



ANNUAL REPORT · 2022





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LET'S KEEP MOVING!

Everything changes and evolves, and it could not be any other way. Changes are also taking place within RMK, which I have had the honour of heading since November 2022. With the support of the RMK team, I have started my 'journey as a forester' by taking a fresh look at what Estonian society expects from RMK, exploring new areas of activity, and setting RMK's goals for the next five years in the new strategy to be completed by the end of 2023. The core values that I adhere to are openness, honesty, innovativeness, and respectful cooperation.

We have tried to write this year's Annual Report in such a way that it would give our so-called shareholders – all Estonians – a clear and straightforward picture of how RMK is doing as the worthy and capable carrier of Estonian forestry.

In short, we are doing well. This is also confirmed by our record turnover in 2022, which all Estonians will benefit from in one way or another. But RMK is, of course, much, much more than simply an impressive financial number. The following pages sum it all up. What RMK has to show as Estonia's largest performer of nature protection works or as the owner of the country's most magnificent open-air sports hall, as well as that which is related to the management of Estonia's national forests. Since 2023, the year that this Annual Report will appear, has been declared the Year of Movement, we have placed everything related to movement in nature and the promotion of nature awareness at the top of thematic blocks.

This year, the Annual Report is more than just serious numbers and graphs, but also very warm pictures of Estonian schoolchildren. Thank you to all the young people from across Estonia who took part in the 20th Forest Postcard Competition! The theme for the competition this year was 'We have friends in the forest'.



Mikk Marran, Chairman of the Management Board of RMK. Photo Raigo Pajula

And we really do have a lot of friends in the forest. Animals, birds, plants, fungi, lichens. Trees and bushes. Young and old. And people – our own hard-working employees as well as good cooperation partners and clients. Actually, everyone who respectfully visits Estonia's forests – permanent residents of Estonia as well as Ukrainians who have come here to escape

the horrors of war – are friends of RMK. We have helped the Ukrainian people in Estonia to adapt, and also contributed to the struggle of Ukrainian defenders in their homeland. And we will continue to do so in the future.

Freedom is fragile and always linked to responsibility. I can assure you, dear reader, that RMK, which has been entrusted with a large share of Estonia's forest-rich land, maintains it with a strong sense of responsibility. We

will continue to protect Estonia's nature and wisely manage the forest that belongs to all of us. We are contributing to developing new ways to move about in nature, as well as the green transition and finding new business opportunities. In short – let's keep moving!

Pleasant reading!

Mikk Marran
22 April 2023

'Forest Friends'. Aljona Vernidub, Kohtla-Järve Kunstide Kool, Grade 7





'Flat'. Triin Kullus, Jõhvi Põhikool, Grade 7



State land managed by RMK

1,428,417 ha



... of which forest land

1,054,421 ha



Full-time employees

695

ABOUT THE ORGANISATION

Turnover

EUR 302.3 million



Operating profit

EUR 152.6 million

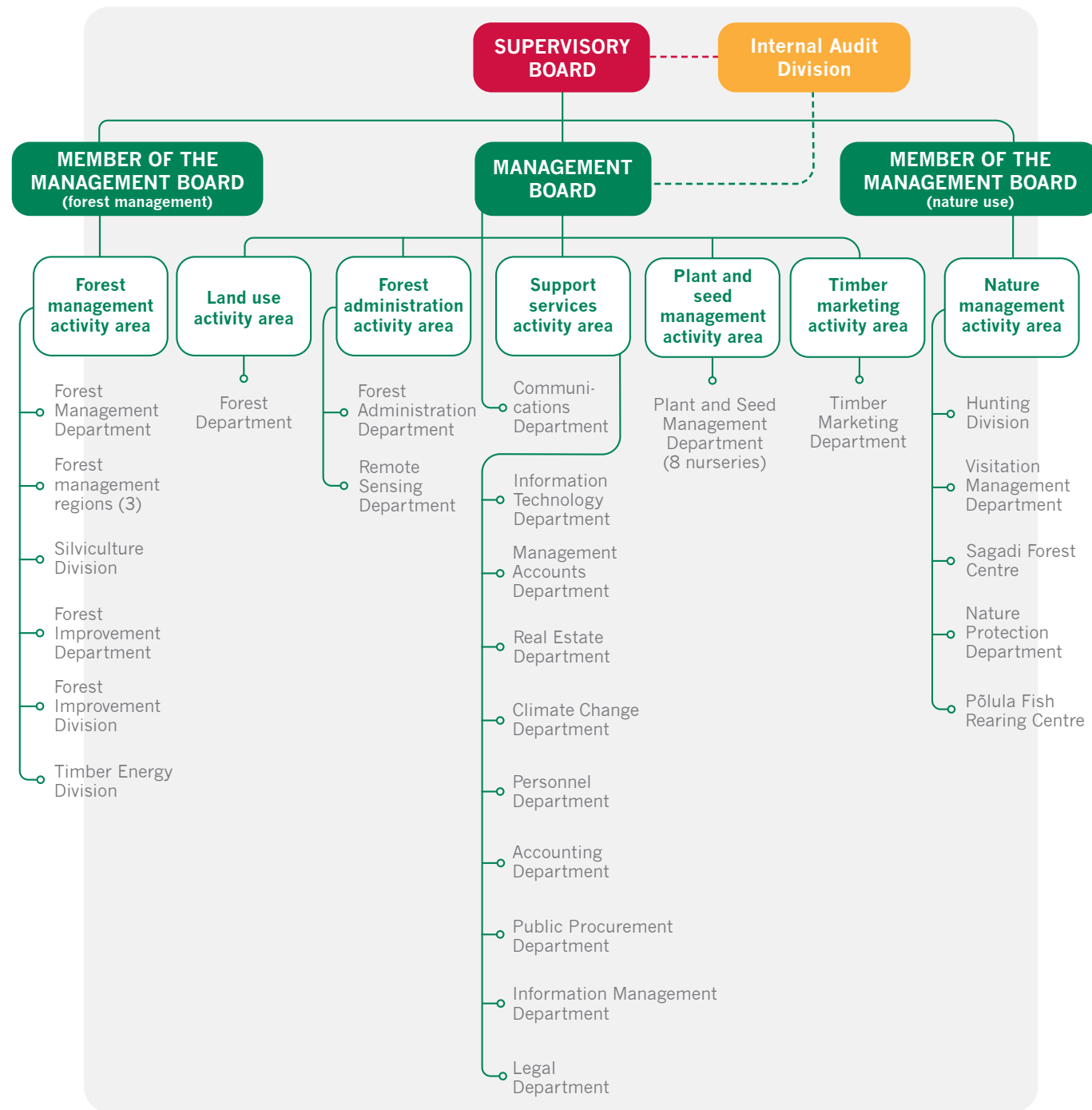


Dividends and income tax paid into state budget

EUR 88 million



STRUCTURE



STAFF

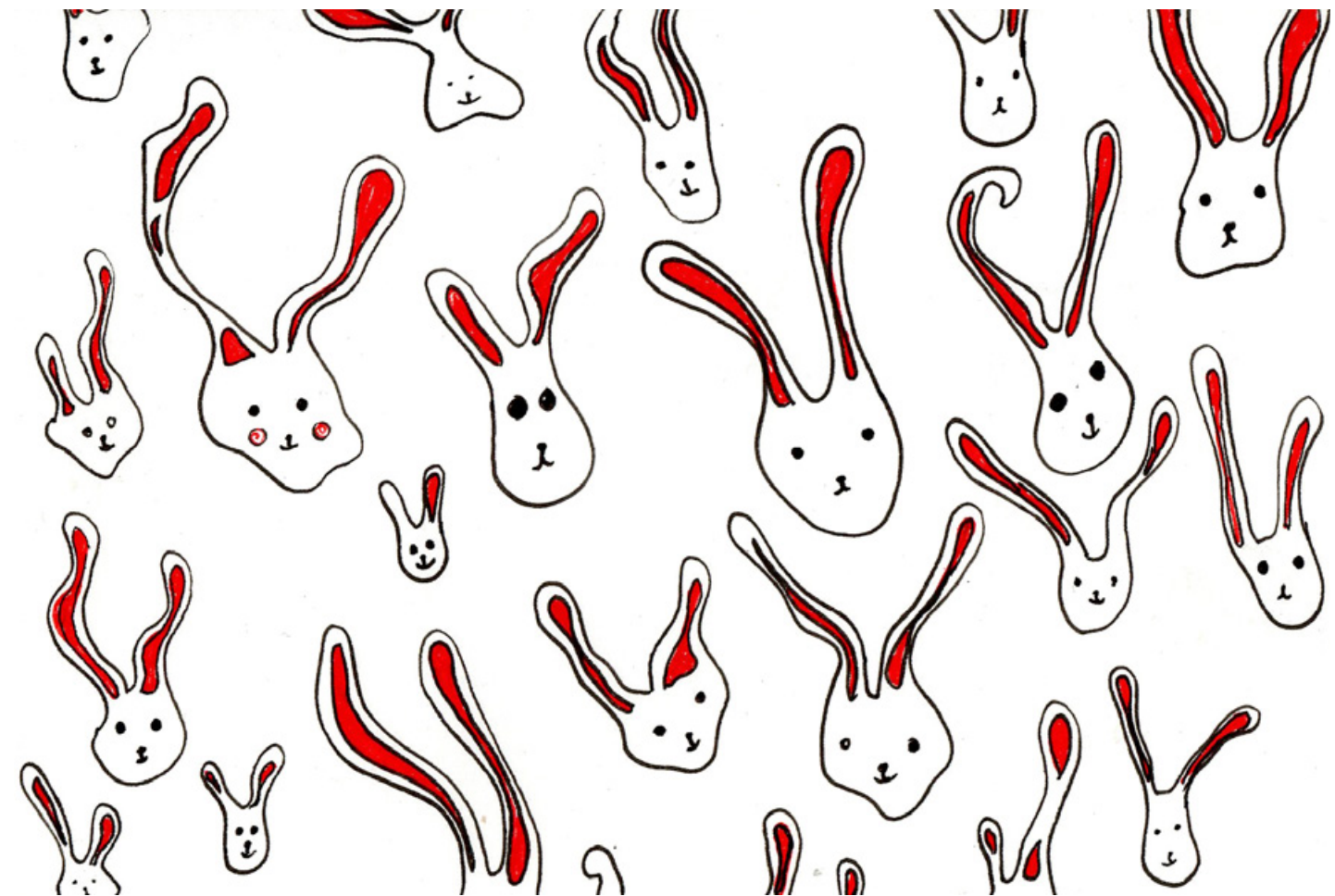
RMK is an employer to **695** people

The forest and timber sector provides work to approximately 29,000 people in Estonia. Taking into consideration the indirect and accompanying effect, the forest offers work to approximately 58,000 people.* This is 4% of our population.

In addition to full-time RMK employees, RMK puts food on the table for another 5,700 people. They are active in RMK's partner companies and/or are hired for seasonal work.

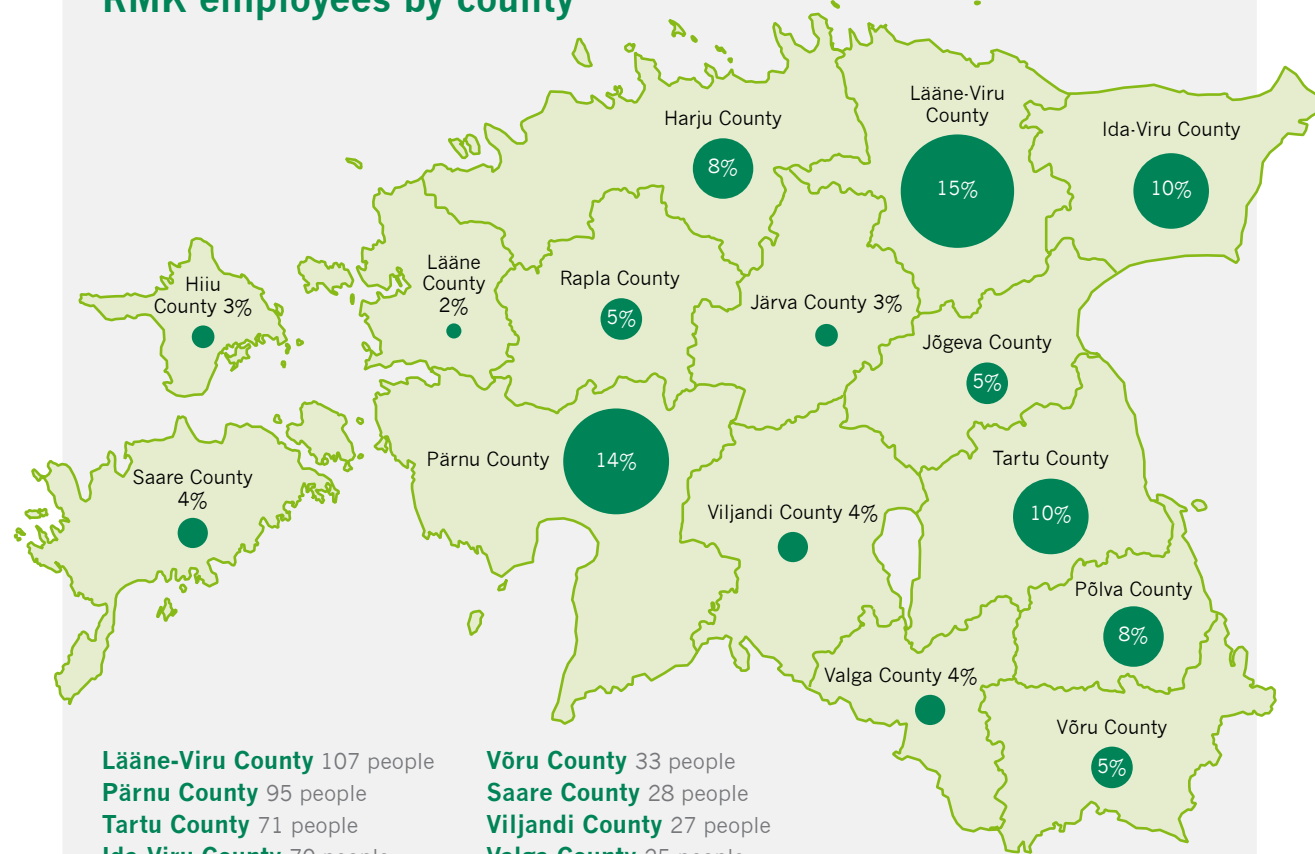
RMK is an employer to 695 people, including 455 men and 240 women. RMK's people are active in every county, with the most found in Lääne-Viru County and Pärnu County.

* Source: Analysis of the socio-economic impact of the forest and timber sector, Ernst & Young Baltic AS, 2023



'Ja jess'. Mirjam Metsaots, Viimsi Kunstikool, Grade 9

RMK employees by county



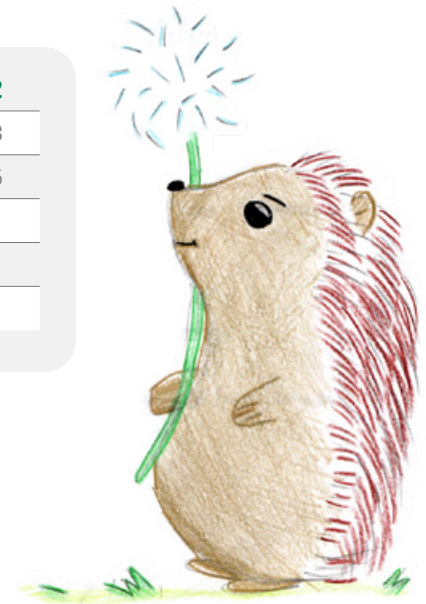
Lääne-Viru County 107 people	Võru County 33 people
Pärnu County 95 people	Saare County 28 people
Tartu County 71 people	Viljandi County 27 people
Ida-Viru County 70 people	Valga County 25 people
Põlva County 57 people	Järva County 23 people
Harju County 53 people	Hiiu County 20 people
Rapla County 37 people	Lääne County 16 people
Jõgeva County 33 people	In total 695 people

Distribution of staff by sector and position

Operating areas	Managers	Specialists	Workers	In total
Land use	1	27	0	28
Forest management	11	122	121	254
Forest administration	5	67	0	72
Seed and plant management	3	10	81	94
Timber marketing	1	11	0	12
Nature management	5	70	75	150
Support services	10	62	13	85
In total	36	369	290	695

CONTRIBUTION TO THE ECONOMY

	2022
Turnover	302.3
Operating profit	152.6
Dividends and income tax to the state budget	88
Land tax	4.7
Labour taxes	7.7



'Little Hedgehog'. Natela Artjomova, Lasnamäe Vene Gümnaasium, Grade 9

CERTIFICATES

RMK manages the forests trusted to its care sustainably. This is evidenced by the sustainable forestry certificates FSC® (FSC-C022757) and PEFC™.

Management of the forest pursuant to the current Forestry Act is sustainable if it ensures biodiversity and the productivity, regeneration potential, viability and possibility of the versatile use of the forest, which satisfies ecological, economic, social and cultural needs.

The fact that timber originating from state-owned forests has sustainable forest management certificates expands the sales market for many Estonian timber products. The certificates also confirm, among other

things, that RMK's prescribed cuts will remain sustainable over the long term and that local communities will be involved in the planning of forest work.

Both systems are subject to an annual audit, and recertification takes place at five-year intervals. RMK is audited by the international certification body BM Certification Estonia OÜ. RMK has held the FSC forest management and supply chain certificate since 2002, and the PEFC since 2010.

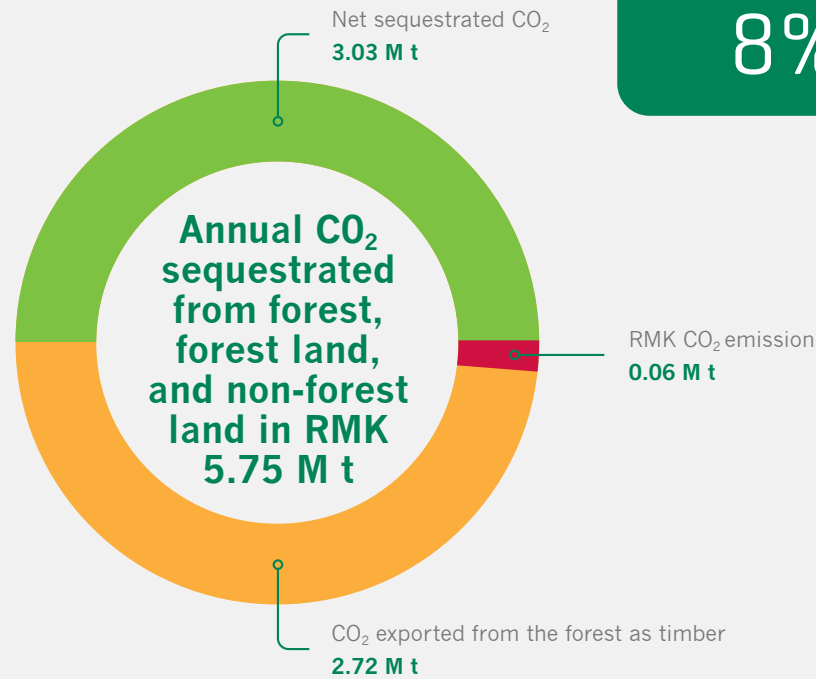
The high level management of RMK as an organisation is confirmed by the ISO 14001 environmental management system and the ISO 9001 quality management certificate. Both certificates were renewed at the end of 2022.



ISO 14001
ISO 9001

CARBON FOOTPRINT

Over the course of the year, the footprint of RMK's activities has decreased by **8%**



For the second year, RMK is preparing a comprehensive carbon report to obtain an understanding of its carbon footprint. This is necessary in order to better organise and measure activities that reduce the environmental impact.

When preparing the carbon report, the following are calculated:

- The carbon stock in forests and other land under RMK's care, i.e., how much carbon is already sequestered in the soil and trees
- The amount of carbon (CO₂) sequestered during the year in RMK's forest and other lands or released into the air
- The amount of carbon (CO₂) released into the air during the course of RMK's activities

When reading the following overview, it is worth remembering that trees sequester CO₂, but

carbon (C) is stored in trees and soil. 1 tonne of C = 3.7 tonnes of CO₂.

Carbon stored in the sink does not warm the climate

Nearly 1/3 of all forests in Estonia are under the care of RMK. A total of 262.3 million tonnes of carbon is stored in RMK's forests, bogs, grasslands and elsewhere. This is 3.4 million tonnes more than in 2021. The reason for the increased carbon stock is that RMK has acquired additional land. Similarly, in the case of non-forested areas, the volume of timber obtained via remote sensing is more precise than last year.

2/3 of carbon is sequestered in the soil and 1/3 in the trees – in the trunks, canopy, and the roots. A total of 86% of carbon is stored in RMK's forests, and 14% in non-forested land.

Carbon dioxide captured from the air turns into carbon

Growing plants, including forests, absorb carbon dioxide from the atmosphere during photosynthesis and store it within themselves. Young and middle-age forests sequester the most carbon, with older and very young forests doing so to a lesser degree.

In 2022, RMK's forests, woodland and non-forested land sequestered 5.75 million tonnes of CO₂ from the atmosphere. A total of 2.72 million tonnes of CO₂ in the form of timber was extracted from the forest via regeneration cutting. Excluding the CO₂ extracted from the forest in the form of timber, RMK sequestered 3.03 million tonnes of CO₂.

Even so, it is worth remembering that in a high-quality and long-lasting timber product, the carbon 'extracted' by harvesting remains locked in for a long time, and it is the production of products with a long shelf life that is valued in RMK's timber sales strategy.

Footprint from work is smaller

The CO₂ emissions created during RMK's activities was 0.06 million tonnes, i.e., nearly 1% of what was sequestered on land owned

by RMK during the year. A reduction of 8% in comparison with the previous year. The primary contributor to the creation of emissions are the motor fuels used in the performance of work. Since the volume of some work fell, the use of motor fuels also fell. Other activities also have their own footprint. For example, RMK has a precise overview of resource use in offices and other registered immovables. Switching to the renewable energy package has reduced CO₂ emissions by nearly three times in the case of offices.

Contribution to climate change mitigation

In summary, RMK has made excellent progress with its carbon footprint. Over the course of the year, RMK has reduced its footprint and increased the sequestration of carbon in its forests.

The sustainable management of forests allows us to sequester large quantities of carbon dioxide from the atmosphere in Estonia. As a renewable resource, wood makes it possible to reduce the use of fossil materials. RMK renews forests with quality and speed, maintains them in a timely manner and keeps them viable and healthy, thus contributing significantly to climate change mitigation.

'Other side'. Mirt Maria Peterson, Loo Muusika- ja Kunsti Kool, Grade 6





'Gathering berries with friends'. Triin Lepasaar, Pärnu Rääma Põhikool, Grade 9



Visits to RMK's recreational areas and protected areas

2.96 million



Visitors at the information desks

68,600



Visitors to Elistvere Animal Park

61,800

VISITING NATURE AND NATURE AWARENESS

Visitors to Sagadi Forest Centre

30,400



Participants in nature education programmes

48,100



Expenditures on visitation infrastructure and promoting nature awareness

EUR 9.9 million



ENJOYING NATURE

RMK has
3,300
km of nature
trails across
Estonia

Step into the green!

RMK's recreational and protected areas were visited 2.96 million times over the course of the year. This is 110,000 more than in 2021, and 60,000 times more than in the first year of the corona pandemic (2020) when large crowds of people were attracted to the bog.

The most visited recreation area was around Tallinn (390,600 visits), which stretches from Paldiski to the top of Rohuneeme, and from Haabneeme to Varbola. For the first time, the use of the Nõmme-Mustamäe Landscape Conservation Area, located on state forest land in Tallinn, was also monitored – the data confirmed the popularity of the sites located there (220,000 visits).



'Fox looking for a friend'. Uljana Divissenko, Maardu Kunstide Kool, Grade 7

On the list of visits, the recreation area around Tallinn is followed by the Northern Shore of Lake Peipus Recreation Area, together with Alutaguse National Park (259,100 visits), Lahemaa National Park (192,600 visits), and Soomaa National Park (90,200 visits).

Objects received a makeover

During the year, several of RMK's visitation infrastructure sites were renovated, including:

- Valgesoo Study Trail, in Põlva County, which is now fully accessible by wheelchair and pram.
- Suitsu and Kloostri observation towers, located in Matsalu National Park, Lääne County, which received a beautiful new appearance and are now safer and more convenient to use.
- Rebastemäe Study Trail, on Hiiumaa, which was reconstructed, during the course of which new observation towers were installed along the trail.
- Koigi Study Trail, on Saaremaa, which was reconstructed in its entirety, and where it is now possible to move about in a circle and enjoy views from an observation tower as well as a platform.
- Meiuste Campsite and parking area, on Saaremaa, were reconstructed. The object has been well-received by the community and earned county recognition.
- Iisaku Hill Campfire Site, in Ida-Viru County, received a new look. An illuminated cycle and pedestrian track now leads to the observation tower located 200 metres away, to better connect the two sites.
- An arched stone bridge was built across the River Pühajõe, in Oru Park, in Ida-Viru County, replacing a dangerous Soviet-era bridge. Referred to as the port bridge, it is the only way to access the park from the beach and is an integral part of the hiking and walking trails. The magnificent bridge has become one of the most photographed and viewed places in Oru Park.

Most popular sites in the counties based on visits



Harju County

Keila-Joa Park (171,100 visits)
Meremõisa Campsite (83,900)
Viru Bog Study Trail (42,200)
Kaberneeme campfire sites (39,700)

Lääne-Viru County

Käsmu Hiking Trails (36,200)
Altja Nature and Culture Historical Trail (15,900)

Ida-Viru County

Oru Park (119,200)
Kauksi Campsite (35,500)

Järva County

Kakerdaja Nature Trail (16,500)

Jõgeva County

Männikjärve Bog Study Trail (14,700)

Rapla County

Mukri Nature Trail (24,200)
Varbola Stronghold (10,100)

Lääne County

Peraküla Campsite (27,600)
Põõsaspea Rest Stop (18,800)

Hiiumaa County

Tõrvanina Campsite (30,900)
Sääretirbi Campsite and Trail (27,300)

Saare County

Kaali Rest Stop (85,300)
Tuhkana Rest Stop and Campsite (26,000)

Pärnu County

Lemme Campsite (21,300)
Kabli Nature Study Trail (14,800)
Keemu Rest Stop (15,000)

Viljandi County

Riisa Study Trail (13,400)
Hüpassaare Study Trail (10,100)

Valga County

Oore Campsite (27,900)
Tellingumäe Observation Tower (9,000)

Võru County

Ööbikuoru Short Hiking Trail (11,800)

Põlva County

Taevaskodade Hiking Trail (81,600)
Palojärve Campsite (44,100)

Tartu County

Pangodi Campsite (28,500)
Tiksoja Hiking Trails and Campfire Site (19,500)
Selli-Sillaotsa Study Trail (18,500)

STOP BY!

RMK has 15 visitor centres, three nature houses, and one nature school. Within these, nature education programmes and other events are organised and the values of the recreation or protected area are introduced. Visitor centres also operate as RMK information desks. In addition, RMK has information desks introducing the possibilities for moving about in Nature in Narva and Tallinn, and during the summer on Osmussaar, in Lääne County, and at the Roela Cone Hut Museum, in Lääne-Viru County.

- Visitor centres in all Estonian National Parks: Vilsandi, Soomaa, Matsalu, Lahemaa, Karula, and Alutaguse
- Visitor centres at RMK recreation areas: Viimsi, Ristna, Pähni, Oandu, Nõva, Kiidjärve, Kabli, Elistvere, Aegviidu
- Sagadi Nature School
- Nature Houses: Mändjala, Ojaäärse, Simisalu

Visitor Survey: how often do you visit the forest?

In November 2022, Turu-uuringute AS carried out a survey commissioned by AS RMK, in which 1,003 Estonians over the age of 15 participated.

It was revealed that the awareness of the population concerning the opportunities for recreation and mobility created by RMK has increased – while in 2020, 90% of the population knew about the recreational opportunities offered by RMK, in 2022, 97% were already aware. However, the result may also have been influenced by a change in survey methodology, as for the first time the data was collected entirely online.

Estonians have heard about the possibilities offered by RMK more often than residents of other nationalities, but the difference is

not very big (99% and 93%, respectively).

A total of 61% of the respondents had visited some of RMK's visiting points during the year. In terms of numbers, there is a 95% probability that the annual number of visitors will be between 647,400 and 714,600. RMK itself measures the number of visitor trips on its infrastructure, which numbered 2.96 million in 2022, and the data from this survey gives an idea of how many people these trips are distributed among.

Younger age groups are more likely to visit RMK's visiting points: among 15–34 year olds the number of visitors is 70%, among 35–54 year olds it is 61%, among 55–74 it is 56%, and among those over 75 years of age it is 51%.

Among residents, 11% have visited RMK's recreation and nature reserves, national parks, or hiking trails 12 or more times in the last 12 months.

A total of 97% of Estonia's residents believe that the opportunities created by RMK are important.

What is RMK doing to make people moving about in nature happy?

- 738 campfire sites
- 61 campsites
- 27 forest huts
- 20 rental huts
- 1 off-road driving area

RMK has 3,300 km of nature trails across Eesti. Many nature trails are a part of RMK's long hiking route, which currently consists of the following branches:

- 812 km Peraküla-Aegviidu-Ähijärve
- 613 km Penijõe-Aegviidu-Kauksi
- 370 km Oandu-Aegviidu-Ikla
- 234 km Heltermaa-Ristna-Sarve

97%
of residents
are aware of
the recreation
opportunities
offered by RMK

Relief and respite for the soul of Ukrainians

Hopefully our nature will be able to offer some relief to the people of Ukraine who have fled to Estonia to escape the brutal war. To that end, RMK translated its website introducing opportunities for enjoying nature holidays into Ukrainian and organised special nature tours.

Nearly a thousand Ukrainians took part in the nature treks offered by RMK between July and December, but more have certainly taken the opportunity on their own to get to know nature with the help of the Ukrainian-language homepage.

RMK has also hired nature specialists, according to whom the most exciting areas for Ukrainian children are Estonia's bogs, since this type of natural environment is not found in their homeland. Under the direction of guides, young people learnt how to behave well in nature, including how to sort waste and safely build a fire.

In March, one month after war broke out in Ukraine, Estonian environmental authorities joined together to send an aid consignment to Ukraine. RMK contributed eight pickup trucks and 13 computers. Prior to this, RMK had provided more than 2,000 cans of elk meat to help the Ukrainians.

'Last sunset'. Kaspar Kleinberg, Kohila Gümnaasium, Grade 7



NATURE AWARENESS

The nature education programmes organised by RMK's visitor centres, nature houses and Sagadi Nature School were attended by 48,100 people, which is more than a thousand people more than the year before.

For schools, the programmes are a good way to diversify education on the natural environment, since they are put together for different age groups and there are a wide range of topics to choose from. In addition, RMK offers educational walks for pre-school children and adults.

WHAT SUBJECT ARE YOU INTERESTED IN?

Nature education programmes include a wide range of themes: forest nature, forestry, nature conservation, moving about in nature, hunting and heritage culture. In spring, summer, and autumn, RMK offers educational institutions programmes at the discounted price of EUR 1 per person.

A small selection of the offered programmes:

- Pine cone mathematics
- A voyage of discovery in the insect forest
- Each forest is unique
- The top predators in our forests – cute or scary?
- The forest as an ecological community
- Forest – apothecary and pantry
- Happily into the bog
- Men came without axes and built a house without corners? – Ants

Alongside the classical education programme led by an instructor there are also backpacking activities to be completed independently, as well as exciting smart games designed for specific trails. RMK has already created more than 50 of the latter. In addition, there are smart games that can be enjoyed while moving along any nature trail, as well as those that can be played without leaving home. Geo-caching offers the opportunity to acquire new knowledge in a more adventurous way, making it fun to spend time in all six Estonian national parks.

A total of 10,731 students from 237 schools participated in RMK's interactive forest quiz. The forest quiz has been taking place for 21 years and it helps to diversify the teaching of natural subjects.

As part of the 20th forest postcard contest for schoolchildren, 'We have friends in the woods', 4,426 drawings from 180 educational institutions were submitted. A set of postcards consisting of the 36 best drawings, as selected by a popular vote and a jury, was printed. A selection of the entries submitted to the competition can also be seen in the pages of the Yearbook.

On the eve of the 105th anniversary of the Republic of Estonia, RMK presented each kindergarten in Estonia with Tarmo Tuule's book *Mets on kodu. 12 puu- ja kuulugu*. The book uses simple language to introduce what takes place in nature based on the 12 calendar months. Nearly 1,600 books were sent to nursery schools. In 2022, grade one students starting their educational journey received the book as a gift.

RMK's
information desks
were visited
68,600
times during
the year

SAGADI FOREST CENTRE

Sagadi Forest Centre was visited more than 30,400 times last year, which is considerably more than the year before (17,600). A highlight was the opening of the renovated manor house in the spring and the completion of the new permanent exhibition of the forest museum in winter.

The old house was full of surprises

During the course of renovation of the more than 550-year-old Sagadi manor house, the entire plaster layer of the façade was replaced and given the colour of the revealed mid-19th century layers. Windows were replaced and exterior doors were renovated, most notably the main door of the manor house from 1795, along with its historic lock.

The balcony on the park side of the building underwent extensive refurbishment, a new floor was poured and the historic vaulting that supports it was restored. Wallpaper was replaced in several rooms in the house and floors were given a fresh sanding.

The old house was able to surprise even the heritage conservationists, when blind windows, the likes of which are not found in Estonian manor houses in this form, emerged from the east and west end walls. The final renovation of the discovered 'windows' will take place in 2023.

Forest Journey

In December, the new exhibition at Sagadi Forest Museum – Forest Journey – opened its doors to visitors. The exhibition is divided into thematic areas spread across two floors. The first floor features a video room providing a graphical overview of the current state of Estonian forests and showing an experience clip inspired by the beauty of the forest.

The following topics are represented on the second floor:

- the tree parliament teaches about the primary species of trees found in Estonia;

- in the area of wood use you will learn how many things in our surroundings are related to wood;
- forest biology introduces Estonia's primary forest animals, the windy life in the canopies of trees and the mysterious life full of bustling beneath the soil, including the opportunity to practice animal language under the guidance of Tõnis Niinemets;
- the field of wooden architecture invites you on an interactive journey through wooden houses throughout history;
- the role of the forest as an economic engine provides examples of how the forest has boosted our lives over a period of 400 years;
- forest meditation offers a moment to catch your breath;
- the role of the forest in adapting to climate change;
- a glimpse thousands of years into the past, i.e., how Estonia's forests have changed over time due to the climate;
- The ABCs of forestry;
- An overview of forest and soil types in Estonia;
- forests in Estonian place and family names;
- an interactive wall that will help you learn the proper etiquette for moving about in nature;
- a repository of forestry related heritage culture;
- the forest as an object of public debate, i.e., different views of the forest;
- forest-related footage from Estonian films.

Hospitality for every taste

A total of 251 education programmes, with nearly 5,000 attendees, were held at Sagadi Nature School. The manor hotel and restaurant continued to offer accommodation and catering service, with nearly 4,400 customers staying at the hotel during the year. Traditional nature school family days, night museums, tree days and a mushroom exhibition took place during the summer and autumn. The summer theatre season kicked into high gear once again with the summer production of *Topeltduubel* and the Russian Theatre's *Armuleivasööja*.

ELISTVERE ANIMAL PARK

After celebrating its 25th anniversary, visitor numbers at Elistvere Animal Park returned to their normal rhythm and were similar to the pre-corona era, with 61,800 visits during the year.

There were sadder and happier moments in the lives of the animal family. In the final days of August, Erik, the bull elk, bade farewell to his earthly life. Luckily the elk enclosure was not left empty for long, as Latvians were looking for a new home for a male elk born in the spring. Elistvere is now home to the Latvian wolf Koroonius and the Latvian elk Halens.

At the beginning of October, a lynx cub born in the spring, who had wandered into a henhouse due to extreme hunger, was brought to the animal park. The animal – who was given the name Elisabeth – was quite unhappy at first, but recovered nicely.

European fallow deer delighted the animal park with their progeny. Together with the European fallow deer, the animal park is now home to 40 residents. Visitors can see a wolf, European bison, elk, reindeer, roe deer, European fallow deer, a brown bear, lynx, foxes, common raccoon dog, red squirrels, European pine martens, European polecats, beech martens, and minks. Indoors you can get acquainted with guinea pigs, degus, chinchillas, gerbils and lab rats, golden hamsters, winter white dwarf hamsters, and dwarf or Japanese dancing mice. Domestic animals are represented in the park by rabbits, and since wild boar still cannot be kept due to African swine fever, Tyrrhenian goats and Pekin ducks are living in their enclosures.

For the fifth time, RMK organised the Valge ÖÖ light festival during summer, which took place this time in Elistvere. The park's 25th birthday, Estonian Nature Day, and the Day of Restoration

of Estonian Independence were celebrated with the light festival. The manor and animal park were filled with enchanting light art and music on the evening of 20 August. The event was brought to a glorious close by the premiere performance of *Maailma loomine*, written for the evening by Mari Kalkun and Sander Mölder. A total of 3,500 visitors took part in the light festival.

Elistvere Animal Park was established in 1997, and it has been part of RMK since 2008. Originally home to motherless and injured animals, Elistvere Animal Park is now home to their offspring, as well as residents from other animal parks.



'My zoo'. Karoliina Loosaare, Pärnijõe Kool, Grade 9

Home to
40
permanent
residents,
Elistvere Animal
Park celebrated
its 25th birthday

NATURE CAMERAS

RMK nature cameras tracked the activities of animals in five locations. For the first time we were able to view the northern goshawk nest cam, which was located on a 14–15 m high pine branch at the RMK Tree Nursery, in Tartu. Parents Ruudi and Alla saw four goshawk chicks hatch in May, with the chicks being banded at three weeks of age. Little was previously known about the nesting habits of goshawks, with the nest cam helping to fill that gap. For example, a great deal of anxiety occurred when the parents left the eggs uncovered for nearly five hours, at a time when the outdoor temperature was below freezing. Luckily, the eggs were not damaged in any way. By Midsummer's Day, the young birds had left the nest and no longer returned to spend the night. They could be heard and occasionally seen sitting on branches near the nest.

For the first time, a bear camera was placed in a forest in Järva County, on lands belonging to the Lööla hunters' society, where many bears reside. In the spring, four different mothers and cubs appeared before the camera; animals that were killed in traffic or while trawling were brought to the feeding ground as bait. Male bears were infrequent visitors to the feeding ground. Frequent visitors were foxes and common raccoon dogs, lynxes could be seen walking past the camera, and a western capercaillie cock even stopped to pose in front of the lens. An impressive recording was made of a wolf pack giving a long concert in close proximity to the camera.

The bird migration camera was located on the Sassi Peninsula, an important stopover point for migratory birds living in the Arctic. Twilight was accentuated by the powerful sound of large flocks of common cranes descending to Tauksi beach for the night, and the surprise howl of jackals in the dark. Barnacle geese often came right up to the camera.



'My forest friends'. Alexandra Tarasenko, Tallinna Läänemere Gümnaasium, Grade 9

The winter camera was located in Häädemeeste Small Town, by Pärnu Bay. Frequent visitors there included jackals and foxes, with new insight being gained into their interactions. It turned out that the fox is not prey to the jackal. Common buzzards, common ravens, and hooded crows added a bit of colour during the white period.

For the tenth season, the flagship of RMK's nature cameras was the deer camera on Saaremaa. The camera monitors the activities of deer from the height of a wolf's eyes. Following an extended absence, wild boar were once again seen at the feeding ground in 2022, with the 'carrot fox' also making waves. A fox began visiting the feeding deer site, who eagerly ate four or five carrots at a time. This was the first time that a carrot eating fox had been captured by the nature cam. Another peculiar incident was caught on camera where the gaze of two deer met, and one was so frightened that it knocked over the carrot box.

CHRISTMAS TREES

Nearly 8,300 fir trees were brought home from the state forest for Christmas. RMK offers this opportunity to preserve the beautiful old tradition and to call on people to also visit nature in winter. Spruce can be paid for by telephone and as can be confirmed by the number of calls made from Ukrainian telephone numbers, the opportunity of bringing home a Christmas tree from the state forest appealed to many war refugees.

Traditionally, RMK donates spruces to a number of social institutions and to all substitute homes in Estonia that wish to receive them.

Spruces may only be taken from places where they cannot grow to maturity: the sides of roads and ditches, under overhead power lines and old forests.

USER EXPERIENCE: FUN AND EASY

At the end of the Christmas tree campaign, the research company Norstat conducted an online survey for RMK, in which it was revealed that half of the respondents had brought home a real Christmas tree. Spruces are commonly brought home from a seller or from the forest. A large share of those who did not bring a real Christmas tree home use artificial ones; another reason given was the lack of space.

People that brought home a tree from the state forest considered the endeavour to be a fun tradition. They enjoyed the process and it was appreciated that everything had been made convenient and easy. A suggestion for the future was that good 'tree locations' could also be marked on the RMK app.



'A normal autumn evening'. Katre Kadaja, Puka kool, Grade 4

HERITAGE CULTURE

The heritage culture database, which was created at the initiative of RMK, grew by more than a couple of thousand entries during the year, and now contains information on 42,658 heritage sites. Around a fifth of these are located, either in whole or in part, on RMK lands.

On Forest Day, celebrated on 21 March, RMK helped organise an international conference focusing on trees and the non-timber values of the forest. A total of 54 presentations from several dozen countries were given at the conference, which are available for viewing on the page www.worldwoodday.org.

RMK participated here at home with thematic presentations and writings in Lime Year events, since Lime Year was celebrated in Estonia in 2022. The heritage culture database contains information on 424 limekilns and 294 limestone quarries.

Heritage culture is considered to be signs of the works and activities of our ancestors left behind on the landscape. For example, heritage culture is a farm in the forest, a boundary marker in the form of a moss covered stone or a trace of resin collection on a pine tree. Heritage culture has been better preserved in the forest landscape, than, for example, arable land, where the cultivation of soil and land improvement have damaged it more.

In 2005, RMK began the extensive mapping of heritage culture objects, including hundreds of volunteers, foresters from RMK, dedicated local history researchers, etc., in the process.

Heritage culture sites can be reviewed on the heritage culture map app in the Geoportal of the Estonian Land Board. It offers a good way to learn about your local history, or to find inspiration for putting together an itinerary for a nature walk.

Cultural heritage objects are not under protection and there are also no plans to place them under protection. The determining factor in preservation is the awareness of landowners and those operating on the landscape. For example, in the state forest the cultural heritage map layer is used when planning all work. RMK's sorters and silviculturists have undergone training to make it easier for them to spot objects in nature and take them into consideration during their work.

Heritage culture is introduced in RMK's visitor centres and along many hiking routes. The Oandu Visitor Centre, where thematic educational trails can also be found, has focused in particular on introducing forest-related heritage culture.



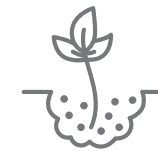
'We have friends in the forest'. Jan-Marten Kase, Tartu Raatuse Kool, Grade 5



'Day off' . Devin Altosaar, Valga Põhikool, Grade 5



Renewed forest area
13,000 ha



New forest plants
23.9 million



Maintained young forest
37,900 ha

FOREST MANAGEMENT

Thinning
8,300 ha



Regeneration cutting
11,700 ha



Timber sold
3.7 million m³

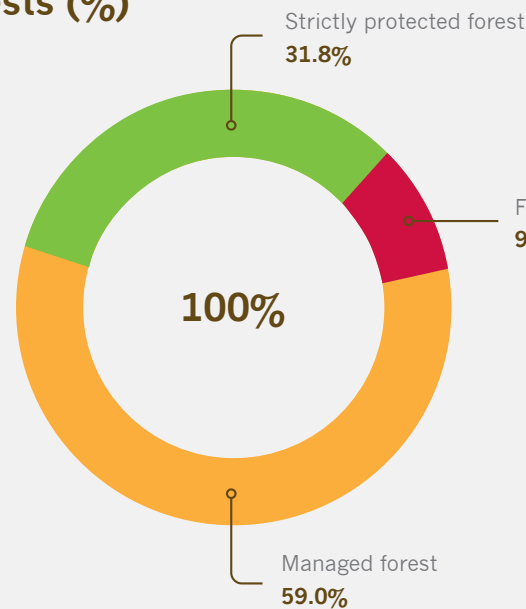




'Friendship of animals in the state forest'. Elisabeth Radik, Järvakandi Kunstikool, Grade 5

OVERVIEW OF FORESTS

Division of the RMK forests (%)



Strictly protected forest

RMK does not manage forests in these areas, but activities may be necessary for conservation purposes. Nature reserves, dedicated protection zones for permanent habitats and protected areas, precious habitats and Natura 2000 habitats overlapping with restricted zones and storage areas are under strict protection.

Forest with economic limitations
9.2%

Forest with economic limitations

Economic activity is permitted in these forests, but additional restrictions apply. Such areas include for example restricted zones and preserves outside the Natura habitat.

Managed forest

Economic activity is permitted in these forests.

RMK forest surplus*

	million m ³
2013	159
2014	166
2015	174
2016	180
2017	187
2018	190
2019	192
2020	195
2021	197
2022	198

* RMK's forest reserves have grown over the past decade primarily, but not exclusively, through the acquisition of forest land. The average hectare reserve of forest land has also grown – from 182 m³/ha in 2013, to 187 m³/ha in 2022.

Estonia is among the most forest-rich countries in Europe. Our most heavily forested counties are Hiiu County, Valga County, and Ida-Viru County

RMK's forest area and forest surplus by main tree species

	Surplus		Area		
	m ³	%	m ³ /ha	ha	%
Pine stands	90,253,000	45.7	210	429,996	40.8
Birch stands	51,945,000	26.3	167	310,992	29.5
Spruce stands	37,929,000	19.2	172	220,187	20.9
Aspen stands	8,716,000	4.4	197	44,146	4.2
Black alder stands	4,911,000	2.5	202	24,324	2.3
Grey alder stands	2,926,000	1.5	150	19,448	1.8
Others	950,000	0.5	178	5,328	0.5
TOTAL	197,630,000	100	187	1,054,421	100

The average age of forest stands (y)*

Pine stands	79
Black alder stands	56
Birch stands	50
Aspen stands	48
Spruce stands	47
Grey alder stands	35

* The most common tree in Estonia is the pine. The average RMK pine stand is 79 years old. It is worth keeping in mind that, although pine trees are the most commonly found tree in a pine stand, there are also other trees found within it. In the same way that not only birches grow in birch stands and spruces grow in spruce stands. In comparison with other trees, the pine is unique in that it can grow in very dry as well as very wet habitats, where other tree species encounter difficulties.

FOREST WORKS



30–180 years REGENERATION CUTTING

Regeneration cutting takes place in a mature forest in order to use timber as a renewable natural resource, for example as a house, toy or book. Regeneration cutting can be done in a number of ways. Under conditions prevalent in Estonia, most of the felling is carried out as clear-cutting over the course of one year. In places where natural conditions allow, shelterwood cutting is also performed. During shelterwood cutting, timber is removed from the forest in several stages over an extended period of time.



20–60 years THINNING

Thinning of a middle-aged forest. Thinning is used to promote the growth of the main tree species, to ensure that high-quality timber is obtained in the future and that the forest remains healthy.

Sanitary cutting. Sanitary cutting takes place when the forest has suffered significant damage, e.g., caused by bark beetles. Dead, diseased and infested trees are removed.

Formative cutting. Sometimes cutting is necessary in order to protect natural objects or species. In this case, it is formative cutting.



0–5 years REFORESTATION

The lifecycle of the forest is never ending. RMK makes sure that new forest will begin to grow on each clear-cut area within a few years, with planting taking place on 80% of areas and 20% left to natural regeneration. Trees that have begun to grow must be maintained in the first couple of years, to prevent them from being smothered by grass.



5–20 years MAINTENANCE OF YOUNG STANDS

Maintenance of young stands or cleaning is the most important silvicultural practice. It is used to improve the lighting and feeding conditions for growing trees and shape the composition of species in the new forest.

Deforestation. If the forest land is to be used for another purpose in the future, for example, to build a road or a house, clearing of the forest is referred to as deforestation.

RMK manages 46% of the forests in Estonia. Various forest works were performed in 2022 on 7.6% of this land. Forest works were comprised of:

- maintaining reforestation 2%
- maintenance of young stands 1.6%
- planting of new forest 1.2%
- regeneration cutting 1.1%
- thinning 0.8%
- sanitary cutting 0.8%
- deforestation 0.1%
- formative cutting 0.01%

23.9 million tree seedlings were planted

RMK invested EUR 19.8 million in planting, protecting, maintaining and growing the next generation of forest. Half of the money was spent on young forest maintenance works, and the other half on plants, planting works and preparation of the soil for planting.

New forest was planted on 10,500 hectares and 2,500 hectares was left to natural regeneration. In total, this is 1.2% of RMK's forest land. Left for natural renewal are areas where the necessary prerequisites are present for the regeneration of clear-cut areas with suitable tree species. The areas being reforested also include 326 hectares where there was previously no forest growing, having instead been home to low-value grassland or scrub.

A total of 23.9 million tree seedlings were planted: 10.9 million pines, 10.5 million spruces, 2.2 million birches, and 300,000 black alders.

A total of 90% of the plants were planted in the spring, from April-May, but the planting season in the state forest lasts from spring to autumn – with planting machines running from April-November and autumn planting also taking place. This helps to disperse the workload. While spruce trees were previously mainly planted in autumn, now pine trees are also planted at the same time and treated with a repellent before planting. A planting machine was mainly used on wet and difficult areas, where working by hand is difficult. In a single operation the machine creates a mound and immediately plants the sapling in it.

No sowing was done in the forest in 2022 as it is more practical to grow the pine trees in its own nursery. In the nursery they can be treated with glue, sand and wax, to make the tiny trees resistant to attack by the large pine weevil.

For the first time, water furrows were used to prepare the soil in waterlogged areas. In wet habitat types mounds were used, which create small mounds on the surface and help plants to begin growing faster. In the future there are plans to use mounds even more, to ensure the faster regeneration of the clear-cut area.

Forest renewal

Mineralisation of the land for planting (ha)	9,815
Forest planting (ha)	9,747
Aiding natural renewal with planting or sowing (ha)	715
Leaving for natural renewal (ha)	2,501
Contribution to the forest renewal (ha)	3,103
Plants planted (million)	23.9

Young forest maintenance works

	ha
Maintenance of young stand	16,413
Forest renewal maintenance	21,536
IN TOTAL	37,949

A young forest requires support

RMK performed young forest maintenance works on 37,900 hectares, which is 3.6% of RMK's forest land. Small trees were helped out of the grass (reforestation maintenance) and maintenance of young stands, i.e., cleaning, was performed, which improved the growing condition of young stands and shaped the composition of the new forest. Significant snowfall in winter and a hot summer made it difficult to improve the young stands.

Assessing the results of previous afforestation works, 11,492 hectares of young forest was considered to have been regenerated. In order for the clear-cut area to be considered renewed, a specific number of trees with a specific height must be growing there. A cutting area that has been clear-cut will renew itself within 4.6 years, on average, with one hectare having more than 1,000 spruces and 1,500 pine trees with a height of 0.5 metres, or 1,500 deciduous trees with a height of 1 metre.

INCLUSION OF THE LOCALS

For RMK's forest managers, the main focus in 2022 was directed towards working with local governments to identify forests of importance to local communities. By the start of 2023, it was agreed that forests of heightened public interest, or recreational forests, are located on the territory of 72 local governments. There are a total of 395 sites with a total area of 38,119 hectares.

RMK performs forestry maintenance works in recreational forests in order to ensure the sustainability of the forest for future generations. If nothing is done in the forest, then a beautiful recreational forest will not remain this way forever. The performance of forestry works in these areas is like tailoring, which is born

through negotiations with local residents and, if possible, taking their wishes into consideration. For example, in the event of clear-cutting, more old trees are preserved than usual, if possible tree species that are preferred by communities are planted, etc. If it is possible to plant young trees in a recreational forest using different means, then RMK does not plan clear-cutting, instead performing compartment cutting and selective cutting.

During the course of the year, RMK held 66 consultation meetings. Discussions touched upon 22 forests of high public interest. In 19 cases an agreement was reached with locals regarding forest management plans, while three agreed to postpone the plan.

SEED SURPLUS

RMK's task is to ensure that there is a sufficient supply of seeds for all of Estonia. As at the end of 2022, there was a stock of 8,344 kg of seeds, of which spruce seeds comprised 64%, pine seeds 33%, with a small quantity of silver birch and black alder seeds.

The spruce seed stock will cover Estonia's forest needs for 15 years, the pine seed stock for nine years, the black alder stock for three years, and the birch seed stock for two years.

The size of the seed stock is based on the principle that the stock should also cover the need for seeds during those years when trees do not bear seeds. Spruce produce seeds, on average, every 7–8 years, pines every 3–4 years, and black alder and birch every two years.

In 2022, 688 kg of forest tree seeds were used, of which 228 kg were planted in RMK's

nurseries and 460 kg sold to private forest owners. A total of 555 kg of new pine seeds, 90 kg of silver birch, and 47 kg of black alder were stored.

RMK has eight nurseries and 22 seed orchards across Estonia. The plants that are planted by RMK originate from their own nurseries. RMK also sells a small quantity of plants to the Luua Forestry School.

Estonian seed surplus (kg)

Pine	2,782
Spruce	5,367
Birch	160
Black Alder	35
IN TOTAL	8,344

Performing forestry works in recreational forests is like tailoring



'We have friends in the forest'. Penelope Istomin, Tallinna Mustamäe Reaalgümnaasium, Grade 3

TIMBER MARKETING

Timber brought to market by RMK comprises nearly one-third of the volume of timber harvested annually in Estonia. During the year, RMK sold 3.7 million cubic metres of timber. Logs made up 47% of the sales volume, pulpwood 30%, with 23% going to energy production in the form of firewood and wood chips.

Revenue from the sale of timber amounted to EUR 299.6 million, an increase of EUR 80.8 million over the previous year. The average price of a cubic metre of roundwood sold rose to EUR 82.80, having been EUR 59.20 the year before.

Breakthrough geopolitical events at the beginning of the year impacted the European economy, including the timber market. Producers were unable to immediately react to the sudden growth in global demand, which resulted in an apparent timber deficit and a price increase. The main reaction took place on the market for firewood and wood chips, which became more important in terms of ensuring local energy security. Prices rose to historically high levels for pulpwood assortments, due to the behaviour of cellulose and paper industries in the Nordic countries. In the common timber market of countries located along the Baltic Sea, the pulpwood resource of the Baltic states has been seen as an important source for building up or maintaining stocks, and prices have been manipulated where necessary.

The local market was very volatile for the second year in a row. Even though warehouses filled up in the second half of 2022 and the cooling of the economy began, the prices of all assortments remained at a relatively high level. The first to begin falling were the prices of conifer logs and conifer pulpwood. The price increase for firewood, birch pulpwood, alder, and aspen logs stopped, with only the price of birch plywood and veneer logs continuing to increase until the end of the year.

Sale of timber

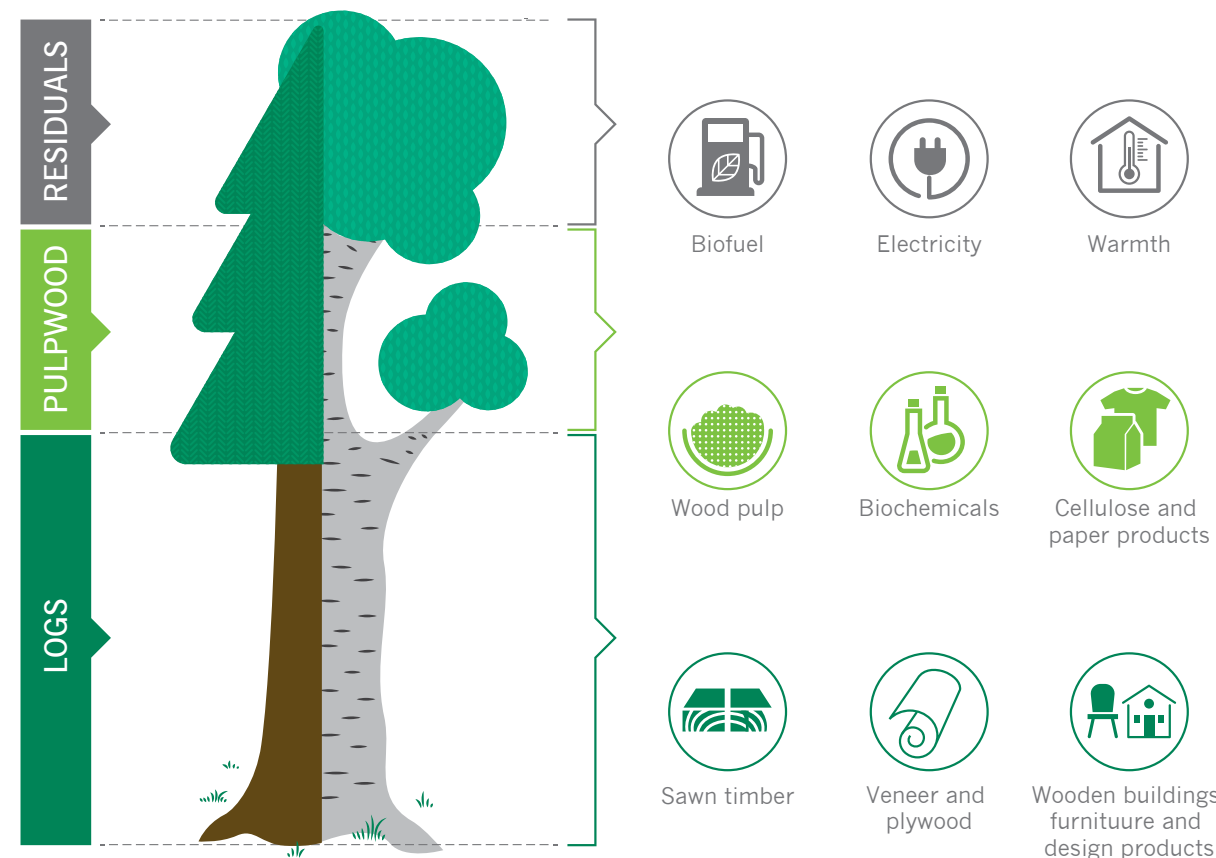
	2022	
	m ³	%
Logs	1,741,000	47
Pulpwood	1,110,000	30
Firewood	588,000	16
Wood chips and residuals	293,00	7
IN TOTAL	3,732,000	100

Average price of the sold round wood

	EUR/m ³
2013	44.3
2014	47.2
2015	44.4
2016	44.1
2017	45.9
2018	56.3
2019	55.5
2020	46.8
2021	59.2
2022	82.8

With the arrival of the energy crisis, the focus switched to fuelwood, and towards the summer, doubts arose as to whether energy producers had sufficient reserves for the upcoming heating period. The liquidation of bark beetle damage allowed RMK to offer district heating providers and firewood producers additional fuelwood in the autumn. Slowly but surely energy timber buyers gained a sense of confidence, as a surplus began to form and fuelwood was finally available in sufficient quantities. By the end of the year, the situation had stabilised.

'We have friends in the forest'. Arseni Raströgin, Kohtla-Järve Tammiku Põhikool, Grade 3



FOREST IMPROVEMENT

RMK's lands contain 9,360 km of forest roads, which belong to RMK. In addition, RMK uses and therefore also maintains some 2,000 km of roads located on the land of other owners. During the year, RMK reconstructed 204 km of existing forest roads and built 62 km of new roads.

Properly maintained forest roads simplify forestry and nature protection works, make moving around in nature convenient and, among other things, make it easier to put out fires. There are 799 fire-fighting water outlets in RMK's forests.

Almost half of RMK's forest land has been drained. RMK updated and reconstructed the forest drainage systems found there on 16,400 hectares. According to an agreement reached some time ago with nature conservation organisations, RMK is not building any

additional forest drainage systems, although existing systems require maintenance and reconstruction. During the course of reconstruction RMK applies mitigation measures (sedimentation basin, small water bodies, and ponds) to protect the environment.

Drainage helps to increase forest increment and reduces damage to soil during forest works. Drainage systems also play an important role in coping with the effects of climate change. Increased precipitation and shorter winters will lead to higher humidity, and a functioning ditch network is needed to drain excess water away from the forest.

The construction and reconstruction of forest roads and drainage systems cost EUR 18.4 million, and maintenance works EUR 6.5 million.

Forest roads that are in order simplify forest and nature protection works and make moving around in nature convenient

WASTE COLLECTION

RMK collected 146 tonnes of waste from the forests, which is six tonnes less than a year earlier. Even so, the quantity is quite significant, approximately 15 container trucks worth.

Most of the rubbish that is dumped in the forest is collected at waste stations for a fee. More waste is cleaned in counties where the population is higher. A total of 68 tonnes was removed from the forests of Ida-Viru County and 32 tonnes from Harju County.

Waste clean-up was performed by RMK's contractual partners, Ragn-Sells and Eesti Keskkonnateenus, at a cost of EUR 76,200.

Collecting waste from the forest is necessary not only because the waste dumped in nature is an eyesore, but because it also poses a threat to the environment and forest biota.



'Everyone needs a friend'. Riti Valo, Võhma Kool, Grade 7

HUNTING

RMK manages the Kilingi-Nõmme, Kuressaare, and Väätsa hunting districts. Hunting is possible there with a hunting permit obtained from public auctions organised by RMK. RMK earned EUR 214,500 from hunting activities.

On average, RMK was paid EUR 2.13 per hectare in the Kilingi-Nõmme hunting district, 2.27 in the Kuressaare hunting district, and 3.89 in the Väätsa hunting district. RMK shared EUR 23,000 of the revenue from public auctions with private land owners who permit hunting on their lands.

In those hunting districts where RMK itself is not administering hunting activities, RMK has

concluded contracts for the use of state land for hunting, covering 325 hunting districts. Among other things, the contract also states when hunters have to compensate the damage caused to forests by game.

The area of significant game damage in the state forest has stabilised, identified on 300 hectares in 2022. Young forests on the mainland are primarily damaged by elk and, on islands, by deer. RMK submitted 66 claims for game damage to 23 hunting associations. This concerns 100 hectares altogether, where RMK has to renew the area or make significant additional efforts for forest renewal. The total amount of the claims is EUR 42,600.



'Meeting a woodpecker', Carolin Pool, Märjamaa Gümnaasium, Grade 6



Protected species

502



Sites with protected species

48,426



Total area of key biotopes

34,426 ha

NATURE PROTECTION

Semi-natural biotic communities, rented

26,113 ha



Restored habitats

1,871 ha



Cost of nature protection works

EUR 4.8 million



NATURE PROTECTION WORKS

Bogs help ensure biodiversity, preserve clean water, combat flooding and droughts, as well as sequester carbon from the atmosphere

Restoration of habitat (ha)



RMK is Estonia's biggest performer of nature protection works. During the year, 259 works were performed, which were directed towards maintaining or improving the status of nature protection values. The largest category of works in terms of area was bog habitats restoration, followed by the restoration of semi-natural habitats. Nature protection works cost a total of EUR 4.8 million, which is EUR 700,000 more than the previous year.

Wide-ranging impact of bog restoration

By closing ditches in bogs, RMK is contributing to raising water levels and restoring valuable bog ecosystems. A number of works that began

earlier were completed, with RMK restoring a total of 1,656 hectares of bog habitats. The largest of these were the 625-hectare area in the Nigula bog, in Nigula Nature Reserve, and the 674-hectare area in the Puhatu bog complex, in Alutaguse National Park.

Bogs are important for ensuring biodiversity, conserving clean water, combatting flooding and droughts, as well as sequestering carbon from the atmosphere. Bogs comprise just 3% of the planet's land, yet store 20% of all carbon found in the soil of the planet.

However, cut-over peatlands, or peat mining areas that have not been rehabilitated, and which cover nearly 9,000 hectares of state

land in Estonia, do not sequester carbon. These areas may be extremely flammable, emit significant amounts of carbon, and in doing so accelerate the rate of global warming. RMK is working to find the most appropriate methods for restoring former peat mining areas to wetlands. To this end, an experiment in Ess-soo mire, in Võru County, in which peat moss components were spread and the water level raised, was completed. This was done in collaboration with researchers from the University of Tartu, who are helping to identify the changes accompanying restoration works in both the vegetation and the greenhouse gas balance.

Meadows and pastures are preserving biodiversity

Semi-natural habitats are areas characteristic of the Estonian landscape, that have been used as pastures and meadows, where moderate human intervention is required to preserve their biodiversity.

To preserve semi-natural habitats, RMK leases meadows and pastures on its maintained lands to local entrepreneurs for management. In total, there are 33,407 hectares of semi-natural habitats on lands belonging to RMK. By the end of 2022, 26,113 hectares of the land had been leased, with 438 natural and legal persons serving as RMK's partners.

In order for the areas to be maintained, RMK restored 215 hectares of meadows and pastures over the course of the year. The most extensive works took place in Ida-Viru County (73 hectares) and Viljandi County (50 hectares).

Five roads were built to improve the conditions for managing semi-natural habitats: Vohilau Road and Jausa Road, in the Väinamere Protected Area, in Hiiumaa; Kallaste Road, in the Vahtrepa Landscape Protection Area; Vasknarva Road, in Alutaguse National Park, in Ida-Viru County; and Osju Secondary Road, in Soomaa National Park, in Viljandi County. Three bridges were reconstructed: the Räksi Highway bridge and the Lemmjõe pipe bridge, in Soomaa National Park; and the Hansu-Kalda bridge in Käntu-Kastja Nature Reserve. The new

roads and reconstructed bridges will facilitate the management of 912 hectares of semi-natural habitats.

Resounding success in species protection work

Specific works were performed for the benefit of 22 rare and endangered species on a total of 105 hectares. The living conditions of the natterjack toad, the northern crested newt and the common spadefoot were improved in permanent habitats and protected areas across Estonia. In essence, this means clearing away excess vegetation (including trees) and creating or clearing suitable patches of terrain to serve as a spawning habitat, to expand the suitable habitat for species. The status of the natterjack toad in Estonia has, thanks in great part to the actions of RMK, improved significantly in the past 20 years, and without species protection work there would be no such Estonian nature protection success story.

The habitat of protected plant species was improved at 31 sites. Growing conditions for orchids were created for at six sites, the largest of which are located in Varangu, in Lääne-Viru County, and at Nehatu Nature Reserve, in Pärnu County.

Parks in order, views of the landscape opened up

Landscape maintenance and restoration works were carried out on 25 hectares. The largest maintenance sites were at the Varbola Stronghold (6 ha), in Rapla County; around the Neerut lakes and hiking trails (3 ha) in Lääne-Viru County, and the Kostivere Karst Area (5 ha). For the most part, landscape maintenance and restoration involves keeping views open.

Park maintenance and restoration works were carried out in 17 parks across Estonia. The biggest activities took place in Elistvere Manor Park, in Tartu County, and a separate maintenance schedule was prepared for Oru Park, in Ida-Viru County. In other parks, grass was mown and brushwood was cut to maintain the visual appearance, and hazardous individual trees were cut to ensure the safety of visitors.



'My friends from the forest'. Sandra Oru, Loksa Gümnaasium, Grade 8

PROTECTED AREAS

RMK bought 20 registered immovable properties with nature protection restrictions from private owners. RMK purchases lands as the representative of the state, if the procedure for its protection restricts the owner from using it for its intended purpose. A total of 153 hectares of land was acquired, at a cost of EUR 1.5 million.

RMK began purchasing lands of high natural value for the state in 2018, something that was previously done by the Land Board. Over the past four and a half years, RMK has purchased 116 registered immovables with a total area of 924 hectares at a cost of approximately EUR 8.6 million. RMK obtains the necessary funds by selling land that is not necessary for the fulfilment of its main assignments.

Protected areas in RMK forests (ha)

Special mgmt. zone of the protected area	209,960
Limited mgmt. zone of the protected area	67,557
Limited mgmt. zone of Species protection site	30,044
Special mgmt. zone of Species protection site	25,176
Special conservation area	17,533
Protected area without protection rules	256
Strict nature reserve of a protected area	3,167
Single object in nature	131

The zones of the protected areas may partly overlap.

KEY BIOTOPES

RMK has 34,426 hectares of key biotopes, which is 3.3% of the forest land owned by RMK. Over the year, this area increased by 3,746 hectares.

An extensive inventory, which began in 2019, was completed, during which more than 55,000 hectares of mature forest was inspected, where, based on the available inventory data, the likelihood of the presence of key biotopes was higher than elsewhere. The area under observation accounted for about 1/3 of all managed mature forests meeting the criteria for regeneration cutting, and all cutting in these forests was stopped before the inventory was completed.

In addition to RMK's trained forest surveyors, outside experts also inventory key biotopes in RMK's forests. Key biotopes are suitable habitats for rare and endangered species, where structures characteristic of natural forests have been preserved: for example, very old trees, large fallen and dead or burnt trees. Key biotopes fall under the category of strictly protected forests, covering 335,100 hectares, or 31.8% of RMK's forests. The share of strictly protected forests has grown from year to year.

Over the course of the year, the area of key biotopes held by RMK increased by

3,746 hectares

PROTECTED SPECIES

In Estonia, 568 species of plants, fungi, lichen, and animals have been placed under protection. Of those, 502 protected species have been registered on lands belonging to RMK. A total of 53 species belong to the most strictly protected category I, 236 to category II, and 213 to category III.

In addition to the number of species, the situation concerning protected species can be characterised more substantially by the number of discovered locations. Protected species have been found in 48,426 places on lands belonging to RMK, with the number increasing by 5,364 over the year. A location is defined as the habitat of one individual of a species (also a group in the case of plants growing together).

Protected species registered for the first time on lands belonging to RMK

- Yellow Whitlow-grass (*Draba nemorosa*), protected category III
- Bumblebees, all are category III protected: garden bumblebee (*Bombus hortorum*), brown-banded carder bee (*Bombus humilis*), shrill carder bee (*Bombus sylvarum*), heath bumblebee (*Bombus jonellus*), short-haired bumblebee (*Bombus subterraneus*)

PÕLULA FISH FARM

A total of 681,000 fish from the Põlula Fish Farm have been released into Estonian bodies of water: 254,000 salmon, 423,000 whitefish and 4,000 Baltic sturgeon juveniles of varying ages. Salmon were released into the River Valgejõgi as well as the Jägala, Purtse and Pärnu rivers, with whitefish, depending on their origin, being released into Lake Peipus, the River Pärnu, and Pakri Bay, as well as sturgeon into the River Narva. They also began the process of boosting the common whitefish population, releasing 3,000 larvae and 5,000 fish from the same summer into Pakri Bay.

With the support of the LIFE programme and the Ministry of the Environment, a five-year international project 'LIFE Baltic Sturgeon' for the recovery of the sturgeon population was launched. The natural populations of this protected category III fish species have been destroyed in the Baltic Sea. With the support of the project, 40,000 one summer, 8,000 two summer, and 900 two to three year old Baltic Sea Sturgeon will be raised and released into the River Narva. Long ago, the River Narva was a natural spawning site and habitat for sturgeon. Hopefully, the released sturgeon will return here to spawn. The total cost of RMK's activities in the project is EUR 506,000.

The fragile life of freshwater pearl mussels

Work on revitalising the population of protected category I freshwater pearl mussels continued. There are some adult mussels capable of reproduction present in Estonia's only freshwater pearl mussel river, but conditions have become unsuitable for juveniles and there are almost no offspring produced. Põlula Fish Farm is collecting freshwater pearl mussel larvae and raising them under controlled conditions during critical life stages. At the same time, the natural habitats of freshwater pearl mussels are being restored.

Over the course of the year, 27,000 freshwater pearl mussel larvae were collected, 9,000 of

which were put on special plates to grow in the river, and the rest in a thermostat in the laboratory. In June, 1,000 freshwater pearl mussel that had reached one year of age in the laboratory were also placed on plates in the river. A partial mussel census was carried out along an approximately 12 km section of the river. Together with the results of the 2021 census, a total number of 25,500 living freshwater pearl mussels was reached. The population was previously estimated to be around 10,000 individuals. It was gratifying to learn that individual young mussels were also found down river from the habitat.

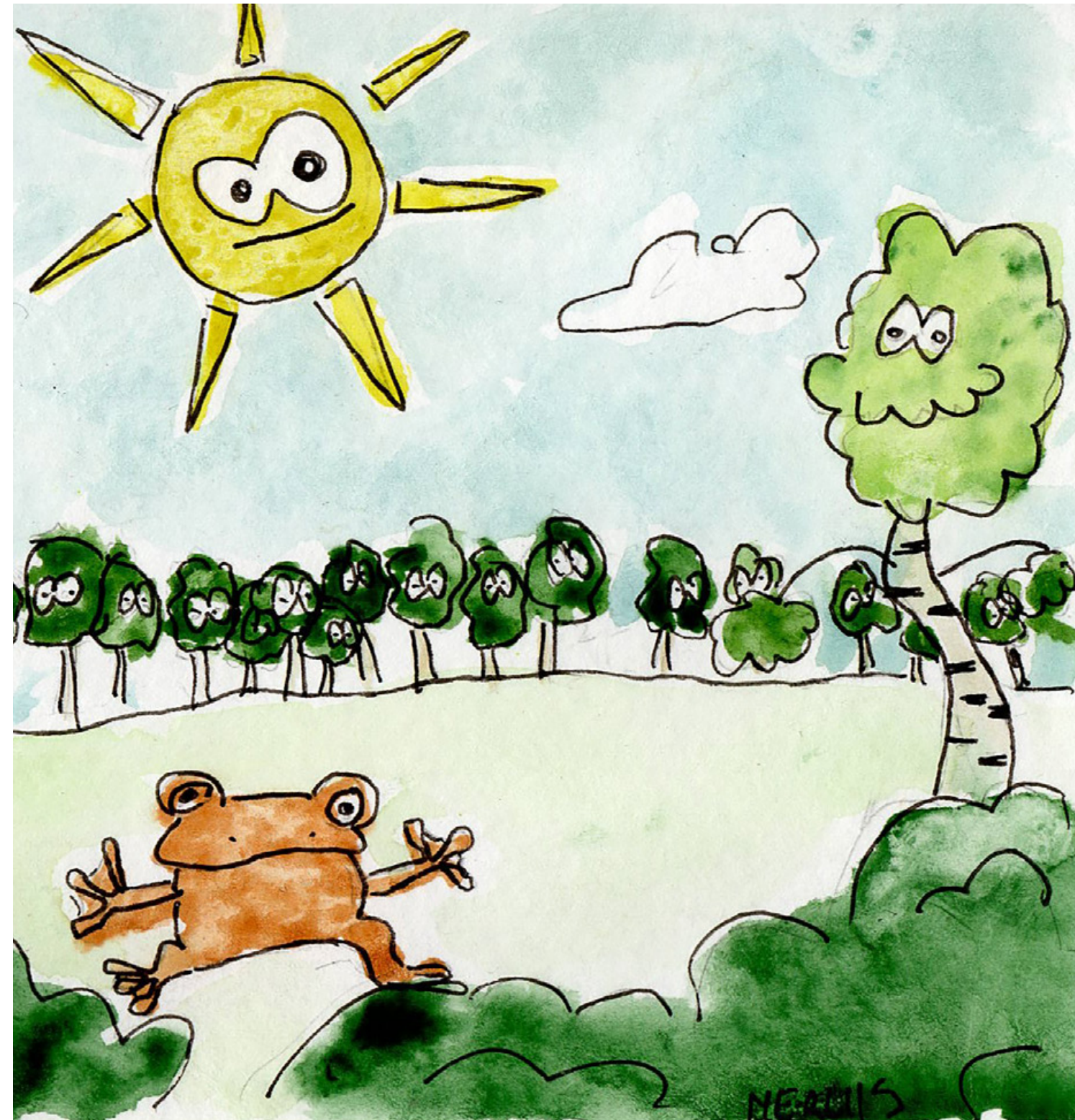
Work restoring the freshwater pearl mussel population is taking place within the framework of the project 'LIFE Revives', and will continue until 2027. The total cost of RMK's activities in this project, including wetland restoration, is approximately EUR 1.7 million.

Eating habits of crayfish

The four-year-long feeding trials for crayfish, under the direction of the Estonian University of Life Sciences, have come to an end. During all four years the survival rate for crayfish under farm conditions was over 90%, and carp feed proved to be suitable feed. It was recognised that there are significant differences in the rate of crayfish growth, which is why they need to be sorted by length and sex in the first years of life. Male crayfish grow faster.

River crayfish feeding trials were necessary to help facilitate their commercial breeding. Cooperation continued with the Peipsi Alam-vesikonna Kalurite Liit and the University of Tartu's Unit of Lake Peipsi Fisheries working group on restoring the stocks of Lake Peipus whitefish. Cooperation took place with the non-profit Harju Kalandusühing and Pakri fishermen for the hatching of common whitefish roe originating from the Gulf of Finland, along with the breeding and stocking of juvenile fish.

The fish farm, which has been a part of RMK since 2014, is restoring Estonia's fish stocks



'Frog Wigburg', Merliis Veersalu, Kolga Kool, Grade 8



'Tree of positive thoughts'. Maibrit Odar, Kunda Ühisgümnaasium, Grade 7



RMK supported research projects in progress

4



Disbursements of research projects

EUR 284,600

RESEARCH AND COOPERATION

Forestry scholarships

5



Scholarship spending in a year

EUR 42,600



APPLIED RESEARCH

The RMK Research Council was established in 2008. Since then, it has allocated support for 21 applied research projects, with slightly more than EUR 3 million having been paid out. In 2022, work continued on two research projects and the decision was taken to finance two new projects.

Overview of research projects

Factors determining defence responses and growth of Norway spruce in pure and mixed stands: impact of climate change and growth conditions

Project Manager: Priit Kupper, University of Tartu
Duration: 2021–2023
RMK funding: EUR 195,219

The project will study the impact of climate change on spruce, depending on where it grows and the proportion of deciduous trees in the forest. The project also seeks to learn what determines the rate of spruce growth and what determines its defensive capacity.

Measurements are carried out in two ways: in natural spruce stands and in an experimental forest ecosystem FAHM (Free Air Humidity Manipulation, i.e., the experiment on the manipulation of the humidity of air in the forest ecosystem, see fahm.ut.ee). Although the measurements are highly detailed, the results can be used to provide site-specific recommendations for spruce-birch mixed stands and a regulating growing room for trees through the use of improvement cutting, taking into consideration the ability of the trees to adapt to future changes in climate.

The project is ongoing, although initial results may already be presented. For example, it has become clear that spruce growth can be better in mixed stands than in pure spruce stands, although the ‘mixed stand effect’ is not the same at all growing sites. A surprising result

was provided by the unplanned intervention of nature – namely, it turned out that the summer drought of 2021 had a drastic effect on the trees growing in the wettest of growing areas (meadowsweet, *Carex-filipendula*), even though the moisture conditions there were significantly more favourable than in drier areas. Awaiting analysis are the interactions between indicators, which will hopefully provide new insights that are even more substantial.

In addition to that which is planned in the project, soil has been collected from the sampling areas, on which the planted spruces will be grown in climate chambers. The aim is to determine how the trees respond to a rise in temperature in different forest soils. Such studies, carried out within the framework of different research projects, complement each other and allow for a better understanding of the adaptation mechanisms of trees.

The impact of selective cutting on the carbon balance of the forest eco-system and the economic aspects

Project Manager: Veiko Uri, Estonian University of Life Sciences
Duration of the project: 2020–2023
RMK funding: EUR 204,000

The aim of the research is to explain the impact of selective cutting on the carbon balance of the forest, as well as to assess the economic aspects of selective cutting. This is the first in-depth project in Estonia to investigate the feasibility of a transition to permanent forestry in old mature stands. For silvicultural reasons, pine stands were mainly chosen as test sites, as pine is one of the most storm-resistant tree species in Estonia.

Since the establishment of the Research Council in 2008, RMK has supported **21** applied research projects

The study will focus on the carbon cycle, as this approach allows for an assessment of the impact of selective cutting on the forest ecosystem over a relatively short project period. The impact on the carbon cycle, and thus on the climate, remains a central issue when assessing the environmental impacts of any forestry activity today.

Carbon balance is the ‘tool’ used to carry out the research. To increase the reliability of the results, the project will at the same time use a high-tech method known as eddy covariance (EC) to study the carbon cycle, which will allow for the real-time measurement of CO₂ fluxes entering and leaving the forest using precision instrumentation. While the balance method can be used to help provide a rather detailed explanation on the role of different parts of the ecosystem in the carbon cycle, the EC method, applied in parallel, allows the resulting balances to be validated.

Preliminary results suggest that carbon sequestration capacity is reduced in thinned stands and in general they remain carbon neutral after cutting. At the same time, the effect of selective cutting on heterotrophic soil respiration (i.e., annual CO₂ emissions from forest soils) was modest.

Since selective cutting is mainly viewed as an alternative to clear cutting, the study was designed, in terms of carbon sequestration and production estimates, as a direct comparison of selective cutting versus clear-cutting. An important added value of the project is the established experimental plots for selective cutting, which set the stage for further research in the future, as well as function as a demonstration and training area.

The impact of the reconstruction of the drainage systems of drained peatland forests on the water quality of artificial recipients and an assessment of the efficiency of water protection measures

Project Manager: Kuno Kasak, University of Tartu
Duration of the project: 2022–2024
RMK funding: EUR 180,000

Estonian forests are characterised by their high proportion of bog soils and excessively moist mineral soils, which makes regulation of the wa-

ter regime for the soil an indispensable tool for silviculture and forest management. The impact of drainage ditch reconstruction works on water quality in drained peatland forests is being studied within the framework of the project. It will be determined which water protection measure – a sedimentation pond or the combination of a sedimentation pond and a filter bed – is more effective in terms of nutrient retention and better meets environmental protection objectives.

During the course of the project, which began in 2022, water quality was monitored in existing drainage ditches and preparations were made for the construction of sedimentation ponds and filter beds.

Impact of the afforestation of residual swamps on the carbon and nitrogen balance of the ecosystem

Project Manager: Ülo Mander, University of Tartu
Duration of the project: 2023–2025
RMK funding: EUR 250,000

The binding of carbon in ecosystems is probably the most important countermeasure against global warming. The ecosystems with the highest carbon sequestration capacity are mires, with more than a quarter of the world’s soil carbon being stored in them. In Estonia, paludification is a natural process, which is why bog soils account for as much as 22% of Estonian soil. However, when mires are drained, the carbon compounds contained in the drained peat decompose, with carbon and nutrients becoming available to soil microbes and being carried out and released from the peat. Therefore, cut-over peatland is a source of CO₂ and other greenhouse gasses. Within the framework of the project the possibilities for restoring cut-over peatland with various water regimes and tree species are being studied.

The financing decision for the project was made in 2022, actual work will begin in 2023. During the course of this work, the best options will be identified for the afforestation of cut-over peatland (either pine stands, birch stands, black alder stands or grey alder stands) and the most economical ways to manage afforested cut-over peatland to maximise carbon sequestration and reduce greenhouse gas emissions.



'Forest Friend'. Arabella-Delysa Laus, Pärnu Rääma Põhikool, Grade 7

RMK SCHOLARSHIPS

Endel Laas Scholarship

- For doctoral students at the Estonian University of Life Sciences
- EUR 4,800 per year
- Recipients in 2022: Kristjan Täll and Argo Orumaa

Heino Teder Scholarship

- For Master's students at the Estonian University of Life Sciences
- EUR 3,200
- Recipients in 2022: Maret Liekis and Karin Kütt

Toomas Ehrpais Scholarship

- For students at the Luua Forestry School
- EUR 1,917
- Recipient in 2022: Indrek Leetmaa

Award for the best forestry Master's thesis

- For Master's students at the Estonian University of Life Sciences
- EUR 700
- Recipient in 2022: Anni Kalle
- Master's thesis topic: hybrid aspen ground cover in the former Aidu oil shale quarry

COOPERATION PROJECTS

RMK participates in activities which help people to better understand and move about in nature, to enhance the value of timber as a building material, and to honour the traditions of foresters and the heritage of Estonians. Some examples are below.

Timber as a valuable construction material

The non-profit Estonian Woodhouse Association held the XII Vocational Competition for Handcrafted Log House Builders, at the Rocca-al-Mare Open-Air Museum, with RMK providing the necessary materials. RMK provided timber to SA VIKP in support of the restoration of a heritage culture object – the World War II defensive line Walk – located on Sooru Hill.

Contest between logging athletes

Under the auspices of the non-profit Eesti Metsaselts, and with the support of RMK, competitions demonstrating professional skills in logging sports were held. The series was opened by the Tartu Maamess Spring Cup, in April, followed in June by the TOP 10 at the Rakvere City Festival, and the 52nd forestry competitions in Järveselja, as well as the Estonian Logging Championships, in Jõhvi, at the end of August.

Singing forests

With the support of RMK the forester's choir Forestalia continued singing, celebrating its 50th anniversary.

Lotte is planting

With the support of RMK, anyone interested was able to receive an envelope containing tree seeds from Lotte Village, along with instructions on how to sow the seeds and where.

Healthy spirit in a healthy body

From spring through autumn a total of 300 RMK orienteering days took place, in which 6,000 participants made 47,905 starts.

Bloodless hunt

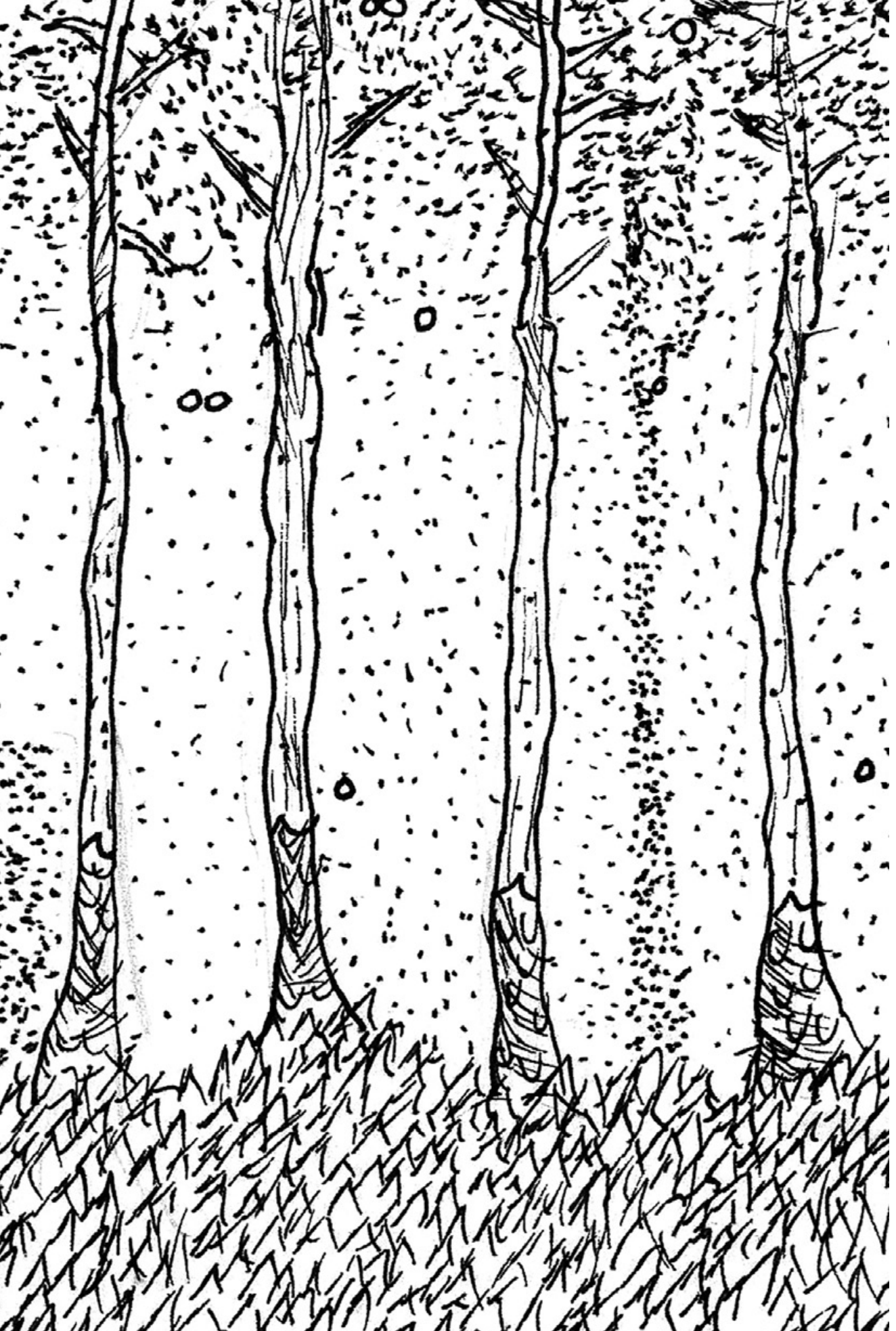
In the spring, 37 photographers took part in the nature photography competition Vereta Jaht (Bloodless Hunt). This time, species specific to Alutaguse National Park were captured and the 'prey' was the bear. Olavi Hiiemäe, who captured a picture of an exhilarating bear that had come dangerously close to him, was recognised as the best. A book summarising the 25th anniversary of the Bloodless Hunt was also published.

Rally Estonia

The Rally Estonia stage of the World Rally Championship was held on the winding roads of southern Estonia, and RMK contributed to its safety by cleaning the roadsides.

'Wolf and human compromise'. Karoline Akk, Jüri Gümnaasium, Grade 6





‘Taara in the forest’. Erik Veinberg, Järvakandi Kunstikool, Grade 7



Asset value

EUR 3 billion

FINANCIAL SUMMARY

Operating profit

EUR 152.6 million



BALANCE SHEET

(in thousands of euros)

ASSETS	31.12.2022	31.12.2021
Current assets		
Cash	145,963	114,446
Receivables and prepayments	28,060	18,632
Inventories	34,736	23,662
Biological assets	59,182	39,342
Total current assets	267,941	196,082
Non-current assets		
Investment properties	659	892
Tangible assets	596,725	582,504
Intangible fixed assets	1,838	1,640
Biological assets	2,141,584	914,176
Total non-current assets	2,740,806	1,499,212
TOTAL ASSETS	3,008,747	1,695,294
LIABILITIES AND EQUITY CAPITAL		
Liabilities		
Short-term liabilities		
Debts and prepayments	21,205	20,182
Short-term provisions	3,295	3,027
Total short-term liabilities	24,500	23,209
Long-term liabilities		
Long-term provisions	442	615
Total long-term liabilities	442	615
TOTAL LIABILITIES	24,942	23,824
Equity capital		
State capital	1,159,071	1,169,680
Retained profit	428,099	241,251
Accounting year profit with profit from the revaluation of biological assets	1,396,635	260,539
TOTAL EQUITY CAPITAL	2,983,805	1,671,470
TOTAL LIABILITIES AND EQUITY CAPITAL	3,008,747	1,695,294



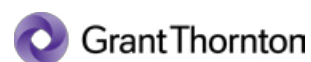
'Where did the rabbit go?'. Emma Portia Tinnuri, Veltsi Lastead-alkool, Grade 2

INCOME STATEMENT

(in thousands of euros)

	2022	2021
Revenue	302,286	221,329
Other operating revenue	8,022	3,554
Gain (loss) from biological assets	-258	247
Changes in inventories of finished goods and work-in-progress	11,124	4,381
Work performed by an entity in the production of fixed assets for its own purpose and capitalised	0	33
Goods, raw materials and services	-115,747	-98,067
Miscellaneous operating expenses	-12,014	-9,987
Labour costs	-29,110	-27,098
Depreciation and impairment of fixed assets	-11,557	-11,295
Other operating expenses	-116	1,376
Operating profit	152,630	84,473
Other financial income and expenditure	44	-23
Profit before income tax	152,674	84,450
Income tax	-14,322	-5,444
Profit for the accounting year	138,352	79,006
Revaluation of biological assets	1,258,283	181,533
Accounting year profit with profit from the revaluation of biological assets	1,396,635	260,539

AUDITOR'S REPORT



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INDEPENDENT AUDITORS' REPORT

To the supervisory board of Riigimetsa Majandamise Keskus (RMK)

The accompanying summary financial statements on pages 54 to 55, which comprise the balance sheet as at 31 December 2022 and the income statement for the year then ended, are derived from the audited financial statements of RMK for the year ended 31 December 2022. We expressed an unmodified audit opinion in those financial statements in our report dated 28 February 2023. The summary financial statements and audited financial statements do not reflect the effects of events that occurred subsequent to the date of the auditor's report on the audited financial statements, which may require adjustment of, or disclosure in, the audited financial statements.

The summary financial statements do not contain all the disclosures required by the Estonian Financial Reporting Standard, which was applied in the preparation of the audited financial statements of RMK.

Reading the summary financial statements, therefore, is not a substitute for reading the audited financial statements of RMK.

Management's responsibility for the summary financial statements

Management is responsible for the preparation of the summary financial statements derived from the audited financial statements in accordance with the accounting and measurement requirements of the Estonian Financial Reporting Standard.

Auditor's responsibility

Our responsibility is to express an opinion on the summary financial statements based on our procedures, which were conducted in accordance with International Standard on Auditing (ISA) 810 *Engagements to Report on Summary Financial Statements*.

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Opinion

In our opinion, the summary financial statements derived from the audited financial statements of RMK for the year ended 31 December 2022 are consistent, in all material respects, with those financial statements, in accordance with the accounting and measurement requirements of the Estonian Financial Reporting Standard.

Mart Nõmper
Sworn Auditor
License number 449

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28 February 2023

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2022 Postcard competition for Estonian schoolchildren,
with the competition theme of 'We have friends in the forest'.
Front- and back cover 'Hope'. Ann Karjam, Kihnu Kool, Grade 7

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