

STATE OF THE NORDIC REGION 2020

Appendix – Chapter 9: Methodology



Definition of the Nordic bio-economy, by NACE industry sector

The definition of the Nordic bio-economy used in this report is based on the Norwegian definition in the report *Value Added in the Norwegian Bio-economy*.¹ Workshops attended by a team of researchers and experts from Nordregio, the Nordic Council of Ministers and *Bæredygtighed 2030* (Sustainability 2030) compared the Norwegian definition with definitions developed by the Natural Resources Institute Finland² and the Statistics Sweden report *Bioekonomi – Utveckling av ny regional statistik* (Bio-economy – Developing new regional statistics).³

- The aim was to come up with a definition based on these comparisons.
- Sectors of agriculture, forestry, wood-product industries, pulp and paper industries, fishing, hunting and the food industry were categorised as being entirely within the bio-economy.
- Some indirectly relevant sectors were excluded to facilitate harmonisation of data between countries, e.g. sectors categorised as detailed employment sectors in some countries but not in others.
- Estimates are given in the lists that follow. Unless otherwise indicated, the estimate was made by the team at Nordregio.
- For Iceland, Greenland and the Faroe Islands the estimates are more approximate because the data was less complete.
- This annex contains a more in-depth description of the sectors included, why they are included, the calculations used and how they were made.

¹ NORUT (2017) https://www.researchgate.net/publication/320181533_Value_added_in_the_Norwegian_Bioeconomy

² LUKE (2018) The Principles for Monitoring the Bioeconomy <https://www.luke.fi/wp-content/uploads/2018/03/The-principles-for-monitoring-the-bioeconomy.pdf>

³ Statistics Sweden (2018) *Bioekonomi – Utveckling av ny regional statistik* https://www.scb.se/contentassets/c42ded21253f484ab8ce1b27054488bb/mi1301_2016a01_br_mi71br1803.pdf

Electricity and heat

- For these sectors we calculated an adjusted percentage from each country, depending on the volume of renewable energy.

FI

- Production of electricity from hydropower and wind power (35111): 100%.
- Other sectors related to the production, transmission and distribution of electricity: 45% in 2016 and 40% in 2008. Estimates are based on the share of renewable energy/electricity according to Statistics Finland; electricity generation by energy source in 2016
- Heat production and distribution-related sectors in 2016: 33%. Estimates are based on the share of re
- Newable fuels for CHPs (according to Finnish Energy: *Kaukolämmön yhteistuotantosähkön tuotantoon käytetyt polttoaineet*; 2016 percentage used for 2008 because of lack of data.
- Bio-gas manufacture, distribution and trading are not included due to the relatively low production volume.

SE

- Sectors related to production, transmission and distribution of electricity: 50% in 2017 and 55% in 2009. Estimates are based on SCB data on electricity generation and fuel consumption (MWh) by region, mode of production, fuel type and year.
- Bio-gas is not included in the gas-related sectors (35220–35230) due to the relatively low production volume.

NO

- Production of electricity from water, wind or biofuels: 100%.
- Sectors related to transmission, distribution or trading in electricity: 98% in 2017 and 95.5% in 2010. This is based on the share of renewable electricity from total electricity production according to SSB, Production of electricity (GWh).
- Bio-gas is not included in the gas-related sectors due to the relatively low production volume.

DK

- Sectors related to production, transmission, distribution and trading in electricity (351100–351400): 70% in 2017 and 31% in 2010. The share of renewable electricity production in 2017 (hydro, wind and other) comes from the Danish Energy Agency <https://ens.dk/sites/ens.dk/files/Statistik/pub2017dk.pdf>
- Bio-gas is not included in the gas-related sectors due to the relatively low production volume, most of which is used for heat and electricity.
- Sector 353000 heat supply: 55% in 2017 and 34% in 2010. Based on the share of bio-heat according to the Danish Energy Agency <https://ens.dk/sites/ens.dk/files/Statistik/pub2017dk.pdf>

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- **IS:** 73% of Sector D. Electricity, gas, steam and air conditioning supply are categorised as part of the bio-economy. This estimate is based on Nordic Statistics figures for energy consumption in 2016.
 - **FO:** 51% in 2017 and 45% in 2009 for the energy sector. These estimates are based on the Environmental Agency's figures for the share of renewable electricity production in the Faroe Islands.
 - **GL:** 80% for the electricity and water supply sectors. This estimate is based on renewables' share of electricity according to Climate Greenland.

Clothes and textiles

- For all of the countries, all second-hand goods and stores (except antiques) were included (100%).
- The Swedish definition included 48% of manufacturing of textile, clothes and leather products. Based on this, we applied 50% to textiles, clothing, footwear and leather-related sectors in the analysis.
- For all of the countries, the definition includes 50% of the sectors involving wholesale, repair, retail sale, manufacture and sales agents .
- **IS:** the definition includes 50% of sector C: 13-15, manufacture of textiles, clothing and leather products.

Furniture

- For all of the countries, the definition includes 50% of the furniture-related sectors: wholesale, repair, retail sale, manufacture, sales agents.

Shipping and boats

- For all of the countries, 50% of repair, maintenance and retail sale of ships and boats including shipyards (and boating accessories).

Supermarkets

- For all of the countries, 80% of retail sales in non-specialised stores, such as large supermarkets selling groceries. This figure is based on the estimated proportion of ICA sales of food and food products in Sweden.

Tourism and accommodation

- For all of the countries we included 25% of the accommodation and tourism-related sectors. This proportion is based on the LUKE definition. The Norwegian definition does not include tourism or accommodation-related sectors.

Recreation and others

- For all of the countries, the definition includes 25% of recreation services such as sport facilities, skiing centres, museums, libraries or botanical gardens. This estimate is based on the Finnish definition.
- For all of the countries, the definition includes 25% of beauty treatment activities, funeral and related activities, and physical well-being activities (e.g. heat from cremations used for district heating).

Chemicals

- For all of the countries, manufacture of paints, varnishes and similar coatings, printing ink and mastics (15%).
- For all of the countries, manufacture of soap and detergents, cleaning and polishing preparations, and manufacture of adhesives or glues (30%).
- For all of the countries, essential oils (50%).

Pharmaceuticals

- Manufacture of basic pharmaceutical products and pharmaceutical preparations, 100% for all of the countries.
- For all of the countries, 25% of pharmacies, wholesale of drugs and pharmaceutical goods, retail sale of medical and orthopaedic articles, and retail sale of cosmetics and personal care products (including retail sale of cosmetic and toilet articles in specialised stores).

Research and consultancy

- For all of the countries, the definition includes 100% of research and experimental development on biotechnology.
- For all of the countries, the definition includes 25% of other research and experimental development on natural sciences and engineering (7219).
- For all of the countries, the definition includes 25% of other research and experimental development on natural sciences and engineering, and research and experimental development on social sciences and humanities.

Building, constructing and building materials

- Construction was partially (30%) included in LUKE's definition. We applied that percentage to the following sectors for Finland and Norway (17% was used for the related sectors in Sweden based on the report by SCB, and 10% was used for the related sectors in Denmark):
 - Construction of residential and non-residential buildings (41200)
 - Construction of water projects (42910)
 - Development and building of civil engineering projects (42991).

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- For all countries, 30% was applied to the following sectors:
 - Joinery installation (43310)
 - Floor and wall covering (43330)
 - Floor and wall covering, wholesale of wallpaper and floor coverings, and retail sale of wallpaper and floor covering.

We also applied the following to construction-related sectors linked to the bio-economy:

- Manufacture of wallpaper: 100%
- Wholesale of wallpapers and floor coverings: 30%
- Non-specialised wholesale of construction materials: 30%.

Separate sectors included for certain countries that specify them in their statistical accounts

FI

- Washing and (dry-)cleaning of textile and fur products (9601): 50%.

NO

- Washing and (dry-)cleaning of textile and fur products (96.010): 50%.

DK

- Manufacture of wind turbines and parts (sector 281110): 100%.
- Disposal of waste with energy production (382120): 100%.
- Agricultural Consultants: 100%.
- Food control (712010): 100%.