“New things in the air”

How to reduce the harmful effects of weather and climate-related risks and make healthy everyday choices.

A follow-up to “It’s in the air”, a publication by the Organisation for Respiratory Health in Finland

The Organisation for Respiratory Health in Finland

Contents

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The Organisation for Respiratory Health in Finland
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Layout: Vitale Ay

From this moment forward

The climate continues to warm, and the results of that are affecting the everyday lives of all of us more and more. This is a standalone publication and a follow-up to the 2019 respiratory health programme "It's in the air" by the Organisation for Respiratory Health in Finland to continue its efforts to promote respiratory health.

Over the past couple of years, we have gained more information about the effects of climate change on nature and our health. The information we shared in "It's in the air" has been further substantiated, meaning that its messages are still relevant today.

In this publication, we present up-to-date research data in an easy to digest format, based on a literature review by Sari Mäki. This publication discusses climate change and health (the impact of biodiversity, biodiversity loss, and weather-related risks on respiratory health in particular), indoor and outdoor fine particulate matter, zoonoses and vector-borne diseases, antimicrobial resistance, the environmental effects of tobacco, the impact of nature on our health, and nature connectedness. Facts enable understanding and understanding helps make good choices. The sources we have used are listed at the end.

We will give concrete suggestions on how to make healthy everyday choices and reduce the harmful effects of weather and climate-related risks and environmental changes. We believe that encouragement and solutions are more effective than intimidation or blaming.

We would like to thank indoor air quality specialist Kirsi Säkkinen for writing the chapter "Those tiny, tiny particles" and senior specialist Jenni Tuomela for the chapter "Tobacco is also harmful to nature". We would also like to thank senior specialist Satu Mustonen and other colleagues for their valuable feedback during the writing process.

In this guide, we will take a look at the world at the grassroots level, focusing on the actions and steps that individuals can take. Actions create hope and solutions. Changing the world will happen one day at a time. We want to encourage everyone in Finland to take action for better respiratory health from this moment forward.

Sari Mäki and Hanna Salminen

PART 1

Big and small everyday changes

In this chapter, you can update your knowledge of the different ways climate change affects our health. We will particularly focus on how weather and climate risks from temperature to air pollution affect everyday life.

You will learn what the Organisation for Respiratory Health does to promote respiratory health and the quality of life of people suffering from respiratory disorders. You will also find concrete tips on what steps you can take in your everyday life.

1.1 One Health and planetary health: groundbreaking ideas

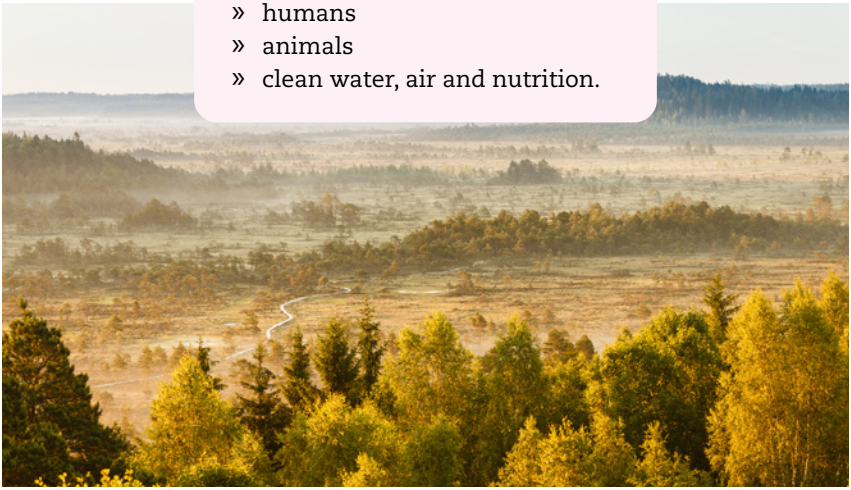
The terms One Health and planetary health are often used to describe the holistic well-being of the entire planet. Both largely refer to the same things, but from slightly different perspectives.

These terms include both taking care of our planet and minimising health problems – among both humans and animals. These approaches acknowledge that human and animal health are not only interlinked, but also connected to the environment, and that environmental changes have significant effects on health. Problems in the ecosystem are reflected around the planet, and finding the solutions will require global action. In addition to the technological and economic challenges, political issues need to be tackled, which will call for solidarity between people.

The European Climate Law (2021) carries an important message: by enhancing our resilience and adaptive capacities, we can minimise the impact of climate change and address its unavoidable effects.

Planetary health encompasses the following factors:

- climate change
- biodiversity
- humans
- animals
- clean water, air and nutrition.



Next, we will discuss the various ways in which planetary health is tangibly present in our everyday lives and what steps we can take.

1.2 Climate change affects our health

In recent years, we have witnessed how the human-caused climate change has brought about various acute crises around the globe. Extreme environmental changes and phenomena, such as extreme droughts, water shortages, heatwaves, forest fires, floods, glacial melting, and rising sea levels, are triggering internal and international migration. The most significant changes have occurred in the developing countries, where mortality rates are estimated to increase by a quarter of a million from 2030.

Humans continue to convert natural areas to agricultural and industrial land, pollute the soil, deplete natural resources and cause pollution. Biodiversity is declining. Human-wildlife conflicts are increasing. Pandemics are becoming more common.

In Finland, people can see how these changes are affecting our society and economy, our natural environment (more heatwaves, rainfall, and winds), and our health and safety (longer allergy season, increased pollen amounts, zoonoses*).

New pathogens that have recently started spreading from animals to humans are found every year. In Finland, zoonoses include tick-borne diseases and rabbit fever (tularemia).

*Zoonoses mean animal diseases that can spread directly to humans and vector-borne diseases.

» In Finland, heat causes 200–400 premature deaths every year and leads to higher health care costs.
» The annual cost of treating tick-borne diseases is already around 2 million euros. The number of ticks is expected to increase due to climate change.

The Climate Change Adaptation Plan of the Ministry of Social Affairs and Health (2021) sets 43 targets and 92 recommendations for action. The biggest health benefits will likely be achieved as a combined effect of mitigation measures, because

» climate-friendly food is often also good for health
» switching from motorised vehicles to physical activity improves physical fitness
» shifting away from fossil fuels reduces air pollution.

Urban green spaces are among the things that contribute to climate change adaptation: urban greening helps adapt to heatwaves, improves air quality, curbs surface water flooding, creates carbon sinks, and offers opportunities for recreation.

According to researchers, issues that would require political discussion and actions include the future of environmentally harmful subsidies, the price of environmental degradation, and rewarding efforts to improve biodiversity and soil quality. It remains to be seen whether countries could measure the depletion of their natural capital alongside GDP in the future.

WHAT CAN YOU DO?

- ✔ Eat more vegetarian food*.
- ✔ Reduce your consumption of red meat.
- ✔ Use public transport, walk or cycle.
- ✔ Find information and influence policymakers.

*Switching to a more plant-based diet is the most effective action people can take for the climate and public health. For people suffering from respiratory diseases, it is particularly important to ensure a varied diet with enough protein. What if you replaced some of the meat and dairy in your diet with legumes?

1.3 Weather risks in everyday life

Climate change increases the frequency and intensity of extreme weather events and changes their typical time of occurrence. In Finland, **it is likely that our winters will change more than our summers**: temperatures will rise and precipitation will increase and fall in the form of rain instead of snow, which will decrease the number of snow-covered days.

In Finland, the average temperature is estimated to rise by 2.3–6 degrees by 2100. Precipitation is estimated to increase by 8–20%.

Although the impacts of climate change are thought to be much less severe in Finland compared to the global average, we are not safe from the adverse health effects. We will have to tackle more problems due to heat, waterborne diseases, vector-borne diseases, slip and fall accidents, and building moisture damage*. The Climate Change Adaptation Plan of the Mi-

*** Read about solutions**

nistry of Social Affairs and Health (2021) divides the health effects into the following categories:

Consequences of an increase in the average temperature:

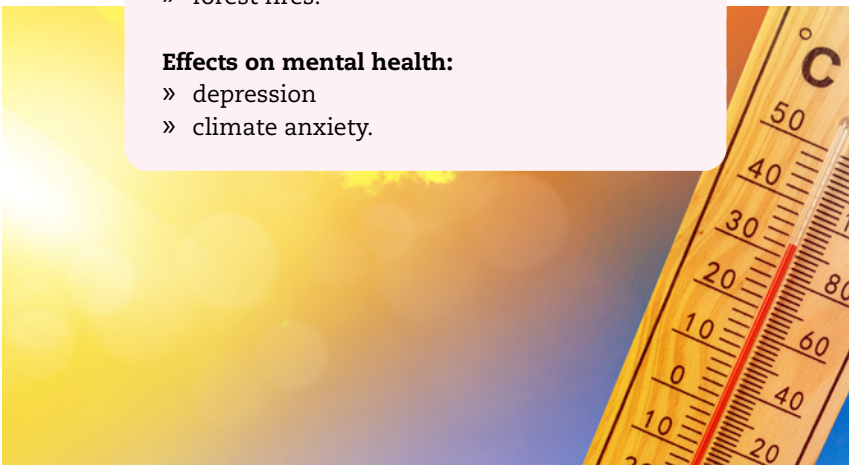
» additional heat stress among people suffering from illnesses
» combined effect with air pollution
» effects of changes in the distribution of microbes and animals that carry them on communicable diseases
» changes in road surface conditions and their effect on accidents.

Effects caused by increasing extreme weather events:

» heatwaves
» storms
» heavy rainfall
» floods
» drought
» forest fires.

Effects on mental health:

» depression
» climate anxiety.



In this publication, we will particularly focus on heat, fine particles and road slipperiness since they have a big impact on the lives of the elderly and people suffering from respiratory diseases.

1.3.1 The heat is on

Summertime temperatures are expected to rise in Finland. Heatwaves are also likely to become longer, more common, and more intense. In 2021, the World Health Organization (WHO) recommended that all countries should come up with national heat-health action plans to guide local and regional prevention of adverse heat-related risks.

They keys to preparedness are leadership and coordination, an up-to-date and health-based heat warning system, a communication plan, prevention of indoor heat exposure, protection of vulnerable groups, preparedness in healthcare and social services, and long-term actions in urban planning and construction.

OUR ADVOCACY WORK

- The national climate change adaptation plan is under way. The key is to adapt to the risks, but the risks should also be prevented.
- In addition to implementing the national adaptation plan, the implementation of the social and healthcare sector's adaptation plan must be ensured.
- The Organisation for Respiratory Health is in favour of drafting a national action plan to prevent the adverse health effects of heat. The plan should be drafted swiftly, and sufficient funding should be ensured for its implementation.
- The adverse health effects of climate change should be actively prevented. Climate policy must be made with health considerations in mind.
- **We need both societal and structural measures and individual action.**
- **Policymakers must have the courage to make climate-friendly decisions.**

According to studies, Finns start developing health problems at lower temperatures than southern Europeans. The most common mild issues are sleep problems and reduced functional capacity. Heatwaves also increase the need for medical services, especially when buildings heat up and indoor temperatures remain high at nighttime.

Consequences of prolonged heat stress:

- more strain on the respiratory, cardiovascular and circulatory systems; chronic heart and respiratory conditions increase the risk of hospitalisation
- growing sleep debt
- slower recovery if the body does not cool down during the night
- increased physical and psychological morbidity among people suffering from mental health problems.

Warning signs of heat-related illness:

» thirst
» dry mouth
» decreased physical performance
» faintness and muscle weakness
» nausea
» confusion
» concentration difficulties
» sleep disturbances and fatigue
» heart arrhythmia
» shortness of breath
» wheezing and excess mucus
» changes in the effectiveness of medication.

Heatwaves that last for several weeks can lead to hundreds of premature deaths. **The risk of serious adverse health effects is particularly high among the elderly and people with long-term illnesses, regardless of whether they live at home or in service housing. The ageing population also increases the number of people at risk.**

According to a recent study (2022), hot indoor air during heatwaves is a common problem in hospitals in primary and specialised health care, affecting the well-being of both patients and staff and the operation of care facilities. In this study, the highest indoor temperatures were between 27°C and 30°C. The use of mechanical cooling varied between locations and different types of facilities. Problems were the most prevalent in staff break rooms, patient rooms in inpatient wards, and treatment and examination rooms.

OUR ADVOCACY WORK:

The Organisation for Respiratory Health is particularly concerned about the adverse heat-related effects on the elderly and people suffering from respiratory diseases. We need concrete actions to reduce and prepare for heat-related risks. Awareness of weather risks varies among healthcare professionals. **Information about heat-related health risks should be disseminated, and good working and living conditions must be ensured for all.**

In its weather and climate publication "It's in the air", the Organisation for Respiratory Health argued that childcare facilities and care homes for the elderly should have proper ventilation and cooling when the temperature exceeds 23°C. Hospitals and healthcare facilities must have proper cooling.

The current temperature limits set out in the decree on housing health are too high. This will result in considerable health hazards among the elderly in the summertime. In the future, the threshold levels should be reassessed based on health considerations.

The most vulnerable groups must be protected. People suffering from long-term illnesses and other risk groups should be warned about the adverse health effects of heat and climate change. The reduction of adverse health effects should not be forgotten either.

WHAT CAN YOU DO?

- Follow the Finnish Meteorological Institute's heat warnings.
- Remind people in charge of urban planning to add parks that offer people respite from the sun in urban areas.

How to protect yourself from heat

- Find a cool place. The temperature inside your apartment should be below 25°C. Keep in mind that tolerance to heat varies from person to person.
- To cool the apartment, keep the curtains closed, reduce the amount of heat generated by household appliances, and air out the apartment at night.
- When you close the blinds, make sure that the convex side is facing the window. This way, the UV rays will be reflected back outside.
- High indoor temperatures can be reduced with cooling systems and air source heat pumps.
- Wearing the right kinds of clothes can help cool your body indoors. Damp and thin garments are an effective way to cool your body.
- Cold showers also help cool the body down.
- Check whether your medication contributes to heat-related symptoms. Certain medications can increase heat-related symptoms. This is particularly the case with medicines that affect the cardiovascular system. Check with your physician to find out how your medication interacts with heat.

How to ensure proper hydration

- In hot weather, you should drink 1.5 times the normal amount of fluids.
- Drink even if you don't feel thirsty.
- Eat something salty every now and then.
- Ask your doctor for advice on hydration.

OUR ADVOCACY WORK:

Solution: Prepare for weather risks, particularly heatwaves

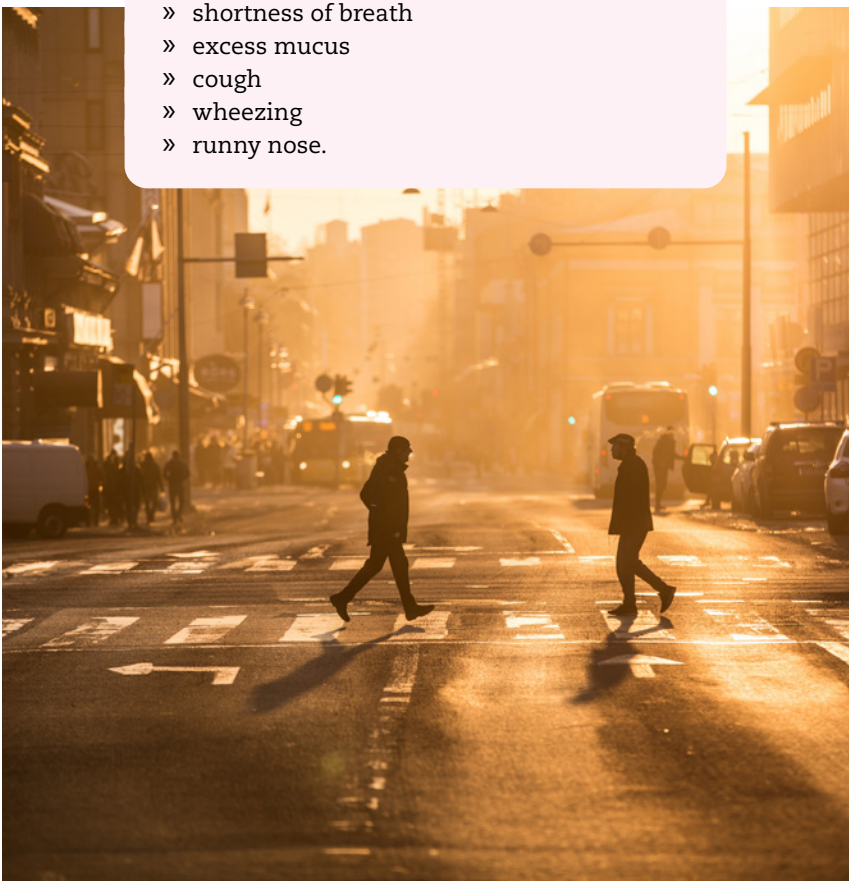
1.3.2 Road dust: one problem after another

Mild winters and other weather conditions that worsen road conditions mean slippery streets and more traffic accidents. Going by the highest estimates, traffic accidents have increased by 20%. This also increases slip and fall accidents, incapacity for work, and related costs.

Road slipperiness is usually tackled by gritting. Gritting increases urban road dust and particulate matter concentrations, particularly in springtime.

Road dust-related respiratory symptoms include:

- shortness of breath
- excess mucus
- cough
- wheezing
- runny nose.



Street dust increases the need for medication. Street dust increases inflammation and pneumonia, which are particularly dangerous to people with respiratory and cardiovascular diseases.

Street dust is mainly made up of coarse particles. Coarse particles increase the risk of asthma among children.

Street dust also contains fine particles. The current understanding is that fine particles are the most harmful particle group. Fine particles are also the most significant environmental exposure agent affecting health. The risk of mortality and the risk of developing asthma both rise steadily as fine particle levels rise. Fine particles and street dust also find their way indoors.

For people with allergies, respiratory symptoms are further aggravated by the simultaneous appearance of airborne pollen and the flowering of birch, alder, and hazel.

Road maintenance and the use of more ecological gritting and deicing methods that emit less dust (such as washed, crushed stone) can help reduce urban street dust.

What people responsible for street cleaning can do

» Start cleaning the streets as soon as the weather permits.
» Use water to prevent the formation of dust during grit removal.
» If necessary, use calcium chloride as a 'first-aid solution' for dust prevention.
» Schedule the cleaning project properly.
» Provide financial support for street cleaning.
» Wash the streets after grit removal.
» Invest in winter-time snow and grit removal.
» When gritting, target the locations that need it the most.
» Use high-quality grit.

WHAT CAN YOU DO?

How to protect yourself from street dust

- ✔ Avoid problem areas during the worst road dust season. The dust problem is worse in busy streets.
- ✔ Install fine-particle filters in air intake vents and ventilation equipment at home, in your car, and at your workplace. Change the filters as instructed.
- ✔ Avoid opening the windows and install dust screens in ventilation windows.
- ✔ People with allergies and respiratory and heart conditions should keep their prescription reliever medication on hand whenever the air quality is low. You can alleviate irritation by moisturising the mucus membranes with appropriate sprays and drops.
- ✔ If your health allows it, consider wearing a respirator outdoors.

Protect babies and children from street dust

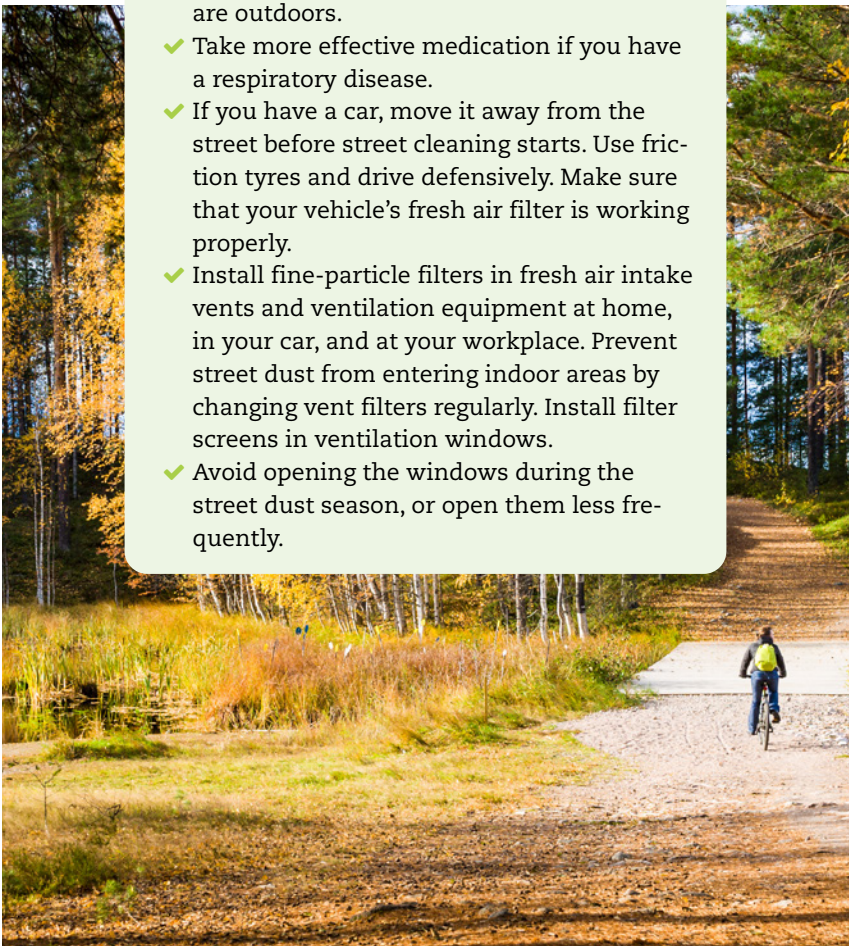
The health risks are the same for children and adults. Street dust is linked to the onset of asthma. Children are usually more exposed to street dust than adults as they spend more time outdoors.

When taking babies and children outside, it is advisable to stay away from the busiest roads and streets. You can spend time in places like parks or forest trails, or by the lake or sea. In calm weather, street dust does not mix into the air.

When putting children down for a nap outdoors, it is advisable to avoid areas near busy streets during the worst street dust season. Yards and gardens are usually safe.

WHAT CAN YOU DO?

- Walk or cycle short distances. Avoid unnecessary car journeys – opt for public transport and carpooling instead.
- Avoid busy roads and streets. Avoid driving during rush hour, especially in dry weather and during the worst road dust season.
- Follow weather forecasts, so you know when to prepare for potential symptoms. If necessary, use a respiratory mask while you are outdoors.
- Take more effective medication if you have a respiratory disease.
- If you have a car, move it away from the street before street cleaning starts. Use friction tyres and drive defensively. Make sure that your vehicle's fresh air filter is working properly.
- Install fine-particle filters in fresh air intake vents and ventilation equipment at home, in your car, and at your workplace. Prevent street dust from entering indoor areas by changing vent filters regularly. Install filter screens in ventilation windows.
- Avoid opening the windows during the street dust season, or open them less frequently.



What property owners and housing companies can do

- ✔ Remove grit from the street while it is wet, or during snow removal.
- ✔ Clean your own section of the street before the city's cleaning trucks.
- ✔ Avoid using leaf blowers for grit removal.
- ✔ Avoid any unnecessary gritting of streets in winter.
- ✔ Use washed, crushed stone for gritting.

1.3.3 Those tiny, tiny particles

Second-hand smoking, indoor radon, and air pollutants transported indoors through ventilation (fine particles in particular) are factors that pose health risks to humans.

In nature, particulate matter comes from the soot emitted by forest fires and volcanic eruptions. The resulting gases also form organic and inorganic particles. Organic particles also come from the hydrocarbon emissions from trees and other plants.

Human activities generate fine particles. Common sources are residential wood burning and soot emissions from car exhaust gases. Other sources are the fly ash from power plants and direct emissions from industry.

In Finland, residential wood burning is the biggest source of fine particles, especially in densely built urban areas dominated by detached housing where the emissions are released into the air from a low height. People use fireplaces and wood-burning sauna heaters both at home and in secondary residences. It is estimated that the health effects of residential wood burning affect medium-sized municipalities the most (municipalities with 20,000–100,000 inhabitants). WHO published its latest guidelines for indoor air quality in September 2022. Air pollution causes around 7 million premature deaths worldwide every year. In Europe, the figure is about 500,000. Reduction of air pollution helps prevent several diseases from respiratory diseases to cancers.

Even though Finland rarely exceeds the WHO's strict guideline values, air pollution is still estimated to cause 1,600–2,000 premature deaths per year. The adverse health effects of air pollution are largely caused by fine particulate matter (PM2.5). As fine particle levels rise, the risk of developing asthma and asthma mortality both rise steadily. In Finland, the majority of fine particles are airborne emissions that originate from outside Finland, but they also come from industry, energy production, residential wood burning, car exhaust gases, and urban road dust.

OUR ADVOCACY WORK:

Solution: Reduce street dust and its health risks

Pellets = small, dry pieces of pressed wood

Wood chips

Firewood

Wood and peat briquettes

OUR ADVOCACY WORK:

As a member of the EFA, the federation representing respiratory diseases patients, the Organisation for Respiratory Health is asking Europe to adopt the WHO air quality guidelines as targets.

The Organisation for Respiratory Health demands that Finland should undertake to comply with the WHO guidelines for particulate matter concentrations: 5 micrograms/m^3 annually (µg/m^3). In the EU and Finland, the recommendation is currently 25 micrograms (µg/m^3).

Solution: Demand a reduction in fine-particle emissions

Most often, residential wood burning generates emissions in the evening and on weekends, particularly in calm winter weather. Wood burning generates direct emissions into indoor air, especially when starting the fire and adding more wood. The smoke can also reach the neighbours' homes through ventilation.

Did you know?

» Residential wood burning always generates some amount of emissions (such as fine particles, carbon monoxide, hydrocarbons, and other harmful compounds*) even in almost complete combustion. The quantity and quality of the emissions depend on what types of fuel, fireplace and combustion method are used.

» In complete combustion, the carbon, hydrogen and oxygen contained in the wood are converted into carbon dioxide and water vapor. Incomplete combustion generates carbon monoxide and hydrocarbons, such as methane, which is a greenhouse gas, and other carcinogenic and irritating compounds. Combustion generates soot and harmful nitrogen and sulphur oxides, which form fine particles (secondary particles) in the atmosphere. Wood itself contains a minimal amount of several ashes (coarse particles of more than 10 µm), which have no effect on human health or the climate.

POLTA PUUTA PUHTAASTI

Puun poltto tuottaa aina pienhiukkasia ja terveydelle haitallisia yhdisteitä. Päästöjen määrään voi vaikuttaa polttamalla kuivaa puuta puhtaasti!

Tiesitkö, että...

- omalla polttotavalla vaikutat merkittävästi lähiympäristösi ilmanlaatuun
- kostean puun poltto tuhlaa energiaa
- kitupoltto (liian vähän ilmaa) ja roskien poltto heikentävät tulisijan ja hormien kuntoa
- nokeentuneet tulisijat ja hormit tuhlaavat energiaa, eivätkä ne ole paloturvallisia
- puun poltosta muodostuva savu sisältää pienhiukkasia, häkää, erilaisia hiilivetyjä ja muita terveydelle haitallisia yhdisteitä.

Hengitysliitto KOSTEUS- JA HOME TALKOOT

Hengitysliitto tekee työtä, jotta meidän kaikkien olisi helpompi hengittää. Tutustu toimintaamme, hengitysterveyteen, hengityssairauksiin ja löydä oma tapasi osallistua osoitteessa www.hengitysliitto.fi.

Varmista, että perheesi ja naapurisi eivät altistu turhille savujäämille:

Kuivaa pilkkeet polttopuuksi. Kuivuminen kestää puuvajassa tai ulkona yli vuoden.

Tuo poltettava puumäärä sisätiloihin 1–2 vrk ennen polttoa.

Tutustu tulisijan valmistajan ohjeisiin ja noudata niitä. Valitse tulisija käyttötarkoituksen mukaan. Tulisijan asennuksen toteuttaa alan ammattilainen.

Tarkista, että:
- savupellit ovat auki
- tuhkat on poistettu
- arina on puhdas.

Lado puut vaakatasoon niin, että palamisilma pääsee kiertämään pilkkeiden välistä: isot puut alle, pienet puut päälle ja ylimmäksi sytykkeet. HUOM! Jätä vapaaksi puolet tulipesästä ja sytytä tuli aina päältä.

Huolehdi korvausilmasta. Avaa esim. ikkuna hetkeksi tai käytä ilmanvaihtojärjestelmän takkakytkintä. Vähennä poistoilmanvaihdon tehoa liesituulettimesta tai liesikuvusta.

Sopivan ilman määrän tunnistaa kirkkaista liekeistä sekä tasaisesta ja rauhallisesta huminasta. Säädä tarvittaessa paloilman määrää.

Katso savupiipusta tuleva savun väri. Sytytysvaiheen jälkeen savun pitää muuttua vaaleaksi ja heikosti näkyväksi.

Sulje pellit vasta, kun hiillos on varmasti palanut loppuun.

Tilaa nuohooja säännöllisesti:
- jos savupiippu on jatkuvassa käytössä → nuohous 1 kerran vuodessa
- jos kyseessä on vapaa-ajan asunto → nuohous 3 vuoden välein.

Tarkista palokatkojen tiiviys.

Read the clean wood burning manual of the Organisation for Respiratory Health in Finland.

*Sources of PAHs include residential wood burning, tobacco smoke, cooking and grilling. PAHs particularly increase the risk of lung cancer.

Health effects of residential wood burning

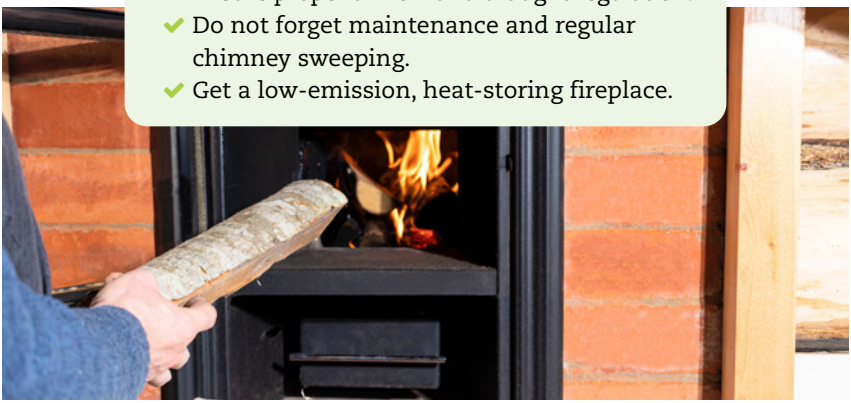
» Clearly elevated particulate matter concentrations (more than 5–8 µg/m^3) can cause symptoms even after short-term exposure. The most common symptoms include irritation, such as a sore throat, cough, and shortness of breath. Small children and people suffering from asthma or COPD are particularly prone to irritation.

» Heavy residential wood burning can aggravate even the most severe symptoms among people suffering from heart and respiratory diseases. Several years of exposure can increase the risk of developing a chronic cardiovascular disease.

» Exposure to the emissions from residential wood burning is estimated to cause approximately 200 premature deaths per year. The National Air Pollution Control Programme (2019) talks about raising awareness and potentially tightening fireplace regulations.

WHAT CAN YOU DO?

- ✔ Clean out the ashes before use to improve airflow.
- ✔ Burn wood that is dry and clean. Do not burn too much wood at once.
- ✔ Do not burn waste.
- ✔ Use kindling correctly.
- ✔ Light the fire correctly.
- ✔ Add more firewood at the right time, not too early or too late.
- ✔ Ensure proper airflow and draught regulation.
- ✔ Do not forget maintenance and regular chimney sweeping.
- ✔ Get a low-emission, heat-storing fireplace.



Heat-storing fireplaces include fireplaces built using brick, soapstone and ceramic materials:

» heat-storing fireplaces (both modern and traditional models)
» wood-burning baking ovens
» traditional metal-clad masonry heaters (pönttöuuni)
» cookers.

Modern fireplaces have controlled air supply, which helps combustion air and combustion gases to mix better and reduces emissions when instructions are followed.

OUR ADVOCACY WORK:

Solution: Prepare for weather risks, particularly heatwaves

Solution: Burn wood cleanly – particularly in the winter and in urban areas

OUR ADVOCACY WORK:

Learn about zoning and construction-related solutions in our “It’s in the air” programme.

PART 2

Tackling the causes of everyday problems

In this chapter, you can update your understanding of the complex causal relationships that lie behind everyday problems. To solve these underlying causes, both individuals and societies need to make an effort. It is not enough to resolve the problems that we encounter; we must also try to address the factors behind these problems. In this chapter, we focus on tobacco production, zoonoses, and antimicrobial resistance.

The mission of the Organisation for Respiratory Health in Finland is to promote respiratory health and the quality of life of people suffering from respiratory disorders. We influence policymaking by issuing statements and opinions. We meet with decision-makers and government officials to inform them how they can promote respiratory health.

To address the challenges discussed in this chapter, we collaborate with our partner organisations and disseminate information to our members and everyone who is interested. In Europe, the Organisation for Respiratory Health in Finland promotes respiratory health as a member of the EFA, the European Federation of Allergy and Airways Diseases Patients' Associations.

Everyone can make a difference in their own way. That is why we will give you concrete tips on what steps you can take in your

2.1 Preventing biodiversity loss together

Biodiversity, or biological diversity, affects the world on many levels. Biodiversity is defined as the variety of genes, species, communities and habitats. From the perspective of planetary health, it ensures an ecosystem that provides people with enough clean water and food.

From the perspective of societies, biodiversity helps sustain local communities and cultures and helps develop environmentally friendly agricultural production. For the individual, it means a stronger immune system and protection against diseases.

Closely linked to global warming, biodiversity loss is at least as big a global problem. According to some researchers, the root causes of biodiversity loss are the human population explosion and the overconsumption of natural resources. Biodiversity loss is also often referred to as the sixth mass extinction[1].

Things that contribute to biodiversity loss:

» changes in land use (converting forests to farmland, urbanisation, urban sprawl)
» overlogging
» excessive use of plant protection products and pesticides
» overuse of antibiotics
» disappearance of pollinators, which affects plant species and cultivated crops.

1 People also talk about the so-called evil quartet of biodiversity loss, which includes overexploitation of natural resources, habitat loss and fragmentation, and invasion of alien species.

In Finland, the Ministry of the Environment has listed (2022) ways to combat biodiversity loss: nature conservation, restoration, changing consumption habits, changing production technologies, nature conservation-friendly taxation, and measures to curb population growth. In 2021, the European Commission set a biodiversity strategy for the European Union to restore biodiversity by 2030.

Threatened habitat types in Finland (2018)[2]:

- Baltic Sea
- Baltic Sea coast
- inland waters and shores
- mires
- forests
- rock outcrops and scree
- semi-natural grasslands and wooded pastures
- fells.

2 The assessment looked into the quantity and geographic distribution of the habitat type, habitat degradation, and the occurrence of disruptions.

that aim to halt biodiversity loss:

- The UN Convention on Biological Diversity (78/1994)
- Biodiversity strategies of Finland (Ministry of the Environment 2021) and the EU (European Commission 2021)
- Government Programme of Prime Minister Sanna Marin's Government (Government 2019a)
- Government proposal for the Nature Conservation Act (HE 76/2022)
- National Strategy and Action Plan for Pollinators (Ministry of the Environment 2022b)
- Updated National Forest Strategy 2025 (Finnish Government 2019b).

There are different practical ways and approaches to tackle biodiversity loss:

- restoration and protection of habitats (particularly peatlands)
- preserving forests as carbon sinks; using nature management to counterbalance the impact of logging
- stopping the use of peat to generate power
- increasing the nature conservation budget
- protecting species and habitats
- supporting biodiversity and employment simultaneously
- increasing environmental education
- promoting the possibilities of voluntary nature conservation
- prioritising and investing in the protection of keystone species on which other species rely
- strengthening the number and diversity of pollinator populations.

OUR ADVOCACY WORK:

Solution: Foster biodiversity

2.2 Tobacco is also harmful to nature

The direct adverse health effects of smoking have been extensively studied and are fairly widely known. However, debate about the negative effects of smoking tends to overlook the negative environmental effects of tobacco – of which there are many. The global ecological footprint of tobacco production is comparable to the ecological footprint of an entire country.

The cultivation of one tonne of green tobacco plants contributes to climate change roughly 2–3 times more than the cultivation of one tonne of tomatoes or potatoes. Among individuals, smoking can have a bigger carbon footprint than eating red meat or sugar.

A large amount of resources is required at every stage of the production chain – from the cultivation and drying of tobacco plants to the manufacture and distribution of cigarettes and the disposal of cigarette butts. The use of limited arable land and water for the cultivation of tobacco is a controversial issue in itself. It is known that tobacco cultivation uses harmful chemicals and causes deforestation. The production and distribution processes cause CO^2 emissions, hazardous waste, and non-biodegradable waste.

Cigarette butts are one of the world's most common types of waste and classified as hazardous waste. Not enough people know that when you throw a cigarette butt on the ground, it will not decompose but break down into smaller pieces. The toxic chemicals end up in lakes, rivers and seas and remain in the ecosystem. If an animal ingests a cigarette butt by accident, it can swell up in its stomach and cause a blockage. At worst, cigarette butts can cause an animal to die a slow and painful death.

Finland is amending its Waste Act in autumn 2022 as a response to the Single-Use Plastics Directive. From 2023 onwards, municipalities may have to start placing more cigarette bins in public areas and prevent cigarette butt litter through information and public awareness campaigns. The plan is to make tobacco companies pay the costs of purchasing, installing and maintaining public cigarette bins, as well as the costs of tobacco information and public awareness campaigns.

E-cigarette also create waste: electronic waste, plastic cartridges, and hazardous liquid chemicals. The harmful and hazardous parts and chemicals in e-cigarettes have to be recycled. They pose serious environmental risks if they end up in mixed household waste or in nature. Even a small amount of hazardous waste in nature is too much.

WHAT CAN YOU DO?

- The most effective way to reduce the supply of tobacco products is to reduce the demand for them. Live smoke-free.
- Help raise awareness of the environmental impact of tobacco. Raise the issue with your friends and decision-makers: we need both a change in attitudes and rules and regulations.

OUR ADVOCACY WORK

The Organisation for Respiratory Health raises these issues in the Tobacco-Free Finland 2030 Network and the Nicotine-Free Finland Network for Organisations.

Suggestions for policymakers:

- Increase the number of cigarette bins even if it is not required by law.
- Raise tobacco taxation to cover the environmental costs.
- Extended producer responsibility makes tobacco manufacturers responsible for consumer waste. It would make them obligated to prevent and reduce cigarette waste.

2.3 Zoonoses are becoming more common

Diseases that spread from animals to humans are called zoonoses. Human activities that contribute to climate change also cause biodiversity to decline, which, in turn, increases the occurrence of zoonoses. Up to 60% of the infectious diseases of humans are estimated to be zoonoses.

The more people travel abroad, do business, buy pets, and are in contact with wildlife, the bigger the risk of new infectious diseases becomes. This is also accelerated by a global increase in population density.

Zoonoses include vector-borne diseases: diseases caused by bacteria, viruses, and parasites transmitted to humans by vectors, such as mosquitoes or ticks. The quantity and geographical distribution of these diseases is affected by climate change and several sociodemographic factors (such as population size and urbanisation), changes in land use, and changes in host animal populations.

In Finland, it is likely that warmer winters and humid summers will increase vector-borne diseases, as common tick and taiga tick populations expand. The populations are spreading wider, putting more people at risk of getting Lyme disease, which is a bacterial disease, and tick-borne encephalitis or TBE, which is a viral disease. Mosquitoes spread the Pogosta disease. Mild winters can also aid the egg production of parasites and the survival of larvae.

» Ticks depend on large mammals. Growing roe deer populations are found to have a clear link to the incidence of tick-borne encephalitis.

Bank voles spread vole fever (hemorrhagic fever with renal syndrome, HFRS), which is caused by the Puumala orthohantavirus. Changes in bank vole populations also affect the prevalence of tularemia, rabbit fever. An increase in the number of small carnivores may be linked to a possible increase in rabies cases.

Finns encounter vector-borne diseases as an undesirable consequence of tourism and traveling. Sea and air travel help insects, ticks and exotic diseases to spread rapidly across the globe. Airport malaria is one example of a new kind of threat: a mosquito may bite an infected person and then spread malaria to other passengers. When people travel abroad with their pets, they may bring home foreign species of ticks and fleas.

OUR ADVOCACY WORK:

Solution: Take precautions against animal-borne diseases

2.4 The causes of antimicrobial resistance must be addressed

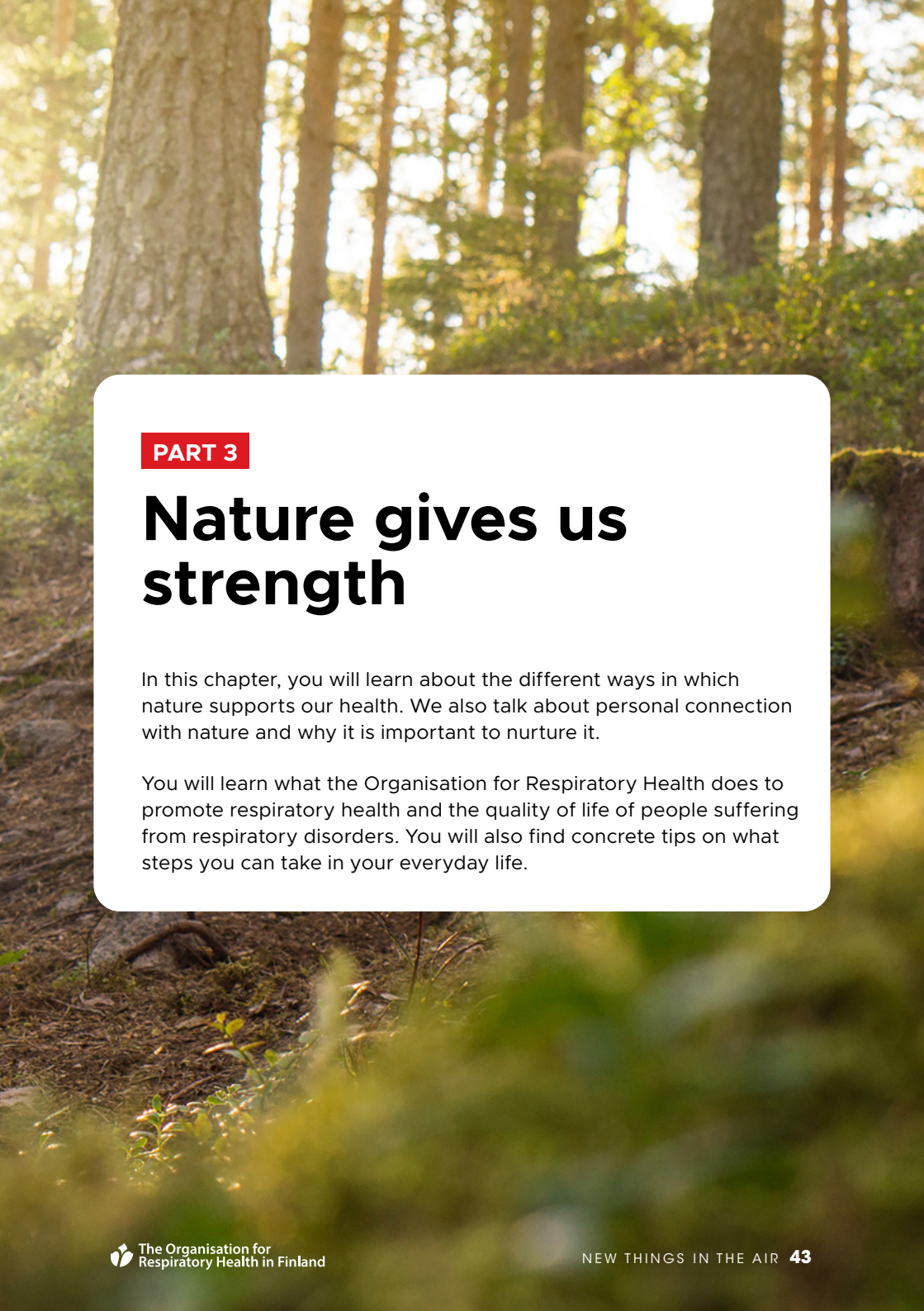
Health care was revolutionised by antimicrobial medicines and the mass production of penicillin, which began during World War II. Modern medicine developed and reduced the mortality rate of infectious diseases. Cancer treatments, organ transplants, treatment of premature babies, burn treatments, and prosthetics became possible and more common.

Although antimicrobial resistance is a future threat in healthcare, we need antimicrobials. Antibiotics are used in the treatment of diseases such as COPD. Antibiotics improve the success rate of the treatment of COPD exacerbations, although that also depends on the severity of the exacerbation and the treatment facility.

WHO has stated (2021) that antimicrobial resistance is an extremely serious threat to people and healthcare. **According to estimates, around 5 million people die from antimicrobial-resistant infections every year.**

Antimicrobial resistance is essentially caused by humans. Partly the same antimicrobials or groups of antimicrobials are used to treat infectious diseases in humans and animals. This increases the emergence and selection of antibiotic resistant strains. Antimicrobial resistance is globally exacerbated by the overuse and misuse of antibiotics, inadequate disease prevention and vaccination programmes, inadequate diagnosis and treatment, and inadequate hygiene conditions of both humans and animals.

The Ministry of Social Affairs and Health set a national action plan for 2017–2021 to tackle antimicrobial resistance. Developments in antimicrobial resistance are monitored and reported by the Finnish Institute for Health and Welfare in its Finres report. So far, the situation has been relatively good in Finland.



PART 3

Nature gives us strength

In this chapter, you will learn about the different ways in which nature supports our health. We also talk about personal connection with nature and why it is important to nurture it.

You will learn what the Organisation for Respiratory Health does to promote respiratory health and the quality of life of people suffering from respiratory disorders. You will also find concrete tips on what steps you can take in your everyday life.

3.1 Digging in the dirt for better health

We rely on nature in many ways. We need the clean water, air, food, raw materials, and respite it gives us. Biodiversity also brings health benefits by protecting people from the emergence of new infectious diseases and by exposing people to microbes that support the functioning of the immune system. It gives us protection against both infectious diseases and non-communicable inflammatory diseases. Spending time in nature is also beneficial to mental well-being.

The human microbiome is in constant interaction with external microbes. **Our diet, lifestyle, and living environment determine what kind of microbes we get and which of them make their way into our microbiome.** The Western lifestyle, urbanisation, and the habit of spending most of our time indoors are factors that affect the composition of the microbiome. **The human microbiome is also affected by genes and medication.** Scientists have found that like organs, the human microbiome can also get sick.

Scientists have noticed that natural environments increase health-promoting microbes in the human body. The most convincing evidence comes from children who live on farms, as they tend to suffer from asthma and allergies less compared to other children*. However, there is sometimes a fine line between good and bad exposure, because nature also has harmful parasites.

Although exposure to microbes every once in a while is a good thing, you should not compromise basic hygiene. One solution to this dilemma could be so-called targeted hygiene: washing hands more rigorously in busy urban and indoor environments and less in natural environments. Introducing nature into urban environments in one way or another also increases people's contact with nature.

The Finnish Government's National Nature Recreation Strategy 2030 encourages nurturing people's connection with nature and ensuring access to nature for children, young people, the elderly, and disadvantaged groups.

*They were, however, predisposed to late-onset asthma.

The health benefits of nature include:

» richer skin, gut and respiratory microbiota
» stronger immune system
» possible protection against allergies
» lower stress level, blood pressure and heart rate
» better mental well-being (life satisfaction, happiness, self-esteem)
» increased physical activity
» management of social contacts (a chance for social interaction and solitude).

The view from your window matters

» Did you know that just being able to see nature from your window is good for you? According to studies, people who regularly spend time in nature or see green spaces from their windows experience less loneliness, depression, and anxiety.

WHAT CAN YOU DO?

- From childhood to old age, expose yourself and your loved ones to good microbes.
- Try urban farming.
- Get houseplants for your home. Choose plants that do not trigger allergy symptoms.
- Choose local food.
- Support nature daycare centres and small animal farms.

Tips for daycare centres:
Adding forest undergrowth to the yard areas of daycare centres can improve children's microbiome and support a balanced immune system. Safe natural materials can be added to sandboxes to promote microbiological diversity and healthy immune systems.

OUR ADVOCACY WORK:

The Organisation for Respiratory Health in Finland issued a comment on the National Nature Recreation Strategy. Here are our key messages to policymakers:

- **Everyone should have access to nature: easily accessible recreational areas promote health.**
- **Hiking areas should offer trails and paths for people of all ages and fitness levels.**
- Nature can be a useful tool in health care and rehabilitation. This could be facilitated with evidence-based treatment guidelines on the use of nature-based methods.
- Urban planning projects should invest in urban green areas and their healthy, recreational applications. Residents need quick access to green spaces and recreational areas. Nature should also be made accessible to people with disabilities.
- Recreational areas should be planned so that people are not unnecessarily exposed to road dust or pollen.
- Alien species do not belong in Finnish nature.
- In the future, contact with nature should also be ensured for people who cannot access it physically. People who live in care homes should be given access to nature by technological means or by enabling access to balconies or yards, and, where possible, by bringing nature indoors while ensuring that everyone can breathe safely.

Solution: Maintain and promote your contact with nature

Solution: Foster nature in urban planning

If the distance to a green area is longer than 300 metres, people tend to visit there less. In Finland, 90% of the people who live in the largest cities live close enough to green areas, which is something that we should ensure in the future as well. The average distance to the nearest forest is 700 metres. The more varied yet clear trails and paths the forest offers, the more people it attracts.

3.2 A trip to the forest improves mood

Forests are the most typical and the most popular natural environment in Finland. Even a short trip to the forest can help reduce stress and improve fitness. Spending time in nature also boosts creativity, learning, and problem-solving skills, making the health benefits truly diverse. Factors that affect how many health benefits a person gains include the frequency and regularity of these visits, as well as the person's age and state of health.

The more animal and plant species we learn to identify, the deeper our nature connection becomes. A better connection to nature makes us value nature more.

WHAT CAN YOU DO?

- A trip to the forest is relaxing and can support other treatments you may have.
- A trip to the forest supports your health and helps prevent diseases.
- Influence policy-makers to enable wider testing of health benefits in occupational health care, services for the elderly, social services, and sports services.

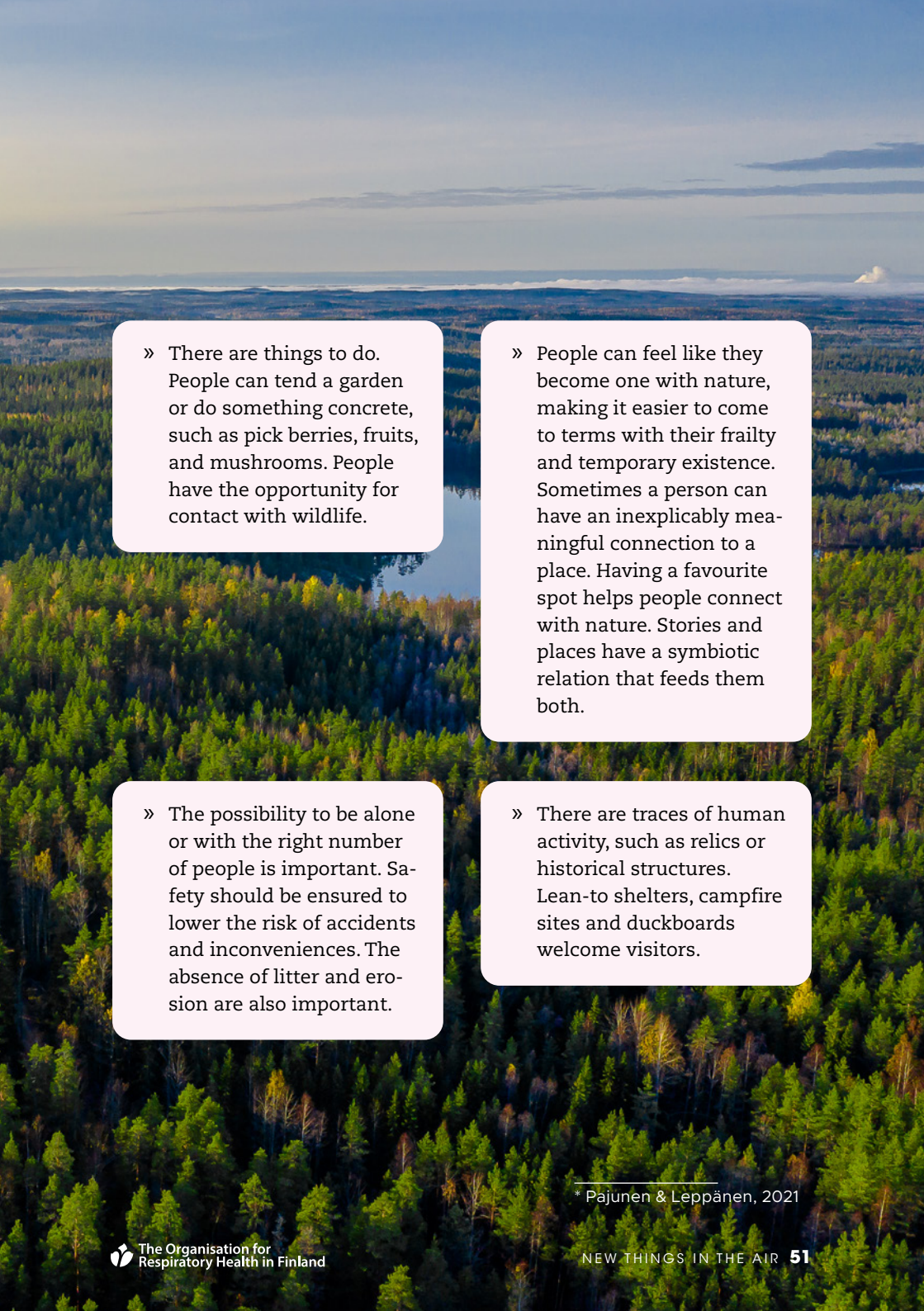
Characteristics of a health-promoting forest*

» The forest forms an unbroken and adequately large area. It is located nearby and can be easily reached. The forest offers trails of different difficulty levels in a green environment. The more trees and forests there are, the more the place offers shelter, safety, comfort, and peace. The air is clean with a smell of nature. People can enjoy silence and the sounds of nature.

» The forest is in its natural state: it is diverse, stable, and resilient. The forest has big and old or otherwise impressive-looking trees.

» The landscape is picturesque. The terrain has rocky outcrops and differences in elevation. There are traces of Earth's history, such as the ice age. The further you can see and the more you can see sky, the better. At night, the forest is naturally dark and without artificial lighting.

» The habitat types and species are diverse. There are not only dense forests, but also open landscapes that show the rich variety of species. The closer people can get to a water body (such as a sea, lake, river, or waterfall), the better.



» There are things to do. People can tend a garden or do something concrete, such as pick berries, fruits, and mushrooms. People have the opportunity for contact with wildlife.

» People can feel like they become one with nature, making it easier to come to terms with their frailty and temporary existence. Sometimes a person can have an inexplicably meaningful connection to a place. Having a favourite spot helps people connect with nature. Stories and places have a symbiotic relation that feeds them both.

» The possibility to be alone or with the right number of people is important. Safety should be ensured to lower the risk of accidents and inconveniences. The absence of litter and erosion are also important.

» There are traces of human activity, such as relics or historical structures. Lean-to shelters, campfire sites and duckboards welcome visitors.

* Pajunen & Leppänen, 2021

The Organisation for Respiratory Health recommends: 6 effective actions for the climate and respiratory health

ACTION 1

Burn wood cleanly.

ACTION 2

Spend time in nature and expose yourself to beneficial microbes.

ACTION 3

Eat vegetarian food more often.

ACTION 4

Walk, cycle and use public transport more often.

ACTION 5

Understand the harmful effects of heat. Prevent and reduce those risks during heatwaves.

ACTION 6

Live smoke-free and encourage others to do so as well.

The Organisation for Respiratory Health in Finland

Closing words

As long as there is life, there is hope. We are responsible for this planet for the sake of future generations. No one can do it all, but everyone can do something.

- **Take the message forward.**
- **Make everyday changes one or more steps at a time.**

It is still possible to prevent and reduce weather and climate-related risks. We can still change the quality and quantity of their harmful effects on humans, animals, and plants.

The Organisation for Respiratory Health in Finland continues its work to promote respiratory health. Join us and find your way to make a difference.

www.hengitysliitto.fi

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The Organisation for Respiratory Health in Finland

Join us and find your way to make a difference!

* See membership fees on our website at www.hengitysliitto.fi.

Yes. I want to join!

The Organisation for Respiratory Health in Finland and its local associations promote respiratory health and good life for

TIP: PAY THE MEMBERSHIP FEE AND FILL OUT THE FORM: www.hengitysliitto.fi

☐ **I want to become a member of a local respiratory association**

☐ **I want to join the Organisation for Respiratory Health as a**

SURNAME

FIRST NAME(S)
(underline your preferred name)

DATE OF BIRTH*
(DD.MM.YY)

TEL.

EMAIL

ADDRESS

POSTCODE AND
CITY/TOWN

PLACE OF DOMICILE

GENDER ☐male ☐female ☐other ☐prefer not to say

FIRST LANGUAGE

☐ A member of my family is already a member:

SURNAME AND GIVEN NAMES

I am interested in respiratory health/respiratory diseases. Please specify which:

☐ I consent to having my personal data stored in the register of members of the Organisation for Respiratory Health in Finland and local respiratory associations. Privacy policy: www.hengitysliitto.fi

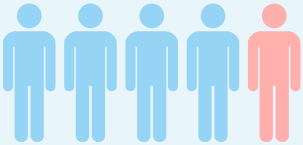
☐ You can send me marketing and fundraising mail

DATE

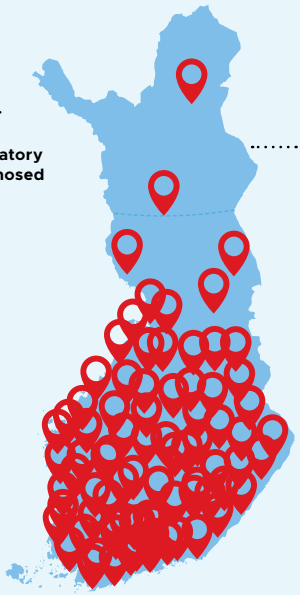
SIGNATURE

*If the person is under 15, a guardian must write their name and signature

The Organisation for Respiratory Health in Finland



ONE IN FIVE
Finns suffers from a respiratory disorder or has been diagnosed with a respiratory disease



The Organisation for Respiratory Health has

around **70** local respiratory associations

2 national associations

around **20,000** members

RESPIRATORY ASSOCIATIONS OFFER DIVERSE ACTIVITIES AND SERVICES LOCALLY:

- ✓ peer support: various peer support groups and meetings
- ✓ members' nights, clubs and trips
- ✓ exercise groups and sports events
- ✓ information: public lectures and events, guides, advice and guidance
- ✓ support to promote smoke-free living
- ✓ local advocacy and supervision of interests.

The Organisation for Respiratory Health in Finland

Members of the Organisation for Respiratory Health can:

» participate in local peer groups and exercise groups, events, lectures, and other recreational activities
» take courses and work as a volunteer in a role that is meaningful to you
» apply for positions of trust both locally and nationally
» access local membership benefits in addition to national membership benefits
» get our Hengitys magazine.

As a supporter of the Organisation for Respiratory Health in Finland, you can:

» get nationwide membership benefits
» get our Hengitys magazine.

Fill in the form, cut it out, and fold it along the line on the reverse to form a letter. Fasten the edges with tape. The postage is paid by The Organisation for Respiratory Health in Finland, so you can drop the letter in a mailbox without a stamp.

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The Organisation for
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Peer support from the Organisation for Respiratory Health in Finland

One of the key activities of the Organisation for Respiratory Health in Finland and its local organisations around Finland is to offer peer support.

Peer support offers individuals suffering from a certain condition the chance to share their experiences. Together, they can reflect on how their lives, resources and conditions differ from each other and what they have in common. Even more serious topics can be brought up. At its best, peer support is a source of empowerment for both the person receiving support as well as the one offering it.

The illness also affects family members and other loved ones. Many people feel that it is a relief to discuss the condition with other people in the same situations, as you do not have to add to the concerns of family and friends.

Go the website of the Organisation for Respiratory Health in Finland at www.hengitysliitto.fi, and find out which local association is active in your region. Come and join the activities!

The Organisation for Respiratory Health in Finland