

# Yellow and blue makes green

Selected environmental initiatives at Vattenfall

**“Good environmental performance is fundamental to the success of our business. We must always question how we can do better and our environmental policy reflects our ambition.”**

Magnus Hall, CEO Vattenfall



**VATTENFALL**

# Focus on a greener world



**Our goal is to enable fossil free living within one generation. All we do and everything we invest in is in line with this direction. Our products and services add value to our customers, partners and society.**

**We take responsibility for all environmental aspects related to our business.**

**Most importantly we commit to:**

# Protect natural environment and biodiversity

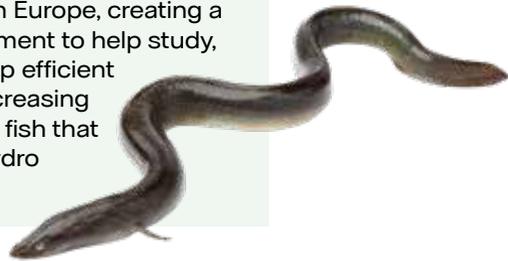


All energy sources impact nature. Protecting ecosystems and biodiversity is fully embedded in our daily business, permit processes and R&D activities. Many different types of biodiversity projects are ongoing across Vattenfall.

Here are some selected examples:

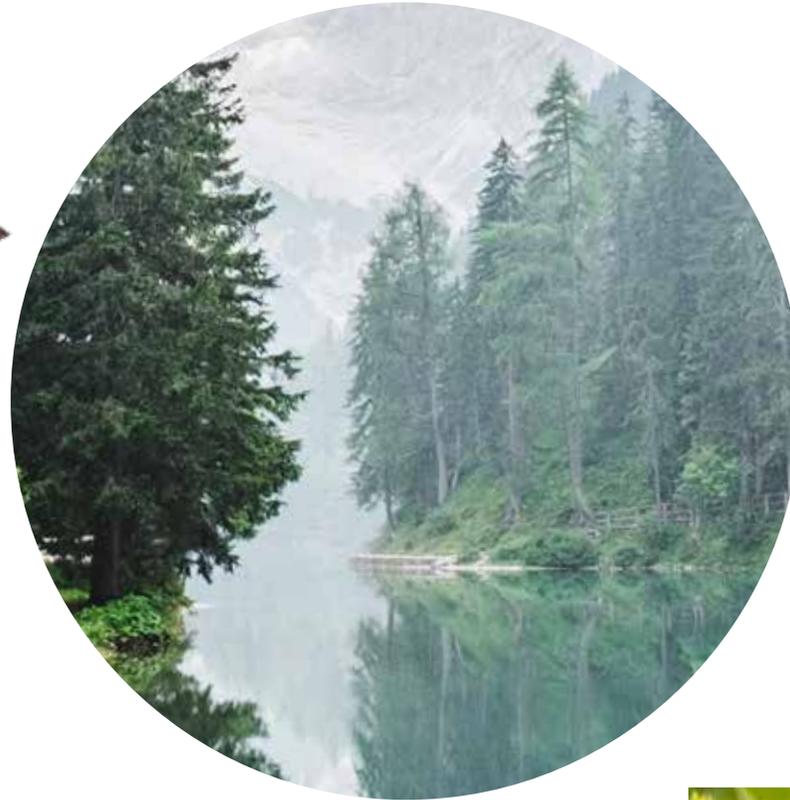
## “Laxeleratorn” - getting close with eel and fish

Environmental adaption of hydropower is very important to Vattenfall. Therefore we have - among other things - built the largest test facility for fish migration (Laxeleratorn) in Europe, creating a unique environment to help study, test and develop efficient methods for increasing the numbers of fish that migrate past hydro power plants.



## The Fairy slipper - a hydro power plant crown jewel

We have four nature conservation areas connected to our hydropower plants in Sweden. They enable us to protect very rare, and sometimes even unique, biological species like orchids and fungus. All areas are open to the public and offer educational opportunities with signs indicating selected species of interest.



## The Forsmark frog hotel

When building the nuclear fuel repository in Sweden, ponds with endangered pool frogs will be impacted. In advance we have created new habitats for the pool frogs and as a bonus we also built a frog hotel that offers shelter during winter. The hotel works effectively and the frogs check-in in September and check-out again in May depending on weather and wind.



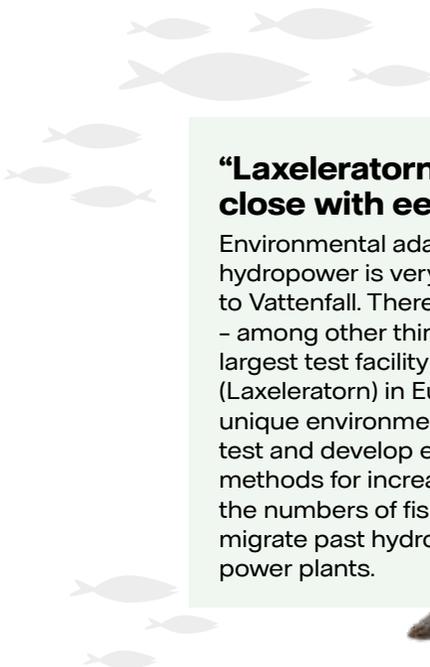
## Thriving life in power line corridors

Power line corridors are home to many endangered plants and animals. During 2018 we mapped all our corridors in Sweden to get a full overview of biodiversity hotspots. With this information we can enhance conditions for endangered species and thus protect biodiversity. At one location we use goats to clear the vegetation in the power line corridors. Grazing does not only have positive effects on biodiversity, it also makes clearing more cost efficient and we avoid fossil fuel emissions.



## Technical innovation meets biodiversity research

Aberdeen Bay wind farm, also known as European Offshore Wind Deployment Center, will produce electricity for approximately 80,000 households every year. At this wind farm Vattenfall invest 3 million euro in the largest environmental research programme for studying the effect of offshore wind farms on marine wildlife such as dolphins, salmon, sea trout and sea birds.





## Reduce our climate impact

We are reducing CO<sub>2</sub> emissions throughout the entire value chain. Vattenfall is committed to accelerating and powering the transition to further electrification and renewable energy. Every year we are adding more renewable capacity to our portfolio and by 2020 our estimated total capacity will be 4,100 MW. We are enabling electrification in other business sectors and in the society in large. One example is the HYBRIT project where Vattenfall, SSAB and LKAB are building a globally unique pilot plant for fossil free steel production.

### Examples of what we are doing:

#### Soon - a charging station near you

If electric cars cannot be charged easily very few people will buy them. Vattenfall is providing seamless charging solutions for homes, businesses and public places. In partnerships with corporates and municipalities we are investing heavily in expansion of InCharge, a European charging network connecting thousands of charging stations.



#### Climate targets in Berlin achieved three years ahead of plan

Our Heat business will phase out coal by 2030. In Berlin we have already invested more than one billion euro to make our combined heat and power plants more effective and reduce emissions from our production. Thus the absolute carbon dioxide emissions in Berlin have been more than halved since 1990.



#### Solar farm

Vattenfall is running a pilot project together with partners at a dairy farm north of Stockholm where solar production and battery storage secure electricity for milking the cows. Energy solutions like this have great potential and can make way for more green electricity production within the agricultural sector.



## Using our resources in a sustainable way

Undoubtedly we are moving from a throw-away society to a circular economy. We are contributing to the change by providing renewable energy, rethinking processes and business models while enabling our customers and partners to improve their environmental footprint.

### Batteries and renewables - an ideal combination

Renewable energy with battery storage to stabilise the grid is an important solution in the future energy landscape. Vattenfall's largest battery storage is a 22 megawatt flagship project at the Pen y Cymoedd wind farm in Wales. We are continuously developing smarter solutions like this.



### Reduce plastic waste

Since plastics are connected to several environmental problems we are consequently working with our suppliers to reduce unnecessary plastic waste. In Forsmark for example we have a target to reduce 3 tons of plastic by replacing it with other reusable materials.

### Taking care of our customers surplus energy

Energy loss through heat leakage is something both we and our customers want to avoid. Consequently we have initiated a business model that enables our customers to sell back the surplus energy consisting of heat that would otherwise be wasted.



### More examples of what we do:



#### Our first climate neutral station house

In our wind farm Wieringermeer in the Netherlands, a new concept is tested - an energy neutral building with as little environmental impact as possible. Fitted with solar panels and charging stations for the electric cars, reused furniture and a water system to capture rainwater it is a sign of things to come.



#### Development of smart tool for location of wind turbines

When a wind farm is designed numerous factors must be considered to optimise design and resource use. To manage challenges one of our researchers has developed a new innovative tool to optimise both power generation, costs and resource use already in the design phase.

## **Fossil free living within one generation**

Vattenfall is a leading European energy company with approximately 20,000 employees. Our goal is to make fossil-free living possible within one generation. Therefore we are driving the transition to a more sustainable energy system through growth in renewable production, cross-sector partnerships and climate smarter energy solutions for our customers.

## **Making our environmental policy come alive**

At Vattenfall we manage a variety of environmental aspects from fish migration to the energy solutions in our own offices. Our foundation for success is to have a strong environmental culture embedded in our company DNA. Thus almost 100% of our production is certified according to the Environmental Management standard ISO14001. We have worked with life cycle assessments (LCA) for 25 years and were the first company in the world to publish an Environmental Product Declaration (EPD) verified by a third party.

## **Learn more at**

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