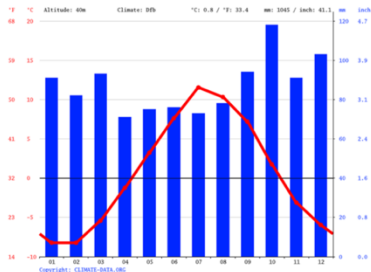


## 1.0 Sustainable lifestyle

### 1.1 environmental characteristics

The environmental conditions in Hammerfest, Norway differ a lot to the ones we are familiar with in Münster, Germany. In Hammerfest the people have to deal with very heavy snowfall and cold temperatures going down to minus 10.7 degrees Celsius in January with only 5 months going slightly above 0 degrees Celsius.



Therefore, they have to wait for example on the streets in their cars because of too much snow, which costs a lot more of Gasoline.

In general, the cold temperatures lead to a higher consumption of energy because they have to heat more than we have to do in Münster.

Another aspect of environmental conditions that lead to a higher consumption of electricity is the location inside the Arctic Circle, near the top of the world's axis.

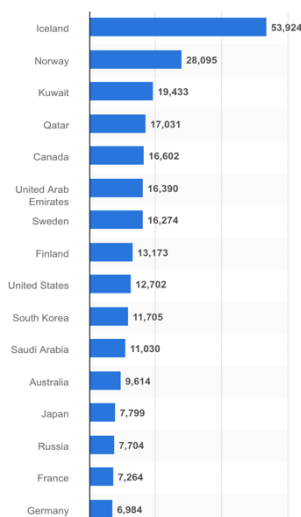
The effect is total darkness from mid-November to mid-January and continuous light from mid-May to the end of July.

All in all, in Hammerfest are longer dark periods than bright ones. The inhabitants use all in all much more lighting over the year, in the school building, at home, on the streets or in other public places to overcome the dark months.

### 1.2 Energy consumption

Additionally, the way our Norwegian exchange students use electricity is very different from which standards we know. They do not care if the light is on or not, even if they are not using the room for a longer period of time. It is also a cause from their intense focus on electricity production. Germany is in the 21<sup>st</sup> place in comparison to average electricity prices for new customers in the first quarter of 2024, if the different purchasing power in the countries is taken into account.

In contrast in Norway the prices for electricity are only the half of the costs in Germany. Norway is very energy self-sufficient and due to the high amount of renewable electricity and in general a high energy production in their own country without any imports, the prices fall.



The electricity consumption per capita in 2022 was about 28,095 kilowatt-hours in Norway, whereas in Germany it had a about a quarter of this amount with an electricity consumption per capita of 6,984 kilowatt-hours.

### 1.3 Differences in infrastructure

Further differences regarding to the sustainable lifestyles in Hammerfest and Münster, lie in the infrastructure. Hammerfest is very far away from huge and dense cities and offers a very wide and empty landscape. The public transport around the city Hammerfest only includes busses, which drive only a few times a day. Other public transports like the train or subway does not exist there so they have to use the car or, to get out of the region around Hammerfest, use the plane.

This is of course an option which is bad for our environment and a method of traveling which damages our planet the most. But on the other hand, the fact that they do not get away so easy, probably keep them away from traveling that often.

In Münster we have significantly better opportunities and connections to leave our city with the public transport and also by car. But of course, we have also more opportunities with the plane, so we are consequently more encouraged to use them.

## 2.0 Sustainable energy resources - wind power

With the help of wind turbines, the power of the wind can be used to produce electricity. The blades from the turbines collect the wind's kinetic energy. The wind turns the blades by flowing over them. The connection of the blades to a drive shaft, which spins an electric generator, creates the electricity.

### 2.1 Advantages

Wind power has many deciding advantages. First of all, the electricity which is created out of the wind is entirely free of greenhouse gas emissions and once a wind turbine is build, only the wind is needed to create energy. Due to advanced technology, the costs of wind power become less. Since 2021, renewables including electricity from the wind, became the cheapest energy source on earth.

### 2.2 Disadvantages

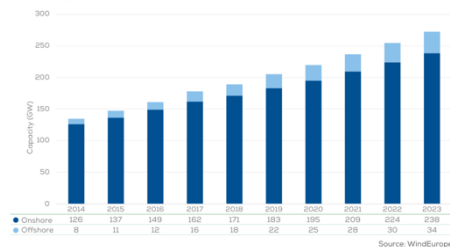
Nevertheless, it can also have a negative impact especially on the wildlife. The animals can be disturbed of the wind turbines which can be very noisy. Furthermore, the huge size, fast speed and high spatial placement of a wind turbine can harm animals and even kill them if they are in the air.

### 2.3 Comparison Germany-Norway

The importance of wind power is significantly higher in Germany than in Norway. Germany, in total (onshore and offshore) had 3,896 new installations in 2023, whereas Norway only installed 35 offshore additions. As a result, the share of electricity demand covered by wind in percentage, in 2023 was also much higher in Germany with 31% than in Norway with a share of 10%.

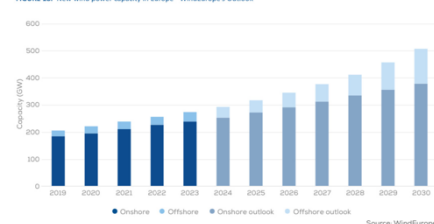
### 2.4 Europe

FIGURE 11. The growth of wind power capacity in Europe, 2014-23



In general, the wind power capacity in Europe grew from 134 GW in 2014 to 272 GW in 2023 and is still growing. Although, the Onshore wind capacity is much higher, the Offshore wind turbines become more and more preferred and favourable with the time.

FIGURE 18. New wind power capacity in Europe - WindEurope's Outlook



The prognosis is also characterised by a strong expand of wind power. The outlook is a constant increase of wind power especially a stronger increase in offshore wind power. 17 years later in 2030, the offshore wind power capacity should increase from 20 GW in 2023 to 120 GW in 2030, in total from 272GW to 510GW, nearly twice as much as now.

### **3.0 Sustainable aims**

The primary aim is the strengthening of German-Norwegian cooperation in terms of energy and climate policy, as well as industrial transformation.

#### **3.1 Oil and gas**

One goal in perspective of Europe's energy supply, is the reducing of the dependence on Russia, which is a country fighting aggressively against other countries like in the war in the Ukraine. Therefore, it is important to guarantee secured energy sources as a substitute for Russia's gas and oil supply. Norway is and will be in future a stable and reliable supplier of these energy resources such as oil and gas to Europe. The Norwegian and German government want to intensify their partnership.

#### **3.2 Hydropower**

Since Norway has the largest hydropower installed capacity in Europe at 33,897 megawatts, Germany wants to cooperate with Norway for the production and supply of hydropower. They aim to reach the highest possible standards for Carbon Capture and Storage.

**By Franka Preuß**

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Workshops/excursions in Münster/Hammerfest

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