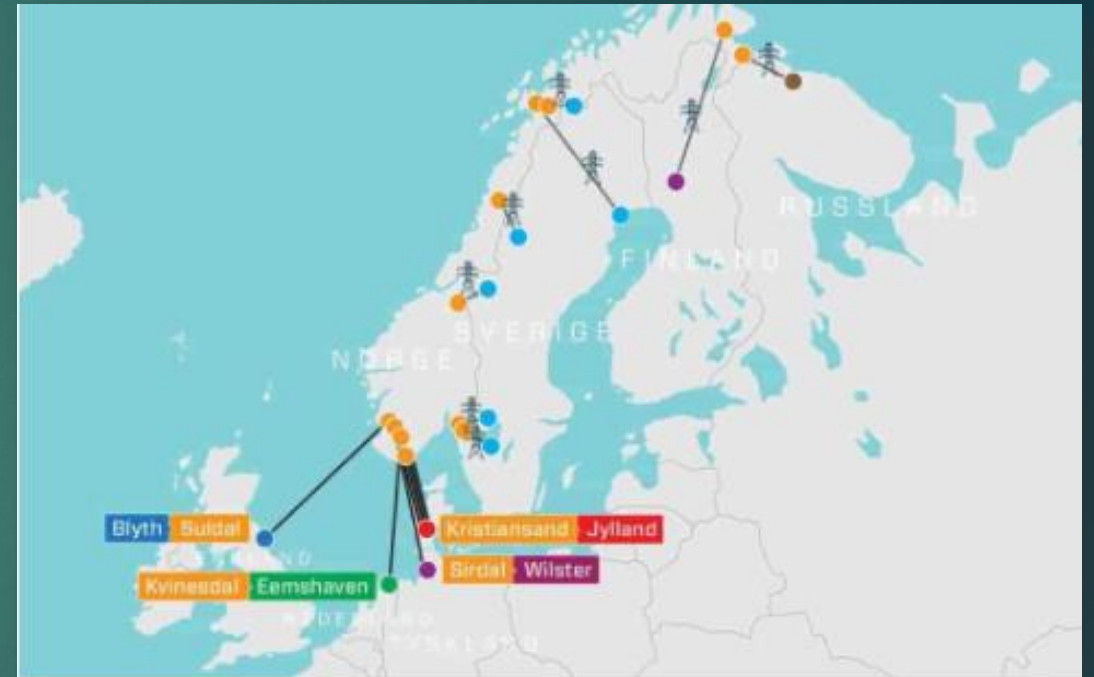


Energy from renewable sources in Oslo and Norway



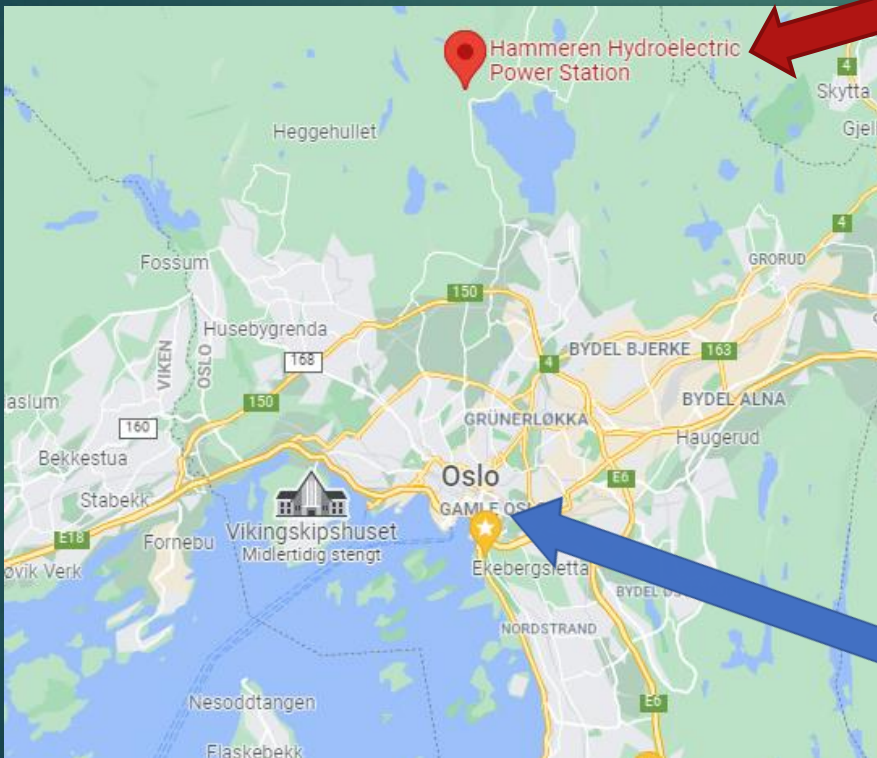
Power production vs power consumption

- Oslo consumes more power than it produces and is dependent on power production elsewhere.
- Norway produced 153TWh pr year, 91% is hydro power
- Norway exports and imports power
- There are 17 power connections to other countries, including four foreign cables to Denmark, one to the Netherlands (Norned), one to Germany (Nordlink) and one to the United Kingdom (North Sea Link). Norway also has power lines on land to Russia, Finland and Sweden.



Hammeren hydro plant

- Only hydro plant still in operation in Oslo
- Built 1900
- Exploits a 105 m waterfall in Maridalen
- Noise from small power plants: 80dB



Kongshavn school

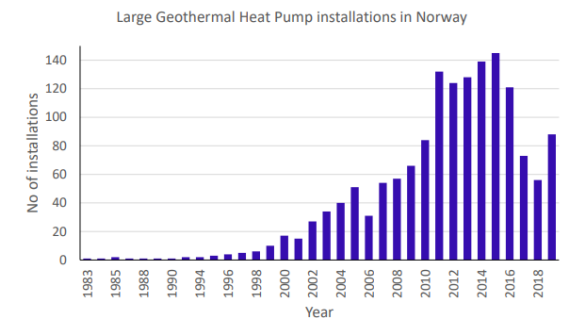
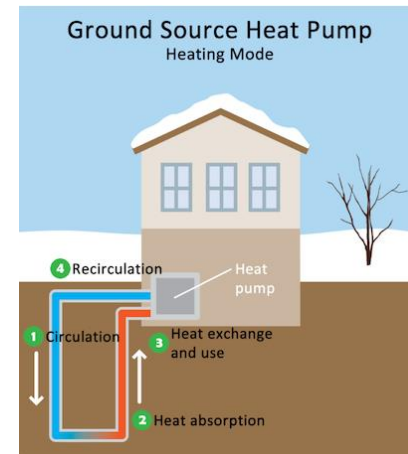
Solar power in Norway



- ▶ Solar panels mainly on buildings, private houses and cabins.
- ▶ Solar panels do not create any greenhouse gas emissions
- ▶ They do not make noise
- ▶ Solar plants conflicts with agricultural interests
- ▶ 0,06 TWh /year (2019)

Geo thermal power in Oslo

- ▶ Mainly for heating housing associations and larger buildings
- ▶ 60 000 energy wells in Norway
- ▶ 1520 larger plants
- ▶ 3,5 – 4,0 TWh pr year
- ▶ No noise outside or inside



Wind power

- ▶ No wind plants in Oslo
- ▶ Expanding quickly in Norway and at sea
- ▶ 800 turbines on 42 plants on mainland
- ▶ 8,2 TWh/year
- ▶ Developing floating wind mills
- ▶ Noise: 35-50 dB by little wind
- ▶ Reindeer owners stopped windmill developers

