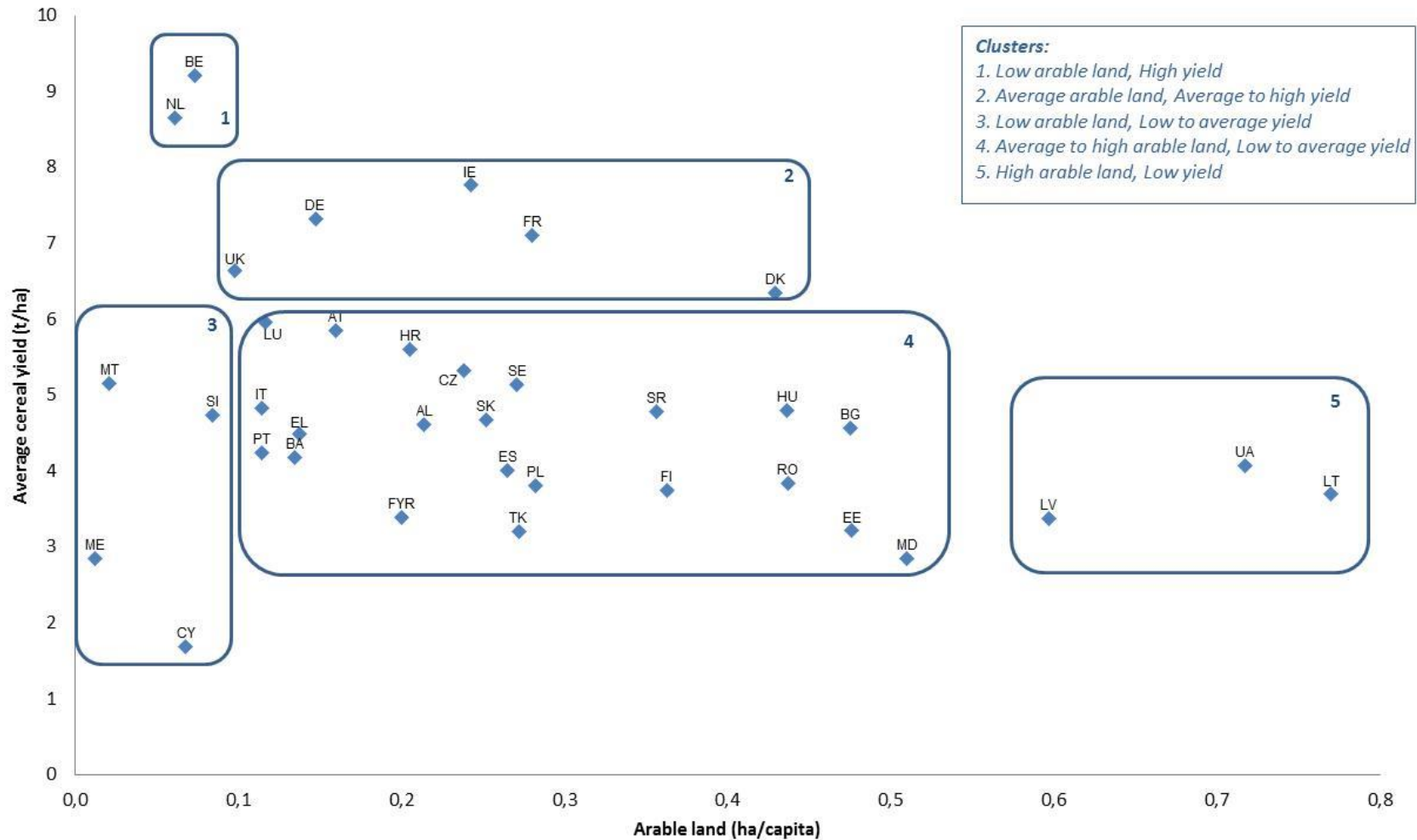


Country clustering

Total forest land vs Forest increment



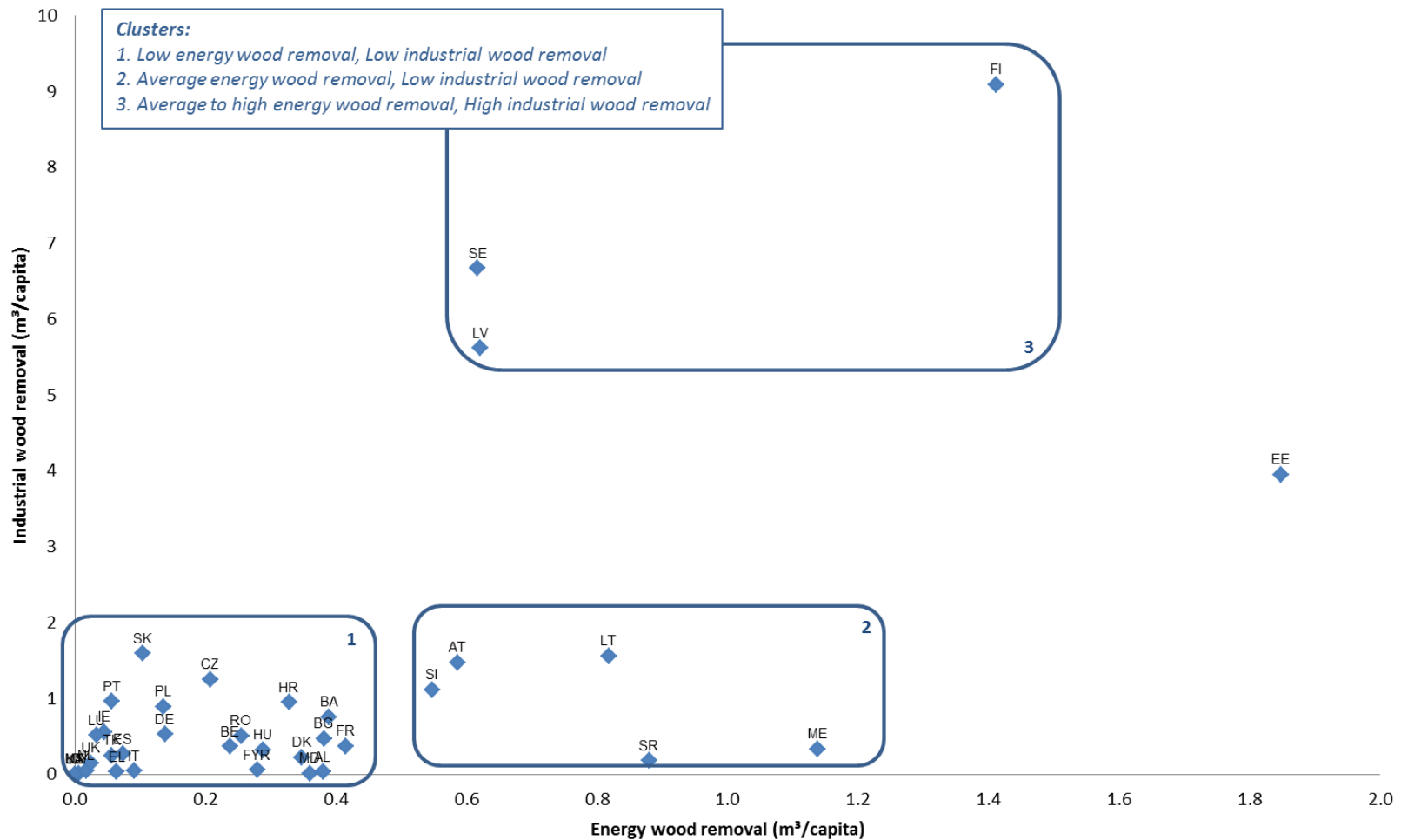
Arable land vs Yield



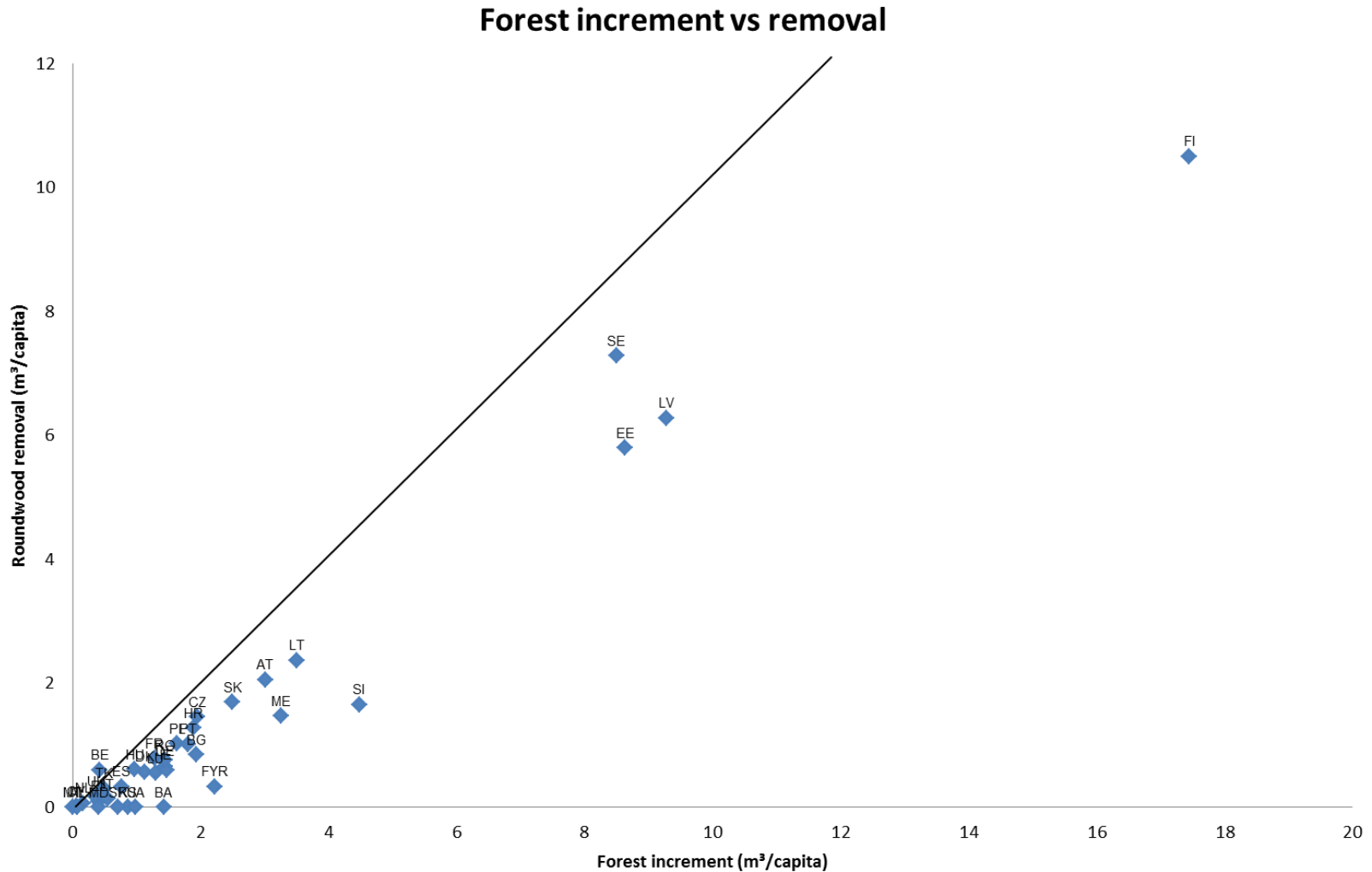
- **Biomass mobilization in relation to potential**
 - Use of forest biomass for materials and energy
 - Use of agricultural land and residues for non-food purposes
 - Import reliance
- **Sustainable resource management**
 - Share of sustainable forest management
 - Sustainable agricultural practices
 - Status of waste management (landfill)
- **Value chain efficiency**
 - Share of CHP in bio-electricity
 - Role of district heating
- **Balance between different biomass utilizations (link materials-energy sectors)**
 - Importance of wood & paper (pulp) industries
 - Importance of food industry

Biomass mobilization: Forest increment & harvesting

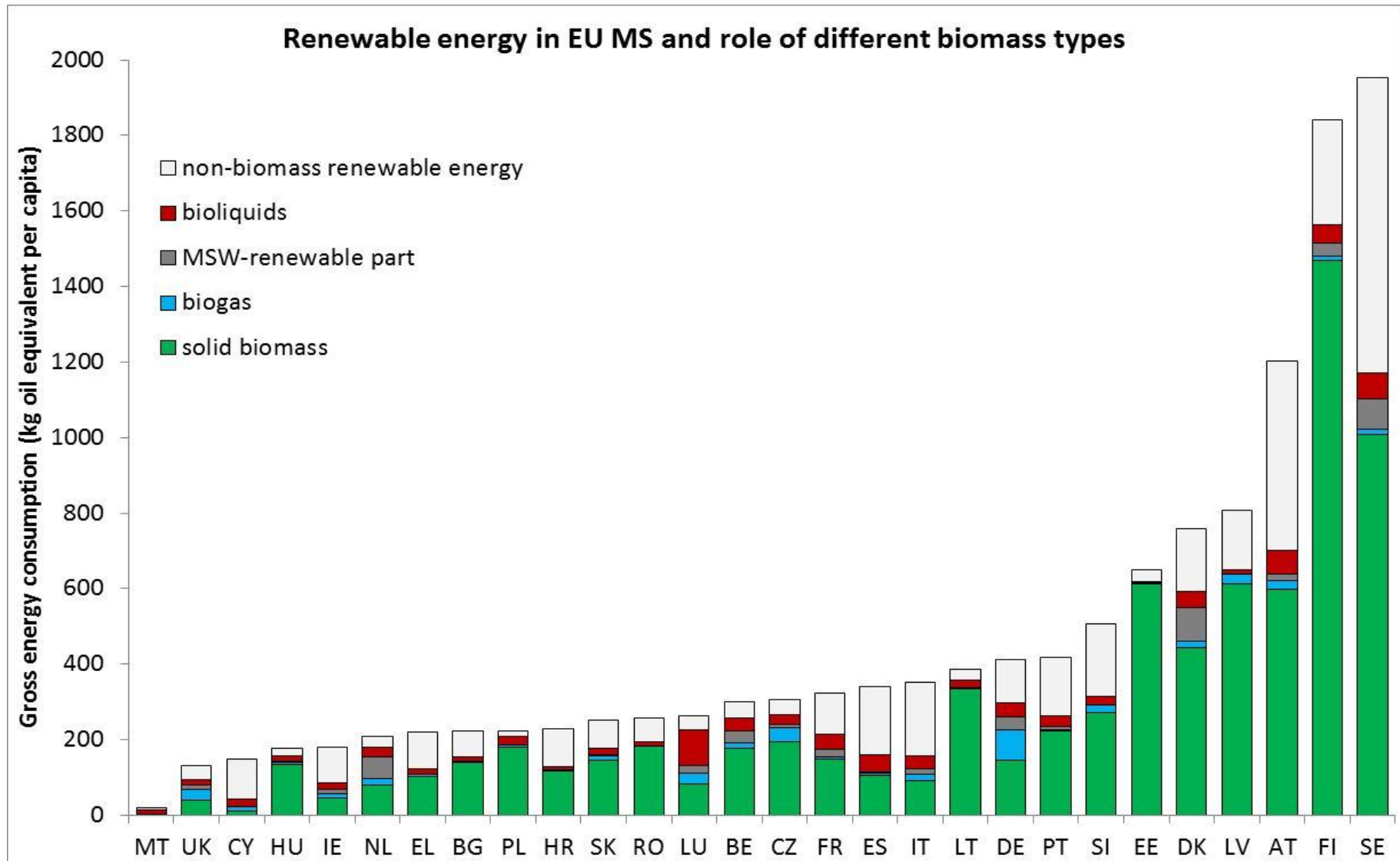
Roundwood removal - Energy vs Industrial



Biomass mobilization: Forest increment & harvesting



Role of bioenergy



Sustainable resource management: forest certification



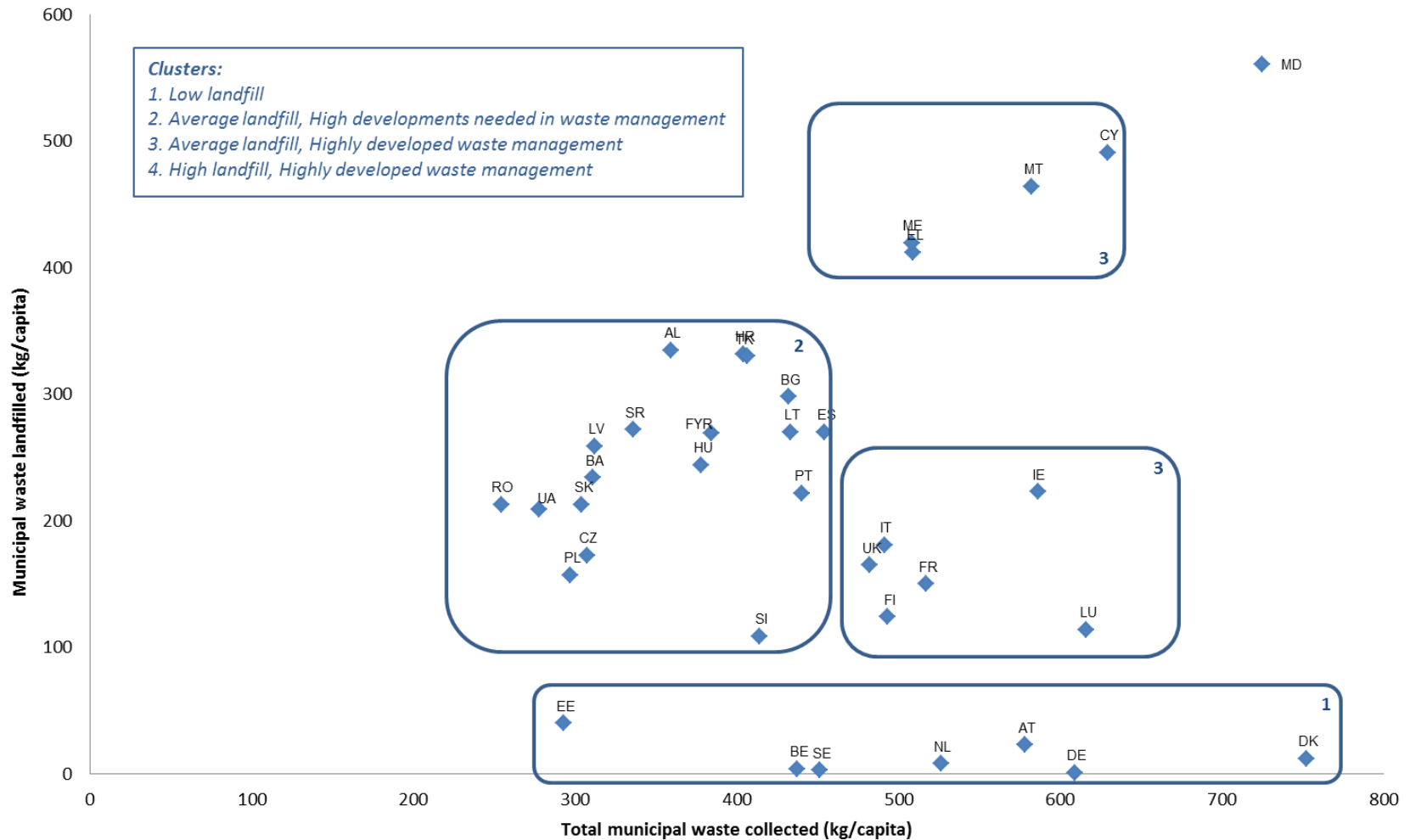
Europe	Total area (ha)
AUSTRIA	587
BELARUS	7,853,725
BELGIUM	23,259
BOSNIA AND HERZEGOVINA	1,495,526
BULGARIA	789,644
CROATIA	2,039,223
CZECH REPUBLIC	49,921
DENMARK	212,161
ESTONIA	1,262,037
FINLAND	1,233,604
FRANCE	31,390
GERMANY	1,053,659
HUNGARY	305,134
IRELAND	448,301
ITALY	94,089
LATVIA	1,697,349
LITHUANIA	1,083,486
LUXEMBOURG	21,521
NETHERLANDS	136,311
NORWAY	417,900
POLAND	6,937,643
PORTUGAL	366,666
ROMANIA	2,463,874
RUSSIA	39,976,251
SERBIA	1,001,943
SLOVAKIA	149,387
SLOVENIA	260,291
SPAIN	225,562
SWEDEN	12,216,619
SWITZERLAND	606,438
UKRAINE	2,668,785
UNITED KINGDOM	1,588,258



Europe	Certified Area (ha)
Austria	2'923'562
Belarus	8'758'200
Belgium	298'500
Czech Republic	1'753'879
Denmark	257'769
Estonia	1'028'712
Finland	17'582'892
France	8'034'570
Germany	7'327'619
Italy	824'049
Ireland	376'108
Latvia	1'683'604
Luxembourg	32'509
Norway	9'142'702
Poland	7'627'617
Portugal	252'839
Russia	0
Slovak Republic	1'243'380
Slovenia	31'016
Spain	1'847'847
Sweden	11'354'853
Switzerland	239'167
United Kingdom	1'351'505
Total	83'972'898

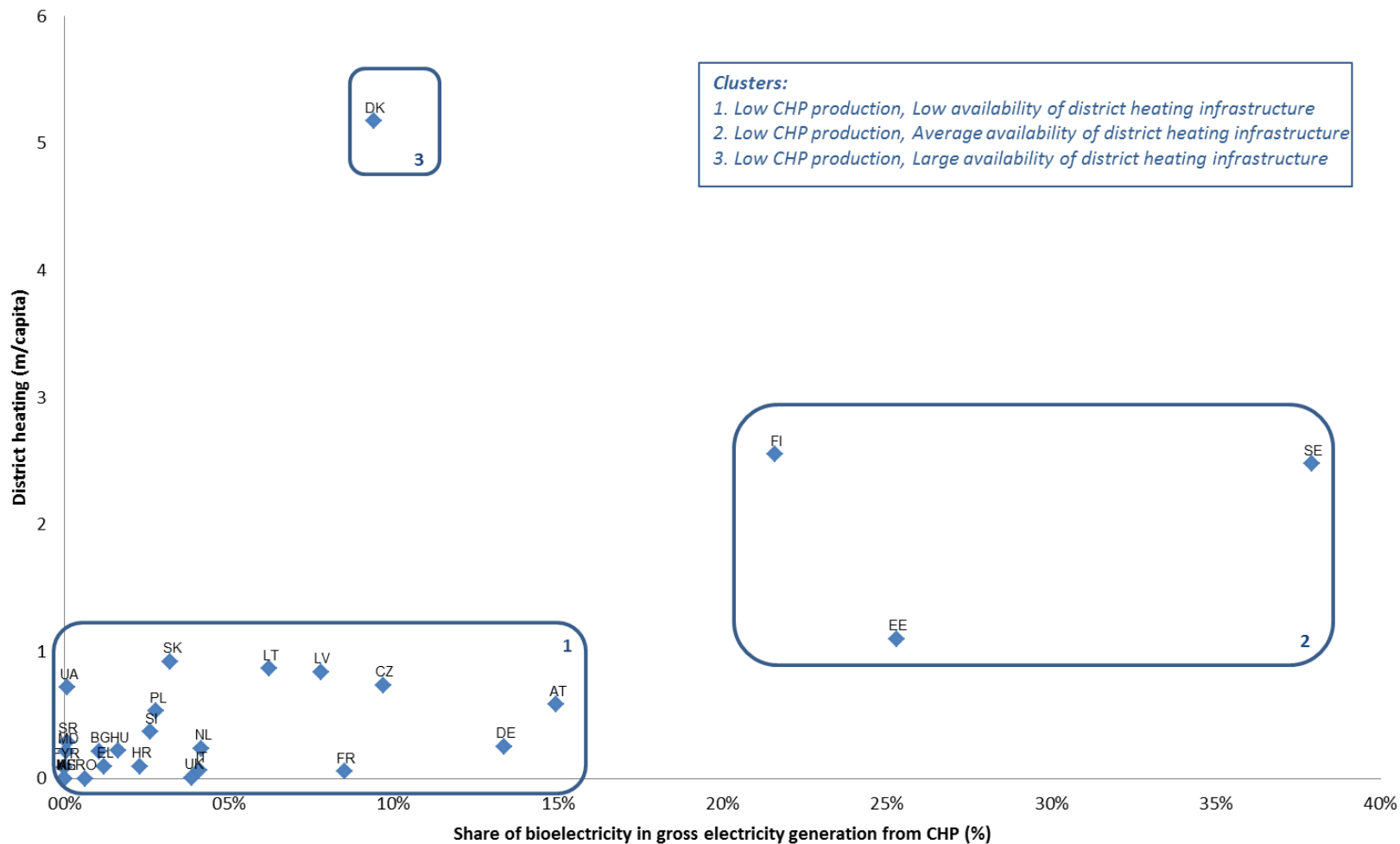
Sustainable resource management: waste management

Municipal waste landfilled



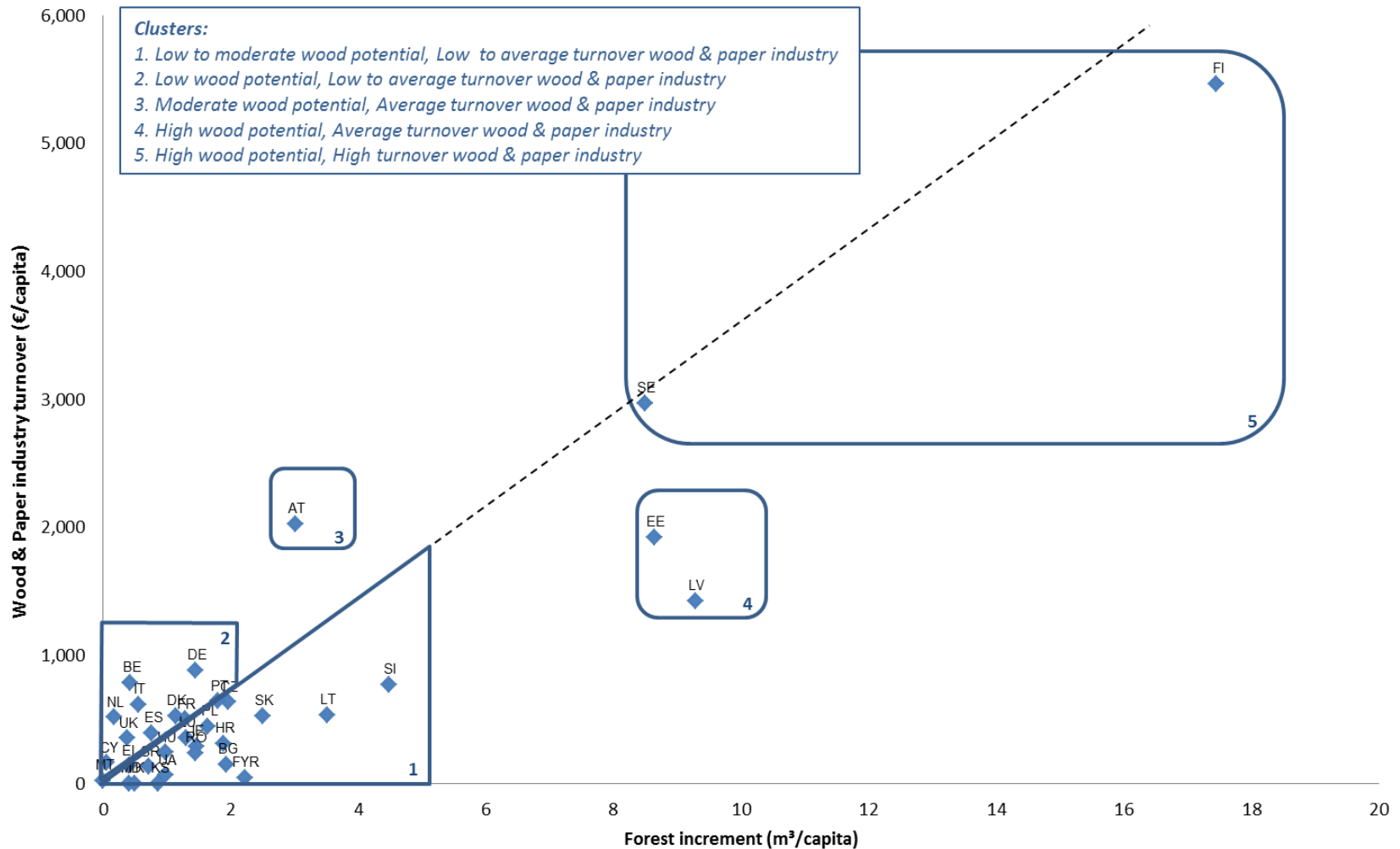
Value chain efficiency

CHP share vs District heating



Link materials – energy sector

Wood & Paper industry turnover vs Forest increment



Step 3: Link performance criteria to policy frameworks



- **Description of policy framework in relation to the specific biomass/value chain (cfr. policy database)**
 - Type of support: feed-in tariff, obligation, certificates, subsidies, technical norms, procurement rules, ...
 - Sustainability addressed? through which policy field? (energy, forestry, environment, agri policy)
 - Efficient use addressed? (e.g. CHP requirement)
 - Competition addressed? (e.g. hierarchy, exclusion of certain feedstocks)

- Forest-based biorefineries in Finland (link with pulp & paper industry)
- Forest-based (district) heating in Austria and Sweden (link with forest based industry)
- Straw-based district heating in Denmark
- Biomethane (SNG) in Sweden and Germany
- Large scale bio-electricity (including imports & sustainability assurance) in UK, Belgium, Netherlands
- Lignocellulosic crops in France, Spain
- Second generation biofuels in Spain, Denmark, Germany, France, Sweden

Examples: sustainability requirements of solid biomass *(link to imports)*

- **UK: Renewables Obligation/Contracts for Difference**
 - Monthly reporting if >50 kW
 - >1MW: GHG criteria, land criteria (non-wood), timber criteria (wood)
- **NL: Energy Agreement, SDE+**
 - Limit of 25PJ co-firing
 - Sustainability criteria solid biomass (co-firing & >10MW dedicated): GHG, carbon debt, iLUC (LIIB), GHG (60% reduction)
- **BE: Green Power Certificates (FL); Green Certificates (WA, BR)**
 - Flanders: certificates based on net electricity production (MWh) ; some resources (wood, waste) not eligible if other valorisation
 - Wallonia: certificates based on fuel cycle GHG savings compared to best available technology for E & H production (STAG 55%; NG boiler 90%)
- **SBP: Sustainable Biomass Partnership: voluntary system for large importers**



- **Finland:**
 - Support for biorefineries & 2G biofuels, based on residues of existing paper & pulp industries
- **Belgium, Flemish Green Power Certificates:**
 - (regional) woody resources are not eligible for green certificates if they can be used by the wood processing industry,
 - biomass from waste not eligible if it can have a valorisation by recycling into materials, fodder, ...
- **Germany, Feed-in tariff**
 - Deletion of the FiT for waste wood combustion for new systems to prevent competition with other uses.
 - electricity from biogas: the use of maize and corn is limited to 60% (relative to mass) to prevent excessive maize cultivation (*competition for land*).
- **EU level:**
 - iLUC directive (cap on crop-based biofuels in the frame of food vs fuel)
 - Waste framework directive (material hierarchy)

- **Requirement:**

- DK: Electricity Feed-in tariff only applies to CHP
- SE electricity ordinance: some biomass types only receive certificates when burned in CHP
- DE EEG (Erneuerbare-Energien-Gesetz): added benefit (heat use or fertiliser use) is needed for feed-in tariff biogas
- ...

- **Bonus/premium**

- FIN: heat premiums for biomass CHP installations
- LU: higher FIT when heat is generated
- NL – SDE+ (Stimulerend Duurzame Energieproductie) : bonus on the use of heat from CHP plants
- ...

Examples: efficiency & emission levels

- **Financial incentives under condition of minimum efficiency requirements and/or emission requirements**
 - SDE incentives scheme in NL,
 - FR schemes for heat, CHP and renewable electricity,
 - BE subsidies for boilers
 - DE wood heating vessels
 - SK biomass boilers for households
 - ...
- **Technical requirements of installations,**
 - AT, BE, DE requirements for small scale heating installations

- **Support for renewable energy and bioenergy is on the basis of resource efficiency (*reduce consumption of depletable resources*)**
- **Various MS regulations contain resource efficiency elements, but no uniform approach; coverage in different policy levels**
- **Element of competition / cascading in a biobased economy gains interest**
- **Input of BiomassPolicies & S2Biom in terms of benchmarking policy approaches & support future policy formation towards resource efficiency**
- ***S2Biom Benchmarking exercise on-going***

Thank you for your attention !!

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