

Copenhagen 20 June 2018

## **Geothermal energy has the potential to cover 30% of Denmark's district heating supply**

Geothermal energy is a renewable and currently untapped energy source with the potential to cover approx. 30% of Denmark's energy supply for district heating, equaling the heat consumption of 500,000 households. That is one of the promising claims from A.P. Moller Holding who is seeking to introduce geothermal energy on a large scale in Denmark.

"We believe that geothermal energy can be as important for the green transition of our heating supply as wind has been for electricity! For the consumers, this means renewable heating in their radiators – similar to the renewable electricity in their power sockets. For our society, this means bringing a large renewable energy source into play and thereby supporting the phasing out of coal and gas. Geothermal energy can supply our houses with heating from the subsurface 365 days a year regardless of whether the sun is shining or the wind is blowing," says Samir Abboud who is in charge of the geothermal energy project in A.P. Moller Holding. "Geothermal energy is a naturally occurring energy source and can play a key role in Denmark's green transition. There is of course no guarantee that we will succeed, however the potential is too great to not be pursued."

A.P. Moller Holding has worked on the geothermal energy project since 2017 and put together a team of specialists with extensive experience from large, complex, and capital intensive projects developing the subsurface. Such competencies are key in order to exploit geothermal energy in Denmark. There are currently three minor geothermal plants in Denmark, but A.P. Moller Holding presents a new business model which differs from the existing projects:

"Firstly, our ambition is to utilize geothermal energy on a large scale so we can lower the costs and offer the district heating companies – and the consumers – renewable heating at competitive prices. Secondly, we see that interdisciplinary competencies are key in this type of large, complex, and capital intensive projects. We have acquired those competencies from many years of experience working with the subsurface all over the world," says Samir Abboud.

A.P. Moller Holding's business model means that A.P. Moller Holding is responsible for exploration, construction, and operation of the plants. Hence, the consumers will not end up paying the bill if things should not proceed as planned.

"It is vital that the responsibility follows the competencies. Our model is rather simple: We supply the warm water to the district heating companies who distributes to the consumers. This way, everyone does what they do best," says Samir Abboud. "Denmark is famous for a developed district heating system and well-run utility companies. We look forward to a good collaboration with them."

A.P. Moller Holding has entered into a strategic partnership with Danfoss who are leading experts within district heating systems and energy efficiency. The ambition is to optimize the utilization of geothermal energy in district heating:

"We are very excited about partnering with A.P. Moller Holding to explore the possibility of utilizing the great potential of geothermal energy to provide sustainable district heating. Geothermal heat is one of the most cost-

effective measures to reduce CO2 emissions according to a new study by IRENA, the International Agency for Renewable Energy”, says Lars Tveen, President, Danfoss Heating Segment.

The geothermal potential is present several places in Denmark. It will take 5-6 years from the first exploration until the geothermal plant is ready to provide warm water to the district heating companies.

For further information, please contact Mika Bildsøe Lassen at [Mika.Lassen@apmoller.com](mailto:Mika.Lassen@apmoller.com) or +45 2055 2655

**A.P. Moller Holding** is the investment arm of the A.P. Moller Foundation. Our purpose is to exercise the Foundation’s role as an engaged owner, in the spirit of A.P. Møller, and to ensure that the Foundation can continue to contribute to society in the form of donations for generations to come. [www.apmoller.com](http://www.apmoller.com)

# GEO THERMAL ENERGY

AN UNTAPPED RENEWABLE ENERGY  
SOURCE WITH GREAT POTENTIAL

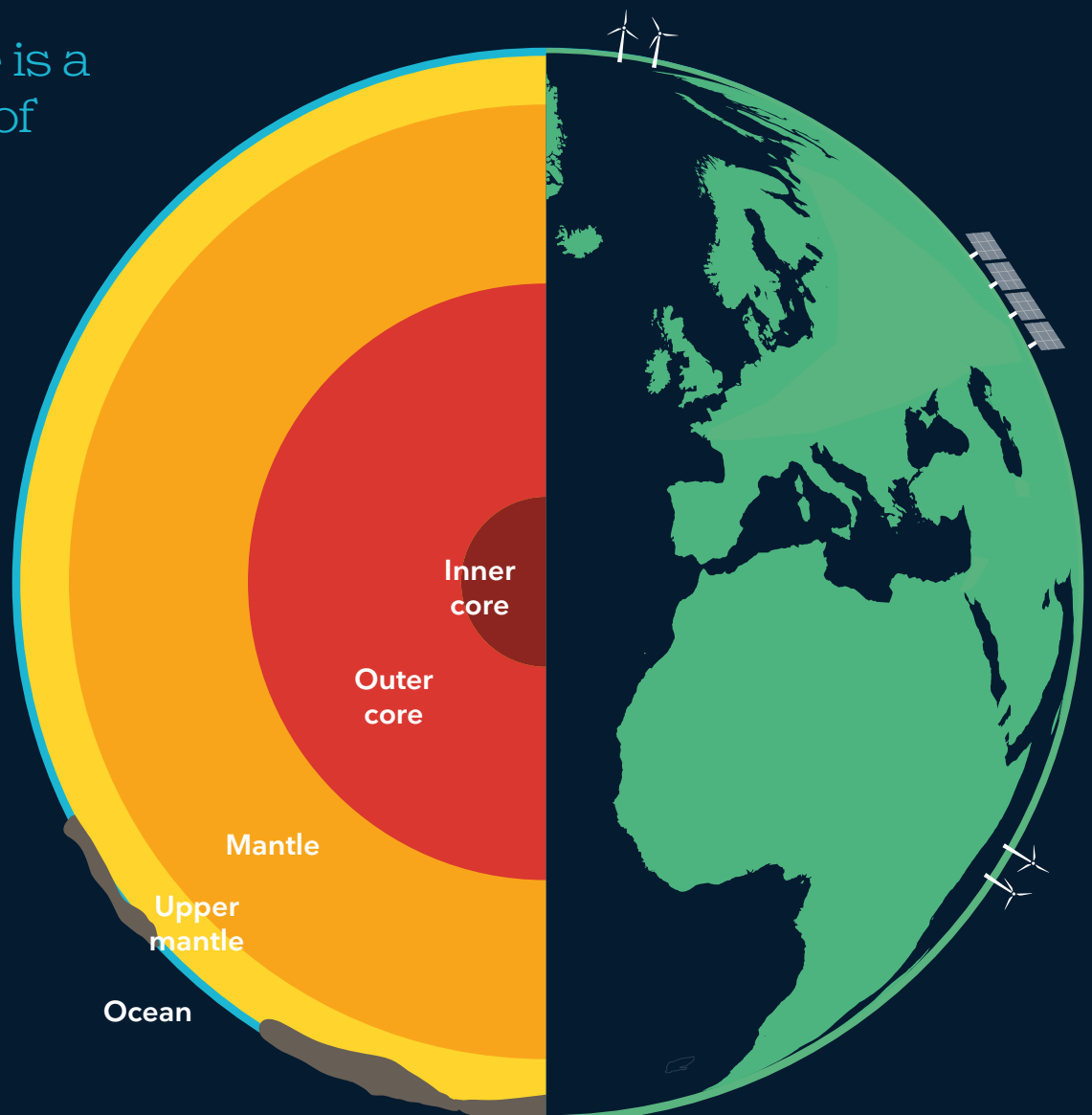
Geothermal energy has the potential to cover approx. 30% of Denmark's energy supply needed for district heating. A.P. Moller Holding is committed to bringing geothermal energy into play in Denmark.

## Our subsurface is a treasure trove of green energy

The interior of the Earth is almost as hot as the surface of the sun; at the Earth's core, the temperature is approx. 5,400 degrees Celsius. This massive source of naturally occurring energy is currently underexploited in Denmark and has great potential.

The heat from the Earth's core radiates towards the surface of the Earth and warms up the water in our subsurface, creating reservoirs with 40-80 degree Celsius hot water under Denmark. The hot water can be used in our district heating as a green alternative to fossil fuels such as coal or gas.

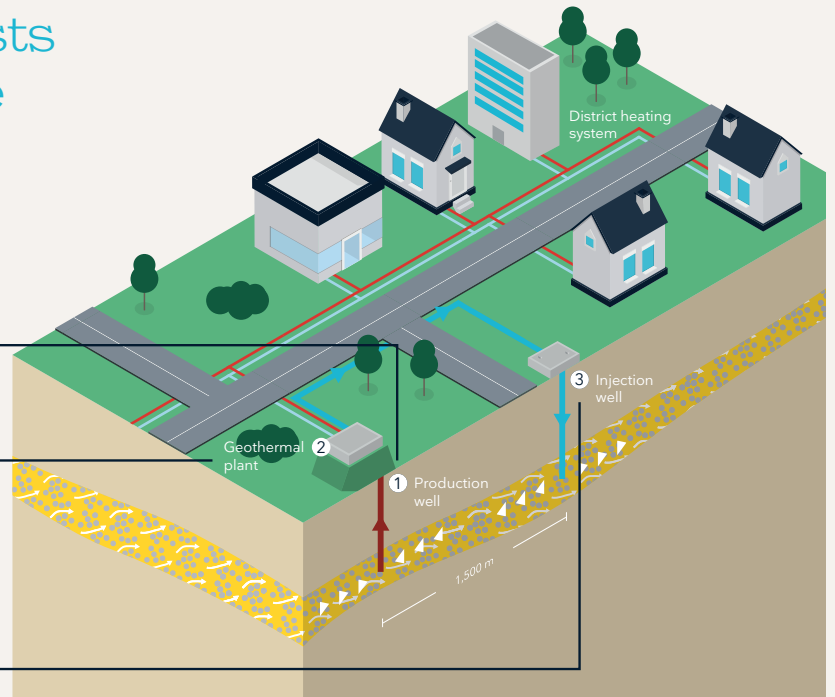
Geothermal energy is a great supplement to sun and wind energy due to its high security of supply and can play a pivotal role in the green transition.



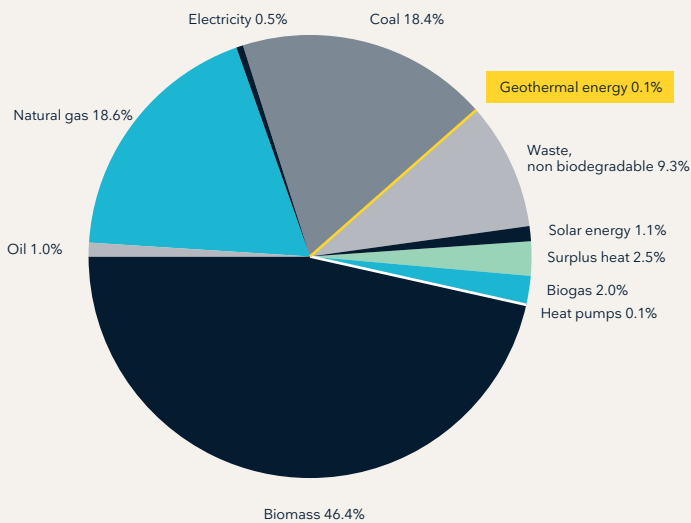
# The geothermal plant harvests the heat from the subsurface

In Denmark, the geothermal energy can be used for district heating, supplying green heating in our radiators. The geothermal process takes place in a closed circuit.

- 1 The warm water is pumped up through a production well from the subsurface
- 2 In the geothermal plant, the heat is extracted from the geothermal water and transferred into the district heating system
- 3 The cold water is pumped back into the subsurface through an injection well



## DANISH DISTRICT HEATING TODAY



Kilde: A.P.Moller Holding's own calculations and categorizations based on figures from the Danish Energy Agency's report 'Energy statistics 2016'

## Geothermal energy can cover 30% of our district heating supply

- 64% of the Danish households are supplied by district heating.
- Geothermal energy is CO2 neutral, provided that the geothermal plants use sun or wind energy for their heat pumps.
- Today, there are three minor geothermal plants in Denmark, located in Sonderborg, Copenhagen and Thisted. They currently supply less than 1% of our district heating.
- Large scale geothermal energy has the potential to cover approx. 30% of Denmark's district heating, equaling the heat consumption of 500,000 households.

## A.P. Moller Holding invests in promising renewable energy

Geothermal energy can be as important for the green transition of our heating supply as wind has been for electricity.

A.P. Moller Holding draws upon many years of experience from large, complex and capital intensive subsurface projects. That is why we invest in geothermal energy. We take full responsibility - from the early exploration phases until the hot water is supplied to the district heating companies. And we aim to do so at competitive prices.

We have entered into a strategic partnership with Danfoss who are leading experts within district heating systems and energy efficiency. Our ambition is to thereby optimize the utilization of geothermal energy in district heating.

A.P. Moller Holding is the investment arm of the A.P. Moller Foundation, managing the Foundation's business activities.