

Finland's most energetic customer magazine» 1/2020

HELEN

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plastic in mixed
waste?

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Korkeasaari
Zoo chose
Recycled Heat

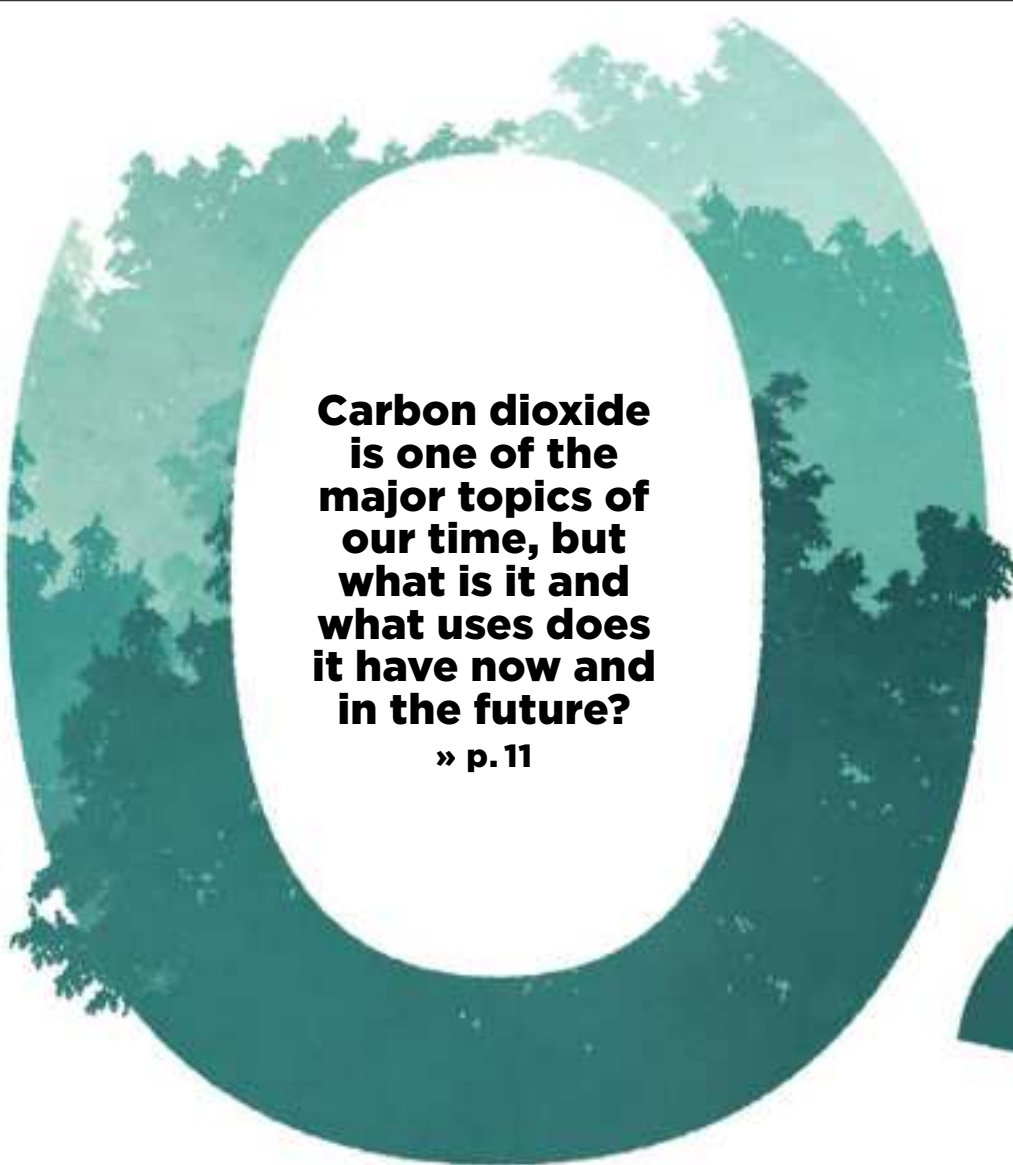
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gets energy
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**Carbon dioxide
is one of the
major topics of
our time, but
what is it and
what uses does
it have now and
in the future?**

» p. 11

Psst! Our customer Sinikka Tammi from Helsinki has rented designated solar panels at three solar power plants. Read more on page 5.



Sustainability

EDITORIAL » Sustainability is at the core of Helen's business. For us, sustainability means taking the environment and people into consideration in everything we do, every day.

Climate change is an enormous challenge and minimising the climate and environmental impacts of our production operations is an important aspect of our sustainability. Our goal is to achieve carbon neutrality by 2035.

At Helen, sustainability spans the entire supply chain. It is important for us to ensure the sustainability of the full product life cycle, which is why we develop it through open collaboration with our partners. We have evaluated our partner-related sustainability risks and developed our own risk management process.

We make it possible for our customers to play a role in the creation of a climate-friendly future with Helen's assistance. For example, anyone can make use of solar energy by renting a designated solar panel. You can also buy fully carbon neutral electricity. We also offer the option of switching to fully renewable district heating. There are many opportunities for our customers to choose from. Let's work together to build a sustainable future!

"Sustainability spans our entire supply chain."

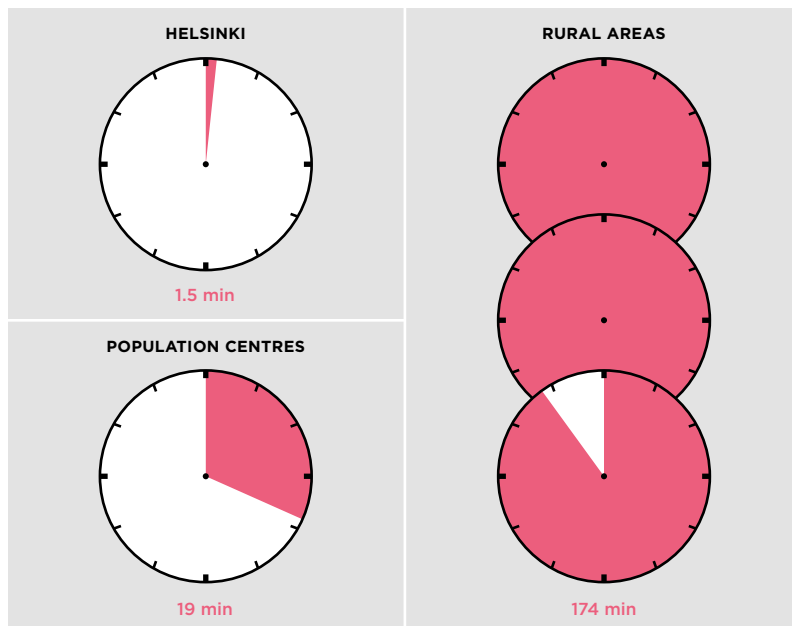
Tea Erätuuli Manager, Corporate Social Responsibility

A SOURCE OF PRIDE

No power outages

A Helsinki resident experiences a 30-minute power outage only once in 10 years. In 2019, the power was out for only 1.5 minutes per customer. The reliability has been achieved through automation, new fault management technology and by upgrading the structure of the electricity network.

The average amount of time without power per year per customer in Helsinki (2019), population centres (2018) and rural areas (2018).



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Energy!

Read about current phenomena and news. Pick up tips for smooth daily life.



PHOTO: GETTY IMAGES

#energyconsumption Don't let your wintertime electricity bills catch you by surprise. As a Helen customer, you can monitor the energy consumption of your home or business, even at the hourly level, via our free Sävel reporting service. Find out more at helen.fi/savel-plus.

#solarpower Have a sunny morning! The solar power plant developed by Helen on the roof of Kaapelitehdas powers Radio Nova's broadcasts. The equipment is based on thin-film solar panel technology, which further reduces the load on the roof.

KEEP THESE THINGS IN MIND WHEN YOU DO BICYCLE MAINTENANCE...

- ✓ WASH THE ENTIRE BICYCLE. USE DISHWASHING LIQUID TO REMOVE STUBBORN STAINS.
- ✓ CLEAN THE CHAIN, CHAINRINGS AND CASSETTE. LUBRICATE THE CHAIN WITH CHAIN OIL.
- ✓ CHECK THAT ALL OF THE SCREWS AND NUTS ARE IN PLACE. MAKE SURE THEY ARE TIGHT ENOUGH.
- ✓ CHECK THE CONDITION AND OPERATION OF THE BRAKE PADS AND BRAKE CABLE.
- ✓ TEST THE TYRE PRESSURE. SQUEEZE THE TYRES. IF THERE IS A LITTLE BIT OF GIVE IN IT, THE TYRE PRESSURE IS JUST RIGHT.
- ✓ CHECK THAT THE LIGHTS AND REFLECTORS WORK PROPERLY.



PHOTO: NIKLAS SANDSTRÖM

Helen produces renewable district heating from waste heat collected from wastewater. Residential and industrial wastewater is processed at the Viikinmäki wastewater treatment plant. The heat from the treated water is then collected and processed into district heat at the Katri Vala heat pump plant.

HOW IRRESPONSIBLE IS IT...

...to put plastic in mixed waste?

It is quite irresponsible. Recycling is a good idea. Much of the plastic waste in daily life consists of plastic packaging, which can be recycled and turned into new plastic. Items such as yogurt cups, the packaging of cold cuts and plastic bags can all be disposed of in plastic collection containers. Items made from hard plastic, such as plastic toys, plastic sledges and buckets, belong in mixed waste or the plastic collection point at the local waste station.

#carbonneutral2035 Geothermal heat is being studied in Helsinki as one option for replacing combustion-based energy production that generates carbon dioxide emissions.



PHOTO: GETTY IMAGES

Shine on

Sinikka Tammi has rented designated panels at solar power plants to support the production of renewable energy.

Muru, Hippu and Pirre. These are the names Sinikka Tammi has given to the solar panels she has rented. She is a nature lover who has dedicated her solar panels to her three dogs.

Tammi currently has designated panels at the Suvilahti, Kivikko and Messukeskus solar power plants. The energy generated by her designated panels is compensated for in her electricity bill.

"I've always been interested in solar power. Since I can't put solar panels on the roof of my home, renting is a good option for me."

Using the Helen website, Tammi was able to decide which power plants she wanted to rent her panels in. She even got to choose their exact location. She enjoyed having that much choice.

"It was like choosing your seat at the cinema! I didn't want a lonely panel out to the side. I wanted one that is surrounded by others," she says with a laugh.

Tammi believes that, in this time of climate crisis, every good deed is important.

"I like the idea that my small contribution can support sustainable solutions. I have also tried to make other changes in my daily life to improve the situation," Tammi says.

"Maybe my next panels will be named after my children. If I keep going like this, maybe the whole family will soon have panels named after them."

DID YOU KNOW?

You can find information on currently available designated panels at the Messukeskus, Kivikko and Suvilahti solar power plants at helen.fi/rent-panels.



"I can't put solar panels on the roof of my home, so renting is a good option for me."

1

Which one is better, an electric or gas-powered heater?

For balconies or small patios, a 1000 W infrared heater powered by electricity is a suitable option. For a large patio, you might choose a 9000 W gas heater, for example. Quartz heaters powered by electricity are also an option for larger spaces.

GETTING TO KNOW HOUSEHOLD APPLIANCES

Hello, I heat up this space!

Sitting close to a patio heater, you can enjoy the spring without having to wear a warm jacket.

2

"If the connected load of your infrared heater exceeds 2300 W, you need a 16 A fuse. Check that the patio or balcony has a socket and note the necessary safety distance. If you opt for a gas heater, you need to ensure adequate ventilation."

Sari Loukasmäki
Energy Advisor



3

What's the cost of a good heater?

It depends on the size of the area you need to heat. The prices of heaters range from 60 euros to over 2,000 euros, but 200–400 euros buys you a balcony or patio heater that is fairly powerful and of good quality. The output of a heater can vary from 300 W to as high as 19500 W, and high-output heaters cost more than those with a lower output.

4

What about the cost of use?

If you run a 1000 W infrared heater three hours a day, every day, your monthly electricity bill will go up by about €13. If you accidentally left the heater on for the entire month, it would cost you about €100. To prevent this, you should use a timer to switch off the heater. A high-output gas heater has higher running costs than an infrared heater.

5

Complete the reader survey on page 26 for a chance to win a patio heater.

#carbonneutral2035 Helen is building a bioenergy heating plant in Vuosaari. Commissioning the bioenergy heating plant a year earlier than scheduled will make it possible to partially discontinue the use of coal even sooner than expected.

Choose the right cottage toilet

Electricity helps with waste management at your summer cottage?

	What?	How?	Output?
INCINERATING TOILET	A toilet that does not need to be connected to a plumbing system. Runs on electricity or gas.	All of the toilet waste is incinerated at a high temperature.	Small amounts of ash that can be used as fertiliser.
FREEZING TOILET	A toilet that does not need a fixed installation nor the installation of plumbing or ventilation through the walls. Runs on electricity.	Works like a chest freezer. The toilet waste is frozen, which makes it odourless.	A biobag of waste that can be placed in a garden compost bin.
COMPOSTING TOILET	A toilet that does not require water or electricity to operate. Suitable for indoor and outdoor toilets.	Liquids are evaporated and filtered. There is a separate inner container for solid waste.	Compost soil. The waste is composted inside the toilet. It can also be used to compost food waste.
DRY TOILET	A toilet that can be easily placed directly on a floor surface, either indoors or in an outhouse. Does not require water or electricity.	In a separating toilet, liquid waste drains into a container that is easily emptied and solid waste is covered by desiccant material.	The pre-composted solid waste can be transferred in the container for post-composting into composted soil.

An award to Helen

Helen received an Award of Excellence in the ICMA Awards for custom media for a cover and cover story, typography and layout.

The jury characterised the cover illustration as surprising. In the cover, the sun is depicted by an egg yolk that is broken in one place. This creates an effect that looks like a solar flare. The text, images and infographics on the pages of the cover story form a coherent whole. The infographic on the last spread of the cover story is a modern and reader-friendly presentation of how a solar power system works.

The Chap font used in the headings gives the magazine an original style. The layout does a good job of breaking the broad content into appropriately sized pieces. The outcome is a varied, laid-back and reader-friendly visual appearance for the story.

More information is available at icma-award.com.



#cottageelectricity Don't forget you can sign an attractively priced electricity contract through Helen for your summer cottage or holiday home located anywhere in Finland. You can sign a cottage electricity agreement at helen.fi/mokki.



LET'S JOIN FORCES

Do it for nature

Helen produces Recycled Heat from the excess heat of industrial and residential properties. It is an eco-friendly solution for heating buildings on the path towards a carbon neutral Finland. Korkeasaari Zoo started using Recycled Heat in summer 2019.

Text: Marjukka Puolakka | Photos: Milka Alanen



Environmental Educator Marjo Priha (left) and Director Sanna Hellström are working towards a carbon neutral Korkeasaari Zoo.

“Recycled Heat is the most effective way to reduce our carbon footprint.”

KORKEASAARI ZOO HAS SET A TARGET OF being carbon neutral by 2030. The motive is clear.

“Carbon neutrality has a significant impact on the survival of the world’s wild animals. Korkeasaari Zoo’s mission is to protect wild animals and their natural habitats. This means that our operations should not have a negative impact on the environment,” says Sanna Hellström, Director of Korkeasaari Zoo.

Before Korkeasaari made the switch to Helen’s Recycled Heat in summer 2019, heating accounted for 40 per cent of the zoo’s carbon footprint. Recycled Heat is fully carbon-free district heating that is produced from excess heat.

“For us, Recycled Heat represents the most efficient and quickest solution for reducing our carbon footprint. It is a concrete form of environmental action. It makes sense to use emission-free Recycled Heat to satisfy the heating needs of people and animals at Korkeasaari Zoo.”

In 2015, Korkeasaari Zoo adopted the Eco Compass environmental system that

helps the zoo make eco-friendly choices and put its Carbon Neutral Korkeasaari 2030 programme into action.

“Our radiators are heated by emission-free Recycled Heat, including our tropical houses and animal shelters. We have an electric flatbed vehicle for transporting goods, and the zookeepers get around on electric scooters and bikes. All of the fluorescent lights in the buildings that house animals have been replaced with LED lights,” says Environmental Educator Marjo Priha.

The Eco Compass system also provides guidance for reducing the waste volume, improving sorting and making sustainable purchasing decisions. Korkeasaari Zoo has strong international networks that support the zoo in its species conservation efforts.

One of the actions taken under the Eco Compass system was a decision to compensate the emissions arising from the employees’ work-related flights as well as animal transport by air.

“We want to set an example for Helsinki as a whole and for other zoos.”

Facts

Korkeasaari Zoo was established in 1889. It can be reached by water bus or by taking the pedestrian bridge from Mustikkamaa.

Korkeasaari is home to about 150 animal species representing habitats ranging from the tundra to tropical rainforests and deserts. The newest addition is the common Surinam toad.

Korkeasaari Zoo participates in the breeding of many endangered and rare animal species.

There are also several buildings on the island, with the Restaurant Pukki and the Bear Castle being among the oldest.

8+1 things you should know about switching your property to Recycled Heat

1 Using Recycled Heat allows your company to eliminate its heating-related emissions. Recycled Heat is produced from the excess heat of data centres, wastewater treatment plants, substations and industrial facilities.

2 If your company wants to make its heating carbon neutral, contact Helen's sales team. We will calculate the estimated cost of Recycled Heat based on your heating consumption as well as the reduction in carbon dioxide emissions that can be achieved.

3 Once you accept the offer, you can start using Recycled Heat immediately. No investments or changes to building systems are necessary. A Recycled Heat contract valid until further notice is an easy and straightforward choice.

4 The additional cost of Recycled Heat is typically slightly below 10 per cent of the property's heating costs. If the property is equipped with Helen's district cooling that collects excess heat, the customer is compensated in their Recycled Heat invoice.

5 You can choose your proportion of Recycled Heat to be anywhere between 5 per cent and 100 per cent if your company does not want to fully commit to Recycled Heat for all of its heating needs right away.

6 Your company's use of Recycled Heat benefits the climate. It is also a great way to build an image of a sustainable company and show your stakeholders that you are making a contribution to the common good.

7 Helen offers Recycled Heat to all companies that use district heating in Helsinki. The more companies choose Recycled Heat, the closer we get to being a carbon neutral society.

8 Helsinki has set a target of being carbon neutral by 2035. Choosing Recycled Heat is an easy way for you to participate in the effort to reach this shared goal.

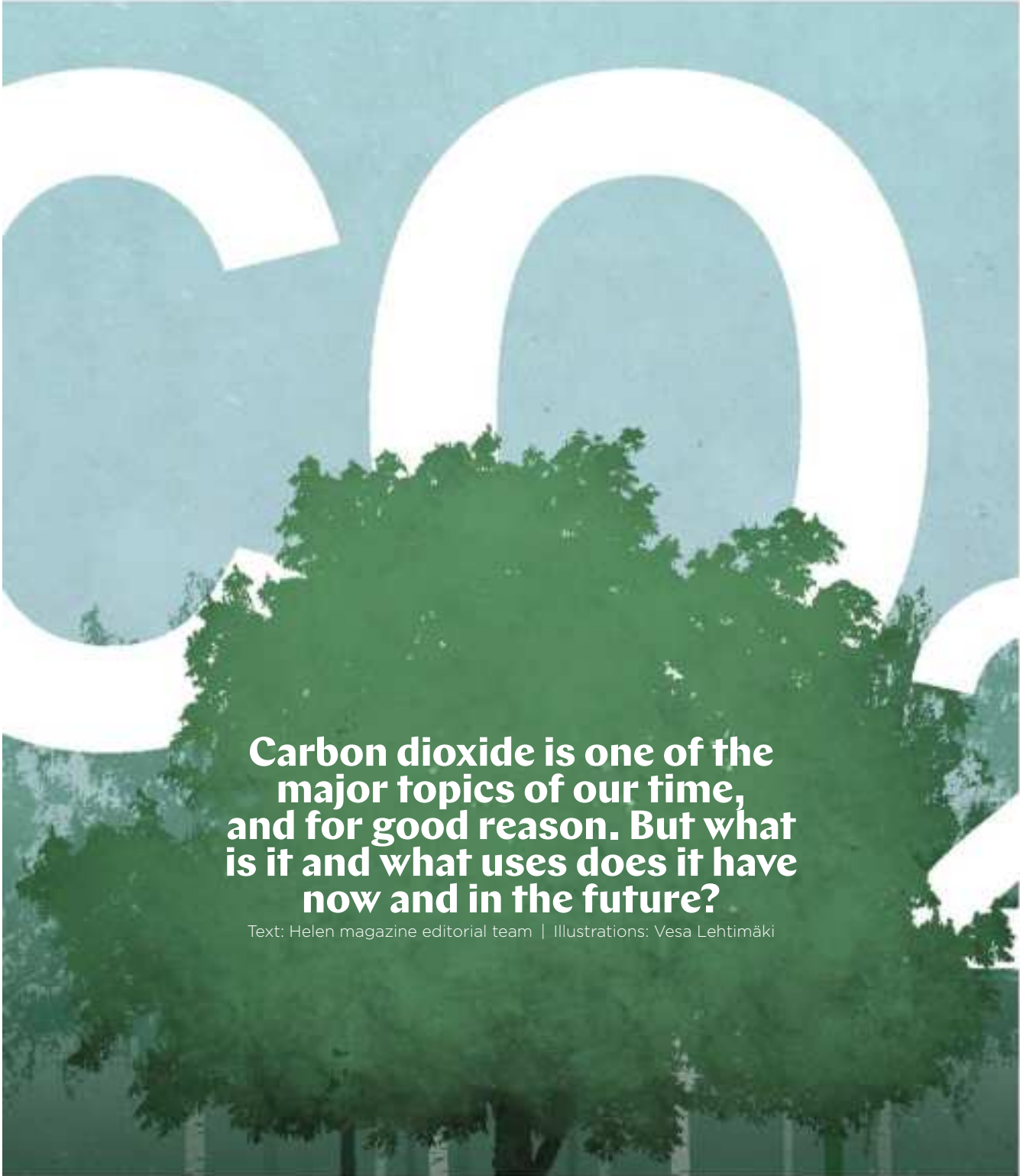
+1 By combining Recycled Heat with electricity and district cooling produced from renewable sources, your company can achieve zero emissions for the energy consumption of your properties.

"Helen's Recycled Heat is 100% produced from excess heat thereby enabling companies to switch to completely emission-free property heating."

Anssi Juvonen
Product Group Manager

CO₂

Everything you ever wanted to know about carbon dioxide — and more.

An illustration featuring a large, dense green tree in the foreground. Behind the tree, a light blue sky is visible, with large, white, stylized letters spelling 'CO2' in the background. The text 'Carbon dioxide is one of the major topics of our time, and for good reason. But what is it and what uses does it have now and in the future?' is overlaid on the lower part of the tree.

Carbon dioxide is one of the major topics of our time, and for good reason. But what is it and what uses does it have now and in the future?

Text: Helen magazine editorial team | Illustrations: Vesa Lehtimäki

YOU TAKE A DEEP BREATH AND FEEL INSTANTLY

refreshed. Do you know what happens in your body when you breathe?

Your lungs push oxygen through your circulatory system to your cells. The cells need oxygen to produce energy. In exchange, your cells give up an odourless and colourless gas called carbon dioxide. It leaves your body when you exhale.

Each molecule of carbon dioxide consists of one atom of carbon and two atoms of oxygen. Credit for the discovery of carbon dioxide is given to the Flemish scientist Jan Baptist van Helmont (1577–1644). He determined that part of charcoal must evaporate into the air when the charcoal burns, because ash is lighter than wood. In the 1770s, the French chemist Antoine Laurent Lavoisier determined what combustion is and showed that carbon dioxide is a compound of carbon and oxygen.

Since those times, people have come up with many clever ways to use carbon dioxide.

CARBON DIOXIDE IS USED AS A PROTECTIVE GAS IN food packaging. It prevents bacterial growth, improves shelf life and protects the contents from damage. Crisps, for example, would break inside their packaging if the bag were not filled with a protective gas.

Dissolved in liquid, carbon dioxide makes fizzy beverages taste cool and fresh and extends their shelf life.

Dry ice made from liquid carbon dioxide keeps ice cream and drinks cold at summer parties. When it melts, dry ice evaporates, creating a fog or smoke effect often seen in various types of performances. In the meat industry, dry ice is used as a refrigerant. In the pharmaceutical industry, it is used to freeze tissue.

Carbon dioxide is very effective for extinguishing fires involving flammable liquids, such as petrol, oil and grease as well as electrical fires. It suffocates the fire by taking away and diluting the oxygen around the fire.

When surgeons perform key-hole surgery inside the abdominal cavity, carbon dioxide is used to fill up the cavity for improved visibility.

IN NORMAL CONDITIONS, CARBON dioxide is a vital part of the

mechanism that maintains favourable conditions for life on Earth: Together with other greenhouse gases, it prevents radiant heat from our planet's surface from escaping out to space. Without greenhouse gases, the average temperature of Earth's surface would be an estimated 33 degrees colder.

In nature, carbon dioxide is released into the atmosphere as a result of the combustion and decomposition of organic matter and the respiration of plant cells and life forms. Carbon dioxide is also released by other sources, such as volcanic eruptions, hot springs and geysers. At the same time, plants and oceans sequester carbon by removing carbon dioxide from the atmosphere.

The fast carbon cycle, which involves the process of photosynthesis in plants, is responsible for the survival of all life on Earth. Plants and cyanobacteria absorb carbon dioxide from the atmosphere and use it in combination with water and the radiant energy of the sun to produce carbohydrates and oxygen. If photosynthesis were to stop, Earth would run out of oxygen in 10,000 years and no longer be capable of supporting life.

The slow carbon cycle refers to carbon dioxide dissolving in bodies of water. In water, carbon dioxide is converted into carbonate, which serves as nutrition for aquatic plants and animals. When aquatic plants and animals die and decompose, the carbonates are transferred into soil and rock, where they form layers. Carbon also enters soil through the decomposition of land animals and plants.

Over millions of years, their remains have accumulated inside Earth's crust and turned into fossil matter such as coal, natural gas, oil and peat.

CARBON DIOXIDE HAS BECOME A PROBLEM BECAUSE human activity produces more of it than carbon

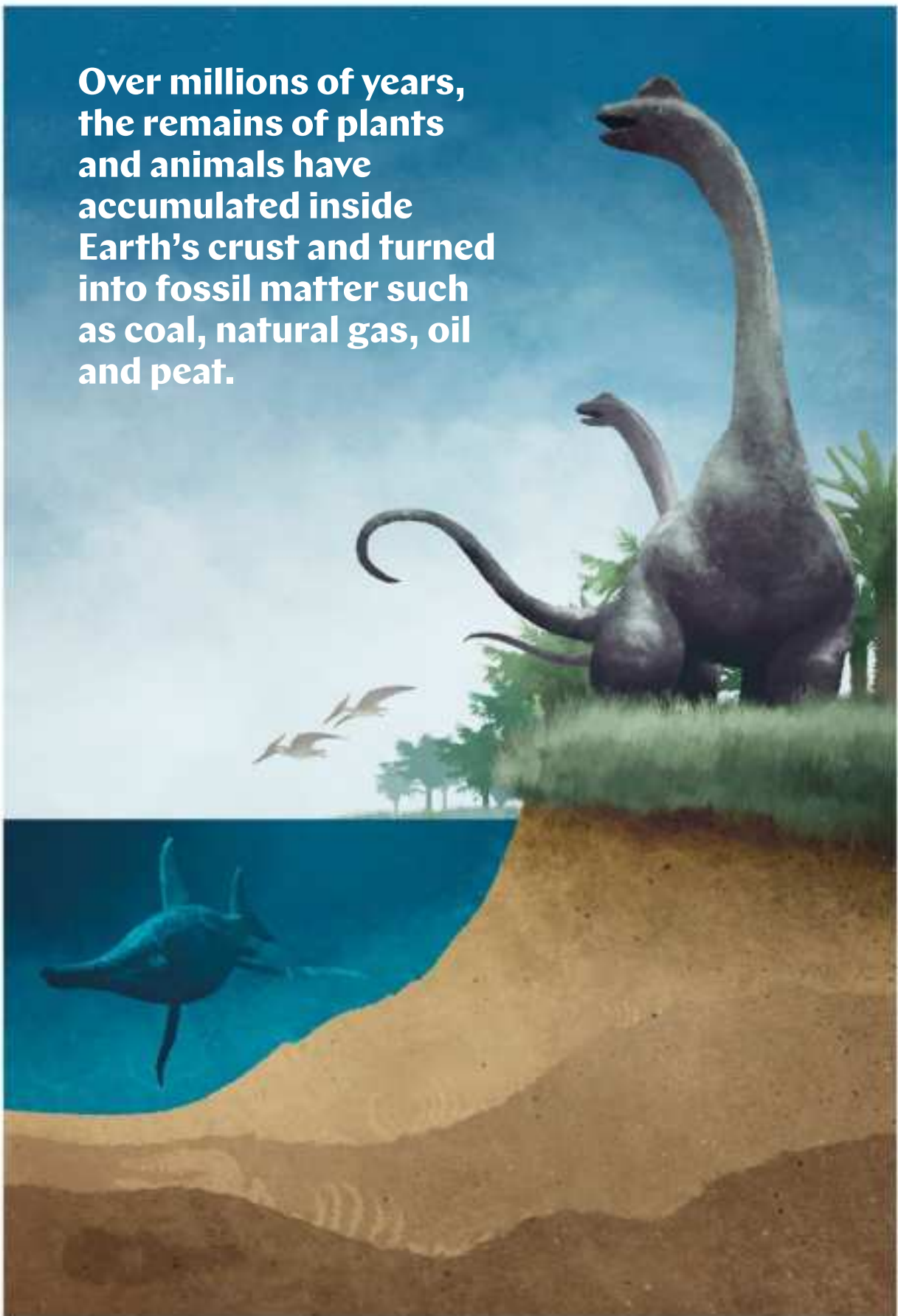
sinks, such as oceans, forests and plants, can sequester. The main reason for this is the burning of fossil fuels, which began with the industrial revolution in Britain in the late 18th century. This was also when the first steps towards our current welfare society were taken.

Coal was the first of the fossil fuels to be harnessed by people. Burning coal enabled an increase in production, which eventually led to a higher standard of living – first in Britain and later else-

A brand new fuel

Work is underway in Finland to develop a method for using carbon dioxide in the air along with nitrogen and electricity to produce fuel from microbes in a bioreactor. It can be used directly to fuel gas-powered vehicles or stored in gas bottles for later use.

**Over millions of years,
the remains of plants
and animals have
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and peat.**



Helen's target is the same as the Finnish government's: to be carbon neutral by 2035. The target is ambitious at the global scale.



where in Europe and other parts of the world. Back then, coal was also used as a transport fuel that powered steam boats and locomotives. Industrialisation meant that people began to move close to production plants, and the process of urbanisation began. The number of homes grew quickly, as did the use of coal for heating homes.

The age of oil began in the United States in the early 20th century, when the number of internal combustion engines and oil consumption started to increase sharply. Cheap oil created jobs, accelerating the industrial revolution, population growth and the rise in the standard of living. The automotive industry thrived in particular. Labour moved from agriculture to industry and, later, from industry to office work.

The Golden Age of Oil began after World War II. A large number of new oil wells were discovered year after year, and oil production grew at an unlimited pace. Cheap energy helped increase the productivity of work, which multiplied during the 20th century in the Western world. The economies of oil-producing countries grew in giant leaps, as did the economies of their international trade partners. Social systems were created on the basis of expectations of economic growth. Welfare states and their services saw the light of day. The economy heated up, but so did the climate.

THE VAST MAJORITY OF THE WORLD'S COUNTRIES HAVE now signed the Paris climate agreement, which is aimed at limiting global warming. The objective of the Paris Agreement is to limit the increase in average temperatures to less than 1.5 degrees Celsius above the pre-industrial levels seen at the start of the 19th century. The Finnish government has set a target of making Finland carbon neutral by 2035.

“Carbon neutrality means that the sequestration and release of carbon are in balance. This means that the process or region being measured does not create an increase in the atmospheric carbon dioxide concentration,” says Sampo Soimakallio, Head of Unit at the Finnish Environment Institute.

Solutions in the areas of transport, agriculture, forestry, industry and energy are significant in the reduction of emissions.

“Energy production and industry in general play an important role in reducing emissions because they generate a lot of carbon dioxide emissions,” says Maiju Westergren, Vice President, Sustainability and Public Affairs at Helen.

Helen’s target is the same as the Finnish government’s: to be carbon neutral by 2035.

“We want to take an active role and to be a leader in our industry. Our target is ambitious at the European and global scale,” Westergren points out.

“The existing zero-emission technologies are becoming more efficient and the price of energy produced by them is falling. New zero-emission technologies are also being developed all the time.”

Achieving carbon neutrality requires not only reducing emissions, but also emission compensation. It can take the form of forestation in areas in which forests would not otherwise grow, or sequestering carbon in a new, permanent product.

STAYING UNDER THE 1.5 DEGREE WARMING LIMIT STIPULATED by the Paris Agreement would require the entire world to be carbon neutral by 2050,” Sampo Soimakallio says.

“After that, we need to achieve a global carbon-negative status, where carbon sinks exceed emissions,” Soimakallio adds.

“There are two main alternatives: reduce emissions or increase carbon sinks. In practice, our priority should be to bring emissions as close to zero as possible and, at the same time, increase carbon sinks to make them at least as large as the remaining emissions.”

“To accomplish this objective, we would need successful efforts in all areas of society, especially political decision-making and technological development,” Soimakallio explains.

New technologies are constantly being developed and, in the near future, we may see a day when carbon dioxide is removed from the atmosphere in large quantities by using it for food or fuel, or storing it underground.

A brand new food

Work is underway in Finland to develop a method for using carbon dioxide in the air along with nitrogen and electricity to produce food from microbes in a bioreactor. The output is a light grey microbial mass that is dried and sterilised to produce a flour.

SOURCES: FINNISH METEOROLOGICAL INSTITUTE, WMO, FINNISH ENVIRONMENT INSTITUTE, ILMASTO-OPAS.FI, IPCC, SITRA, MINISTRY OF THE ENVIRONMENT, PEDANET

Helen's road to carbon neutrality

Our flexible and versatile energy system is part of the Finnish circular economy and it serves as an effective platform for managing energy streams and recycling energy.

We actively develop and research new carbon neutral energy solutions.

New solutions

Energy storage systems

Geothermal heat

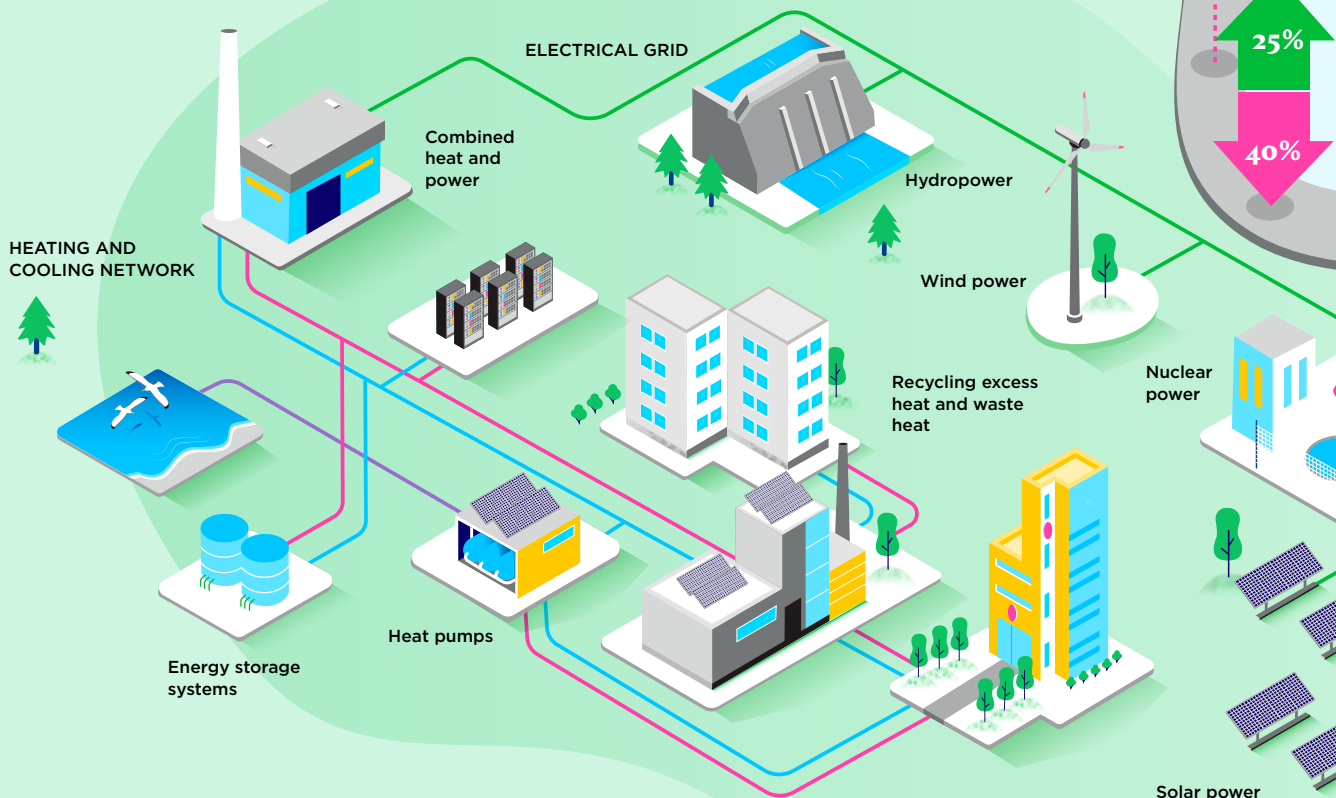
Wind power

2025

25%

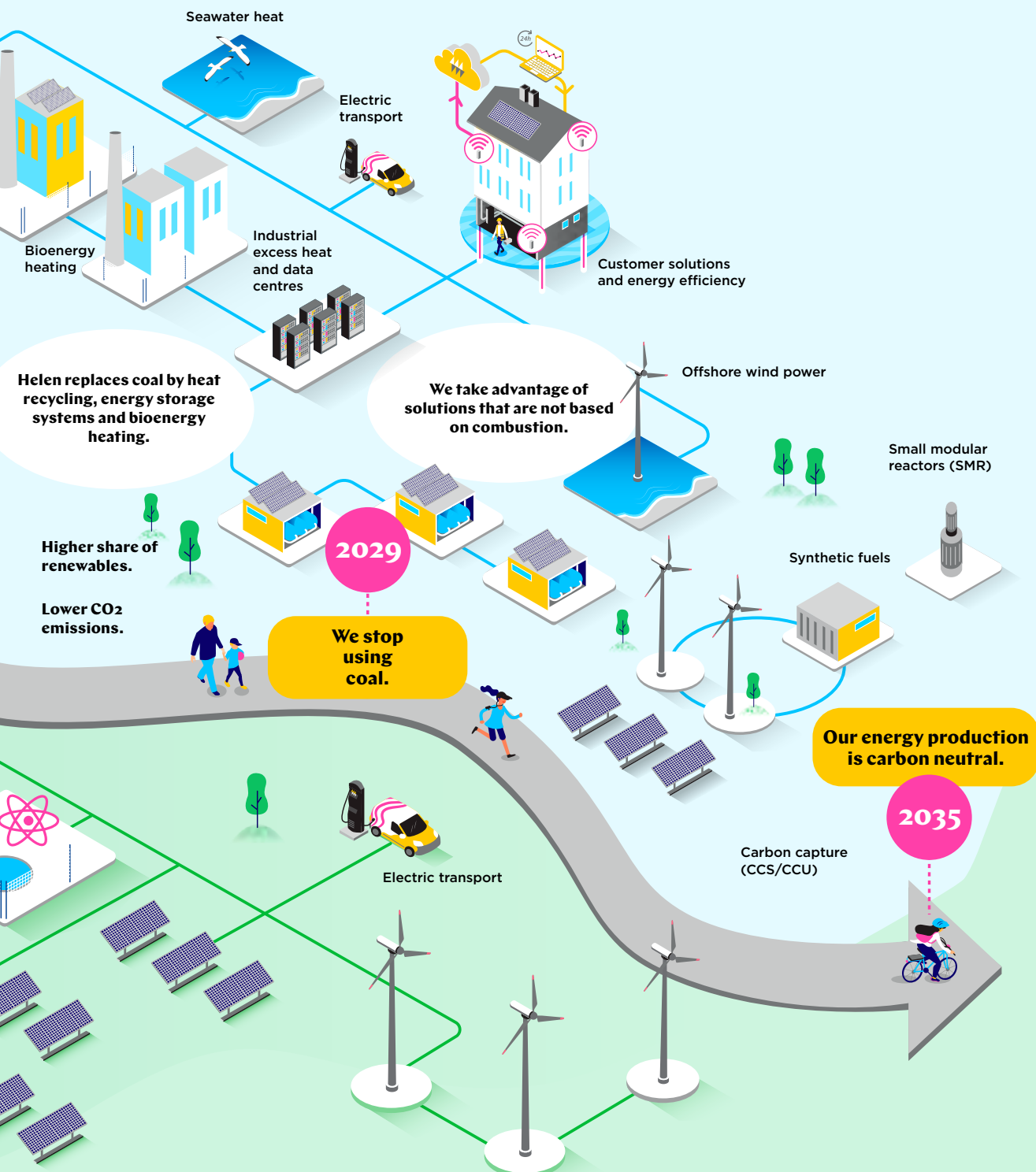
40%

Current production methods and energy sources



In 2035, Helen's energy production will be carbon neutral. Coal will be gradually replaced by new solutions, such as heat pumps, heat storage systems and biomass. Waste heat will play a big role in the energy system of the future.

Infographic: Henna Rynänen



Baby steps

Production coordinator and singer Pinja Rautio is an aesthete who reduces her carbon footprint while enjoying life.

A couple of years ago, the public discussion about the climate made me decide to make a more conscious effort to reduce my carbon footprint. I wanted to see what kinds of changes we could make in our family.

First, we started to emphasise plant-based eating. We looked for new products to try, and the amount of plant-based food on our dinner table increased considerably. I also like to cook with Finnish lake fish, such as vendace.

I love driving, but I started to feel guilty about it. When it was time to change our car, we chose a CNG-electric hybrid car. It was cheaper than our previous car! The network of charging points and service stations for CNG cars and electric vehicles is constantly growing, and we can contribute to this trend by increasing the demand for it.

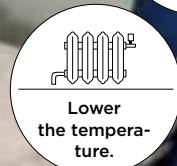
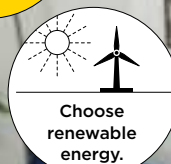
We used to fly overseas for a holiday once a year, but now we have realised there are many great destinations here in Finland as well. I love finding unexpected treasures like a small café by a lake.

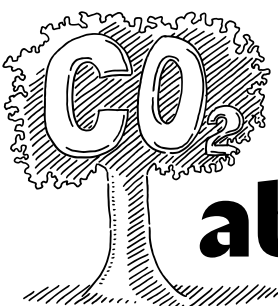
I'm an aesthete and I perform for a living. I love beautiful clothes. I choose to spend on quality that stands the test of time instead of fast fashion. I like visiting flea markets and I sell, donate and recycle my clothes. I then use the money I have saved up to buy a high-quality coat made in Finland, for example.

We reduce our carbon footprint without compromising on our enjoyment of life. I don't feel like I'm giving up things. The way I see it, I'm replacing them with better options. Making changes is easier if you see them as improving your quality of life.

"I like to cook plant-heavy meals and use Finnish lake fish, such as vendace," Pinja Rautio says.

PINJA'S TIPS
Easy ways to reduce your carbon footprint:





Did you know this about carbon dioxide?

Find out how familiar you are with this chemical compound consisting of carbon and oxygen.

1

What is the carbon content of carbon dioxide?

- A. 2.7%
- B. 27%
- C. 67%

4

Who discovered carbon dioxide?

- A. Flemish chemist Jan Baptist van Helmont (1577-1644)
- B. Scottish chemist Joseph Black (1728-1799)
- C. English chemist Joseph Priestley (1733-1804)

6

Why does carbon dioxide have a warming effect on the climate?

- A. It absorbs gamma radiation
- B. It absorbs visible light
- C. It absorbs infrared radiation

2

At what temperature does carbon dioxide turn into dry ice?

- A. -42.5°C
- B. -78.5°C
- C. -100°C



7

What sequesters carbon dioxide in seawater?

- A. Fish
- B. Single-celled algae
- C. Zooplankton

3

How many double bonds are there in a carbon dioxide molecule?

- A. Zero
- B. One
- C. Two

5

How many kilometres do you need to drive in an estate car powered by fossil diesel fuel to generate emissions equivalent to one tonne of carbon dioxide?

- A. 7,500 km
- B. 25,000 km
- C. 75,000 km

8

Which fuel generates the most carbon dioxide emissions in kilograms per unit of energy produced?

- A. Coal
- B. Heavy fuel oil
- C. Peat

9

What happens when you breathe?

- A. Carbon combines with oxygen in the air, forming carbon monoxide
- B. Carbon combines with oxygen in the air, forming carbon dioxide
- C. Carbon combines with oxygen in the air, forming carbon dioxide and releasing energy

Breathing exercise: sit with your back straight, place your hands on your diaphragm and close your eyes. Breathe slowly in and out through your nose.



ANSWER KEY: 1B, 2B, 3C, 4A, 5A, 6C, 7B, 8C, 9C

No escape for carbon

The Hellisheiði power plant is located 25 kilometres from the Icelandic capital of Reykjavik.


The Hellisheiði geothermal power station produces electricity and heating from water vapour that contains carbon dioxide. The plant is known for its unique efforts in the area of carbon capture.

Outside the main building, a piece of equipment about the size of a van draws in vapour and filters carbon dioxide from it. The carbon dioxide is then diluted with water. The process is largely the same you would use to make carbonated drinks at home with a sparkling water maker.

The carbon dioxide solution is then transported to a depth of about 1,000 metres by pump stations that resemble igloos. Deep underground, the CO₂ solution reacts with basalt — which accounts for 90% of the bedrock of Iceland — and turns into calcium carbonate through a process of rapid mineralisation.

This means the carbon dioxide remains deep underground, far away from the atmosphere.





At Hellisheiði,
the carbon
dioxide solution
is transported to
a depth of about
1,000 metres by
pump stations that
resemble igloos.

Household appliances through the years

Did you know that the first washing machine to run on electricity was called Thor?

1889

Singer Sewing Co. develops the first electric sewing machine in the United States.

1892

Canadian inventor Thomas Ahearn assembles the first electric stove.

1886

Josephine Cochrane from the US invents the first automatic dishwasher. Her idea is partly motivated by her frustration with the domestic staff breaking valuable tableware when they do the dishes.



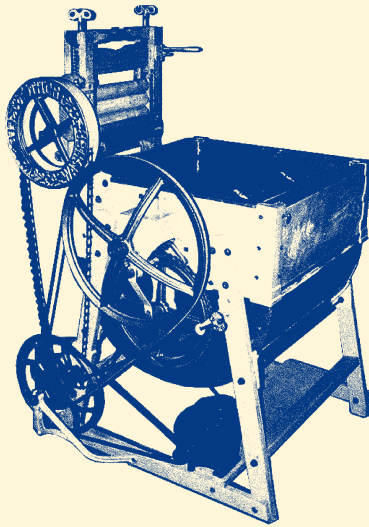
1893

Alan MacMasters develops an electric toaster in Scotland. He calls it the Eclipse Toaster.



1907

Alva J. Fisher from the United States designs a fully electric washing machine. It is named Thor.



1908

James Murray Spangler from the US invents a commercially successful portable electric vacuum cleaner. He sells the patent to William H. Hoover.



1913

Fred W. Wolf develops a commercially viable electric refrigerator in the United States. The DOMELRE cooling unit is installed on top of the refrigerator.



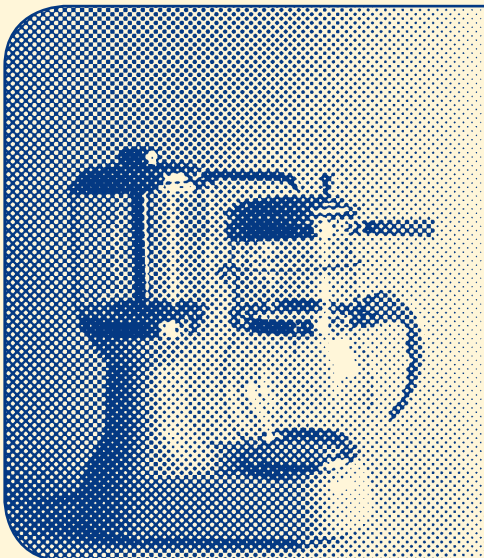
1947

U.S. engineer Percy Spencer works on radar applications at the military contractor Raytheon when he accidentally realises that microwaves can be used for heating food.



1954

Wigomat, the world's first electric drip coffee maker, is patented in Germany. It is named after its inventor, Gottlob Widmann.



1999

The British technologist Kevin Ashton coins the term "the Internet of Things" (IoT). It covers the remote operation and monitoring of household appliances, but also leads to an increased emphasis on information security.

Coffee warms us

The favourite beverage of Finns warms more than just our coffee mugs. Helen recovers the excess heat generated by the roasting processes at the Paulig roastery in Vuosaari.

Text: Ani Kellomäki | Photo: Getty Images

MID-WINTER MORNINGS CAN BE DIFFICULT. GETTING out of bed when it's completely dark outside would be an even more daunting prospect if it weren't for that familiar aroma wafting through the air from the kitchen. Everything feels a little better with a freshly brewed cup of coffee in hand. And do we ever enjoy our coffee here in the darkness of the North! An incredible 86 per cent of Finns drink coffee at least once a day. We are the world champions of coffee drinking.

As the Head of Cupping at Paulig, Marja Touri knows exactly what kind of coffee Finns like the best. She has been tasting coffee for a living for more than 30 years.

"When I started my career in cupping, Finnish consumers wanted Juhla Mokka coffee on normal days and Presidentti coffee for special occasions. These days, people are more open-minded about trying medium and dark roasts, but the popularity of the traditional Finnish light roasts is still strong," says Touri. She enjoys a light roast to start the day.

"It seems like nothing can come between me and my morning cup of light roast! I've tried other options, but I always go back to the safety and familiarity of a light roast in the morning."

As Paulig's Head of Cupping, she tastes 250–300 coffee samples every day, but there is still a lot to learn.

"The world of coffee is so fascinating. You can never get tired of it! There's always something new out there," says Touri, one of only three Finns to pass the Q Grader certification exam. The Q Grader

programme could be compared to the challenging courses taken by wine tasters.

The lovely aromas of coffee are revealed by the roasting process. Unroasted green coffee is tasteless. It's only with heat that the flavours and aromas of the coffee beans develop, giving us the drink we love. Roasting is a meticulous process where every step is carefully measured and considered.

"Changing the roasting profile produces coffees with different nuances. We have six professional roasters at Paulig. It's a skill that is passed on from a master to an apprentice. You learn it by working patiently under a master roaster."

Touri points out that coffee is a highly sensitive beverage because it's a natural product. There are big differences from one crop to the next.

"Like strawberries, for example, coffee beans vary due to the weather conditions and other factors. Last year's harvest was good. There were some fantastic coffees, especially from Africa."





Facts

In 1876, Gustav Paulig started a company with the idea of inspiring our northern people to discover new exotic flavours, and especially high-quality coffee.

Paulig is Finland's largest coffee company and it also operates in the Baltic countries, Russia, Sweden and Norway.

Paulig has roasteries in Helsinki's Vuosaari district and Porvoo in Finland as well as Tver, Russia.

In early 2020, Helen and Paulig will start to recover excess heat generated by the roasting processes at the Vuosaari roastery and recycle it for use in Helen's district heating network. The excess heat recovered from coffee roasting can correspond to the annual heating requirements of as many as 1,000 two-room flats.

“You don’t become a coffee roaster in school. You learn it by working patiently under a master roaster.”

Marja Touri

Head of Cupping, Oy Gustav Paulig Ab



EVENTS

The following customer events are scheduled for the spring at Helen's Energy Gallery on the third floor of Sähkökötalo at Kampinkuja 2 (Malminrinne 6), Helsinki. Coffee will be served starting from 4 p.m. Welcome!

Registration: helen.fi/tapahtumat

TUE 17.3. 5-7 PM Self-sufficient households – what do the homes look like in the new era of energy?

Why is this a good time to get solar panels? What is the difference between an electricity storage system and a virtual battery? Examples of eco-friendly homes of the new era of energy.

TUE 21.4. 5-7 PM Cool your home

Summer is coming! It's time to think about how to prevent your home from getting too hot. Cooling is the coolest way to increase your living comfort. Come find out about cooling and more conventional ways of reducing the temperature of your home when necessary.

SUDOKU

Sudoku solution: helen.fi/sudoku

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READER SURVEY

Send us your feedback and win a prize!

Which of the stories in this issue was the most interesting to you? You can also let us know what you would like to read about in Helen magazine.

Participate in the survey by 11 April 2020 online at helen.fi/magazine-feedback or send a postcard to Helen, Helen magazine, 00090 HELEN. Don't forget to write your contact details and customer number on the card.

Tansun Algarve 1.5 kW

Tansun Algarve is a weatherproof heater. IP55 rated. Available in white, black and silver. For heating areas up to 11 m². DR. FISCHER quartz infrared lamp age 7,000 h. Weight: 2.4 kg. Dimensions: 392 mm x 100 mm x 113 mm.

One lucky survey respondent will win a patio heater.



1

Inner child

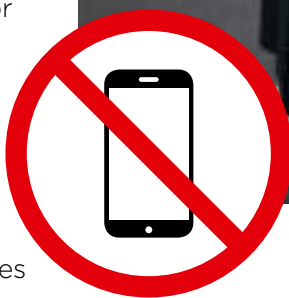
I have three young children. I try to get in touch with my inner child when I play with them. I loved to play dress up when I was young. We all put on Harry Potter themed costumes not too long ago.



2

Putting the phone away

If I read the news on my phone when I'm tired in the evening, it rarely makes me feel better. It tends to put my brain in work mode. That's why we put our mobile phones away in the evenings. Evenings are for relaxation.



3

Time off

As an entrepreneur, establishing boundaries for free time is something I've had to learn. Having a family and kids with school holidays has helped with that. I don't take on any jobs in July, for example.



Marja Hintikka



4

Winter swimming

I discovered winter swimming years ago. Water is such a relaxing and empowering element.



5

Dance

The world of dance opened up to me when I participated in Dancing with the Stars. Dancing is a great way to release your emotions. It brings joy and a sense of lightness to life.

6

Green smoothies

I and my partner start every day with a green smoothie made from frozen blueberries, parsley, banana, avocado and water.

7

Nature

Being by the sea makes you realise how small you are. Just one of those waves could toss you anywhere! I also enjoy nature at our summer cottage.

Facts

Marja Hintikka is a veteran TV personality and journalist.

She hosts the talk show Villa Hintikka, which is shot at her summer cottage. The first episode aired on 9 January.

Her other talk show, Vappu ja Marja Live, will return later in the spring.

Marja lives in Helsinki with her family.

Helen Ltd

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• helen.fi/contact-us
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Mon-Fri 8-16

New district heating connections
• 09 617 8013
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Contract amendments and assistance
• 09 617 8014
• kaukolampo@helen.fi
Billing, meter reading and energy consumption
• 09 617 8001
District heating equipment inspections and assistance
• 09 617 8012

COOLING CUSTOMERS

Mon-Fri 8-16

Sales and contracts
• 09 617 8015
• kaukojaahdytys@helen.fi

ENERGY GALLERY AND CUSTOMER SERVICE

Sähköä, 3rd floor

Mon-Fri 8-16

Energy Gallery: group visits, advice on topics such as heating, new electricity solutions and consumption monitoring as well as guidance on issues related to the selection, use and maintenance of household appliances
• energiatori@helen.fi

FAULT REPORTS

Disruptions in electricity distribution
• 08001 80808
Disruptions in district heating distribution
• 08001 60602
Real-time information on disruptions
• helen.fi

CALL CHARGES

Calls are subject to local network or mobile call charges

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Carbon dioxide has become a problem because human activity produces more of it than carbon sinks can sequester.



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