

Yearbook 2022



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Chairman's letter



Dear reader!

For the company, 2022 began with a new wave of COVID cases, with up to a third of our employees on sick-leave during the worst of it. All that was very important until 24 February 2022 when Russia started a war against Ukraine. On the backdrop of the humanitarian catastrophe and human tragedy of the war, COVID became secondary and in the end disappeared from focus. The war put our environment into an entirely new context, testing our values and forcing us to adapt to the changing situation.

2022 will go down in history as a year of war, although it could also be named an energy crisis year or the year in which the risks of the policy of reducing the competitiveness of the European industry sector materialised. The weaknesses of the uncontrollable carbon trade system and the electricity market could be seen already at the end of 2021, but they fully materialised as a result of the war. The tenfold increase in electricity prices, problems with supply chains, the exploded prices of raw materials and inflation struck a wound in the Estonian economy, recovering from which will take time.

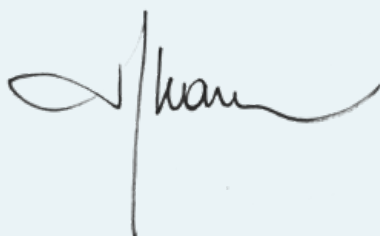
The rapidly changing regulative and economic environment is the everyday reality for VKG. A strong financial standing, fast decision-making processes, and a constant assessment and mitigation of risks have been our strengths which served us well also in 2022. At the peak of the raw material and supply chain crisis, we were able to reconstruct the Petroter I plant and continue with all the previously planned activities unchanged. We also commenced construction work on the aboveground infrastructure of the Uus-Kiviõli Mine with the aim to ensure the smooth transition of oil shale extraction from the depleting supply of the Ojamaa Mine in 2025–2028.

As we are working on the commodities exchange, a low production cost of the end product is of the greatest importance for VKG in terms of competitiveness. The best result is achieved with the stable and coordinated functioning of production units, towards which we make our best efforts. Following the reconstruction of the Petroter I plant, we expect a new production record in 2023, after which we shall focus all of our attention on the prevention of production disruptions. We believe that our long years of experience allow us to find the right balance for making work reliability investments.

In strategic terms, VKG acts on the assumption that the tightening of the Green Transition regulations at the EU level will continue regardless of the energy crisis caused by the EU itself. We are therefore very careful in making development investments related to oil shale processing and are actively planning new development directions in parallel to the valorisation of oil shale. The production of bioproducts and the waste plastic pyrolysis projects are reaching their next stage of development in 2023. In addition, we are more broadly analysing VKG's options in developing the manufacturing industry in Estonia, with particular focus on Ida-Viru County.

As a strategically important initiative, we started the restructuring of the Group at the end of 2022 in a way that would best allow us to finance the opening of the Uus-Kiviõli Mine and the new CO₂ emission development projects. The Green Transition has made engaging foreign capital in the valorisation of fossil raw material basically impossible in Estonia. Russia's war in Ukraine made Estonia a neighbour to an aggressor state, which has scared away possible investors. We have therefore decided to establish a representation for the company in Western Europe in order to be closer to shale oil customers and expand our possibilities of engaging foreign funders.

Changes happen very quickly in economy and society. By the moment of writing this Chairman's letter, Estonia has got a new government, the effects of the oil embargo on Russia have reached Estonia through an increase in freight prices and railway tariffs, inflation has risen to 20% and the economic decline is 4%. The above does not change VKG's plans, for we are well prepared for changes. We are expecting a record year in production and making our best efforts to prove the possibility of a large-scale manufacturing industry in Estonia with our development projects.



Ahti Asmann

Chairman of Management Board of Viru Keemia Grupp



About the company

Viru Keemia Grupp, a private capital-based enterprise located in Kohtla-Järve, is the largest shale oil producer in Estonia, proudly continuing the Estonian tradition of adding value to oil shale that dates back to 1924. The enterprise is based on private capital since 1997 as a result of the privatisation of AS Kiviter.

Our values

- **Openness**
- **Dedication**
- **Progress**

Our central values are openness, dedication to our work, and continuous development. We believe that every step and every action we take must create value for everyone – our employees, partners, clients, and the local community alike.

The Group's strategic objectives

1. Extracting the maximum amount of energy from oil shale,
2. Adding maximum value to end products,
3. Promoting an organisation culture aimed at efficiency,
4. Competitiveness of shale oil products



The Group's strategic occupational safety objective

Is to ensure our own employees, partners and city residents a safe working environment that is free from work accidents.

Of the subsidiaries of VKG Group, three are involved in production and five are engaged in the provision of services to end consumers within the Group and one is engaged in investment activities outside the Group's core activities.

Production



VKG KAEVANDUSED

The excavation of the main raw material, i.e. oil shale



VKG OIL

Production of shale oil and fine chemicals



VKG ENERGIA

The production of heat and electricity

Services



VKG SOOJUS*

The distribution and sale of heat



VKG ELEKTRIVÕRGUD

The sale and distribution of electricity



VKG LOGISTIKA

Automobile and railway logistics services



VIRU RMT

Repair and assembly services



VKG INVEST

Investments outside the Group's core activities



VIRU KEEMIA GRUPP

Support services for subsidiaries

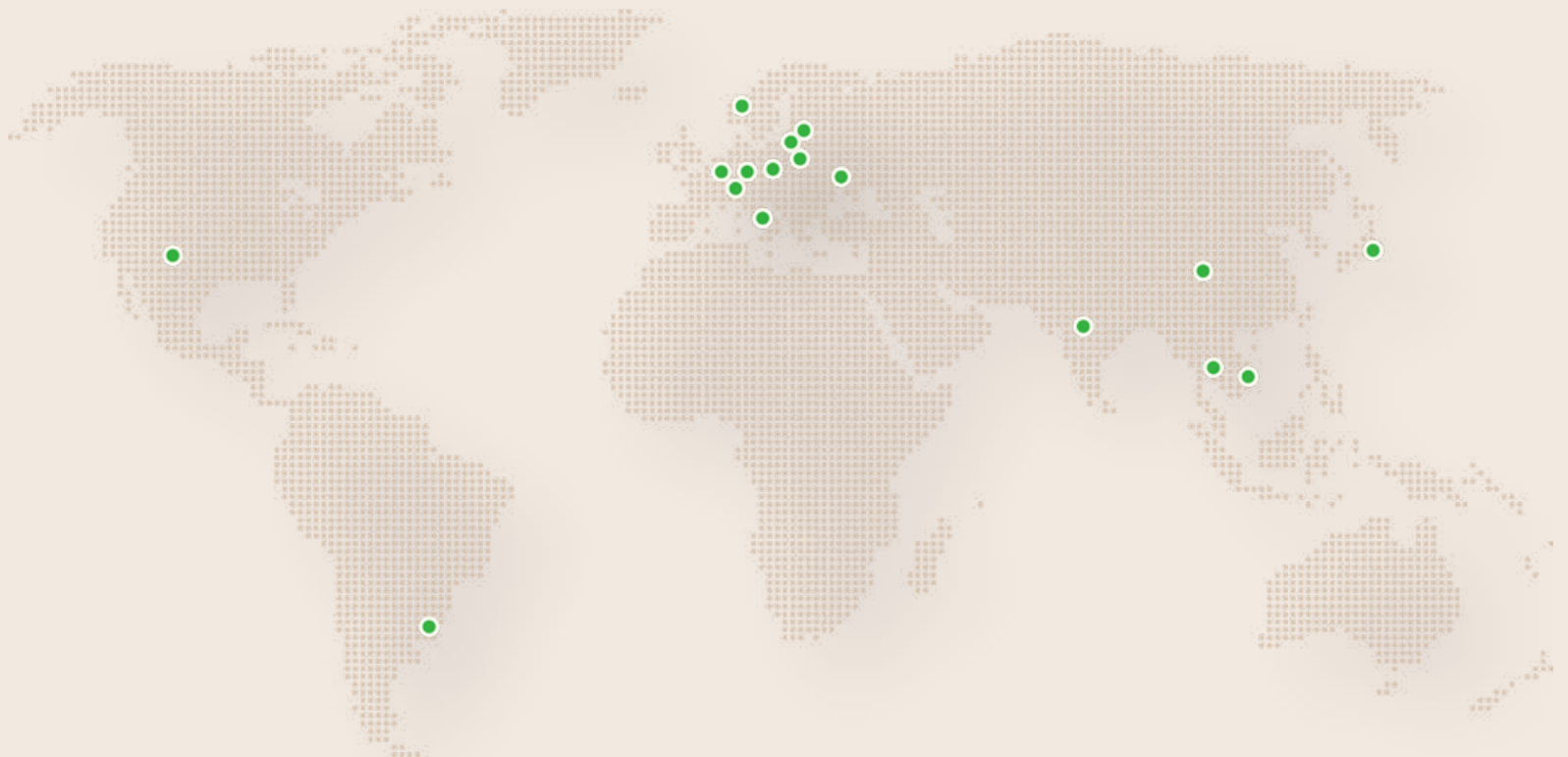
* In October 2022, the Group sold VKG Soojus to Gren AS.

Our main products and services

- Ship fuels
- Heating oil for local heating boiler plants
- Electrode coke for electrode manufacturers
- Oil shale fine chemical products for perfumery, cosmetics, and textile industries
- Oil shale gas for production of heat and power
- Steam and air conditioning for large-scale industrial companies
- Production, transfer and sale of heat and electricity to households and companies
- Repair, assembly and rental services of machinery and equipment
- Consulting services in the field of oil shale processing technology

Geographical sales distribution of the Group's products

- Belgium
- Estonia
- China
- India
- Italy
- Japan
- Latvia
- Lithuania
- Norway
- Poland
- Germany
- Switzerland
- Thailand
- Ukraine
- USA
- Vietnam
- Uruguay



Main indicators of 2022

4 270 000

tonnes of processed oil shale

↓ -6%

571 762

tonnes of commercial shale oil

↓ -5%

2 117

tonnes of fine chemistry
and phenol products

↓ -1%

854

GWh of heat and electricity

↓ -11%





Business activity and fields of activity

For VKG, changes in the Group's structure and work organisation and the reconstruction of the Petroter I plant were the main keywords of 2022. As a result of the restructuring, the entire production activity was transferred to the companies created in the course of the division.

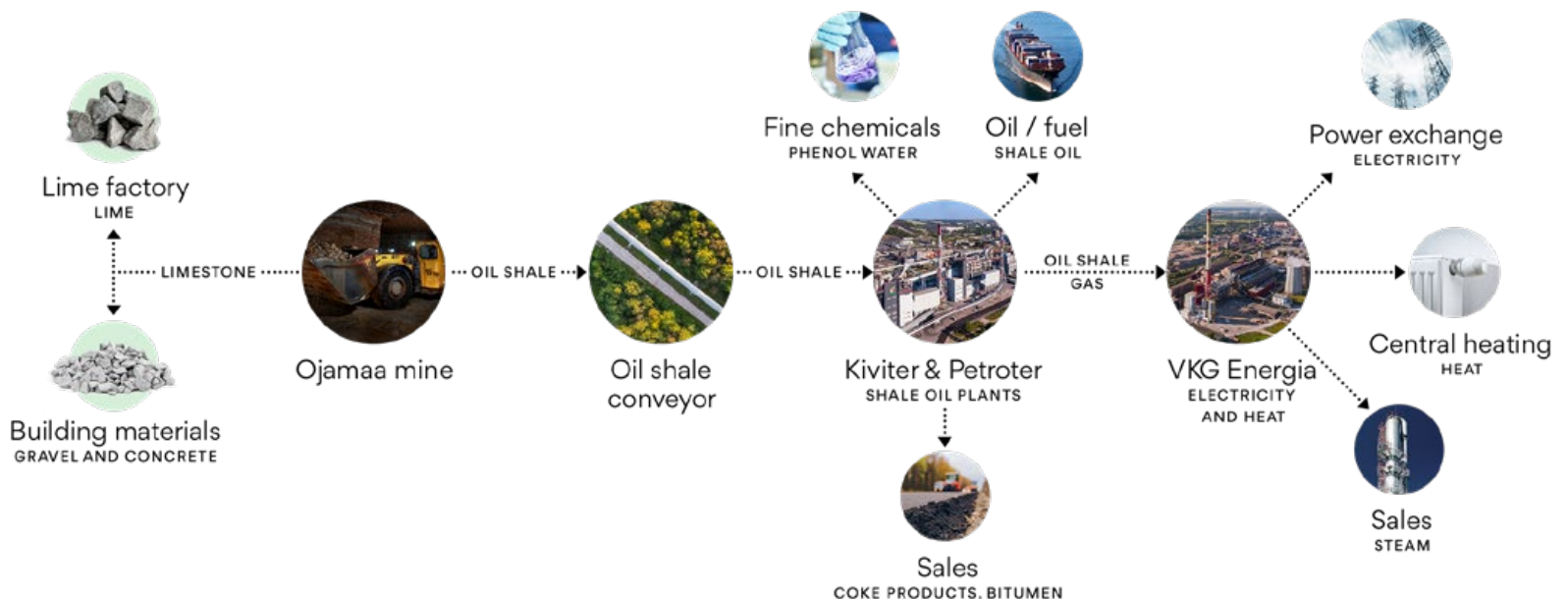
The new VKG no longer holds non-current assets related to the production of shale oil products, but rents these from the related company Kirde Varad AS under a long-term contract. Pursuant to the requirements of IFRS 16, VKG still reports long-term lease obligations as non-current assets. In addition, assets related to the extraction of oil shale were still in the ownership of VKG as at 31 December 2022. Although market conditions continued to be favourable in the second half of 2022, we were unable to take full advantage of them as the Petroter I plant was

due to major repairs out of operation for most of the second half of 2022.

VKG's core activities are divided into three major stages in the process chain: the extraction of oil shale, the production of shale oil products, and the production of energy. The Group also includes two service companies which provide logistics and repair services mainly to other Group companies.

Fields of activity

Our goal and one of the most important principles is adding value to the oil shale processing value chain, and its extension. The existing value chain at VKG is the longest in Estonia and one of the longest in the world.



In order to add maximum value to oil shale as the main input in oil production, we also operate in the following areas in addition to our core activity:

- **Excavation of oil shale;**
- **Production and sales of oil shale fine chemicals;**
- **Production and sales of heat and electricity**
- **Design, construction and repairs of electrical equipment and electricity networks;**
- **Construction, assembly, repairs and maintenance of technological equipment.**



We extract oil shale in the Ojamaa Mine which will celebrate its 15th anniversary in 2024. Since the layer of oil shale is deposited in a bed that is more than 30 metres deep, underground extraction is used at Ojamaa.

In 2022, the Ojamaa Mine continued its ordinary operation, extracting a total of 4.25 million tonnes of commercial oil shale, which was 0.14 million tonnes or 3% less than in the previous year. The main reason for the smaller production volume as the rapid spread of COVID-19 cases at the beginning of the year, at the peak of which nearly a third of the company's employees were on sick-leave. The company's activities were also influenced by the constant increase in the prices of inputs and

the increased competition in the labour market in connection with an increase in the extraction capacity of Eesti Energia. Our focus was on the new project of opening the Uus-Kiviõli Mine, into which we invested nearly two million euros during the year. The intensity and investment volume of this project will grow considerably in the coming years, in order to ensure that the transition from the Ojamaa Mine to the Uus-Kiviõli Mine is as smooth and efficient as possible.

PRODUCTION VOLUMES OF THE OJAMAA MINE

2020

4,14

million tonnes of commercial oil shale

2021

4,39

million tonnes of commercial oil shale

2022

4,25

million tonnes of commercial oil shale



THE OJAMAA MINE IN FIGURES

500

employees

23,7 km²

area

4,5

million tonnes of commercial oil shale a
year in terms of production capacity

150

wheeled equipment units

27 km

of conveyors

81

honorary miners

Availability of oil shale resource

VKG assesses the availability of the oil shale resource in the short-term perspective, i.e. current supply, and in the long-term perspective, i.e. future supply.

CURRENT SUPPLY

Considering all the oil production capacities, VKG's need for oil shale is a total of 4.1 tonnes of the geological resource a year, i.e. 5.1 million tonnes of commercial shale. The mining permits issued to VKG allow the extraction of 2.77 million tonnes of the geological resource at the Ojamaa Mine, (3.5 million tonnes of commercial oil shale) and if other market participants do not extract their allowed volume in the full extent, the extraction volumes at the Ojamaa Mine can be increased to 3.5 million tonnes (4.35 million tonnes of commercial shale) through the retrospective extraction mechanism. This means that in order to purchase the missing 750,000 tonnes (i.e. 15% of VKG's total oil shale need) of commercial shale, VKG has to reach agreements with other market participants.

Oil shale purchasing cooperation with Kiviõli Keemiatööstus continued in 2022. We have still not succeeded in restoring cooperation with Estonia's biggest extractor of oil shale, Eesti Energia, that was suspended in 2020 due to the COVID-19 crisis. Although the lengthy dispute over the unfairly high price of the oil shale sold by Eesti Energia reached a positive solution for VKG in 2021, it is namely the different understanding of the fair price of oil shale that continues to be the main obstacle to. Due to this, one of the three Kiviter oil plants continues to be conserved, waiting for the day on which VKG will perhaps itself be able to supply this production capacity with raw material after the opening of the Uus-Kiviõli Mine.

FUTURE SUPPLY

Considering VKG's extraction volumes and assessing the resource available from the Ojamaa Mine, we shall probably exhaust the Ojamaa Mine by 2028. In order to ensure raw material supply, VKG started actively investing into the opening of the Uus-Kiviõli Mine in 2022, as a smooth transition from one mine to another requires long-term planning and strict adherence to plans. Although we have reached an agreement with our good neighbour Eesti Energia to the effect that until the successful completion of the new environmental impact assessment VKG can use the extraction limits allocated to Eesti Energia at Uus-Kiviõli, there is still a risk that if raising the extraction limits fails, VKG's raw material supply may be endangered, should Eesti Energia decide to come to extract oil shale at Uus-Kiviõli simultaneously with VKG. VKG is actively working to mitigate that risk, because a private company cannot make a 100 million euro investment without contractual assurance that it can extract a sufficient volume of oil shale from the mine to be opened.

The Uus-Kiviõli Mine should ensure the Group's oil shale supply until 2038. In the environmental context, the Uus-Kiviõli Mine is the only right solution, as this mining field is logistically in the best location with regard to the shale oil plants in Kohtla-Järve and allows us to use the existing infrastructure to the maximum possible extent. The oil shale enrichment plant located at the Ojamaa Mine is capable of ensuring the processing of the raw material extracted from the new mining field and therefore there is no need for additional aboveground construction works and nature disruptions.



Production of shale oil

The main product of VKG is shale oil, which is obtained as a result of processing oil shale.

Shale oil's advantages over residual fuel oil are its low viscosity, low sulphur content and low pour point. Shale oil mixes well with conventional fuel oils and therefore facilitates the creation of products with precise specifications. Owing to its low sulphur content, low viscosity and low pour point, shale oil is mainly used to improve the qualities of heavy fuel oil, e.g. as a marine fuel additive, as a raw material for the chemical industry, and for heating boilers and industrial furnaces. Shale oil produced by VKG is used in Estonia as fuel for boilers and industrial furnaces, but most of the production is exported.

We use two technologies to produce shale fuel oil: Petroter and Kiviter. VKG's production territory at Kohtla-Järve includes three Petroter shale oil plants: Petroter I (2009), Petroter II (2014) and Petroter III (2015), along with two Kiviter shale oil plants. The aggregate processing capacity of the five production units is nearly 5 million tonnes of oil shale a year, of which 70% comes from the Petroter plants.

In 2022, the Group processed 4.27 million tonnes of oil shale, which is 5.8% less than in the previous year. The oil shale processing volumes mainly decreased due to the reconstruction of the Petroter I plant, but also due to extraordinary obstructions which reduced the formerly high reliability. Although we again succeeded in increasing the output of oil products per a tonne of processed oil shale, the impact of this remained modest and the production of oil products decreased by 5.7%, i.e. to 583,000 tonnes compared to the previous year. In 2023, we expect a significant increase in production mainly on account of the improved reliability of Petroter I.

By summer, the prices of liquid fuels grew by nearly 50% from the beginning of the war due to uncertainty and unknowing, but the situation calmed somewhat thanks to the expected economic decline in major production countries (China, USA, India) in the 3rd and 4th quarter. As at the end of the year, the ICE Brent was even a little lower than at the end of 2021.

The project of the year: the extensive reconstruction of Petroter I

VKG's first shale oil plant operating on the basis of the Petroter technology was launched in 2009. During its time of operation, the Petroter I plant has processed 10 million tonnes of oil shale and produced more than 1 million tonnes of shale oil. In 2021, active preparations started for a large-scale reconstruction of the PetroterI plant and reconstruction works started on 17 June 2022 and the plant was re-opened on 11 November 2022. The works were performed in parallel in different divisions of Petroter I, with more than 30 subcontractors engaged from both Estonia and abroad.



Odour emissions from the chimney are reduced by more than

10
times

CO emissions from the chimney are reduced by more than

10
times

Dust emissions from the chimney are reduced by more than

80%

Production growth

13%

The project was performed by

525
from outside the Group

The investment amounted

20
million euros

Works performed

- Replacement of the utilisation boiler
- Renovation of the reactor
- Replacement of an electrical filter
- Upgrade of automation
- Improvement of the reliability of various process junctions

Time schedule

- Planned 150 days
- Performed in 143 days

The Group's shale oil production

in tonnes

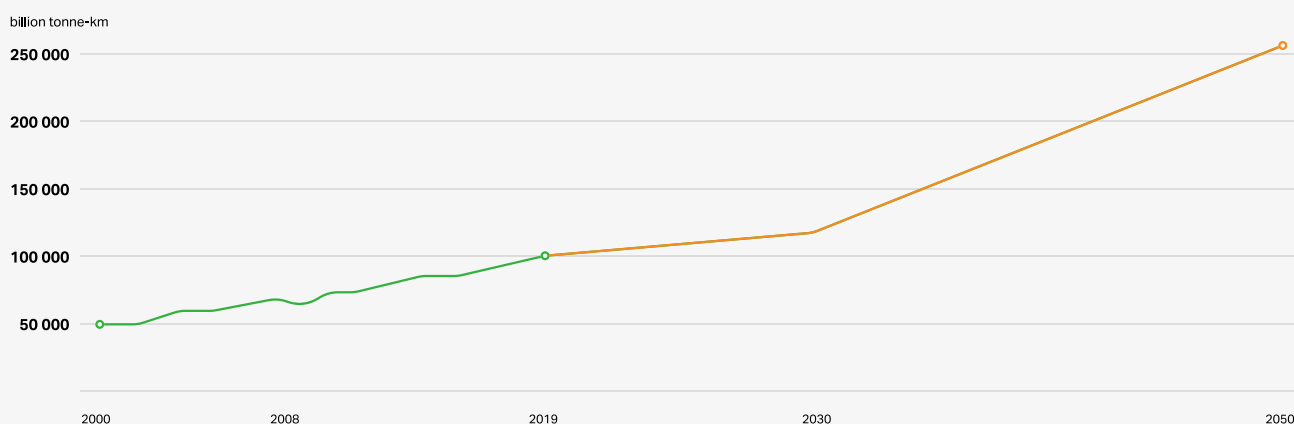


The ship fuel market today: shipping volumes are on the increase

Shipping is the backbone of today's economic structure in the world – more than 80% of trade is done by sea. In connection with the global economic growth, the growing world population and the ever more intensive internationalisation, the volume of trade done by sea has notably increased over the past two decades. While in 2000, six billion tonnes of goods were transported by sea, by 2018 the volume had nearly doubled, reaching 11 billion tonnes (UNCTAD 2019, 72). At the same time, goods are transported to greater distances, and the volume of shipments in tonne-kilometres has more than doubled in the same period – from 48,000 billion tonne-kilometres to 98,000 billion tonne-kilometres (UNCTAD 2020, 6). The geography of marine transport has also expanded and the role of developing countries in sea trade has grown considerably over the past 20

years. While in 2000, developing countries were the destination of 30% of goods, by 2018 the share had grown to 64%. Over the same period, developing countries were the country of origin of 60% of goods.

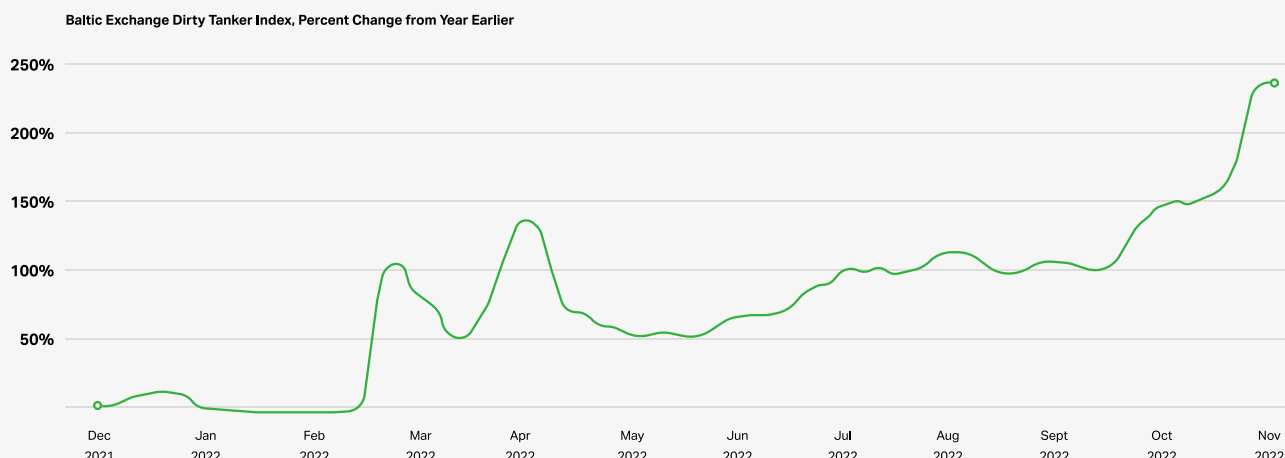
Eighty percent of the fuel consumption of the shipping sector comes from international trade which has undergone a notable improvement in energy efficiency – the GHG emission per shipped tonne is 32% lower than in 2000. There are currently more than 120,000 ships with a capacity of over 100 tonnes. Of these, 90% are cargo ships with an average useful life of 21 years. Which in turn means that any technological innovations will take time.



Sources: United Nations Conference on Trade and Development (UNCTAD), 2020. Review of Maritime Transport 2019. International Transport Forum, OECD (ITF&OECD), 2019. Transport Outlook 2019

The price of sea transport on the Baltic Sea grew by 243% in a year

- The shipping volumes of fuels have returned to the pre-pandemic level and keep growing.
- The lease prices of the so-called dirty tankers that transport crude oil exceed 100,000 US dollars and profits of ship owners have doubled or tripled.
- Russian sanctions – both against Russia and the counter-sanctions imposed by Russia – are forcing European countries to buy fuels from farther away, increasing ship lease prices.
- According to forecasts, changes in delivery routes will raise the demand for oil tankers to a level not seen in the past thirty years.



Sources: Portaaliid U.S Global Investors ja RigZone

Shale oil must become one of many alternatives

If we wish to put shale oil to more use in this decade in replacing Russian energy, we have to change European directives. If we want to be ready to use more shale oil this winter (this refers to the 2022–2023 heating period), the state must send a clear message to both undertakings and the Environmental Board as to when the use of shale oil is acceptable. The signal must be clear enough and provide legal certainty so that undertakings would make the necessary investments and start applying for respective permits. For instance, ordering a burner from Germany may take up to three months. The state must definitely also ensure additional human resources for the Environmental Board to speed up proceedings. It will be too late to do all this when the crisis arrives.

Greater clarity is also necessary for local oil producers. Shale oil is in high demand in the global market and there is a queue of foreign clients who are willing to buy all the products at once. It is currently unclear whether and in what volume the domestic market needs oil. It is clear, however, that products are not produced just for storage and a purchase order placed in the twelfth hour may remain unfulfilled in the winter.

In Germany, the green party is in power and even they understand the need to re-start coal plants, as there simply is no other energy. I hope Estonia will also overcome the false shame and create better conditions for undertakings to start using energy produced in our own country.

Ahti Asmann

Chairman of Management Board of Viru Keemia Grupp



VKG's shale oil production uses the best available technique which also ensures high-level environmental protection in production.

The environmental requirements applied to industrial installations with regard to the generation of waste and the contaminants released to air, soil and water are established within the framework of the Industrial Emissions Directive (2010/75/EU, hereinafter the IED). Estonia has transposed the IED in the Industrial Emissions Act (hereinafter the IEA). The IEA and the related legal acts regulate the Best Available Technique (BAT) system and the issuance of the related integrated environmental permits in greater detail.

In simple terms, the BAT system means that industrial installations are divided into technologically comparable groups and environmental requirements are established on the basis of the leading members of the group. This approach allows comparing technologically similar industries. Estonia's shale oil industry that is the only one in Europe logically forms an entirely separate group. Thus, if, for instance, the burning of natural gas is regulated by the pan-European BAT conclusions document which does not apply to retort coal gas, national BAT conclusions have been adopted within the IED framework with regard to burning retort coal gas. Thus, two valid Estonian BAT conclusions apply to the shale oil industry:

1. the BAT conclusions concerning shale oil production;
2. the BAT conclusions concerning the use of oil shale for energy.

An integrated environmental permit issued to an installation contains all the essential environment-related elements, including contaminants released to air, water and soil, the minimisation of noise and risks, material and energy efficiency requirements, which are all established on the basis of the BAT conclusions. Thus, the integrated environmental permits issued to VKG's installations on the basis of the BATs applicable in accordance with the IEA are the state's quality label attesting the VKG's production activities meet high-level environmental protection requirements. All the employees of VKG can take pride in this.

VKG's installations have operated at a high level of environmental protection for more than 25 years – of that, 12 years within the IED framework and on the basis of BATs, making investments with long-term return in accordance with BATs. VKG has knowingly chosen technological processes and solutions which allow it to fulfil environmental requirements at a level that has been declared technically and economically realistic on the basis of BATs. The current BAT-based system has justified itself in ensuring high-level environmental protection and continuing with this practice is reasonable.

In summer 2022, the European Commission published a draft act amending the IED, which among other things substantively makes a proposal to partly move away from the currently applicable principles, towards a more universal approach.

The amendment of the IED principles must not cause a situation where undertakings would be subject to stricter requirements that are outside the BAT conclusions applicable to the shale oil industry. For instance, applying the standards of another sector of industry to the shale oil industry may cause a situation where there are no technically and economically realistic solutions for meeting such unjustified requirements.

As the shale oil industry – adding value to mineral resources – continues to be a strategically important source of income for the state and the shale oil industry is an important provider of electricity and heat as well as a guarantor of social stability in Ida-Viru County, the state has to steadfastly stand for a legal system that supports making investments of long-term return in the shale oil industry in shaping the IED policy.

VKG's expectations to the state are that:

- the state prepares its positions on the amendment of the IED principles and successfully defends these so that the shale oil industry is not burdened with additional obligations outside.
- the state continues to develop the BAT conclusions applicable to the shale oil industry so that technologically realistic and economically justified solutions are sought which are reasonable considering the environmental benefits gained.
- the state admits that the amendment of the IED principles carries significant risks with regard to the sustainability of Estonian industrial enterprises, which will manifest as a long-term impact in economic and social development as well as in the state's tax revenue, and deems it necessary to prepare an assessment of the impact of the draft IED in cooperation with the Ministry of the Environment, the Ministry of Economic Affairs and Communications, the Ministry of Finance and business organisations in order to acknowledge and mitigate such risks and find a suitable solution.

Directing BAT-based investments into technologies the implementation of which is reasonable and technically and economically realistic in different industrial sectors must remain a principle of the IED. The approach to the shale oil industry must therefore remain a specificity within the IED framework, making the development of the shale oil industry possible.

Viljar Kirikal

Viru Keemia Grupi regulaatorsuhetejuht



Oil shale chemicals

In addition to oil products, VKG also produces oil shale fine chemistry products. The organic part is used for producing very expensive chemicals with a purity level of over 99%, which are used in cosmetics, pharmaceutical, tyre and electronics industries. End users include renowned companies such as Schwarzkopf, Lexus, Samsung, LG.

In total, 2,117 tonnes of fine chemistry and phenol products were produced in 2022. With the currently used technology, the production of oil shale fine chemistry is based on the re-processing of a process residue of the Kiviter plants – phenol water.

In the sales of phenol products, we continued at positions achieved in 2021, fulfilling long-term supply contracts and con-

cluding new ones. The main flow of goods continues to move towards Asia. Of the products in the fine chemistry portfolio, 2-methylresorcinol provides the main sales volume. Phenol products, Rezol, Honeyol and pure resorcinols are primarily exported to chemical industry enterprises. China, the United Kingdom, India, Italy, Germany and the United States are the target markets.

More information about fine chemicals is available here :

www.finechem.eu



A hundred years of experience in refining oil shale has taught us to get much more than just oil out of oil shale. Refining oil shale in VKG means the combined production of oil, heat and power, which is the most eco-friendly and economically efficient way to use this resource.

The shale oil production process generates oil shale gases that do not condense into oils and are transferred to VKG Energia where they are used for manufacturing heat, steam, and electricity. Heat energy is forwarded to the local central heating system, steam is sold to production companies located in the neighbourhood, and most of the electricity is consumed by the companies of the Group. In addition to that, we also use oil shale gases at the limestone plant, whose produce is consumed by our own sulphur-trapping devices that purify exhaust gases. This production chain guarantees the ultimately efficient and environmentally-friendly use of energy contained in oil shale.

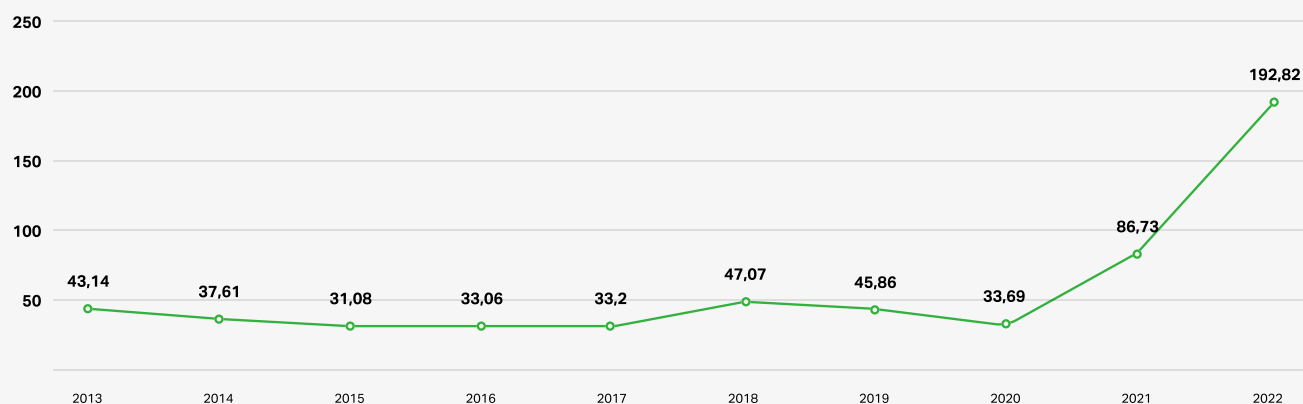
The production of electricity decreased by 11% in 2022, to 364 GWh. This was caused by a smaller quantity of input energy due to a decrease in the re-processing of oil shale. In 2022, VKG Energia's electricity production made up 4.2% of all the electricity produced in Estonia and 3.8% of all the electricity consumed in Estonia.

The 2022 average price of electricity on the NPS EE exchange grew by 122% compared to the previous year. VKG Energia OÜ's average electricity sales price was 136.18 euros/MWh in 2022 (67.08 MWh in 2021), growing by 103% in a year. Fifty-two percent of electricity was sold at a fixed price.

At the same time, the amount of output heat energy only decreased by 3.6%, to 491 GWh, mainly due to the warmer weather compared to the previous year.

At the beginning of the year, VKG Energia contacted the Competition Authority to agree a new heat energy sales tariff according to the previously agreed methodology. As the price of heat energy had risen nearly 40% due to an increase in the prices of inputs, the Competition Authority started finding ways to stall the establishment of a new tariff. As a result of disputes that lasted nearly a year, VKG Energia had no other option than to accept the Competition Authority's changes to the former methodology, the new tariff approved in accordance with which at the end of 2022 covered only a half of the increase in costs.

The average prices of electricity in the price region of Nord Pool Spot Estonia in 2013 – 2022, EUR/MWh



Energy for over 30,000 clients

The sale of electricity and network services is handled by VKG's north-east Estonian subsidiary VKG Elektrivõrgud. The company's service area includes Narva, Narva-Jõesuu and Sillamäe.

The company distributed 243.2 GWh of electricity in 2022. Compared to 2021, the volume of network services decreased by 4.2%. Consumption volumes grew somewhat only for medium voltage clients, decreasing in other client groups. The main causes of the decrease included economising due to high electricity prices and the deteriorating economic situation.

VKG Elektrivõrgud sells electricity to clients all over Estonia, regardless of regions. Electricity is sold on the basis of price packages or in the form of general services to clients who consume electricity without an electricity contract. In accordance with the amendments to the Electricity Market Act, the company started offering a universal service to households as of October.

The company sold 95.3 GWh of electricity in 2022. Compared to 2021, the electricity sales volume decreased by 14.1%. As the exchange prices of electricity grew in leaps in 2022, the sales of electricity was significantly higher than in 2021.

In developing the power network, the company uses equipment with as small an environmental impact as possible, as well as environmentally friendly work processes. An increasing amount of electricity transmitted by the company comes from renewable energy sources and is produced in the same network area. We recommend that our clients manage their electricity consumption in order to reduce their ecological footprint.



The Group's subsidiary Viru RMT is an engineering and project management centre with diverse know-how operating in the international market. The company has several decades of experience and offers repair and assembly services as well as the production, installation and maintenance of metal structures and metal components.

Areas of activity of Viru RMT:

- electrical works from the lamps in the ceiling to transforming substations
- design, production and installation of technical equipment
- automatic management systems design, software development and installation
- installation and repair of control and measuring instruments
- maintenance and repair of lifting equipment, and lifting works;
- project management for the performance of integral technical solutions.

An overview of the works performed is available on the homepage of Viru RMT:

www.virurmt.com

Main projects launched and implemented in 2022:

- Reconstruction of the automation of the Petroter I shale oil plant;
- Gas intake device for the timber industry, commissioned by Estanc AS;
- A dumper for the cast metal industry, commissioned by Elkem Iceland Ltd;
- Modernisation of the control system of the Konsu pumping station;
- 2nd and 3rd stage of the renovation of the street lighting infrastructure in Narva-Jõesuu;
- Power supply construction works at the Vanalinna schoolhouse in Sillamäe;
- Power supply reconstruction works at the Sillamäe track and field and football stadium;
- Purchase and installation of power supply equipment for Elering's substations;
- New substation construction works in Narva.



Impact of the external environment

As a producer of shale oil products, VKG operates in a field where a company's performance largely depends on developments in the external environment, mainly in three areas.



Economic environment

Shale oil as VKG's main product competes with other fuels in a globally open raw materials market where the balance of demand and supply depends on the overall economic environment and the decisions of producers with significant market influence.



Regulative environment

Political decisions made at the European Union level as well as at Estonia's level are like a strong headwind that impedes VKG's competitiveness in the fight for its place in the global market of oil products.



Availability of raw material

The availability of oil shale as VKG's main production input depends on national decisions concerning the shaping of and compliance with the oil shale distribution system, but in competition with a state-owned company such decisions tend to be favourable towards the state-owned company.



Economic environment

2022 began under the continued influence of COVID-19, but the crisis substantively ended by the beginning of the second quarter. The spread of vaccines reduced the hazards of the virus and allowed the state to restore the free movement of people, which entailed a rapid increase in economic activity, and the corona crisis was forgotten by the second half of the year.

However, before the corona crisis fully receded, a new crisis started. The decision of Russia's president to launch an invasion into Ukraine triggered a full-scale war in Europe, which nations had managed to avoid for the past 77 years. The subsequent economic sanctions of the western world against Russia caused a steep increase in energy and raw material prices. That in turn added a boost to the wave of inflation which had raised its head when the COVID-19 restrictions were removed and the root cause of which was the central banks' aggressive money-printing to alleviate the corona crisis. In order to manage the situation, the central banks had no other option than

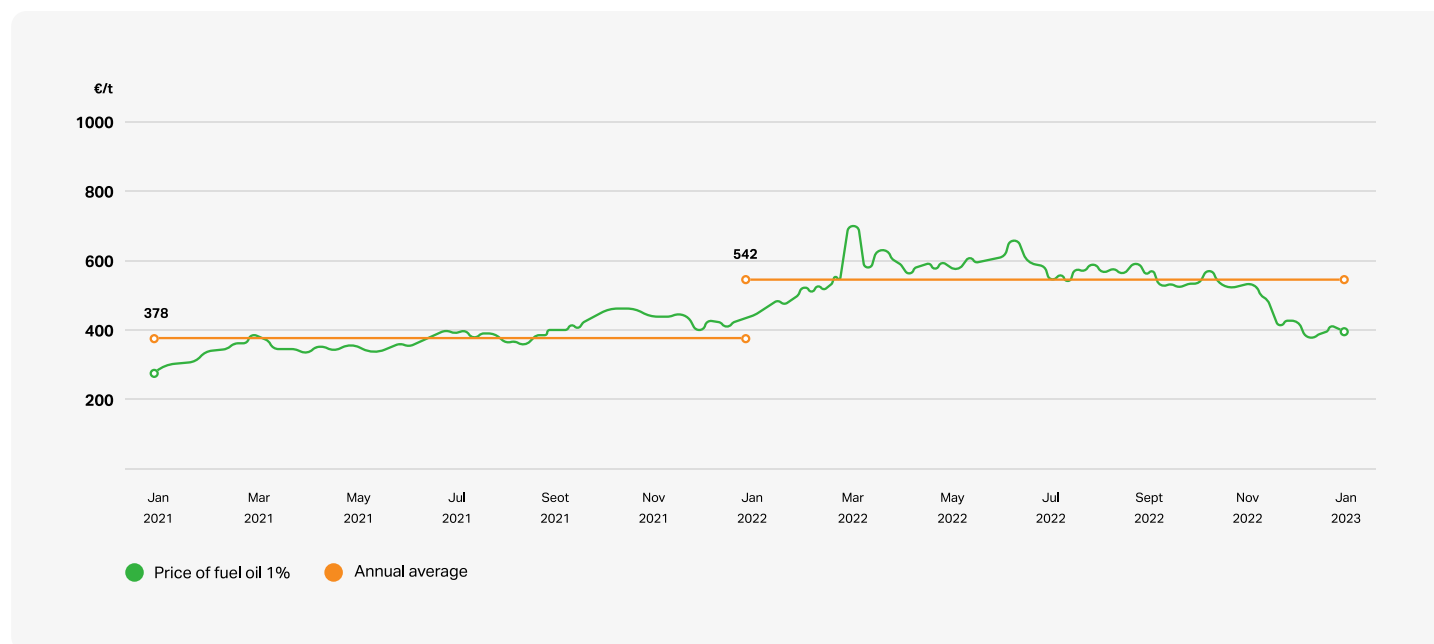
to start raising interest rates. While at the beginning of March the interest rate of the US Federal Reserve was around zero, by the end of the year it had been raised to 4.33 percent. Even the base deposit interest of the European Central Bank was for the first time in ten years again raised above zero and by the end of the year it reached 2%, which was last seen in 2008. The stricter monetary policy caused a decline in economic activity, which decelerated economic growth. According to the World Bank, the global economic growth reached the highest level in the past 50 years, or 5.9% in 2021, the forecast economic growth for 2022 was 2.9%, with a further decrease to 1.7% in 2023.

The small and open Estonian economy responds to events taking place in the global economy promptly and intensely. The overall price rise caused by an increase in the prices of the main energy carriers accelerated from month to month and the average increase in consumer prices was 19.4% in Estonia in 2022. At the backdrop of that, the gross domestic product calculated in real prices decreased by 1.3% in 2022, while just in the previous year it had achieved its fastest growth in the past 15 years at the level of 8%. The price increase caused a strong pressure to raise salaries which grew at their fastest pace since 2008, rising by 8.9% on the average. As the salary increase was significantly smaller than the price increase in 2022, the purchase power of Estonian people decreased in real prices. At the same time, it was the first time in the past 12 years when the average salary in Estonia grew more slowly than the consumer price index.

The economic results of the VKG Group are influenced the most by developments in the global oil market. The economy opening up after the corona crisis receded entailed a continued increase in demand also in 2022 and in the first one and a half

months the Brent barrel price grew from 80 dollars to 93 dollars. The subsequent war in Ukraine hurled the Brent price to the level of 128 dollars a barrel by the beginning of March, which only falls short of the 146 dollars at the peak of the 2008 oil bubble. In an extremely volatile market, the price of oil fluctuated between 100 and 120 dollars until the end of August, but by the end of the year the stabilisation of the situation on the frontlines and the decrease in economic activity caused by interest increases brought it back to the level it had been at the beginning of the year. The average price of 2022 was 99 \$/bbl, which was 39% higher than in the previous year.

VKG sells most of the produced oils on the basis of the price of fuel oil with 1% sulphur content. Compared to the Brent crude oil, the 1% fuel oil market is less liquid and the price of fuel oil may move differently from Brent, depending on the ratio between supply and demand. As VKG's expenses are denominated in euros, the company's results are also influence by the US dollar rate. Thus, the Group's results are best characterised by the following fuel oil price curve.



Source: OMJ

As can be seen from the above diagram, the price of the 1% fuel oil also took a proper leap at the beginning of the war and reached the highest level in its history in March, i.e. 753 euros per tonne. The average price of fuel oil was 542 €/t in 2022, which was 43% higher than in the previous year. Compared to

Brent, the increase of the average price of fuel oil was even bigger in euros, as the euro rate against the dollar also weakened due to the war in Europe. The euro recovered by the end of the year and caused a major drop in the price of fuel oil as can be seen from the diagram.

Consolidated income statement

In thousands of euros

	2019	2020	2021	2022
Sales revenue	256 763	207 841	285 523	184 747
Cost of goods sold	-215 743	-216 077	-275 880	-200 414
GROSS PROFIT	41 020	-8 236	-9 643	-15 667
Marketing expenses	-5 304	-5 548	-5 232	-2 380
General administrative expenses	-11 123	-11 179	-12 722	-7 371
other business earnings	20 595	40 942	66 283	42 495
Other business expenses	-2 140	-1 232	-1 793	-5 133
BUSINESS PROFIT	43 047	14 748	56 178	11 944
Total financial income and expenses	-6 077	-4 424	-1 860	-6 785
PROFIT BEFORE INCOME TAX	36 970	10 324	54 319	5 158
Extraordinary expenses				
Income tax	-293	-244	-4 532	-1 099
NET PROFIT FOR THE REPORTING YEAR	36 677	10 080	49 787	4 059

Investments

The volume of investments of the VKG consolidation group amounted to 6.5 million euros in 2022, of which 5.5 million euros were VKG Kaevandused's investments that were mainly aimed at increasing the operating reliability of the company. As assets related to the production of oil products and energy no longer belong to the VKG consolidation group, the investments related to those assets are not reflected in VKG's reports.

Most of the 2022 investments were financed from the company's own funds, but leasing financing was also used in procuring more liquid assets. The distribution of VKG's loan obligations is described in greater detail in Note 9 to the financial statements.

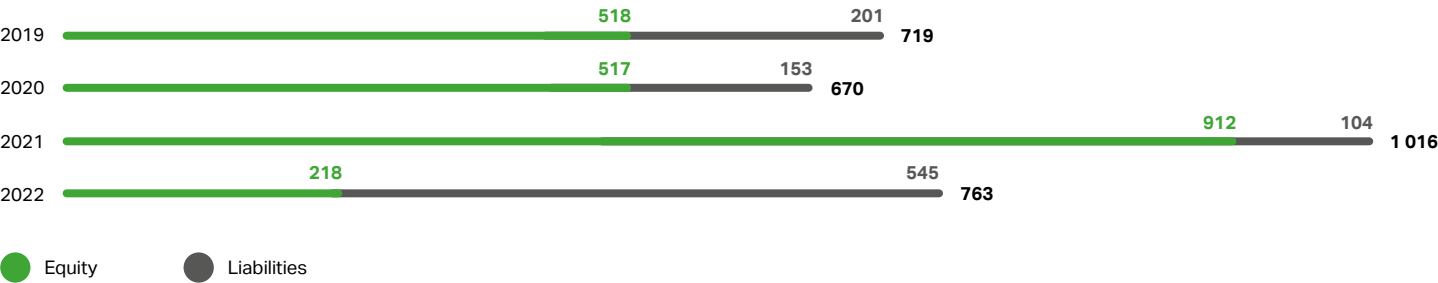
Consolidated balance sheet

In thousands of euros

	2019	2020	2021	2022
ASSETS				
Current assets	149 819	158 937	198 028	337 535
FIXED ASSETS	568 980	511 394	811 342	426 292
TOTAL ASSETS	718 800	670 331	1 009 370	763 827
LIABILITIES AND EQUITY				
Total current liabilities	76 640	51 435	76 586	266 478
Total long-term liabilities	124 220	102 191	27 333	278 855
TOTAL LIABILITIES	200 860	153 626	103 920	545 333
Total equity	517 940	516 705	905 451	218 494
TOTAL LIABILITIES AND EQUITY	718 800	670 331	1 009 370	763 827

Balance sheet volume

In millions of euros





Regulative framework

The main regulative decisions that influence VKG's activities include political initiatives undertaken mainly at the European Union (EU) level, but also at the Estonian level, the common aim of which seems to be to reduce the global competitiveness of the industrial enterprises operating in Europe and to increase re-distribution. The more significant negative developments of 2022 that affect VKG's activities are described below.

The European Green Deal

in December 2019, the European Commission (EC) established the European Green Deal the aim of which is to achieve climate neutrality in the European Union using political, economic and social measures. In December 2020, the representatives of the Member States agreed on an enhanced intermediate goal of the Green Deal by 2030, with which a political guideline was

adopted to reduce GHG emissions by 55% instead of the former 40% compared to 1999. The EC presented the package of measures and legal acts necessary for achieving this goal, the Fit for 55 package, in July 2021. The more significant aspects of the agreement that influence VKG's activities are the following:

EMISSION TRADING SYSTEM (ETS)

The green policy of the European Union is based on the taxation of carbon emissions via an emission trading system. The most harmful part of this Union-wide taxation system is its openness to speculators, which has caused an exponential growth in the taxation rate. While in March 2020 the CO₂ taxation rate was 15 euros per tonne, it grew by 550% over two years and neared 100 euros per tonne in February 2022. The energy crisis that came with the war called the European green policy in question for a moment and speculators rushed to liquidate their positions, causing the CO₂ taxation rate to drop to 58 euros at the beginning of March. The statement of the leading European politicians that the energy crisis was not caused by the nature of the European green policy, but by the fact that the policy has not been implemented with sufficient aggressiveness, raised the CO₂ price back to 80 euros in a week, and in August, when the French and German electricity price futures for the following year floated at the level of 1,000 €/MWh, the CO₂ tonne price again flirted with the 100 euro line. In 2022, Estonian consum-

ers and undertakings paid more than 540 million euros in CO₂ taxes to the EU treasury via the higher than ordinary price of electricity. On the one hand, this has entailed an increase in the mass of money being re-distributed for the implementation of certain policies, but on the other hand this impairs the competitiveness of European production enterprises and the wellbeing of people, as the money for the implementation of the Green Transition is taken namely from their pockets. VKG's CO₂-related expenses amounted to a total of 10 million euros in 2022. Even if we were to presume that the CO₂ taxation rate will not rise anymore, the CO₂ expense will multiply in the coming years due to a reduction in the quotas allocated free of charge. VKG could undertake some investments in order to reduce its footprint, but as the level of the CO₂ taxation rate is unclear, there is a risk that the increasing CO₂ taxation burden may regardless of the reduced footprint put a stop to the company's activities before it manages to re-earn the investments.

INCREASED CO₂ REMOVAL TARGETS

In addition to the reduction of emissions, a proposal was also made to increase the net removal of greenhouse gases (GHG) in the EU's forestry and land use sectors (LULUCF) to at least 310 million tonnes of CO₂ equivalent by 2030. Estonia has been made a proposal to remove 434,000 tonnes of CO₂ by 2030. How this goal should be achieved and what effect this will have on the Estonian forestry sector is currently still unclear. This proposal concerns VKG in connection with the planned bio-products production complex investment project. Although

the said production complex would entail capturing thousands of tonnes of CO₂ into the bioproducts to be produced, which would help fully fulfil Estonia's LULUCF obligation, implementing the investment would be impossible, if a decision is made to abruptly reduce felling volumes in order to achieve short-term goals by 2030, as there would be no raw material in the market to supply the production of products that would replace oil-based products.

The negotiations of the European Parliament, the European Council and the European Commission with regard to the Fit for 55 package continued in 2022 and no final decisions were made as yet. Concrete decisions are expected to be adopted in

2023. The impact of those proposals on VKG is currently difficult to assess, but it is clear that those proposals rather impair the competitiveness of the Estonian shale oil industry on the global fuel market.

Fluctuations in the CO₂ market price, 2019–2022



Source: Refinitiv Eikon

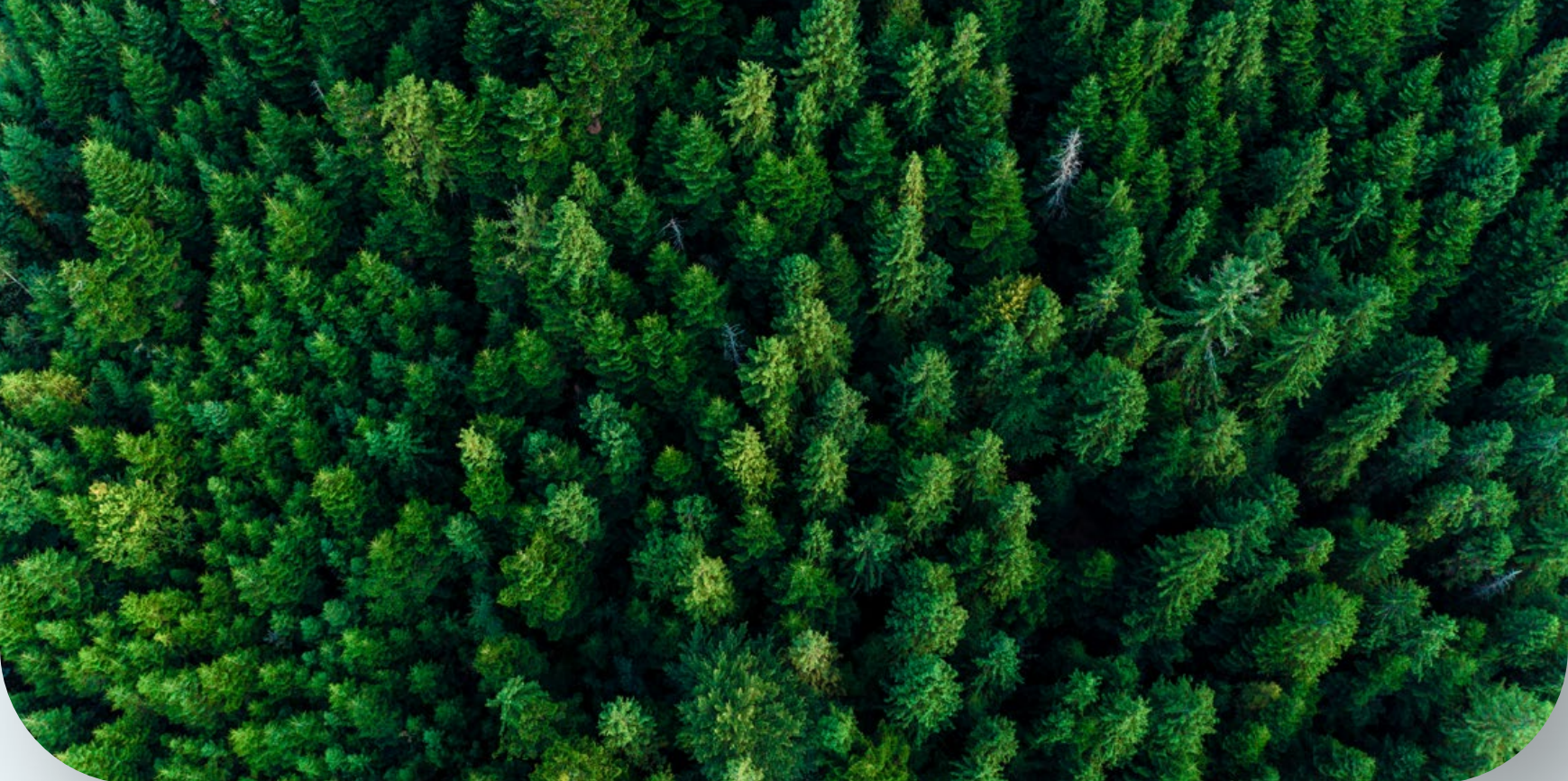
The CO₂ emission quota trading system is one of the EU's main measures in fulfilling the established climate goals. It is intended to make energy producers to use less contaminating raw materials and invest into more efficient technologies.

In 2022 the CO₂ prices were affected by the high price and small reserves of natural gas, due to which an increasing amount of electricity was produced in CO₂-intensive coal plants in Europe, which in turn increased the demand for CO₂ emission quotas.

Application of the Solidarity Contribution

The European energy crisis caused by political short-sightedness and triggered by the Russian aggression quickly increased the profitability of energy producers operating in Europe. In order to relieve undertakings from 'surplus profits', the President of the European Commission proposed an attractive idea of establishing an additional tax mechanism called the Solidarity Contribution. As establishing a Union-wide tax requires the unanimous approval of the European Council, the establishment of such a tax was left to every Member State to decide. Several Member States initiated processes to apply this tax, but the Government of Estonia did not deem it necessary, as the currently applicable resource charge on oil shale takes the developments in the oil market into account and the oil shale extractors operating in Estonia therefore paid an additional 50 million euros into the state treasury in 2022 compared to the average of the past two years.





Taking care of the environment

In shaping its environmental policy, VKG places great value on social responsibility and understands that environmental impact management is a prerequisite to sustainable development. We have created an integral and systemic approach to environmental issues, which is in accordance with European Union and Estonian legal acts as well as the environmental requirements arising from the Best Available Technology (BAT) framework documents.

All VKG's production units are in conformity with environmental requirements, but we are still constantly looking for ways to optimise processes and reduce the production footprint. Our aim is to make full use of the potential of oil shale in accordance with the principles of a circular economy with the smallest possible footprint.

In 2022, VKG participated in legislative drafting processes related to its existing and planned production activities. We pro-

vided an input into Estonia's positions on Fit for 55 and into the development of the report on the study of shale oil production BATs and the Forestry Development Plan until 2030, as well as into the amendment of the Industrial Emissions Directive, the regulation concerning the European Pollutant Release and Transfer Register, the Public Water Supply and Sewerage Act and the Earth's Crust Act.

Environmental areas of activity in 2022



Reduction of air emissions

As the largest Estonian producer of shale oil products, our activities have an effect on the surrounding environment and the local community through emissions from our production processes. In 2022, we performed an extensive reconstruction of the Petroter I shale oil plant, which also included the installation of a new flue gas utilisation boiler and an electrical filter which help to significantly reduce the impact of VKG's production activities on the quality of ambient air in the city of Kohtla-Järve and the surrounding area.



Integrated oil industry permits

The integrated environmental permit of the Petroter installation of VKG Oil was amended in 2022, in order to bring into conformity with the monitoring and other requirements changed by a regulation of the Minister of the Environment. At the end of the year, the Environmental Board also issued an amended draft integrated permit of the Kiviter installation, the main amendments to which included the removal of liquidated and sealed emission sources from the permit, and updates arising from the regulations of the Minister of the Environment.



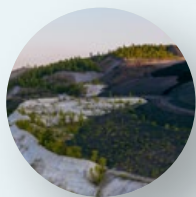
Reduction of odoriferous disturbances

A thorough renewal and implementation of METEO procedures significantly reduced the intensity and duration of odoriferous disturbances related to VKG's production processes.



Greenhouse gases

In 2022, the installations of VKG Group were issued free of charge quota units in an amount about 35,000 tonnes smaller than in the previous year. The reason for this was a decrease in the 2020–2021 production levels compared to the previous two-year reference period.



Oil shale industry waste landfill

Tests of planting greenery on slopes with waste water sediment compost were completed at VKG's shale oil industry waste landfill. The results of the tests were more successful than hydro-seeding the landfill slopes and we plan to expand the compost-based greenery area on the landfill slopes in the coming years. In addition, the report of the 1st stage of the strategic assessment of the environmental impact of the local government's designated spatial plan for VKG's new industrial waste landfill was prepared in 2022 for public display and discussions.



Bioproducts production complex

As at the end of the year, the preparation of the draft decision on the pre-selection of the location of VKG's bioproducts production complex and the report on the 1st stage of the strategic assessment of environmental impact was nearly completed. The public display of and public discussions over these take place in 2023.



Mineral resource extraction permits

at the request of VKG Kaevandused OÜ, the Environmental Board changed the maximum annual rate of oil shale extraction under the issued environmental permit of the Uus-Kiviõli II oil shale mine from the former 2 million tonnes to 5 million tonnes. The said change will apply until Enefit Power AS has not started to extract oil shale at their Uus-Kiviõli mining claim. In order to permanently apply the maximum annual rate of 5 million tonnes, VKG Kaevandused OÜ and Enefit Power AS will jointly conduct an environmental impact assessment (EIA) within the framework of which the EIA programme was prepared and approved by the Environmental Board and activities related to preparing the EIA report started in 2022.

In addition, the Environmental Board also approved VKG Kaevandused OÜ's EIA programme for the extension of the mining claim of the Ojamaa oil shale mine in 2022 and by the end of the year the company submitted the EIA report to the Environmental Board for asking the positions of relevant authorities.

Important activities in 2023

- **Adding special parts concerning air and water to the environmental permit of the Uus-Kiviõli II Mine and continuing with the current EIA**
- **Amending the environmental permit for expanding the Ojamaa Mine.**
- **Amending the waste permit of the Ojamaa Mine.**
- **Participating in the work group for the shale oil production BAT study.**
- **The preparation of conclusions, and providing an input into the updating of the Industrial Emissions Directive.**

Priorities also include conducting the strategic assessments of the environmental impact of the designated spatial plans for the oil shale industrial waste landfill and the bioproducts production complex as well as the preliminary EIA for the plastic plant.

In the coming years, VKG's development and environmental activities will continually focus on energy efficiency, the reuse of waste, the reduction of air emission, and projects related to the climate neutrality policy.





Developing future solutions

In 2022, two projects were in the focus of VKG's development activities: the establishment of a bioproducts production complex (BPC) in the rural municipality of Lüganuse and the plastic waste pyrolysis project.

Adding value to wood

The development of the BPC project in this stage mainly means supporting the designated special plan process initiated in the Lügänuuse rural municipality. In the first stage of the designated spatial plan process, suitable locations for the complex were analysed and two alternatives were proposed. Hendrikson & KO, the preparer of the designated spatial plan, drew up the draft pre-selection of the location on the basis of the studies and analyses performed, as well as the report of the first stage of the Strategic Assessment of Environmental Impact (SAEI). The designated spatial plan process moves on planned schedule and the first stage report should be approved in the Lügänuuse rural municipality in the summer of 2023.

As the availability of pulpwood is critical for the BPC project and may be significantly affected by the Forestry Development Plan (FDP), we actively provided input to the FDP drafters to reflect the need to recycle pulpwood and wood chips in Estonia and not export unrefined wood to Scandinavia. In 2022, the Estonian University of Life Sciences carried out a study on the availability of wood resources for the BPC project, which showed that the resource availability would be sufficient even if the annual volume of harvested wood falls to 10 million cubic metres.

More information:

vkg.ee/biotooted



Vkg environmental day 2022: the potential and prospects for the valorisation of estonian forests

Last year, the VKG Environmental Day was dedicated to our new development area – adding value to wood. We are convinced that the planned bioproducts production complex in the Lüganuse rural municipality is a very necessary step to move away from the dependence on exporting and burning wood resources that are not used in Estonia, to enable the substitution of fossil raw materials and to bring new economic activities and jobs to the region.

The Environmental Day brought together scientists, environmental experts, policy makers and politicians to discuss the possibilities of adding value to one of Estonia's largest natural resources, wood.

The raw material requirement of the proposed production complex is 2 to 2.3 million cubic metres of pine, spruce and birch pulpwood per year. In comparison, Estonian logging generates more than 5 million cubic metres per year of raw material suitable for the pulp industry, which is exported as raw material, burned with energy wood or sold cheaply without much value added. VKG's main interest is to develop further processing of soluble pulp, the end products of which are used in the textile and biochemical industries, as well as in the paint, food and pharmaceutical industries. The largest application is in the viscose fabric industry, but the range of needs and opportunities is broad and the replacement of fossil raw materials by biochemicals is being developed in virtually every sector of the economy. In addition, the complex would produce an additional 730 gigawatt-hours of renewable electricity, more than half of which would be fed into the grid, supporting energy security in Estonia. The planning phase of the production complex is from 2021 to 2024. The construction of the plant is expected to take place between 2025 and 2026, with start-up in 2027.



Recycling of plastic waste

The development of the plastic waste pyrolysis project started in 2022 in cooperation with Kiviõli Keemiatööstuse Oil OÜ and the project is also supported by the Business and Innovation Agency through its applied research programme.

During the development phase of the project, laboratory studies were carried out at the TalTech Department of Energy Technology and initial tests were carried out in the laboratory of Enefit Outotec Technology OÜ in Frankfurt. In addition, the companies independently carried out a study on the availability of plastic waste. In the course of the project, VKG came to the realisation that solutions for pyrolysis of plastic waste already existed in the world and therefore withdrew from the original new technology development project. KKT Oil will continue with the original project independently.

VKG has initiated a plastic waste recycling project based on the initial project, which aims to use the already operating plastic waste chemical recycling technology and to build a plant as soon as possible. The new approach will process plastic waste, mainly collected in Estonia, into pyrolysis oil that can be sold to petrochemical companies to be recycled into new plastic. In this way, up to 75% of the plastic waste can be recycled, thus allowing the production of new plastic.

In 2023, we will continue to develop the two major projects mentioned above. The location of the BPC in the municipality of Lügánuse should be confirmed and the feasibility study should start. With the plastic waste recycling project, the plan is to reach the plant construction stage. In addition, VKG is actively analysing further business opportunities.



Social responsibility and sustainable activities

Recent events in both global politics and the national regulatory environment have increased uncertainty, investment risks and energy security challenges. The Group's strategy is designed to be resilient to different scenarios. In strategic planning, we take into account risks and opportunities related to climate change and the transition to low carbon emission energy production, including the European Union's Green Deal and the Fit for 55 package.

The Group's overall strategy is based on strict requirements for the environmental sustainability of production, social responsibility, and occupational safety. We have mapped the ESG (environmental, social and corporate governance) objectives and focus on seven topics which we handle as a part of a consistent process. One integral part of our sustainability strategy is the responsible use and rational enrichment of natural resources. We are aware that the extraction and production of any mineral resources has an impact on the surrounding environment and we therefore always strive to do more than prescribed by laws or regulations.

With the Group's development direction set and the necessary organisational changes in place, we are fully focused on delivering our strategy and its underlying objectives, including sustainability. We do this with the knowledge that nothing is more important than safety. We are constantly striving at all levels of management to make our industry and our working environment safer, because our unwavering goal is for everyone to get home safely to their loved ones every day. Nothing is more important.

Cooperation with stakeholders

Viru Keemia Grupp constantly cooperates with stakeholders, holding dialogues for the purpose of analysing the internal and external social environment and taking into account the Group's strategic objectives and the priorities of the stakeholders.



Cooperation with stakeholders is aimed at achieving the sustainable development goals and mapping the expectations and joint interests of the parties. We have selected a number of target groups whose interests are notably related to our activities and may have a substantial effect on the fulfilment of our strategic objectives. We place particular importance on including the local community in the case of development projects.

Principles of cooperation with stakeholders are respect for the interests of the parties, constructive cooperation, transparency of information concerning the Group's activities, regularity of joint activities, fulfilment of obligations.

Main stakeholder groups:

- **shareholders;**
- **employees;**
- **clients;**
- **suppliers and partners;**
- **state and local government institutions;**

- **the local community;**
- **NGOs and civic associations;**
- **professional unions.**

Viru Keemia Grupp is a good partner to local organisations that help to promote the region's cultural, sports and educational life. In 2022, we supported 25 initiatives and projects with a total of 260,000 euros. Our main focus is on local youth. The Group has a number of initiatives of its own aimed at promoting life in the region: the Five Schools Competition, the Jõhvi Ballet Festival (in cooperation with the Jõhvi Concert Hall), supporting the Ida-Viru Central Hospital, educational projects, e.g. STEM, and the celebration of the Day of Miners and the Day of Chemists. There are also initiatives where our contribution is non-financial – volunteer work day in the City of Kohtla-Järve, tree-planting, volunteer work day at the Kiikla Orphanage, cooperation with blood centres, etc.

Organisation culture

We integrate the principles of corporate responsibility into our organisation culture: the prevalence of the safety of people, the environment and the Group's property, compliance with human rights, equality of opportunities, and compliance with occupational ethics standards.



VKG's values – openness, commitment, development – as an integral part of our business activities and consolidate the interests of the Group and its employees. The values influence the adoption of decisions, shape our reputation and determine our work principles.

Organisation culture values and principles that support sustainable development:

- **Safety of people, the environment, and property**
- **Working conditions based on respect**
- **Attentiveness and respect towards colleagues**
- **Equal and understandable requirements for all business partners, compliance with business ethics standards**
- **Responsible attitude towards assets**
- **No corruption, conflicts of interest and misuse of inside information**

Reporting

VKG's social responsibility and sustainable development policy was launched in 2009. Since the same year, the Group has published a Responsible Business Report, which is prepared in accordance with the Global Reporting Initiative (GRI) Principles for Sustainable Development Reporting (GRI Reporting Guidelines).



In preparing the report, we also share and apply the Oil and Gas Industry Guidance on Voluntary Sustainability Reporting. VKG's Sustainable Development Report is a public document available electronically on the Group's website in Estonian,

English and Russian. We are currently preparing a report that covers the results and progress of 2022. The report will be published in the 3rd quarter of this year.



Our employees

With its 1,560 employees, VKG is one of the biggest employers in Ida-Viru County. Through the family members of suppliers, cooperation partners and employees, the wellbeing of the Group indirectly influences the wellbeing of another several thousand people in the region.

Our aim is to offer our people stability and a sense of security for the future, but given the volatility of the oil market and fickle government policies, this is a major challenge.

Focal points of our personnel policy

- **We value**
- **We recognise**
- **We support the team spirit**
- **We foster and develop young future employees**
- **We create a safe working environment**

Our employees are highly qualified and innovative specialists who are dedicated and loyal in their work duties. The average job tenure in the company is 10 years, we have 144 employees with more than 25 years of service, 26 of whom have been with the company for more than 40 years. At the end of 2022, the Group employed 1,193 men and 367 women. The proportion of male employees is significantly higher due to the physical nature of the work. The average age of the workforce is 45, with nearly 900 employees in the 35 to 54 age group. In 2022, 206

new employees joined and 227 employees left the company. The labour turnover rate was 12%, of which voluntary turnover was 9%. The turbulent energy market significantly changed the labour market situation in Ida-Viru County and increased the Group's labour turnover, especially in VKG Kaevandused. Due to demographic changes, emigration from Ida-Viru County and other external factors, the shortage of suitable employees in the region has increased, which has prolonged the recruitment period and put significant pressure on labour costs.

The number and distribution of the Group's employees between companies as at 31 December 2022

Viru Keemia Grupp

87

VKG Kaevandused

512

VKG Oil

641

VKG Energia

96

Viru RMT

107

VKG Logistika

117

VKG Elektrivõrgud

36

Total

1596

An effective and motivated workforce is directly reflected in a company's financial results. We base our pay on the labour market conditions in the region, the salary market conditions in different sectors, the level of responsibility of the employee, skills and other factors that can influence the basis on which pay is determined. We participated in the Estonian Salary Survey conducted by Fontes, the results of which confirmed that the salaries paid in the Group are higher than the average salary in Ida-Viru County and that we compete successfully in the labour market. VKG has a transparent and well-established system of performance-based pay. Balanced working conditions and a fair remuneration system ensure motivated and loyal em-

ployees and a strong work culture. Employee satisfaction and commitment were also boosted by the exceptional Christmas bonus paid to all employees at the end of the year to cope with high energy prices.

Expectations to the conduct of the employees are presented as rules and principles of conduct in a single document titled '**Code of Ethics and Operating Principles**'. Our employees' national, gender, age and language diversity places higher demands on us with regard to equal treatment, engagement and notification. The uniform code of conduct described in the personnel policy ensure honest and fair conditions for everyone.

Several projects are underway to develop the work environment and employees as well as to ensure the next generation:

- The Group focuses on ensuring a continuous inflow of new employees and improving the qualification of employees. In the autumn of 2022, we resumed the project for the next generation of technological equipment operators for VKG Oil, which was launched in 2021. In an extensive advertising campaign, we recruited 21 employees who commenced studies under the workplace-based study programme of the Ida-Viru Vocational Education Centre and work as technological equipment operators at VKG Oil. Those who complete the workplace-based study programme will be an important addition to our skilled employees in 2023 and 2024.
 - We continued the development of the Group's employees, establishing our development priorities, training plans and action plans for developing internal training instructors, in order to ensure a systemic internal conveyance of professional competences as well as a readiness to fulfil internal need-based training orders. The development of employees in order to achieve new work techniques, efficient work organisation and a high management culture continued to be our priority also in 2022. The largest employee training and development project was the Group-wide project 'I Choose' aimed at increasing work safety and awareness, which 1,461 employees completed in 40 training days.
 - A training management system was procured for conducting training and development activities, as well as for the management of training materials and data, which was launched at the end of 2022 and continues in 2023.
 - In 2022, 42 students were granted internships, with the largest number of interns coming from the Ida-Viru Vocational Education Centre.
 - We continued paying scholarships last year via the TalTech Development Fund to students of applied higher education, bachelor's and master's degrees. Scholarships were awarded to seven students who are acquiring an education in the areas of electrical power engineering and mechatronics, Earth's crust resources, environmental, energy or chemical technology or thermal energy at the TalTech School of Engineering. The motivation of scholarship holders through the Development Fund continues also in 2023.
- In the autumn of 2022, collective agreement negotiations were held with the Chemical Workers' Union and a new two-year collective agreement was signed, the terms and conditions of which are extended to all the Group's employees.

Safe working environment

Occupational safety is one of the basic values of Viru Keemia Grupp. We believe that all serious work accidents can be prevented, and we apply the 0 accidents vision in our activities. In order to achieve that, we have formulated four development areas: visibility of safety, safe conduct, learning, and indicators.

We registered 21 incidents last year, of which 15 were work accidents resulting in incapacity for work and 6 without loss of work capacity. We shall present a more detailed overview in the Sustainable Development Report to be published in autumn.



Management

The executive management of the Group is the responsibility of the Management Board of Viru Keemia Grupp, which consists of five members.

Three Management Board Members – **Ahti Asmann**, **Meelis Eldermann** and **Jaanis Sepp** – manage the activities of the Group as a whole and are also Supervisory Board Members of subsidiaries. The Group's Management Board adopts all the important decisions concerning economic activities. Two Management Board members – **Margus Kottise** and **Nikolai Petrovitš** – are the heads of the strategically most important subsidiaries of the Group, VKG Kaevandused and VKG Oil. There were no changes in the members of the Management Board during the year.

In all legal procedures of the Group, an enterprise is always represented by two Management Board Members together, whereas one of them must be the Chair or Deputy Chair of the Management Board.

The Management Board Members are paid a monthly remuneration consisting of the pay for performing the duties of a Management Board Member and the pay for keeping business secrets and for respecting the competition prohibition. The duties of the Management Board Members are stated in service contracts signed with the Management Board Members. According to the service contracts, the Management Board Members can get additional monetary remuneration which is paid according to the relevant decisions of the Supervisory Board.



Ahti Asmann

Chairman of the Management Board

Time of appointment
21.09.2015



Meelis Eldermann

Vice Chairman of the Board /
Technical Director

Time of appointment
06.03.2008



Jaanis Sepp

Member of the Board /
Financial Director

Time of appointment
15.04.2016



Margus Kottise

Member of the Board /
Member of the Board VKG
Kaevandused

Time of appointment
09.05.2000



Nikolai Petrovič

Member of the Board /
Member of the Board VKG Oil

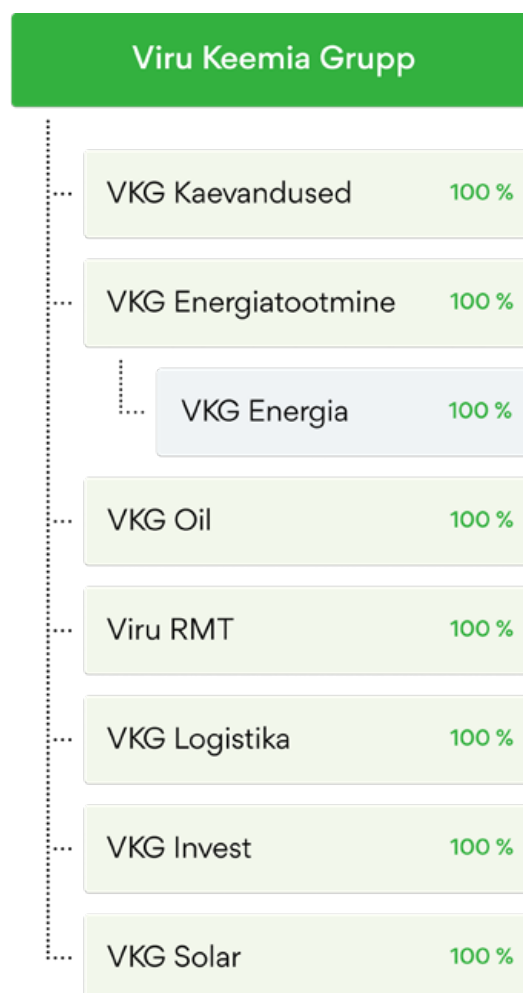
Time of appointment
26.04.1999

Legal structure as of 31.12.2022

The main keywords for the Group in 2022 were restructuring and reorganisation, mainly driven by developments in the economic environment.

In 2022, the following changes took place in the structure of VKG:

- As of 30 June 2022, the division of Viru Keemia Grupp AS took place and resulted in the creation of a new company, Viru Keemia Grupp AS, which is engaged in the production of shale oil and concentrates all the activities related to oil production. The old Viru Keemia Grupp AS was renamed as Kirde Varad AS, whose main focus is industrial real estate investments. In addition, Kirde Varad retained the ownership of VKG Elektrivõrgud OÜ and VKG Soojus AS, regulated companies not directly related to shale oil production.
- On 20 September 2022, a new subsidiary – VKG Solar OÜ – was established with the aim to expand VKG's electricity production portfolio by developing renewable production capacities.
- On 6 December 2022, the Group's structure was simplified by dividing VKG Oil, as a result of which VKG Energia that had been a subsidiary of VKG Oil gained a new parent company, VKG Energiatootmise OÜ. VKG Energia OÜ and VKG Energiatootmise OÜ merged in an event after the balance sheet date, as a result of which Viru Keemia Grupp OÜ now has seven subsidiaries of equal level and specific areas of activity.



General corporate management

We believe that efficient general corporate management is the basis of good business activities. Efficient general management allows the enterprise to work smoothly, ensuring that everyone has a clear understanding of the distribution of roles, obligations, rights and responsibilities.

The activities of the Management Board of the parent company is supervised by a five-member Supervisory Board which includes:



Toomas Tamme
(Chairman)



Priit Piilmann*



Margus Kangro



Ants Laos



Elar Sarapuu

* Following the passing away of Priit Piilmann, a founder and major shareholder of Viru Keemia Grupp, in November 2022, his son Kristjan Piilmann took his place on the Group's Supervisory Board.

Audit Committee

Pursuant to the Authorised Public Accountants Act of the Republic of Estonia, VKG is considered to be an entity subject to the public interest and is thus required to have an Audit Committee.

According to the Statutes, the Audit Committee is an advisory body for the Supervisory Board of VKG in the fields of account-

tancy, auditing, risk management, internal audits, supervision and budgeting and the legality of activities. The members of the Audit Committee of VKG are Ants Laos (Chair of the Committee), Priit Piilmann (until November 2022), Margus Kangro and Elar Sarapuu.

Shares and share capital

As of 01.01.2022, the nominal value of the share capital of VKG was 6,391,164.21 euros. There were no changes in the share capital in the years 2008– 2021. VKG's shares are not noted on the securities market.

The Group has four shareholders with the following holdings as of 31.12.2022:

- **OÜ Tristen Trade 38,91%,**
- **OÜ Alvekor 25,49%,**
- **OÜ Revellis Invest 19,53%,**
- **OÜ Sergos Invest 16,07%.**

Combating the risk of corruption

The fight against corruption has always been important for the Group.

VKG has identified three major risks of corruption together with the methods used for hedging these risks:

- **Giving bribes to achieve the interests of the Group** – VKG is a responsible and transparent enterprise that has established zero tolerance for corruption and bribery.
- **Accepting bribes in the selection of suppliers and cooperation partners** – VKG has established a procurement policy aimed at avoiding skewed procurements and always choos-

ing the most favourable cooperation partner for the Group. Compliance with the procurement policy is supervised by internal audit via regular monitoring.

- **Conflicts of interest of executive employees in representing the interests of the enterprise** – VKG has developed a procedure for submitting statements of economic interests, in the course of which executive employees have to report their holdings and connections in external companies. The members of the Management Board are prohibited from competing in any area of activity of VKG without the prior written consent of the Supervisory Board.



There is a special confidential channel (vihje@vkg.ee) functioning in the Group, which can be used by employees or people outside of the Group to send a notice about various violations related to the activities of the Group, let it be the issues related to professional activities, corporate management and corporate ethics, human rights, work organisation, social aspects, industrial and environmental safety, protection at the workplace, quality of goods and services, or any other issues, including the matters related to corruption.

Prevention of Possible Conflict of Interests

The corporate management system of the Group incorporates a set of norms and procedures, which are aimed at prevention of the conflict of interests between control bodies within the Group.

If the conflict arises, there are certain mechanisms aimed at implementing required measures for the complete resolution of the conflict, and for creating the conditions that would prevent the occurrence of such conflicts in the future.

The Internal Audit Service and other competent subdivisions of the Group deal with the prevention of conflicts of interest within the Group by cooperating with each other. In order to prevent possible conflicts of interest, there are certain limitations existing in the Group as well as the requirements for the Council and the member of the Board. Management Board Members are prohibited from competing with Viru Keemia Grupp AS in its field of activities, unless having the prior consent of the Supervisory Board.

Within the reporting year, no conflicts of interest between the members of the Council or the Board occurred.

In order to avoid conflicts of interest, all Management Board Members and middle-level managers of the business associations belonging to the Group are required to submit upon any changes a declaration in the approved format, stating their holdings in legal entities and/or membership in management bodies of legal entities and/or activities as self-employed persons.



Events of 2022

JANUARY



Viru Keemia Grupp and Kiviõli Keemiatööstus have started a joint project to use existing shale oil production technology to **convert plastic waste, which has become unusable elsewhere, into oil and gas**. The industrial pilot plant could be ready in five years at the earliest and, following the principles of the circular economy, could help solve the ever growing problem of plastic waste.

FEBRUARY



From 1 February, the **Hazard Hunt campaign** started, dedicated to noticing, caring and recording hazards. The campaign ran until 22 April and 410 hazardous situations were recorded, of which 14% were records of dangerous behaviour.



For many years, we have been supporting the good initiative of '**Bring you child to work!**' of the Estonian Chamber of Commerce and Industry, which invites employers, parents and schools to work together to create opportunities for children and young people to learn about work life.

MARCH



On 18 March, VKG Oil and the Rescue Board held a joint **fire drill** to test the readiness of the company's emergency response plan (ERP) and to practice the actions of employees in the event of a major accident. It was also intended to test the flow of information, the functioning of the chain of command and cooperation between the various parties involved.

APRIL

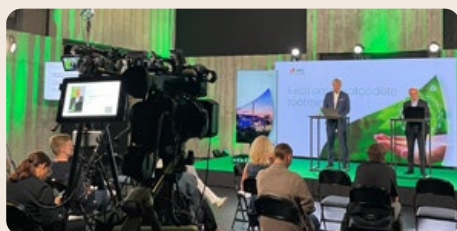


Safety and Health Month. We believe that safe behaviour starts with personal choices and safety is the result of those choices.

MAY



Starting from May, we became a **member of the Estonian Forest and Wood Industries Association.**



On 6 May, **public discussions** of the terms of reference for and the intent of development of the designated spatial plan of VKG's bioproducts production complex and the strategic environmental assessment were held in Kiviõli and Püssi.



On 16 May, an important **cooperation agreement** was signed, which will result in the construction of a modern training centre for Elektrivõrgud. The parties to the cooperation agreement are VKG's subsidiary VKG Elektrivõrgud, Elektrilevi and Elering, and the aim is to build a training centre in the rural municipality of Kiili by the academic year of 2023/2024.



On 19 May, another recognition ceremony for outstanding students was held, during which the **TalTech Development Fund scholarships were awarded.** VKG's scholarships were awarded to three students in the spring scholarship competition.



On 24 May, **Estonian mine rescuers** celebrated their 75th anniversary of service. There is also a mine rescue crew at the Ojamaa mine.



On the last day of May, the Responsible Business Forum recognised companies that care about the environment and want to contribute more to society than the law requires. The RBF recognised Viru Keemia Grupp with the **Responsible Entrepreneurship Bronze Award!**



On 28 May, we celebrated the **Chemists' Day** with a spectacular public party. Popular sports competitions, interesting workshops and favourite artists like Swingers, Nublu and GameBoy Tetris attracted thousands of people from Eastern Estonia.

JUNE



On 15 June, a **public discussion of the environmental impact assessment (EIA)** programme was held at the Maidla community hall, where EIA experts from Maves OÜ gave an overview of the plan of environmental analyses necessary for the mine expansion and all interested parties were able to ask clarifications and make proposals for the programme. During the public presentation of the programme, the assessment of the climate impact of the activities and the clarification of the impact on the Aidu quarry were raised in particular.



The restructuring of the **group will separate the regulated businesses from the oil shale industry**. The legal restructuring of the group has started, as a result of which the subsidiaries VKG Elektrivõrgud and VKG Soojus, which today are part of VKG, will be separated into independent businesses. When the change comes into force, VKG Elektrivõrgud and VKG Soojus will operate respectively under the new parent companies Kirde Elekter AS and Kirde Soojus AS. The shareholder structure of the companies will not change as a result of the division.



Recognition of the TalTech Virumaa College graduates!

AUGUST



The Group-wide conscious safety training '**I Choose**'. By changing the way we think about safety, we improve the working environment and make it safer! It's important to understand and acknowledge the importance of your own personal attitude and behaviour in shaping safety culture.



We held our **traditional school bell party** for the 22nd year in a row in 2022. This year, 64 children from our family of employees set off to discover the world of knowledge.



The Miners' Day, newly renamed as **ViruFest**, is not just a tribute to the best workers and a concert programme, but also includes sports, entertainment, children's activities and more.



An amendment to the Uus-Kiviõli mining permit allowing VKG to extract 5 million tonnes of geological reserves under certain conditions.

SEPTEMBER

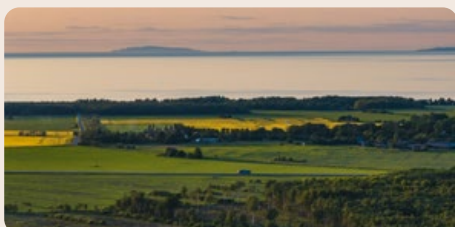


The traditional **VKG Environmental Day** took place. Organised by Viru Keemia Grupp, the Environmental Day brought together scientists, environmental experts, policy makers and politicians to discuss the possibilities of refining one of Estonia's largest natural resources – wood.



The joy of working together – for the fifth year in a row, we organised **World Clean Up Day** activities, this time also involving the city's schools.

OCTOBER



The Group signed an agreement with Gren AS for the **sale of the network company VKG Soojus**.



The second '**Learn and Work**' campaign was launched. It is a learning programme driven primarily by the need to ensure the necessary next generation of employees for our production units.



The '**I Choose**' safety training programme was completed, with 1,300 Group employees participating.

NOVEMBER



A major **reconstruction of Petroter I** was completed. The whole project, from the conclusion of contracts for the manufacture and supply of the main components to the start-up of the plant, took just under two years. The investment amounted to more than 24 million euros.



A traditional **job shadowing day** took place, where students had the opportunity to discover world of work, learning about the tasks and challenges of professionals in their field.



A founder and major shareholder of Viru Keemia Grupp, **Priit Piilmann**, passed away.

DECEMBER



VKG and the Chemical Workers' Union signed a new **collective agreement** for the period of 2023–2024.



Once again, we opted for charity. We continued our good tradition and instead of hundreds of corporate gifts, we made a **donation to the paediatric department of the Ida-Viru Central Hospital**.



In order to cope with high energy prices, VKG decided to pay an exceptional **Christmas bonus** of five hundred euros to all the Group's employees.

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Vice Chairman of the Board **Meelis Eldermann**

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* In October 2022, the Group sold VKG Soojus to Gren AS

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Graphic design

Kaks Ood / www.2ood.com

