



Policies and recommendations for decarbonisation of the CHP and heat only sector

April 19th 2021 Gustav Melin

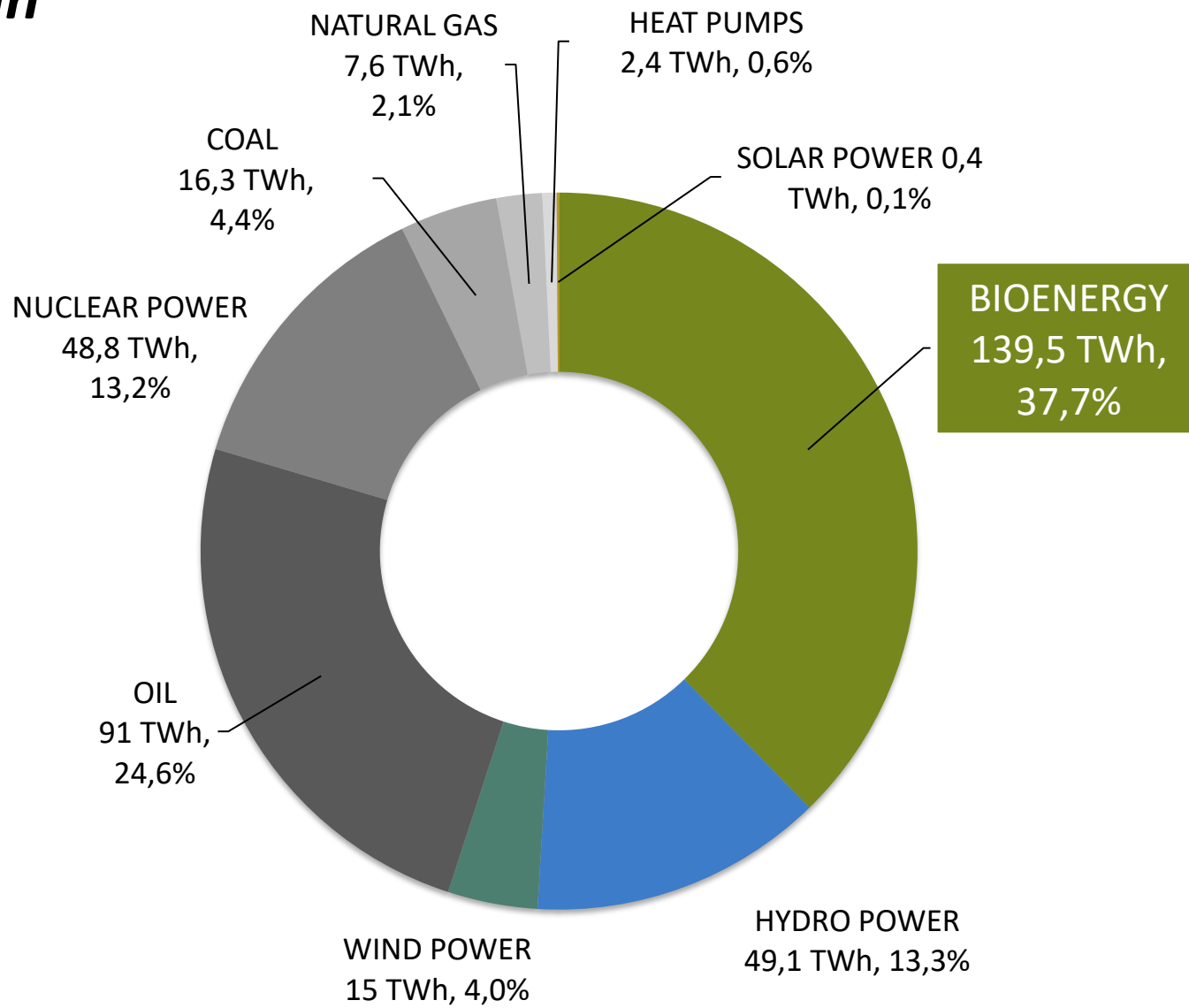


The Swedish Bioenergy Association

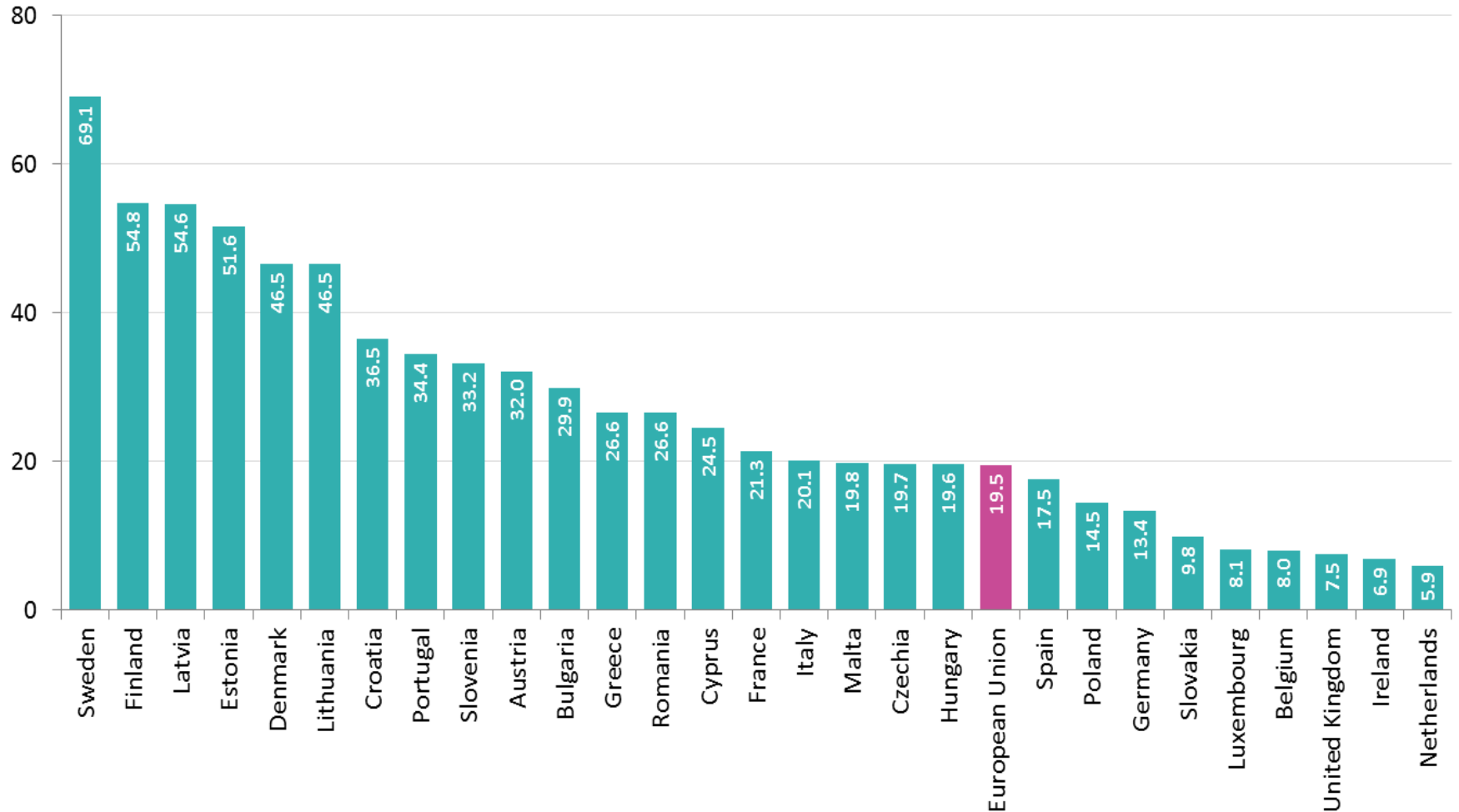
Our mission is to increase the use of bioenergy in an economically and environmentally optimal way.

Interest organisation for companies and private persons. Almost 300 member companies - producers, users, manufacturing firms, consultants and service companies etc.

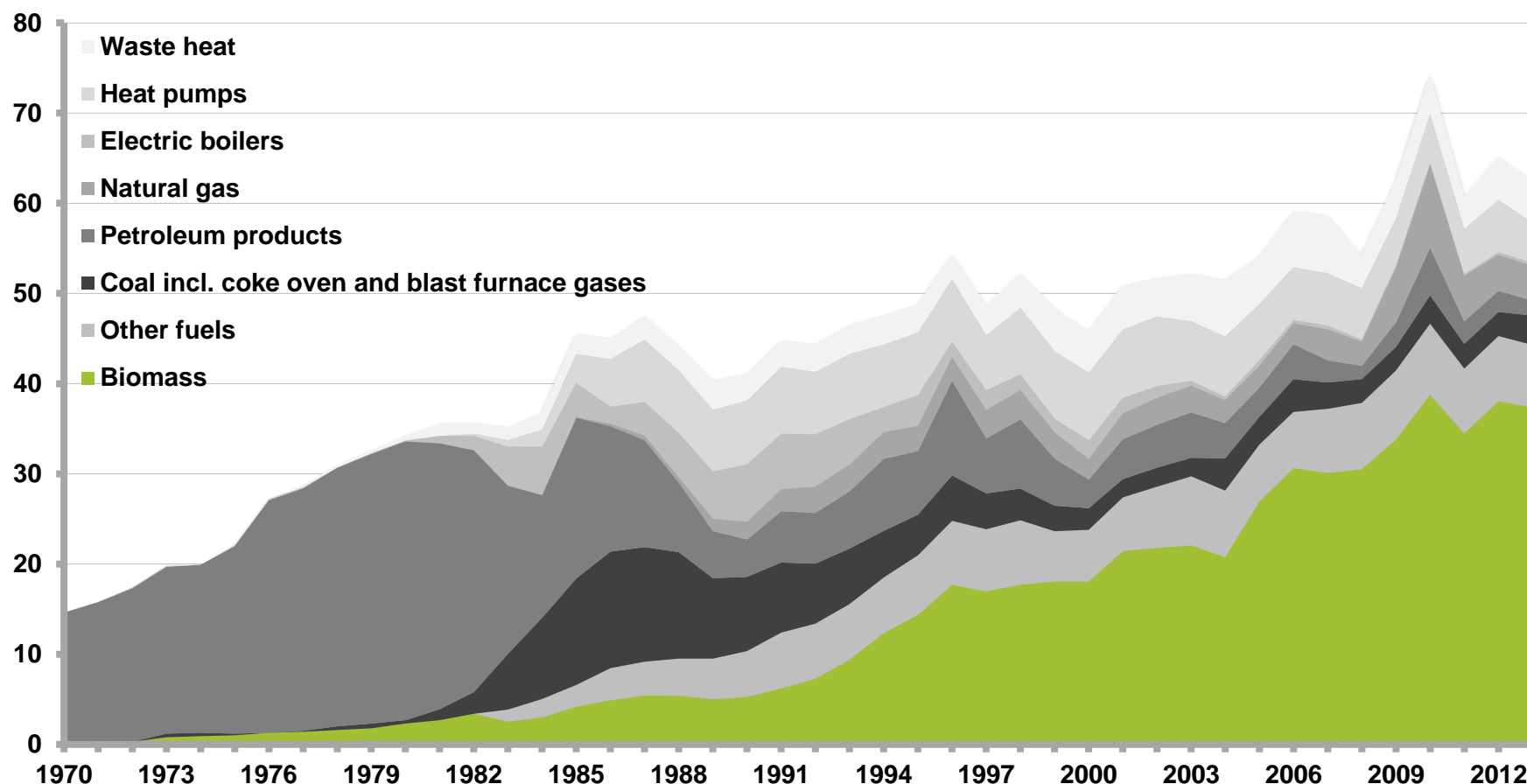
» *Energy use in Sweden 2019*



Share of renewable energy in total energy used for heating in Europe from 2017, Sweden 69,1 %.



Energy supplied to district heating, 1970–2013 (TWh)



During the previous 30 years, biomass has taken over as fuel in Swedish district heating. Fossil fuels dominated in the 1980s, but today bioenergy and "other fuels" (peat and waste) account for 75 percent of consumed fuels.

Source: Swedish Energy Agency and Statistics Sweden.

The biomass from forestry is mainly residues



Chips, bark, sawdust, low-quality and rotten wood, etc



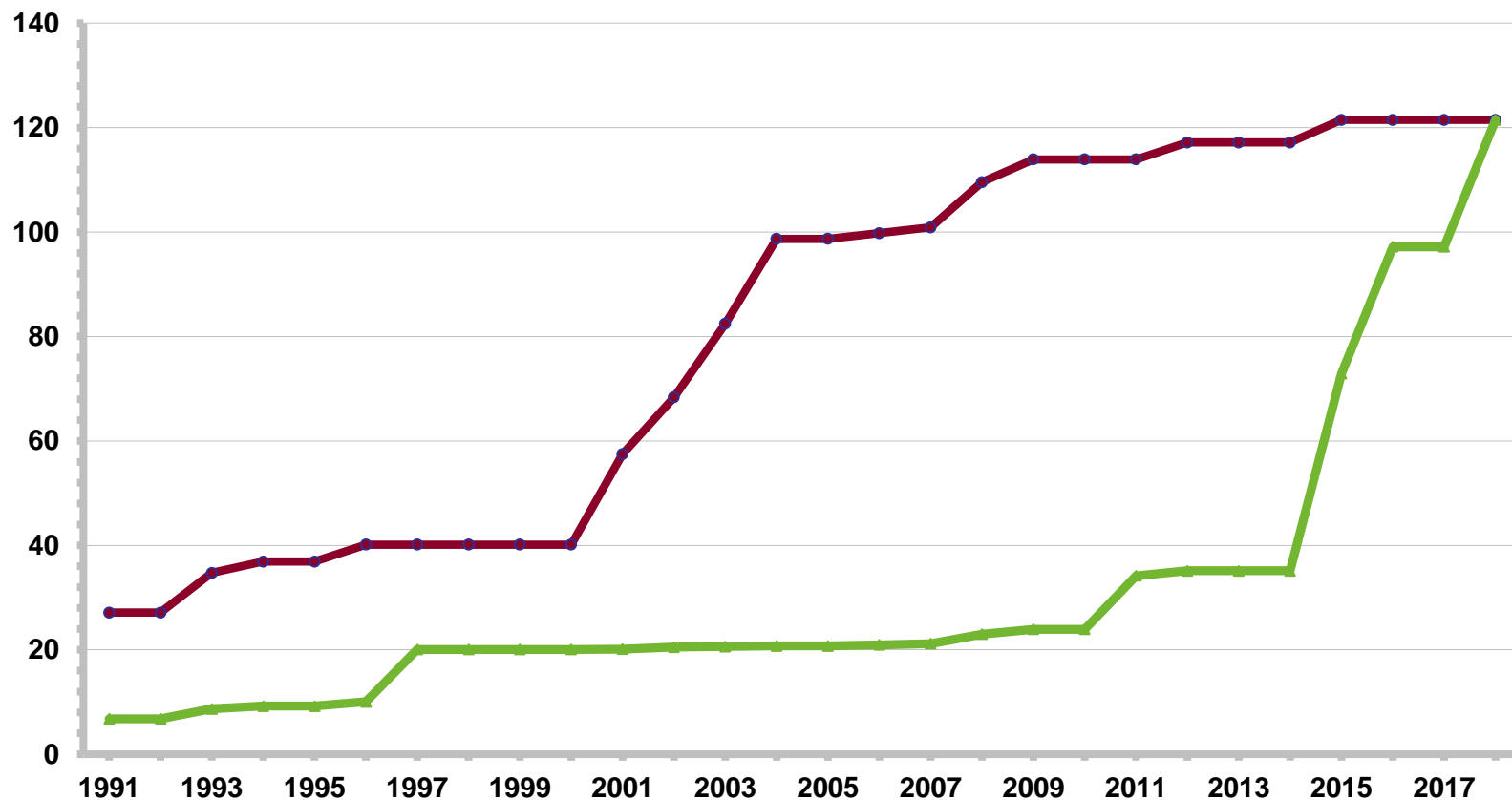
Igelstaverken, Södertälje.

100 000 people

Combined Heat and Power
plant south of Stockholm

200 MWth for District Heating.
85 MWe for Power production

The Swedish carbon tax 1991–2018, €/ton



The carbon dioxide tax was introduced in 1991, and has been increased in several steps since then.

Red: the general carbon dioxide tax level, paid by the residential and service sector.

Green: The tax paid by industries outside ETS that are not required to have emission allowances.

Source: Swedish Finance Ministry / Svebio

- **Easy to apply**

All countries already have some kind of energy taxation. It is administratively easy to introduce carbon tax in all countries at a low level.

- **Simple**

All fossil energy is taxed according to its content of coal. An advantage when all countries have carbon tax.

If for example bioenergy, or other energy, is produced with input of fossil fuels, these inputs will be taxed according to their fossil carbon content. The fossil part of the bioenergy will be taxed and the biomass will be more climate efficient.

- **Tax neutral**

Carbon tax must not lead to higher taxation in general. The Carbon tax can be raised at the same time as other tax is reduced.

- **Economic**

The Carbon tax will make it more profitable to use fossil fuels efficiently. It will also make it more profitable to switch to renewable energy sources or to abstain from using fossil energy altogether.

- **Efficient**

The purpose of carbon taxation is not to punish people for their life style or technical equipment today, but to help them make the right choices and investments for the future.

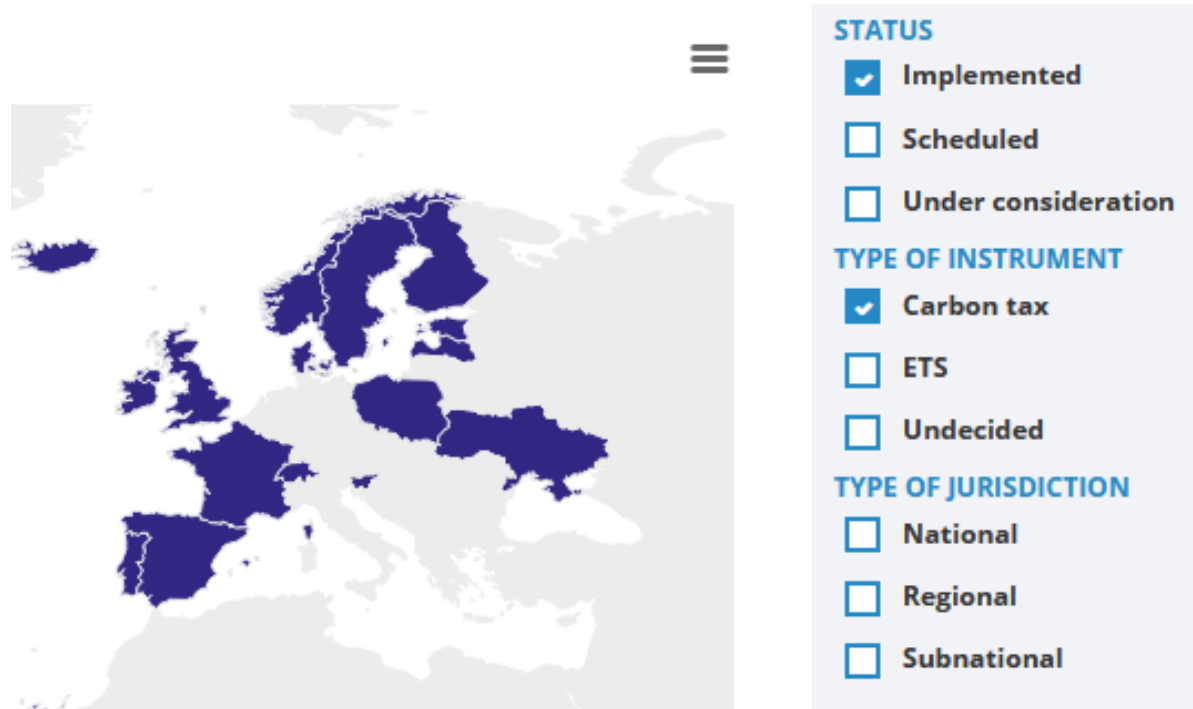
- **Carbon tax and energy poverty**

Rich people pay more carbon tax. They have larger house, several cars and travel more. Still higher heating costs can be a burden to poor people. We recommend governments to use part of the carbon tax income to support poor people from increased costs.

Swedish Carbon Pricing

- CO₂ tax on motor fuels and heating fuels since 1991
 - Based on fossil carbon content of fuels
 - Introduced along with existing energy tax. Part of major general tax reform.
- EU Emission Trading Scheme (EU ETS) since 2005
 - Emissions of fossil CO₂ and other greenhouse gases
 - Large part of heavy industry, heat and power installations
- No CO₂ tax on industry covered by EU ETS **until 2020**

Current implemented Carbon tax in Europe 1 nov 2020



- Since then Germany is added to the list

In other countries

• Sweden	115	€/ton
• Switzerland	90	€/ton
• Finland	53	€/ton
• France	44,6	€/ton
• Germany	25	€/ton in 2025, 55 €/ton

Other support schemes in Sweden

- "Climate Step" in Swedish "Klimatklivet"
- "The Industry step" Industriklivet.
 - Support schemes where you have to make an application and show that the investment is unprofitable without support and still your application is valued due to highest reduction of carbon emission per invested €.
 - Doesn't support the cost efficient investments, support more expensive solutions and application efficient companies not always the best solutions.
 - Does not support a general development.

Brewery

Mission:

- Conversion from oil to powder
- 12MW
- 2,5ton pellets/h

Result:

- 10 000 tons reduce of CO₂/year (-80%)
- 21 000 tons/ pellets year





BIOMASSE DANS L'INDUSTRIE FONDS CHALEUR ET FONDS DECARBONATIO

AAP BCIAT

Fonds Chaleur – Climate step in France

Investments support biomass
plants smaller than 12 000
MWh/year



Date de clôture N°1 : Lundi 17 mai 2021 à 16h00

Date de clôture N°2 : Jeudi 14 octobre 2021 à 16h00

<https://agirpourlatransition.ademe.fr/entreprises/dispositif-aide/20210311/bciat2021-56>

E : 19 et 25 mars 2021, 8 avril 2021

33

Decarbonisation Fund – new support

Support of operational costs, up to 15 years.

Industry investments only

ADEME will be able to spend 1,2 billion € in this fund.

Multi fuel wood powder burners competitive without carbon taxes !

€135/ton wood pellets is
\$61/barrel of crude oil is

€28,1/MWh
\$38,4/MWh or €33,6

Currency ratio USD/€ 23rd of November 2018

The November 2018 Brent crude oil price corresponds to a pellet price of €161/ton.

**today in April 2021 the crude oil price is \$66,7/barrel
which is €35/MWh corresponding to €170/ton wood
pellets.**

1 barrel is 159 liters of crude oil containing 1,59 MWh

1 ton of pellets is 4,8 MWh

Great potential for future increase in Bioenergy.

- Many countries has large unused resources in arable land, waste and forest by-products.
- Many countries has well educated people who can contribute and develop the industry. In heating, combined heat and power and in the transportation sector.
- World Bioenergy Association and Bioenergy Europe are good bases for co-operation.



www.bioenergyinternational.com

SVEBIO

www.svebio.se