Organisation

SCAN is a national program funded by the Ministry of Climate Policy and Green Growth. SCAN is carried out by EBN and TNO. EBN is dedicated to achieving a sustainable, reliable, and affordable energy supply for citizens and businesses across the Netherlands. As part of its mission, EBN supports the implementation of the Ministry's climate and energy policy, drawing on its extensive knowledge of the Dutch subsurface.

TNO is the Dutch organization for applied scientific research. TNO plays a key role in the energy transition by conducting independent and applied research, in collaboration with government bodies, businesses and knowledge institutions.

For more information about SCAN, visit:
scanaardwarmte.nl

Do you have any questions? Please send an email to
info@scanaardwarmte.nl

Ministerie van Klimaat en Groene Groei

ebn

TNO

Versie 1.0 - August 2025

In practice

SCAN works closely with various stakeholders, such as provinces, municipalities and land users. The surrounding area is taken into account as much as possible during the planning and execution of geophysical surveys. Local residents receive a letter prior to the survey. Afterwards, everything is carefully cleaned up.

The geophone collects important data.
Please leave it undisturbed.

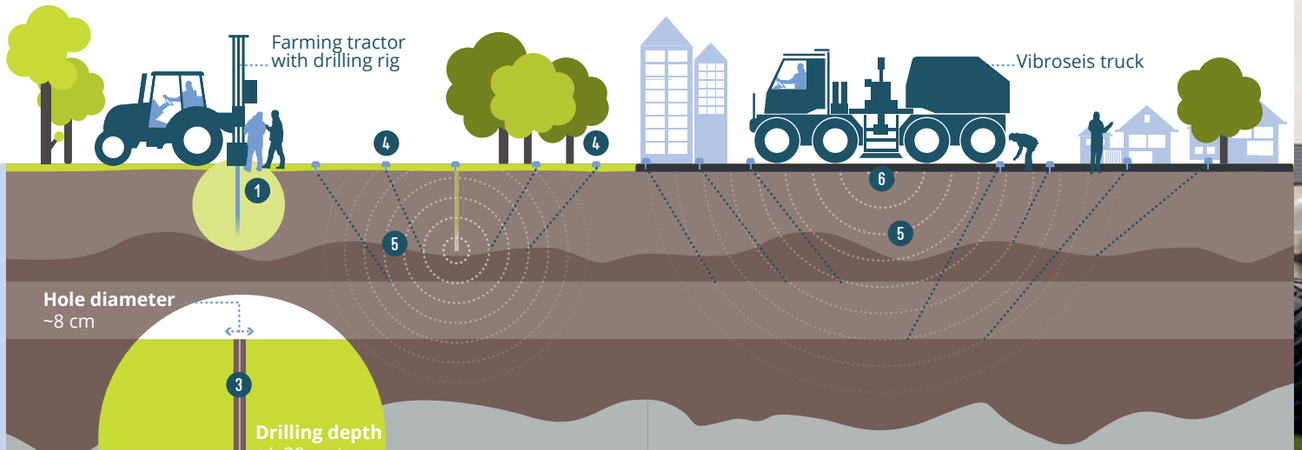
Two techniques

Shothole seismic

Mainly outside the urban area

Vibroseis seismic

Inside the urban area



1. Holes about 20 meters deep are drilled every 40 meters.
2. A small seismic charge is placed at the bottom of the hole.
3. The hole is sealed with clay.
4. Ground microphones (geophones) are placed on or just below the surface to record sound waves that bounce off underground layers.
5. When sound waves are generated, a dull thud can be heard and/ or vibrations can be felt.
6. The vibroseis truck has a vibrating plate at street level. The vehicle stops regularly to send sound waves into the ground. This takes about 1 minute.

scan

Geophysical research into geothermal energy

Seismic survey

scanaardwarmte.nl

SCAN (Seismic Campaign for Geothermal Energy in the Netherlands) investigates where the Dutch subsurface is suitable for producing geothermal energy.

The survey provides a regional image of the subsurface. With this knowledge, experts can better assess where geothermal energy can be produced in the Netherlands.

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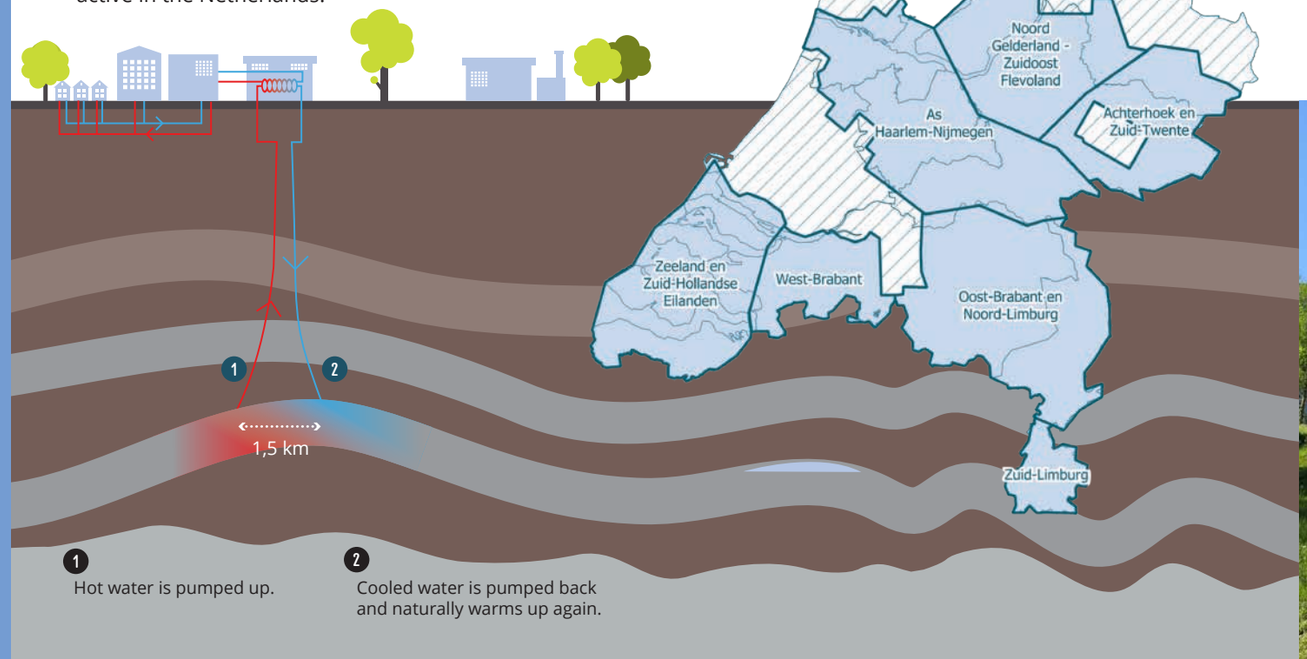
What is geothermal energy?

Deep within the earth, it's warm - and the deeper you go, the warmer it gets. In the Netherlands, the temperature rises by approximately 30°C with every kilometer you descend. Some earth layers in the upper kilometers of the earth's crust are permeable and filled with water. At depths of 2 to 3 km, water reaches temperatures of 70 to 100°C. That heat can be used above ground to heat homes and buildings, support light industry or heat greenhouses in horticulture. After use, the cooled water is returned to the subsurface, where it naturally heats up again. Geothermal energy is therefore a constant and sustainable heat source.

1. Hot water is pumped up.
2. Cooled water is pumped back down where it naturally heats up again.

Several geothermal energy projects are already active in the Netherlands.



Where does SCAN conduct research?

Large parts of the Dutch subsurface have been mapped during the exploration and production of oil and gas. But in other areas, little is known about the subsurface layers. SCAN focuses on these areas. These areas are shown in blue on the map. More information can be found at scanaardwarmte.nl.

Geophysical research

Not all underground layers are suitable for producing geothermal energy. A geophysical survey helps create a picture of the subsurface. To do this, sound waves are sent into the ground.

These waves bounce off the underlying layers and are picked up at the surface by geophones (small ground microphones). The data collected by the geophones is then processed into an image of the subsurface layers and structures. Seismic surveys have been carried out in the Netherlands since the 1950s.

The results help to map the potential of geothermal energy. The findings published by SCAN are analysed by experts. Based on this analysis, insight is gained into where geothermal energy could be developed.

Additional local research is always necessary to develop a geothermal energy project.


Vibroseis truck