

RESPONSIBILITY REPORT

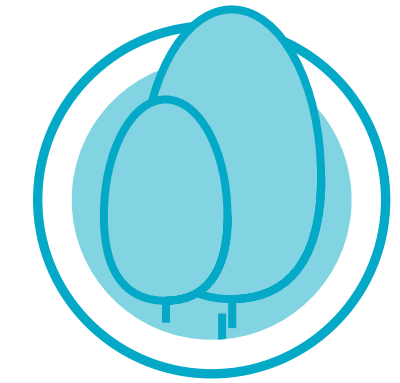
2020



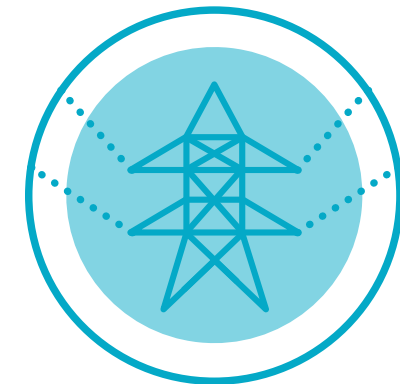
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Contents

03	TVO's year		
04	Review by the CEO 2020		
06	TVO as a company		
08	OL3 is Finland's greatest single act for the climate		
09	Responsibility at TVO		
10	Responsible leadership		
14	Environmental management		
17	Social opinion leader		
19	Responsible procurement operations		
21	Research and development		
23	Safety at TVO		
24	Safety		
27	Nuclear professionalism		
28	Climate impact and environmental responsibility		
29	The environmental impacts of nuclear power		
30	Supply of electricity in Finland and climate impact		
31	Environment and climate		
32	Environment and energy efficiency program 2019–2021		
34	Climate-friendly electricity		
35	Environmental impact – low-emission electricity production		
37	Cooling water		
38	Raw materials and material efficiency		
40	Production and energy efficiency		
43	Emissions to the air		
44	Emissions to water and soil		
45	Waste		
47	Environmental research and biodiversity		
48	Cooperation with authorities		
50	Nuclear waste management		
52	Social responsibility at TVO		
53	Good work community		
55	Well-being at work		
57	Competence development		
60	Occupational health and safety		
63	Radiation safety		
65	Social responsibility indicators		
69	Economic responsibility at TVO		
70	Creating added value		
73	GRI and appendices		
74	Responsibility reporting		
75	GRI content index		
78	Independent Assurance Report		
80	Responsibility contact persons		



PAGE 8:
Olkiluoto 3 is Finland's greatest single act for the climate



PAGE 40:
Approximately 18% of all electricity consumed in Finland is produced on the Olkiluoto island



PAGE 53:
Read about how working methods changed as a result of the COVID-19 pandemic

TVO's year

February 28th

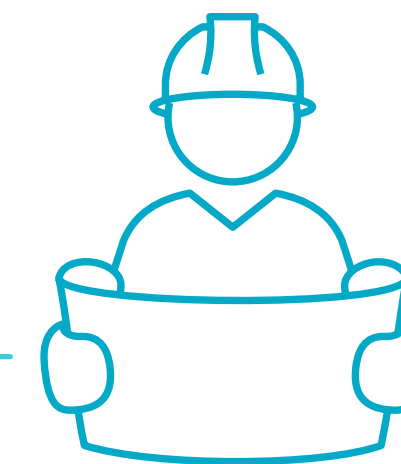
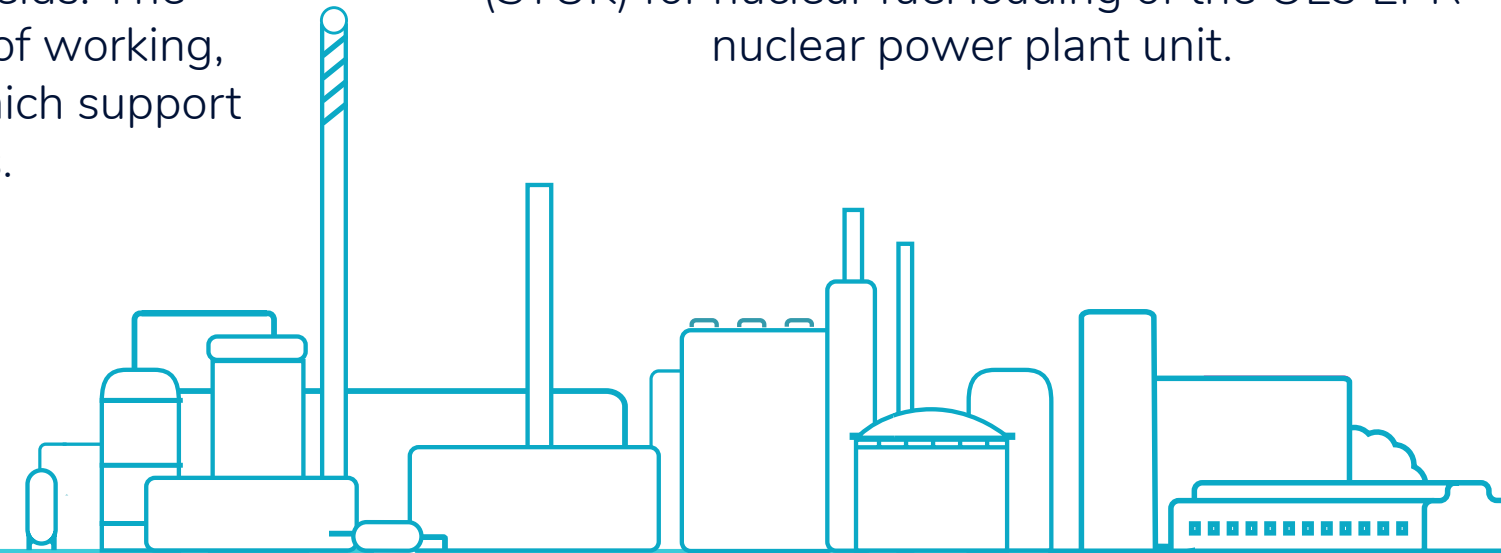
TVO initiated its "DuuniMuovi" project, which aims at supporting and enabling the work of nuclear professionals in different fields. The project encompasses modern ways of working, digital solutions, and work spaces which support different working methods.

April 8th

TVO submitted a permission application to the Finnish Radiation and Nuclear Safety Authority (STUK) for nuclear fuel loading of the OL3 EPR nuclear power plant unit.

June 8th

The annual outages of 2020 were completed. The OL1 and OL2 plant units' annual outages were carried out successfully despite the exceptional COVID-19 arrangements. The annual outages lasted for a total of 4 weeks.



Autumn 2020

Posiva's EKA project is advancing. Work at Posiva's encapsulation plant site and final disposal repository at ONKALO® has progressed despite of measures to prevent the spread of COVID-19 infections. During the autumn, the structures of the encapsulation plant rose to five meters above ground level.



December 10th

A disturbance occurred at the OL2 plant unit, which STUK classified at the severity level 0 on the INES scale. The disturbance did not cause harm to people or the environment.



December 31st

The combined load factor of the OL1 and OL2 plant units was 93.5 %, which was the fourth highest in the history of the plant units.

93.5%

IN FINLAND, nuclear power is the most important form of low-emission electricity production. With the electricity generated at Olkiluoto to date, approximately 525 TWh, an estimate of 430 million tons of carbon dioxide emissions have been avoided, assuming that nuclear power has replaced electricity produced by coal.

Nuclear power is used as stable base load power which supports stable electricity production to supplement the variable production of hydropower, wind power, and solar power.

30%

of all electricity produced in Finland is generated on the island of Olkiluoto when OL3 starts production.

Review by the CEO 2020

The transition in the operating environment of the energy industry has continued to point strongly in a climate-friendly direction. Along with climate change, the price of energy has risen as a topic of conversation. In both aspects, nuclear power plays an important role.

ELECTRICITY consumption in Finland slightly decreased in 2020, but the trend is increasing. Combined with the ever-growing concern about climate change and the Government's goal of making Finland carbon neutral by 2035, this guarantees continued demand for CO₂-free electricity production. At the moment, 85 percent of the electricity produced in Finland is already emission-free, and the figure will rise once the greatest single contribution to the climate in Finland, the Olkiluoto 3 plant unit, is completed.

In addition to renewable energy sources, stable and secure nuclear power is considered not only a necessary electricity production method in Finland, but also a globally significant means

of combatting climate change. For example, in the scenarios of the Intergovernmental Panel on Climate Change (IPCC), nuclear power has a place in the energy palette of the future, also on a global scale.

However, the discussion concerning the price of energy has risen strongly along with climate-friendliness. According to the energy attitude survey carried out by Finnish Energy (ET) in 2020, political decisions should first and foremost pursue a reasonable energy price. It is important to ensure the profitability of climate-friendly energy production far into the future. All climate-friendly production methods from nuclear power to renewable energy sources should be included in the realm of EU's Sustainable Finance Taxonomy. The inclusion of nuclear power in the Sustainable Finance Taxonomy will be resolved in 2021.

Reliable green power

The Olkiluoto plant units are known for their world-class capacity factors. In 2020, the island produced 14.6 TWh

of climate-friendly electricity, reaching a combined capacity factor of 93.5 percent. The production result is good even though it slightly decreased in December 2020 due to a disturbance at OL2. The production in Olkiluoto eliminated some 12 million metric tons of CO₂ emissions when compared to producing the same volume of electricity with more coal-intensive production methods. This roughly corresponds with emissions from all the traffic in Finland.

TVO's mission is to produce environmentally friendly nuclear electricity for its shareholders safely and competitively, thus creating well-being for the whole of Finland. We will continue the work we have been doing for over forty years: the operating licenses of all of our plant units are valid until 2038.

Safety and competitive ability cannot be separated from each other in our industry, and we are engaged in international cooperation to continuously improve both aspects of our operations. We have modernized and developed our plant units throughout their lifecycle. This has allowed us to continuously improve



the safety and reliability of our plant units, of which the high load factors are a concrete example.

We at TVO want to be highly valued trailblazers of the nuclear industry, and the management of the nuclear power lifecycle is an integral part of this aspiration. We also have a solution for the final disposal of spent nuclear fuel. The transition of Posiva's final disposal project to the construction phase acts as a game changer when assessing the sustainability of the entire lifecycle of nuclear power. Posiva's EKA project is the first final disposal project that has proceeded this far.

Towards Finland's greatest contribution to climate

Preparations for fuel loading in March 2021 are ongoing at Olkiluoto 3. Regular electricity production will start at the plant unit in February 2022. This also means that Finland's greatest contribution to the climate will become a reality, and our production volume will increase to

approximately 30 percent of the total electricity demand in Finland. TVO's readiness for the commissioning of the OL3 EPR (European Pressurised Reactor) has been verified by independent experts. The assessments aim to prove that the nuclear industry's best procedures are also used in the case of OL3.

Responsibility is at the heart of nuclear professionalism

Being a nuclear professional and a trailblazer means that you always responsibly complete your tasks. Other core values of nuclear professionalism include continuous improvement, anticipation, and an open culture. Our company-level policies and procedures have been built on these values to support optimal work.

Responsible operations are also reflected in the prevention of the global coronavirus (COVID-19) pandemic in the TVO Group. During 2020, significant measures were implemented to prevent the spread of COVID-19 infections, and

despite COVID-19 restrictions, work has been able to continue under special arrangements.

The disturbance at OL2 in December 2020 was reacted upon with the seriousness it required, and the personnel of the emergency organization acted responsibly and according to safety instructions. The disturbance later proved to be less serious than estimated, and it was categorized as an event with no nuclear safety significance.

Work to improve the profitability of nuclear power has been carried out e.g. in the form of an ongoing nuclear power operators' joint project, which aims at the broad renewal of supplier audits and components' licensing and approval procedures. The project is implemented in close cooperation with nuclear operators and authorities.

Ultimately, TVO's success depends on the people who work here, and their solid expertise enables the well-being of the surrounding society. Hence,

ensuring that the workplace allows the involvement of employees and that people are valued and cared for is the most important value in terms of the results of our work. We have invested in the development of well-being at work with the Better Workplace programme and management to make daily work more fluent.

Safety and responsibility are at the heart of nuclear power production - a heart which pumps well-being to both people and the climate.

Jarmo Tanhua



TVO's mission is to produce environmentally friendly nuclear electricity for its shareholders safely and competitively, thus creating well-being for the whole of Finland.

TVO as a company

Teollisuuden Voima Oyj (TVO) is a non-listed public limited liability company owned by Finnish industrial and energy companies. TVO's line of business is construction and procurement of power plants and power transmission equipment, as well as production, supply, and transmission of electricity, primarily to its shareholders under the terms specified in the articles of association.

TVO operates according to the cost price principle (Mankala principle). TVO is owned by six shareholders, some of which – like TVO – operate according to the cost price principle. Electricity generated by TVO serves the needs of Finnish industrial and energy companies, some of which were owned by a total of 131 Finnish municipalities in 2020. The Olkiluoto nuclear power plant generates approximately 18 percent of all the electricity consumed by people in Finland.

TVO's operations are based on a strong safety culture and securing the safety of production. TVO's operational system covers production operations at the Olki-

luoto nuclear power plant, maintenance and development of production capacity, construction of additional production capacity, as well as related steering and resourcing operations. The system meets the requirements of international quality management, environmental, and health and safety standards, and it has been certified by DNV GL Business Assurance Finland Oy Ab. The general part of the operational system also acts as the licensee's quality management system approved by the Radiation and Nuclear Safety Authority (STUK).

The nuclear electricity produced in Olkiluoto plays a significant role in the economic development, electricity self-sufficiency, and general well-being of the whole of Finland. Nuclear electricity also plays an important role in the reduction of greenhouse gas emissions and the achievement of climate targets. The emissions generated by nuclear power are low: throughout the lifecycle, the greenhouse gas emissions remain at the same level as for hydropower and wind power. TVO is a major contributor to sustainable development and the mitigation of climate change.

The objectives of TVO's strategy include predictable and competitive price of electricity, a solid safety brand, and satisfied customers. The goals are to maintain a competitive average electricity production cost and to ensure that the operability of the plant units meets the company's goals. The safety culture is maintained at a high level and safety is systematically upheld and developed at all stages of the nuclear power life-cycle. As the result of changes of the operating environment, nuclear power will remain a major part of the energy selection of Finland and the entire EU as we make our way towards a carbon neutral society.

The Teollisuuden Voima Group comprises subsidiaries TVO Nuclear Services Oy (TVONS) and nuclear waste management company Posiva Oy. TVONS is a subsidiary fully owned by TVO, providing services based on TVO's expertise covering the entire lifecycle of a nuclear power plant. Posiva Oy is jointly owned by TVO and Fortum, TVO's shareholding being 60 percent. Posiva is responsible for the final disposal of spent nuclear fuel generated

at the power plants of its owners TVO (Olkiluoto NPP) and Fortum (Loviisa NPP). Posiva Solutions Oy is a fully-owned subsidiary of Posiva, which sells Posiva's expertise generated through 40 years of multidisciplinary research.

131

Electricity generated by TVO serves the needs of Finnish industrial and energy companies, some of which were owned by a total of 131 Finnish municipalities in 2020.



MISSION

We produce climate-friendly electricity with nuclear power for our shareholders in a safe and competitive manner, creating quality of life for Finland.

VISION

An appreciated operator in the nuclear industry. Approximately 30% of the electricity produced in Finland.

STRATEGIC CHOICES



Safety and availability of OL1/OL2/OL3 at a high level



Strategic investments



BUSINESS-ORIENTED MANAGEMENT

VALUES

- Responsibility
- Proactiveness
- Transparency
- Continuous improvement

OL3 is Finland's greatest single act for the climate

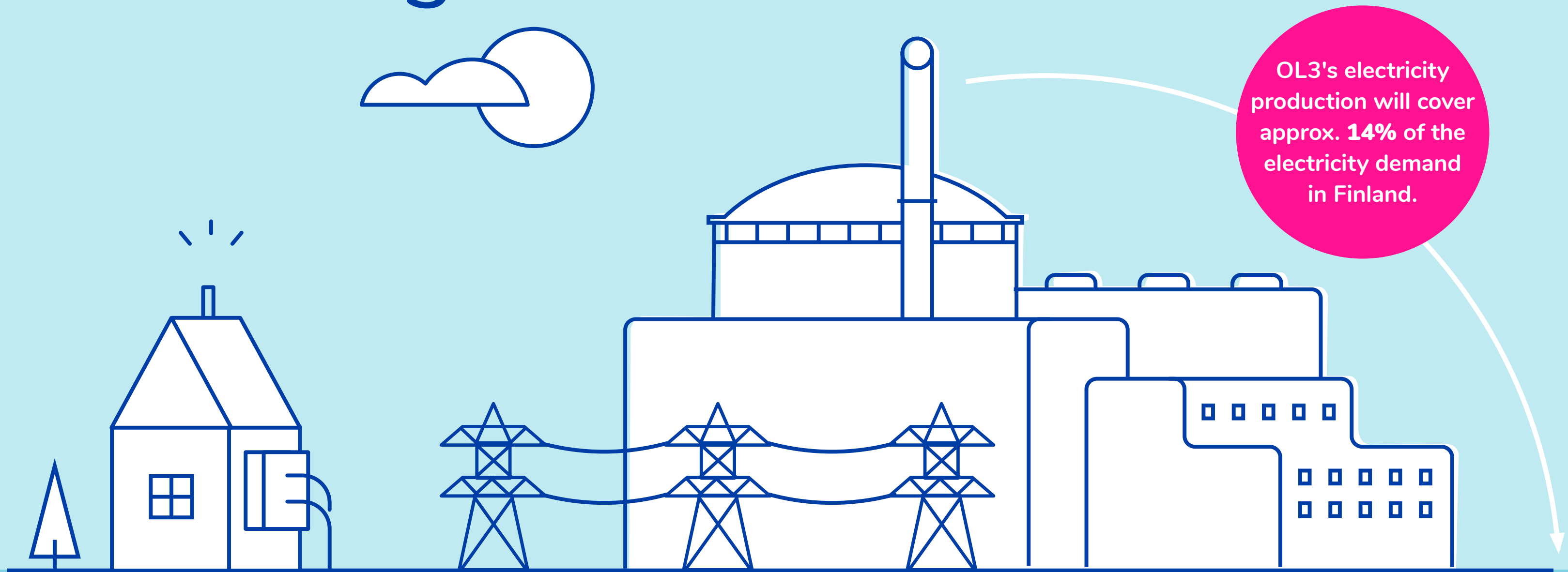
Olkiluoto will see the commissioning of what will be the greatest single contribution to climate in Finland. After the commissioning of the most powerful nuclear power unit in the world, approximately 30 percent of Finland's electricity will come from one island, where the entire lifecycle of nuclear power will be managed.

THE Finnish Government Programme (2019) aims for the carbon neutrality of Finland by 2035. Nuclear power plays an important role in reaching this goal. By replacing electricity generated with coal, the launch of OL3 will result in an annual emission reduction of approximately 11 million metric tons - an amount which corresponds with the annual greenhouse gas emissions of traffic in Finland.

In December 2020, The European Council decided to tighten the EU's climate target. The new binding target is to reduce greenhouse gas emissions by at least 55 percent by 2030 (compared to 1990 levels), so that the EU's target for carbon neutrality by 2050 can be reached. In addition, the European Council acknowledged the right of the Member States to decide on their energy mix and to choose the most appropriate technologies.

As a low-emission form of electricity production, nuclear power has an important role in the mitigation of climate change. With nuclear energy generated in Europe, 700 million tons of CO₂ emissions are avoided, which could otherwise end up in the atmosphere.

Read more about the OL3 project from [the Report of the Board of Directors](#).



The electricity produced by OL3 in one year will heat 750,000 detached houses.

27% of electricity used in Finland was produced by nuclear power in 2019.

After OL3 starts production, the percentage will rise to approx. 40%.

20%

A total of 20% of the energy produced in Finland is used in housing.

27%

40%

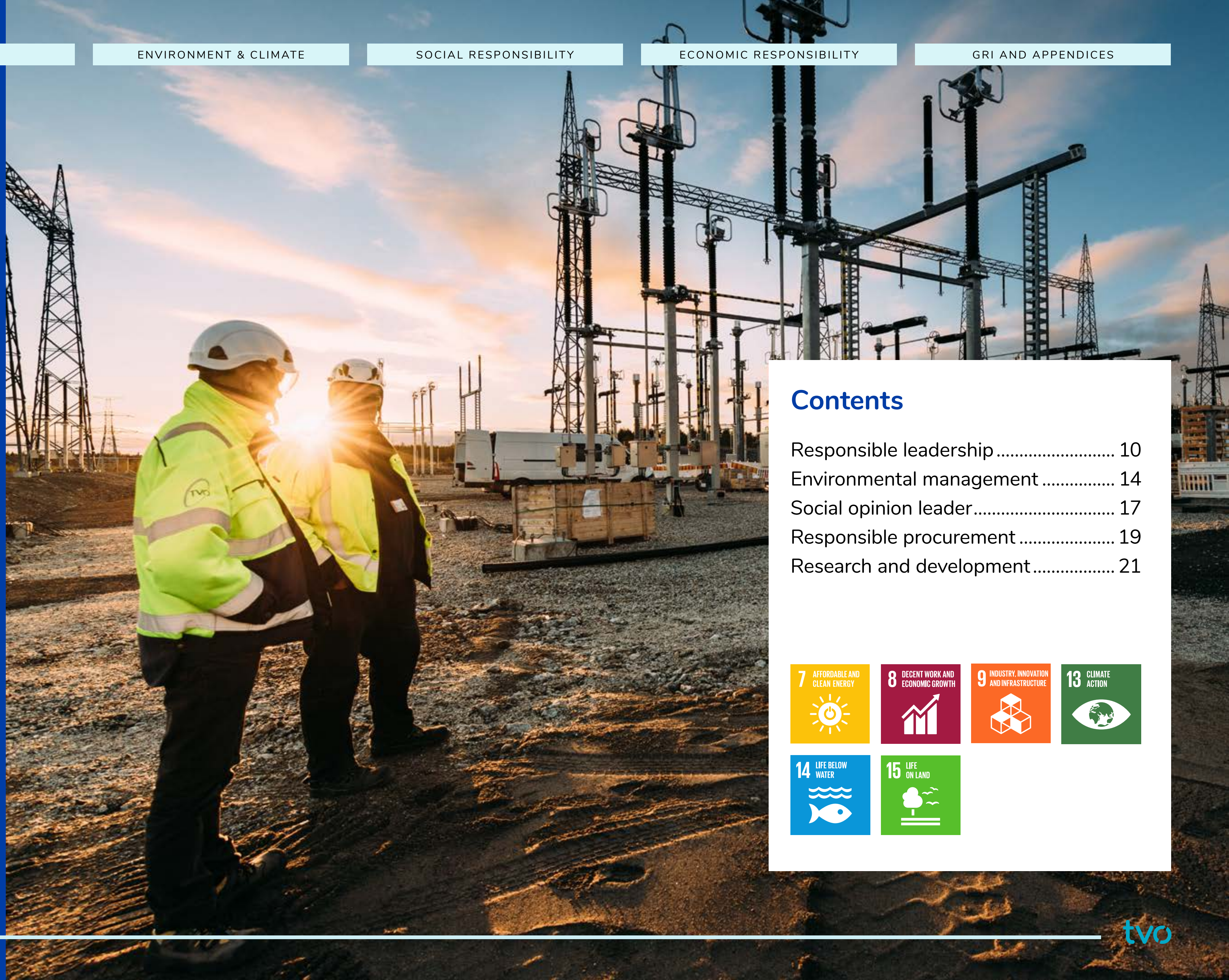
Sources: FORATOM, Finnish Government Programme 2019, Eurostat 2016

Responsibility at TVO

Particle-larly responsible nuclear power

THE TVO GROUP'S responsibility is based on the maintenance of an uncompromising safety culture, a good work community, strong networks, high-class expertise, as well as securing the supply of electricity for society. Through its operations, TVO also promotes the achievement of both national and international climate targets, and strives to improve nuclear power's competitiveness and position as a desirable production method.

TVO'S spent nuclear fuel will be packed in copper canisters and placed in the Olkiluoto bedrock at an approximate depth of 430 meters. The disposal of spent fuel is scheduled to begin in the 2020s; it will continue for approximately one hundred years.



Contents

- Responsible leadership 10
- Environmental management 14
- Social opinion leader 17
- Responsible procurement 19
- Research and development 21



Responsible leadership

The TVO Group's operations are based on defined principles and values. Ethically sustainable operating practices are promoted, and unethical operating practices and situations are challenged. In TVO's vision, nuclear power-generated electricity commands a competitive price and holds a strong position in the production and investment palette of TVO's electricity consumers.

THE cornerstones of responsible leadership and operating practices are the Company values, on which the Company-level policies and the Code of Conduct are based. TVO's objective is to operate in a responsible, transparent, proactive manner, and to continuously improve its operations. The Board of Directors approves the strategic objectives and operational guidelines of the Company, such as the Company values, Group-level policies, and the Code of Conduct.

The TVO Group complies with valid laws, regulatory guidelines, and principles of good governance in all its operations. Regulations by the Radiation and Nuclear

Safety Authority (STUK) and requirements laid down in the nuclear power plant guides (YVL Guides) are also followed. Everybody working at the TVO Group is required to comply with legislation and regulatory guidelines and regulations, the principles of good governance, and the Group's voluntary commitments. The TVO Group is committed to promoting the following United Nation's Sustainable Development Goals (SDGs) in its operations:



TVO's objective is to operate in a responsible, transparent, proactive manner, and to continuously improve its operations.

THE set targets are based on the TVO Group's material responsibility aspects which guide its operations. These are an uncompromising safety culture, the production of stable and environmentally friendly electricity for society, creating added economic value, the well-being of employees, strong networks, as well as high-class nuclear and final disposal expertise.

TVO's managerial and supervisory personnel have the task of initiating discussions about TVO's policies as well as the values and responsibilities on which they are based, and of controlling that laws and regulatory provisions are complied with in the activities of each responsibility area. In legal and ethical issues, employees can turn to the legal unit, the internal audit unit, or the safety unit. The internal audit unit also ensures that legislation and statutory regulations are taken into account in the organization's activities.

TVO's subcontractors are informed of the Code of Conduct by, for example, including the Code of Conduct in contracts signed with subcontractors and partners. All employees and subcontractors working at

Olkiluoto must complete an online training course on the Code of Conduct. In 2020, a total of 160 people completed the Code of Conduct training.

TVO's operational system meets the requirements of the following procedures and standards, among others:

- Quality management system ISO 9001:2015, STUK YVL A.3 Management system for a nuclear facility
- Environmental management system ISO 14001:2015, EMAS Regulation 1221/2009
- Energy efficiency system (ETJ+)
- Occupational health and safety management system ISO 45001:2018

The most important aspects of responsibility are dealt with in the meetings of the Board of Directors and the Committees appointed by the Board from among its members; for example, the Nuclear Safety Committee deals with matters related to the promotion of the safety culture. The Audit and Finance Committee's responsibilities include monitoring the development of shareholder value. The work of the OL3 Committee focuses

on the monitoring and promotion of the power plant project designed to ensure the supply of electricity for society and a positive impact on climate.

The management of and the efforts taken in relation to the most significant aspects of responsibility concern the entire organization of the TVO Group, including the Management Group, the Business Units, and the service functions. The President and CEO, with the approval of the Management Group, is responsible for the objectives and planning relating to the TVO Group's corporate responsibility. The Management Group is in charge of the implementation of the strategy, strategic projects, and strategic goals, as well as the development of new business opportunities. Furthermore, it assists the President and CEO in the planning and management of the Group's strategic operations.

Duties of the Responsibility Team include:

- Making decisions on responsibility goals, policies, operating plan, and indicators
- Considering stakeholder expectations

- Monitoring the responsibility goals, actions, and indicators
- Preparing, developing, and monitoring the implementation of a corporate social responsibility policy and a related Code of Conduct
- Reporting responsibility issues to the CEO and Management Group once or twice a year

Material responsibility aspects

THE most significant aspects that affect responsibility as concerns the TVO Group's stakeholders and business activities have been identified by means of a materiality analysis. In addition to its personnel, TVO's most important stakeholders include its shareholders, the authorities, investors, decision-makers, the local community, subcontractors, the media, and the general public. The reporting principles pertaining to content definition in the Global Reporting Initiative (GRI) Standards were used as the basis in the definition of the reporting content and in the materiality analysis. This Responsibility Report is based on a materiality analysis which was updated during the autumn 2020. The previous analysis was completed in 2016.

The objective of updating the materiality analysis was to reevaluate the TVO

Group's most significant responsibility aspects, so that they would correspond with the operating environment in 2020. The materiality analysis surveyed aspects relevant to the Group on the basis of discussions with the company's management, personnel, and external stakeholders, as well as information obtained from opinion polls. Data for the materiality analysis was obtained from the most recent stakeholder survey carried out as an online survey and targeted at shareholders, decision-makers, public officials, the media, opinion leaders, experts, non-governmental organizations, and the personnel. In addition, comments and queries received from visitors were taken into account in the analysis.

After prioritization of the material aspects, the outcome of the analysis was a materiality matrix confirmed by the key persons responsible for responsibility matters; it describes the view of the company and its stakeholders on aspects of responsibility that are important to the TVO Group, the impact of responsibility, and related development areas. After prioritization, the materiality matrix was once more subjected to an approval procedure carried out as discussions between responsibility experts and representatives of the management of the company. The Management Group

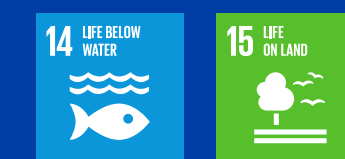
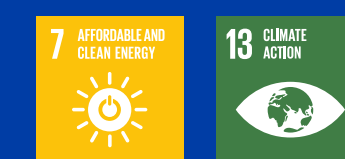
separately approved the content of the materiality analysis at its weekly meeting.

Based on the updated materiality analysis, the material aspects guiding the TVO Group's responsibility operations include **an uncompromising safety culture, the production of environmentally friendly electricity for society, creating added economic value, the well-being of employees, strong networks, as well as high-class nuclear and final disposal expertise.**

As part of the analysis, connections were sought between the material aspects and the UN SDGs. As a result of the updated analysis, the TVO Group broadened its commitment to two new SDGs: Goal 8, decent work and economic growth, and Goal 9, industry, innovation, and infrastructure.

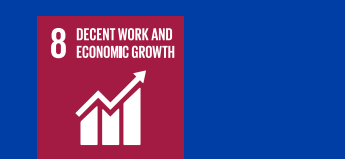
What do we promote with our sustainability work?

We produce climate-friendly electricity for society with nuclear power.



- We further the emission reduction targets set in the Paris Agreement by producing climate-friendly electricity.
- 30 % of all electricity produced in Finland will be generated on the island of Olkiluoto when Finland's greatest single act for the climate, Olkiluoto 3, starts production.
- By producing stable electricity with nuclear power which is unaffected by weather fluctuations, we support renewable energy sources in the electricity system.
- We take care of acting responsibly throughout the entire lifecycle of nuclear power.
- Posiva's final disposal solution enables the production of sustainable nuclear electricity.

We uphold a high-class safety culture.



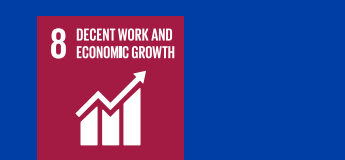
- We ensure uncompromising safety in all safety sectors.
- Our nuclear professionals secure the continuous use of the plant units.
- We manage exceptional situations in an expert manner.
- We manage the lifecycle of the plant units.
- We ensure the long-term safety of Posiva's final disposal solution.

We create added economic value by promoting the competitiveness and position as a desirable production form of nuclear power.



- We promote competitive and predictable electricity production.
- We promote the position of nuclear power as a desirable form of electricity production.
- We focus on strategic investments and successful projects.

We look after our employees and networks.



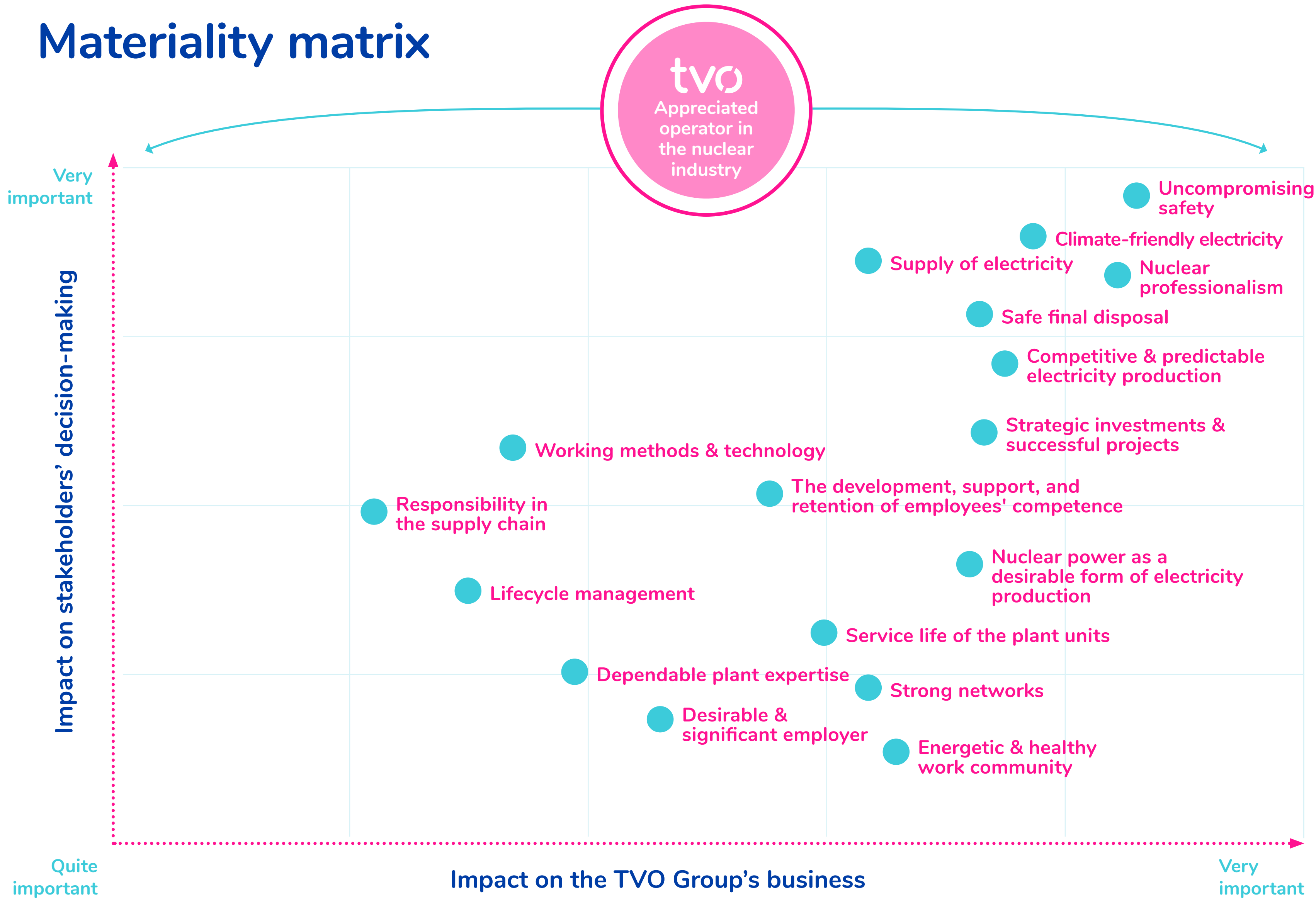
- We look after the health and well-being of our work community.
- We invest in the development, support, and retention of employees' competence.
- We are a desirable and significant employer.
- We foster strong networks and active and open stakeholder cooperation.
- We ensure responsibility in our supply chain with comprehensive supplier evaluations.

We are a trailblazer in the nuclear industry and final disposal.



- We have dependable knowledge on nuclear power plants.
- We actively look for the best working methods and make use of technological developments in order to reach our goals.
- Posiva has a solution for the safe final disposal of spent nuclear fuel in ONKALO.

Materiality matrix



1. We produce climate-friendly electricity for society with nuclear power.
2. We uphold a high-class safety culture.
3. We create added economic value by promoting the competitiveness and position as a desirable production form of nuclear power.
4. We look after our employees and networks.
5. We are a trailblazer in the nuclear industry and final disposal.

Responsibility targets and results

THE responsibility targets are based on the principle of continuous improvement. The targets enable the company to monitor the realization of the key responsibility aspects.

	Objective 2020	Actual 2020
Reputation index	75	77
Personnel survey, category	A*	A*
Reports suspecting violations of the Company's Code of Conduct	-	3
Sick leaves, %	-	2.3
Occupational accident frequency	< 2.4	4.5
Collective radiation dose, manmSv	837	565
Number of environmental incidents, pcs	0	0
Unplanned energy unavailability factor, %	< 0.8	2.4
Number of unplanned automatic scrams, pcs	0	2

Reputation index: TVO Group stakeholder survey, average of respondent groups 0–100; less than 50 = Weak, 50–62 = Moderate, 62–70 = Good, more than 70 = Excellent. The survey is conducted and the results are reported every two years. The next survey will be conducted in 2021.

***Personnel survey:** The survey was conducted at the end of 2019. The results were reported in the beginning of 2020. The survey is conducted every 18 months. The evaluation scale from highest to lowest result is AAA-C, where A is satisfactory.

Occupational accident frequency: per one million working hours. The indicator is Group-level, including Posiva and TVO's and Posiva's subcontractors.

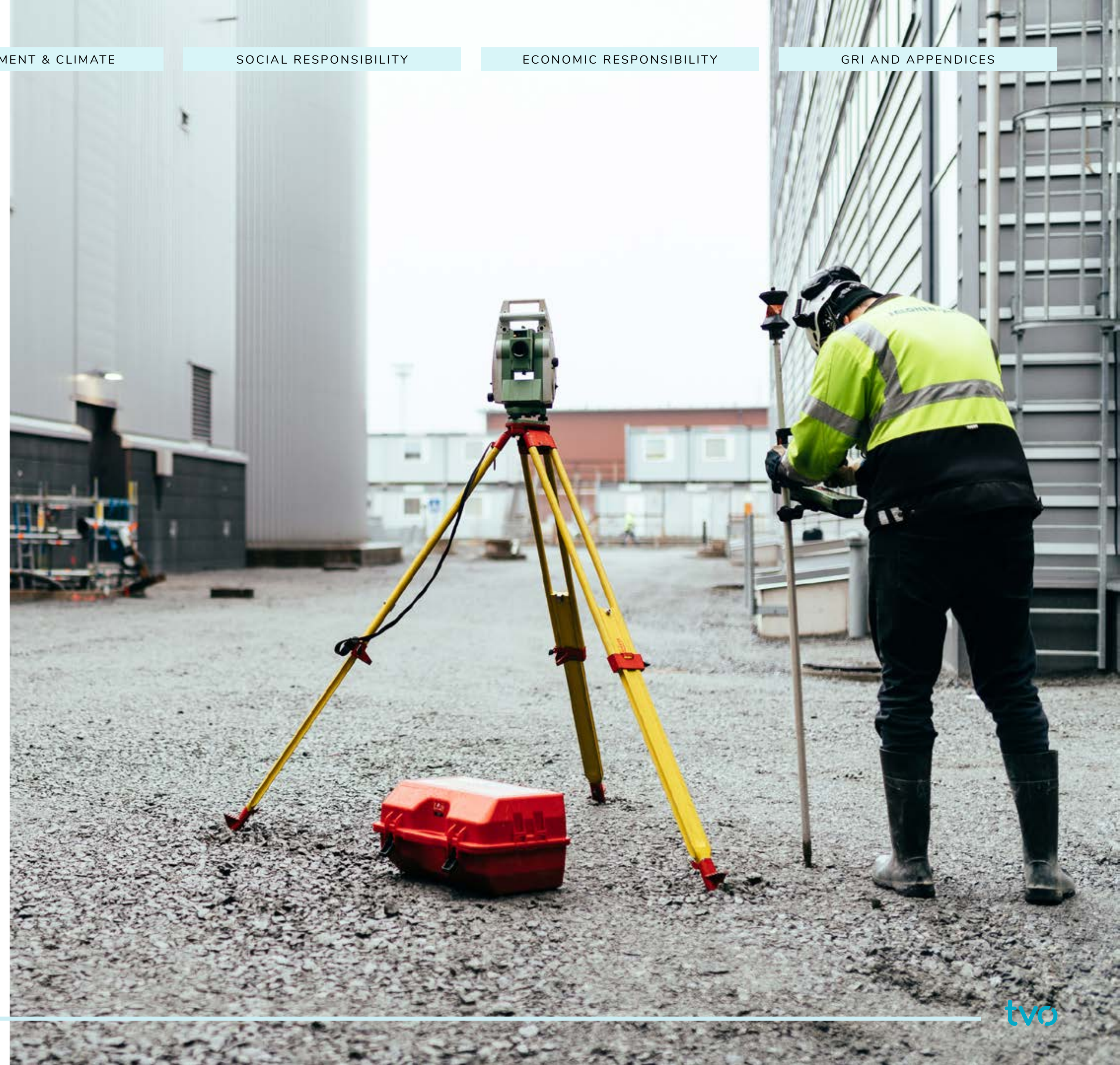
Collective radiation dose: World Association of Nuclear Operators (WANO) indicator.

Reference point: other WANO members' NPPs. Target: the best quarter.

Environmental incidents: in the class considerable/severe.

Unplanned energy unavailability factor: Percentage of total production.

There is more information on the principles and results of TVO's ethical business operations in the nonfinancial information section of the 2020 Report of the Board of Directors.



Environmental management

Operations are managed with a certified environmental management system that complies with the international standard ISO 14001:2015, and includes an integrated energy efficiency system. The system is also EMAS registered.

The goal of the management system is increasing the level and continuous improvement of environmental protection. TVO and Posiva have identified environmental and energy aspects related to their operations and assessed their significance. The significance of environmental and energy aspects are assessed on the basis of statutory and permit requirements as well as by observing the severity/utility of the impact, probability, and impacts to the stakeholder groups. Also opportunities to influence the issue affect the assessment process.

TVO has specified targets for the significant environmental and energy aspects. The targets have been confirmed by the

management of the company. A team of environmental experts from various organizational units monitors the status of the targets regularly. Other subjects discussed at the team meetings include the current status of environmental non-conformities, environmental observations, current statutory matters, and other environmental issues. The team acts as an expert, advisor, and provider of information in environmental issues.

The feasibility of the environmental management system is assessed semi-annually in conjunction with the management review. If necessary, corrective actions are specified to ensure that the goals are reached. TVO identifies all statutory and other requirements pertaining to its operations and systematically monitors the requirements for any changes. Compliance with the requirements is also assessed in conjunction with the management review. Furthermore, TVO's operations are regularly assessed both within the organization and by means of external audits.



Storage and handling of hazardous or harmful substances

Production of climate-friendly electricity

Sustainable land use

TVO has identified the significant environmental and energy aspects of its operations

Emissions in the manufacture and delivery of raw materials, products, and services

Spent nuclear fuel generated during operations

A radioactive release into the environment during a severe accident

Thermal load on the sea caused by cooling water

TCFD at TVO

Metrics and targets: TVO's most relevant metrics concerning the climate and the environment are presented in the environmental balance sheet. The targets and results of the environment and energy efficiency program 2019–2021 are reported annually in the Responsibility Report.

Risk management: The management of climate-related risks is part of the TVO Group's overall risk management, which includes both strategic and operative risks.



Governance: With its group-level policies, TVO has committed to the principles of sustainable development, and environmental responsibility is an important part of the company's management system.

Strategy: The production of climate-friendly electricity is part of the TVO Group's strategy. Investments in the production of clean electricity are included in the Group's strategic decisions.

TCFD (Task Force on Climate-related Financial Disclosures) is an international reporting recommendation, which offers companies a framework for reporting on the financial risks and opportunities related to climate change in relation to four thematic areas: governance, strategy, risk management, and metrics and targets. TVO is reporting according to TCFD for the first time this year, and TCFD reporting will be developed further in TVO's future responsibility reports.

Climate change is one of the greatest challenges of our time, and the TVO Group is committed to supporting the achievement of both national and international climate targets. Producing climate-friendly electricity for society is one of TVO's material responsibility aspects, since nuclear power plays a significant role in the mitigation of climate change as a low-emission form of electricity production. The TVO Group's objective is to also assess climate change and environmentally responsible operations from the perspective of possible risks in accordance with the principle of continuous development.

Governance

The TVO Group's operations relating to sustainable development and environmental responsibility are addressed and developed both in the Responsibility Team and the Environmental Team, which report directly to the Management Group. Some members of the Management Group also belong to the Responsibility Team. The Management Group handles and approves the targets and policies set out in the Responsibility Team and the Environmental Team, and is in charge of their strategic implementation. The highest decision-making authority also in matters concerning sustainable development and environmental responsibility belongs to the Board of Directors and its committees.

With its group-level policies, TVO has committed to the principles of sustainable development, and environmental responsibility is an important part of the company's management system. In its group-level policies, TVO requires a responsible attitude towards environmental matters not only from its own employees but also all the companies and partners working in the power plant area.

Strategy

The production of climate-friendly electricity is part of the TVO Group's strategy. The Group is committed to supporting the achievement of the emission reduction targets set out in the Paris Agreement. TVO also participates in the Finnish Energy Efficiency Agreement for Industries, and has signed the agreement for 2017–2025.

An operating environment analysis is carried out as part of the strategy planning process, which guides the TVO Group's operations. In the operating environment analysis, the greater level of understanding on matters related to climate change as well as the central role of nuclear power in achieving climate goals have been taken into account.

The TVO Group's strategic decision has been to invest in the production of clean electricity. This is reflected in the increase in the production capacity of nuclear power through the OL3 plant unit. Once the plant unit is completed, approximately 30 percent of Finland's electricity will be produced with nuclear power from Olkiluoto. In addition, TVO renounced its share in the Meri-Pori coal-fired plant in July 2020, after which 100 percent of the electricity produced by TVO is nuclear electricity.

Future strategic opportunities include small modular reactors (SMR). In a currently ongoing scheme, TVO is investigating the technical and financial possibilities of SMRs in climate-friendly electricity and heat production.

Risk management

The management of climate-related risks is part of the TVO Group's overall risk management, which includes both strategic and operative risks.

Risks which have been identified in the operating environment include different reputational risks as stakeholders are increasingly aware of aspects relating to climate change, as well as the position of nuclear power in relation to the EU Sustainable Finance Taxonomy. The eligibility of nuclear power as a form of energy production to be included in the Sustainable Finance Taxonomy will be resolved in 2021. To ensure future business opportunities, TVO promotes the competitiveness and position as a desirable production form of nuclear power. The TVO Group's risk management also observes learnings from other operators in the nuclear sector. For example, improvements were made to the Olkiluoto plant units after the Fukushima nuclear accident, where the effects of

earthquakes, floods, and storms are taken into account even more efficiently.

Metrics and targets

TVO's most relevant metrics concerning the climate and the environment are presented in the environmental balance sheet of this report.

In addition, an environmental and energy efficiency program has been prepared for the years 2019–2021 to ensure the achievement of the environmental targets specified in group-level policies and to improve the efficiency of the management of significant environmental and energy aspects.

Targets and results of the environment and energy efficiency program are reported annually in the Responsibility Report. The set targets are based on the production of stable and environmentally friendly electricity for society and minimization of adverse environmental impacts of the operations at all stages of the electricity production chain.

Read more on TCFD: <https://www.fsb-tcfid.org/>

Social opinion leader

TVO cooperates with political decision-makers and the Government to develop and execute energy legislation and guidelines. TVO's interaction with stakeholder groups is always guided by strict ethical principles, thus strengthening trust in the operations of TVO and the stakeholder group without jeopardizing the reputation or objectivity of either party.

Local communities

Active stakeholder cooperation

Stakeholders have a key role for a company that is engaged in environmentally responsible operations. The Olkiluoto Visitor Center normally receives some 13,000 visitors each year. The visitors are openly told about TVO's operations, and their questions are answered. This year, the visits had to be suspended due to the COVID-19 pandemic, but the first digital visits were organized at the end of 2020. The Olkiluoto Visitor Center was closed from the end of March until the end of the year. Stakeholders also have the opportunity to submit feedback and questions to TVO via the



“Active and transparent stakeholder cooperation is at the heart of TVO's operations. During the COVID-19 pandemic, cooperation has been increased especially through digital channels.”

TVO website. TVO replies to all contacts made with contact details appended. TVO received one expression of concern related to environmental issues from external sources in 2020.

TVO normally engages in free-form interaction with the residents of the neighboring areas at open coffee and chat events and the SuomiAreena public debate forum, where discussion about the company and nuclear power is lively. As in the case of the visits, different fairs and events had to be postponed. TVO publishes Uutisia Olkiluodosta (News from Olkiluoto) magazine for people living in the immediate region and communicates diversely through digital channels. TVO also organizes regular interaction through various forums, such as the Municipal Cooperation Committee. The Municipal Cooperation Committee was established in the 1970s upon the initiative of TVO. The committee is a forum for interaction and exchange of information, providing local municipal decision-makers with first-hand information. In addition to representatives of TVO and Posiva, the committee includes representatives appointed by the munic-

ipalities and towns of Eurajoki, Rauma, Nakkila, and Eura. TVO also maintains close interaction with Eurajoki in the municipality's own cooperation team. In addition, TVO participates in the operations of the Vuojoki Foundation and Vuojoki cooperation group.

The traditional close cooperation with schools had to be significantly reduced during 2020, but the planning of virtual school visits was started immediately. For example, the traditional Energy Day organized for ninth grade students from Eurajoki upper secondary school was already organized remotely. The children's science and technology camps were postponed to a time when they can be organized safely.

TVO's impact on the local community and surrounding environment

TVO's strongest positive impact on the immediate community is related to economic well-being and activity in the area, achieved through employment. The local community's attitude towards investments by the TVO Group, such as the OL3 project and the ONKALO project of Posiva, is positive. The real

estate taxes paid by TVO and Posiva have a significant economic impact on the municipality of Eurajoki, and the neighboring municipalities in the region also benefit from the taxes paid by TVO employees. TVO and the OL3 construction site are important sources of employment and economic prosperity in the region, both directly and indirectly. Products and service purchases also provide employment and income to local people. TVO's most significant measurable negative effect on the region is an increase in the temperature of the sea in the vicinity of the power plant. The increase in the temperature of seawater is regularly monitored and measured, together with the impact of the increased temperature on the seabed.

Memberships in nuclear industry organizations

TVO is an active participant in both the national and international nuclear power community, as well as in various organizations and communities of the nuclear energy sector.

TVO's most significant international memberships are those in FORATOM, the

trade association for the nuclear energy industry in Europe, and the World Association of Nuclear Operators (WANO) which focuses on the development of nuclear safety. TVO also complies with the recommendations and requirements of the International Atomic Energy Agency (IAEA).

Follow us on social media:



Visits

THE Visitor Center had to be closed and visits stopped from the end of March due to the prevailing COVID-19 pandemic, but the planning of virtual visits was started immediately. 1911 visitors visited Olkiluoto during the beginning of the year.

During the end of the year, remote visits for getting to know Olkiluoto were tested. The remote connection was rehearsed together with six school groups. The experiences were positive, and the remote visits are meant to continue even after the pandemic has eased. Consequently, a greater number of groups would have the opportunity to learn more about Olkiluoto's operations.

Sponsorship activities

TVO supports sports, cultural endeavors, and activities for the public good. TVO's sponsorship principles are built on the company's values, and the supported activities must be in line with the company's strategy and operating principles. When selecting partners and sponsorships, the emphasis is on offering opportunities for recreational activities to children and young people in the local area. TVO supports activities that reach large numbers of people and are open to everyone.

The most important sponsorship targets in 2020 were:

- Rauman Lukko (ice hockey; representative team and juniors)
- Pallo-livot (soccer; representative team, juniors, and supervised exercise for children)
- Fera association (Finnish baseball; Fera women's representative team and Lukko junior girl teams)
- Rauma Golf
- Eurajoen Veikot (various sports)
- TVO supports the local community by sponsoring sports, cultural endeavors, and associations in the immediate vicinity of the power plant.

CASE

Case: Supporting mental health work

SINCE 2004, TVO has donated the funds reserved for Christmas cards to organizations or communities working for the public good. For this reason, the annual Christmas greetings are sent to partners electronically.

In 2020, the recipient of this donation was a mental health crisis center in Rauma; Kriisikeskus Ankkurpaikk'. The crisis center provides help and support free of charge for people experiencing different life crisis situations. The employees of the crisis

center are trained social work and healthcare professionals specialized in crisis work.

– The TVO Group's donation will be used towards supporting children, youth, and families. The COVID-19 pandemic has seen a clear decrease in the well-being of young people, as well as a rise in different problems concerning families. This donation enables the provision of solutions for supporting children, young people, and families in Rauma. This donation is extremely valuable to us, thank you! - says Executive Director of the center, **Tuija Eskelinen**.

In addition to sponsorships, TVO makes annual donations to organizations, communities, and student groups who work for the public good. In 2020, sponsorship recipients included a mental health crisis center in Rauma; Kriisikeskus Ankkurpaikk'.

Decisions concerning sponsorships and donations are made by TVO's HR Competence Center together with the management of the company. In line with the sponsorship principles, TVO does not sponsor any activities that do not comply with the TVO values, ethical code, or principles of social responsibility, or any political or religious organizations or projects.

Responsible procurement operations

High-quality procurement ensures safe, competitive, and reliable production and long-term operation of the plant units.

THE TVO GROUP and the OL3 construction site are major employers and providers of financial well-being in Finland and the Satakunta region, both directly and indirectly. Purchased products and services provide work and employment in the entire country. Furthermore, TVO and Posiva pay real estate tax to the municipality of Eurajoki.

When selecting suppliers, particular attention is paid to the continuity of the suppliers' operations, delivery reliability, quality, environmental management, and competitiveness, while also appreciating domestic and local suppliers. Suppliers are assessed, delivery quality is monitored, and immediate corrective measures are taken when necessary.

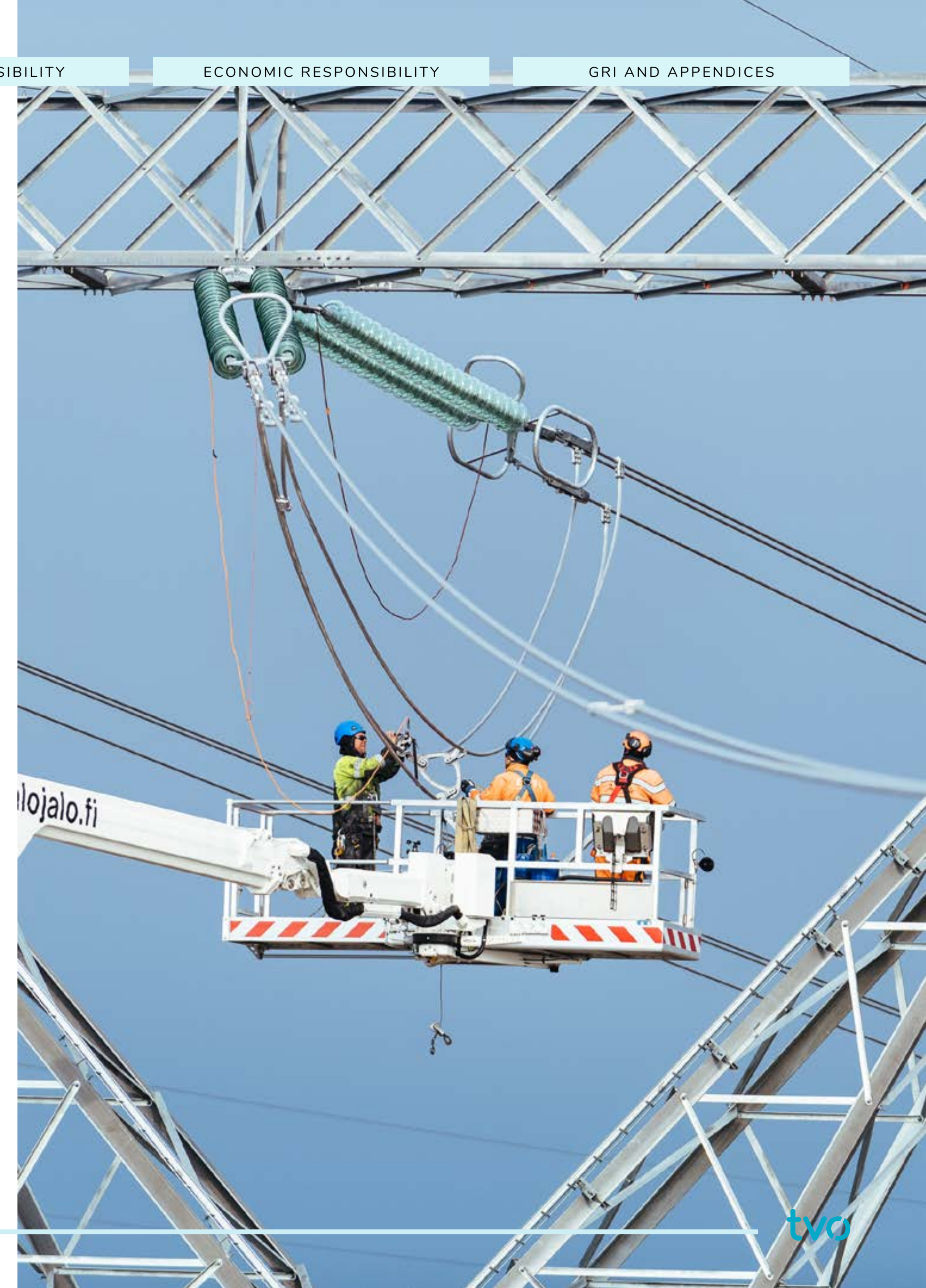
”

TVO conducts negotiations on the procurement of uranium and signs procurement contracts with the suppliers at all stages of the fuel production chain.

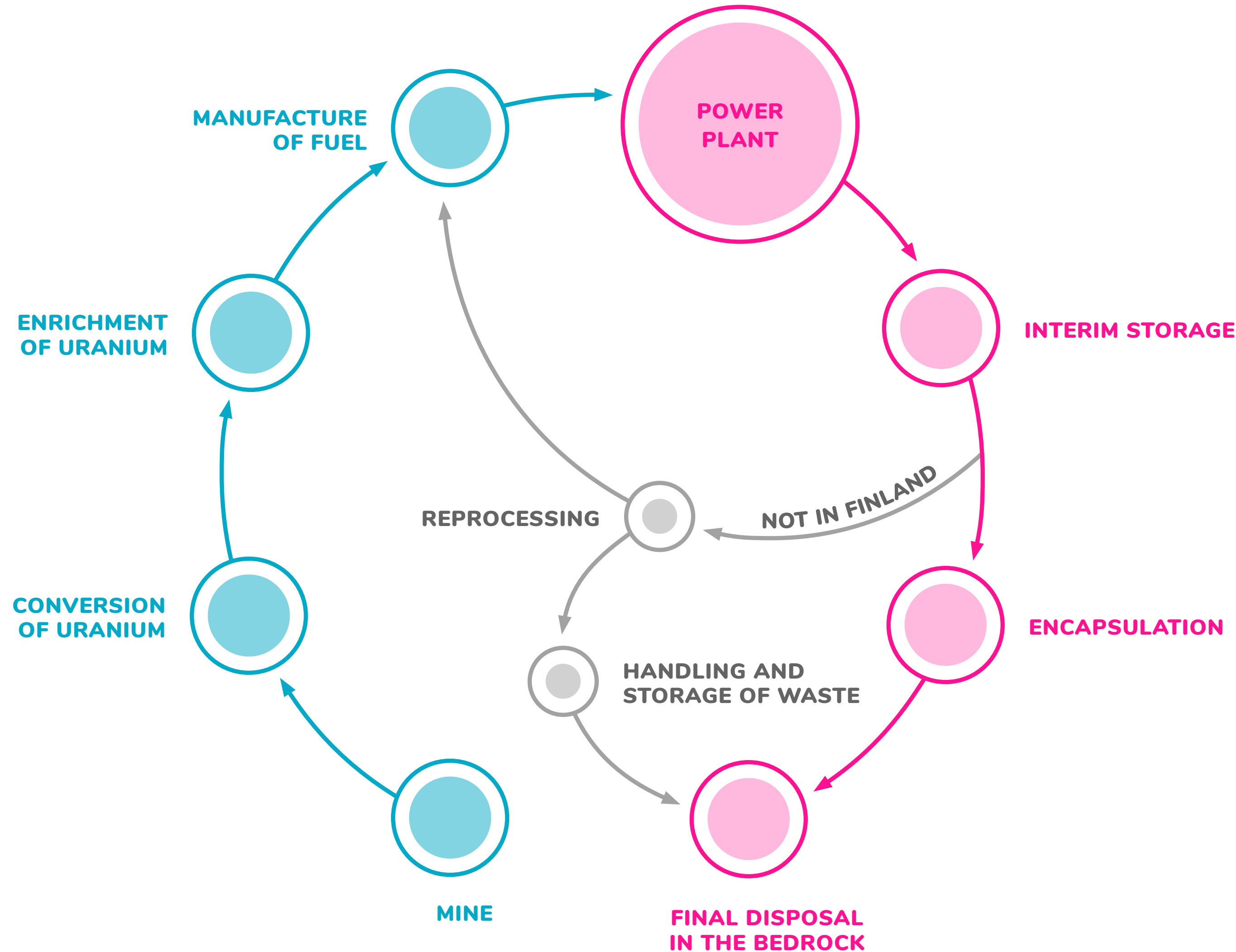
TVO only purchases products and services from evaluated and approved suppliers. TVO uses a supplier classification system for all of its suppliers based on how significant their operations are for TVO's safety and potential risks inherent to TVO's production operations. The products must meet TVO's safety, quality, and environmental requirements. Orders can be placed with assessed suppliers only.

Audits – a quality assurance method

TVO requires that contracting parties use operating methods that comply with TVO's Code of Conduct and Group-level policies. TVO's contractors generally apply a quality level in accordance with the ISO 9001 quality system, ISO 14001 environmental system, and ISO 45001 occupational health and safety system. Auditing is one of the quality assurance methods used. The audits may be carried out by TVO or a third party. TVO has the right to audit quality, safety, information security, and environmental systems, as well as the operations of its contractors and subcontractors to the extent it considers necessary. Contractors are obligated to ensure that the above-mentioned right is included in all contracts between the contractor and its subcontractors in the entire delivery chain. The Radiation and Nuclear Safety Authority (STUK) may participate in the audits to validate the operations of TVO or its subcontractors.



Circulation of Uranium



Procurement of uranium

TVO has high-level expertise regarding all the phases of the fuel procurement process. TVO procures its fuel mainly through a decentralized supply chain, entering into negotiations and making procurement contracts with each separate supplier at the various stages of the fuel production chain. There are several suppliers for each stage of the chain, and the procurement operations are regularly subjected to competitive bidding.

Furthermore, the composition of the fuel and the manner in which it is used are designed by TVO itself. The policy chosen by TVO clearly strengthens the company's position as Finland's leading supplier of nuclear power. Procurement operations are based on long-term contracts with leading suppliers. These companies have mining operations in many countries. If required, TVO also purchases additional batches and services from the market, the development of which is followed actively. Most of the uranium procured by TVO comes from Kazakhstan, Canada, and Australia, and the fuel elements ordered by the company are constructed and assembled in Germany, Spain, or Sweden.

TVO subjects fuel suppliers to strict evaluation

TVO employs a supplier evaluation procedure and only procures uranium and nuclear fuel refining services from suppliers who have passed the evaluation process. A systematic evaluation process precedes the closure of each supply contract. In addition to the requirements set for the products, the process also considers the reliability and responsibility of the supplier.

TVO's supplier evaluation also includes active monitoring and evaluations at fixed intervals. Remote monitoring in Finland and visits to production sites both provide TVO with an opportunity to examine the suppliers' practices and, when necessary, to demand that changes are made. The purpose of supplier evaluation is to ensure that suppliers pay appropriate attention to environmental issues, the well-being of personnel, and quality management. Special issues concerning mines are also considered, such as the impact of the mining operations on local people.

Research and development

TVO's R&D operations focus on supporting the safe use of nuclear power plants, the acquisition and renewal of nuclear power plants' construction and operating licenses through the production of high-quality technical information, and on validating data and calculations for the needs and use of the plant units.

MODERNIZATIONS and modifications carried out at the plant units, as well as the monitoring and use of new technology, also create research needs. Storage, handling, and final disposal of waste comprise another important research area. The development of a safe spent nuclear fuel disposal solution by Posiva remains by far the most important objective of TVO's research work.

TVO is an important nuclear sector researcher and developer

THE total costs of TVO's research and development operations were EUR 18.5 million, of which the majority was spent on R&D activities related to nuclear waste management.

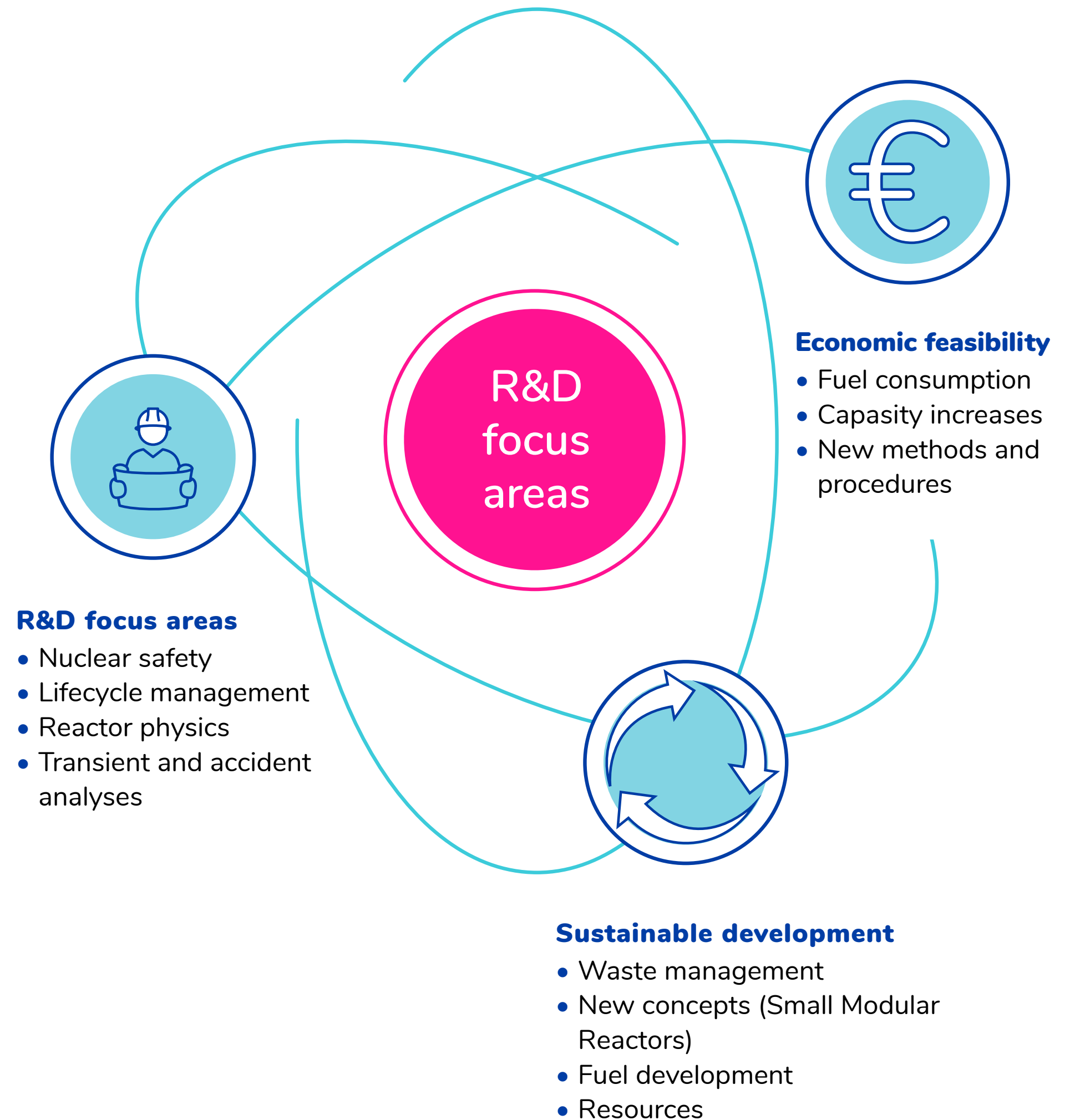
TVO is the largest contributor to the financing of Finnish national public research programs on nuclear power plant safety (SAFIR2022) and nuclear waste management (KYT2022). In 2020, TVO paid a total of EUR 7.2 million in research fund related contributions to the Finnish State Nuclear Waste Management Fund. TVO also participated in the steering and monitoring of the programs through the work of 30 experts.

Key research projects

IN 2020, the primary R&D focus areas of the OL1 and OL2 lifecycle management and modernization projects included studies, development, and documentation of a reactor pressure vessel risk analysis (RPV risk analysis), the piping analysis and monitoring system (PAMS) (with regard to the integration of the LTO and risk informed in-service inspection (RI-ISI) and the inspection database), the mechanical equipment AMP program, plant structures, and I&C ageing. The above efforts were carried out both in-house and together with the VTT Technical Research Centre of Finland.

Research in I&C technology focuses on solutions required for the maintenance of the I&C systems in OL1/OL2 and the solutions required for the commissioning of OL3. Primary research areas include the aging of electronics, the commissioning of digital I&C technology, and the enabling of digitalization to support proactive maintenance.

Fuel research is TVO's most important area of international research cooperation, which requires special expertise, available testing reactors, and hot cell studies. The best option to obtain all of these is international cooperation. Research further specifies and validates the safe use of fuel and accident safety margins with a higher burnup. The behavior of fuel in storage and after final disposal is another important field of study. TVO also participates in the international OECD-NEA Studsvik Cladding Integrity Project (SCIP IV) to investigate the behavior of fuel rods during various transients, as well as phenomena and solutions related to the handling of spent nuclear fuel.





18.5
MEUR

24.1 (2019)

In 2020, TVO invested a total of MEUR 18.5 in research and development operations. The majority of the investments were on R&D operations relating to nuclear waste management.

In 2020, TVO started an R&D program on small modular reactors (SMR). The objective of the project is to investigate the use of SMRs in electricity and heat production, as well as the practicality and profitability of different technical alternatives in Finnish circumstances and as part of the Finnish energy system. The project is carried out as part of the broader EcoSMR project funded by Business Finland and coordinated by VTT.

A strategic choice made by TVO is to transition towards need-based maintenance gradually as of 2024. In order to support this choice, TVO initiated a project which aims at developing new tools and procedures to support maintenance and maintenance control. In addition, the objective is to utilize existing tools better, as well as to develop them.

The processing and final disposal of operational waste, as well as the long-term safety of final disposal operations (VLJ repository), also constitute important research areas at the nuclear power plant.

TVO also actively participates in the work of more extensive international cooperation networks and research projects. TVO is a member Euratom's

Sustainable Nuclear Energy Technology Platform (SNETP). The purpose of SNETP is to steer and carry out European research and development in the field of fission energy, focusing on existing reactors, that is, Generation II and III nuclear power plants. Furthermore, TVO participates in a Swedish Energiforsk reactor technology research program, the main topics of which are concrete structures, I&C, electrical components and reactor circuit components, as well as materials, vibration management, and the utilization of digital methods.

TVO also supports the development of new research infrastructure in Finland and Europe. New experimental technology is being built into the Jules Horowitz material testing reactor in France. It can be used for reactor material and fuel research required by modern nuclear facilities, supporting the development of new reactor types over the next few decades. The plan is to start the research reactor during 2025.

CASE

SMR2029 scheme

CURRENTLY, small modular reactors (SMR) are the number one topic in the nuclear sector. An SMR is a reactor of under 300 megawatts, which can be built to near completion in a factory, and transported as a whole module to the operation site. The objective with factory production is to reduce construction costs and to shorten the construction time. In addition to electricity, SMRs could be used to produce e.g. district heating and process heat for industry use.

In March 2020, TVO initiated the SMR2029 scheme, which aims at investigating SMRs' technical and financial possibilities in electricity and heat production. 13 people have been appointed to TVO's project organization, the responsibility areas have been defined, and work has been started.

– The project interested several employees of the Group in our internal application, and we were able to gain strong expertise into the scheme. The expectations are high, and we

have great prerequisites to make the TVO Group a leading SMR expert in Finland, says the chairman of the steering group, **Mikko Kosonen**.

The project's name refers to the fact that in 2029 the use of coal will be banned in Finland, and there is a need for new solutions for the production of clean energy. The expectations are that SMR technology will become commercial and legislation will enable construction by 2029.

– The use of coal will be banned by law as of May 1, 2029 in Finland. SMR is on one interesting option in the heating of big cities, **Arto Kotipelto**, member of the SMR steering group, points out.

TVO is part of VTT's ongoing EcoSMR scheme, which aims at improving Finnish operators' readiness to compete on the global SMR market. There is a public part and separate company projects in VTT's scheme. TVO's SMR2029 scheme is one of the company projects

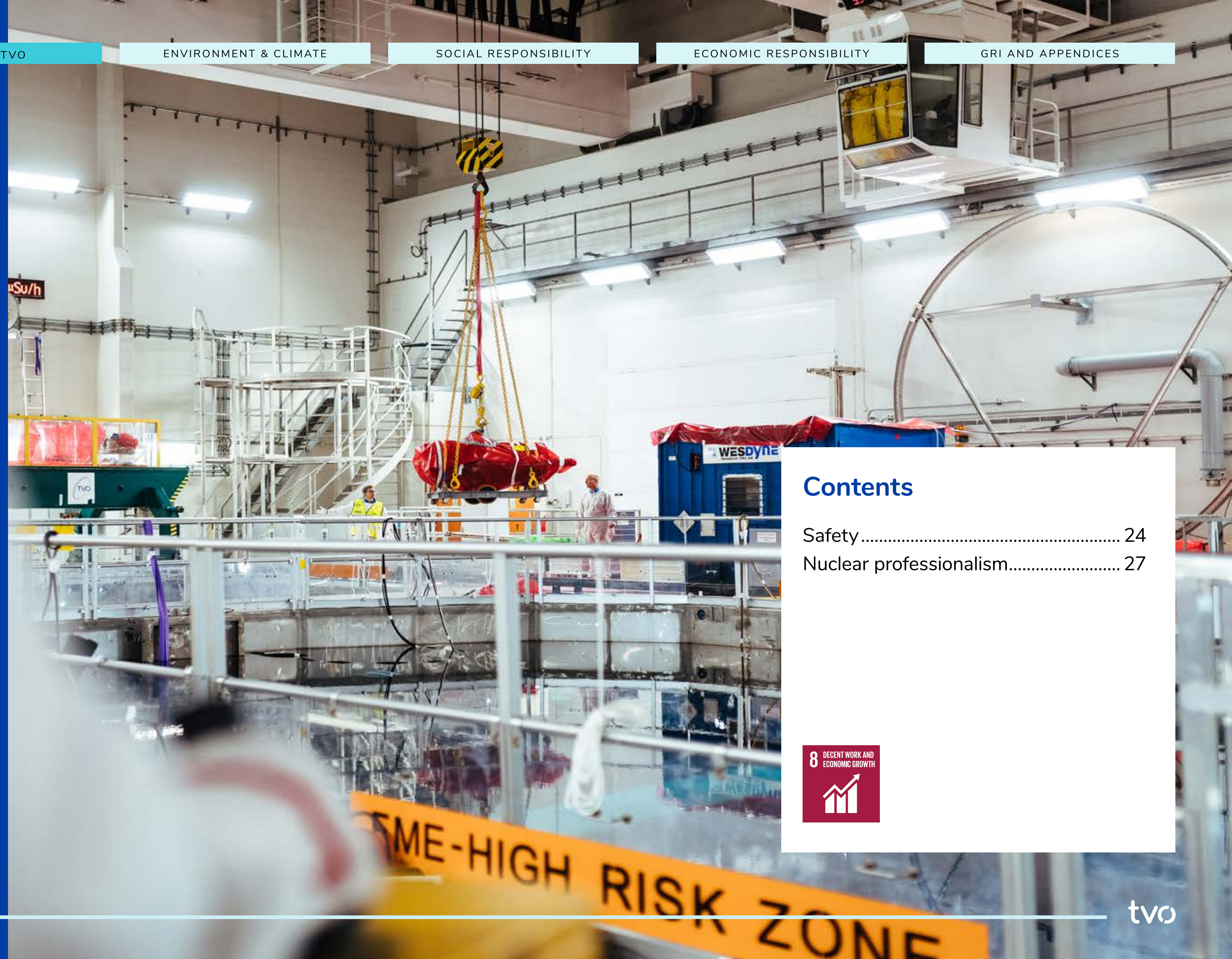
Safety at TVO

Particle-larly versatile safety thinking

For TVO, safety aspects are at the core of all operations and are developed in accordance with the principle of continuous improvement.

A high-class safety culture is the cornerstone of good and safe production. Strong commitment, responsibility, maintaining competence, and continuous development of activities are prerequisites for the operation and maintenance of the plants.

TVO has a safety culture program which aims at achieving the IAEA'S highest safety culture level, i.e. to create a learning organization.



Contents

Safety.....	24
Nuclear professionalism.....	27



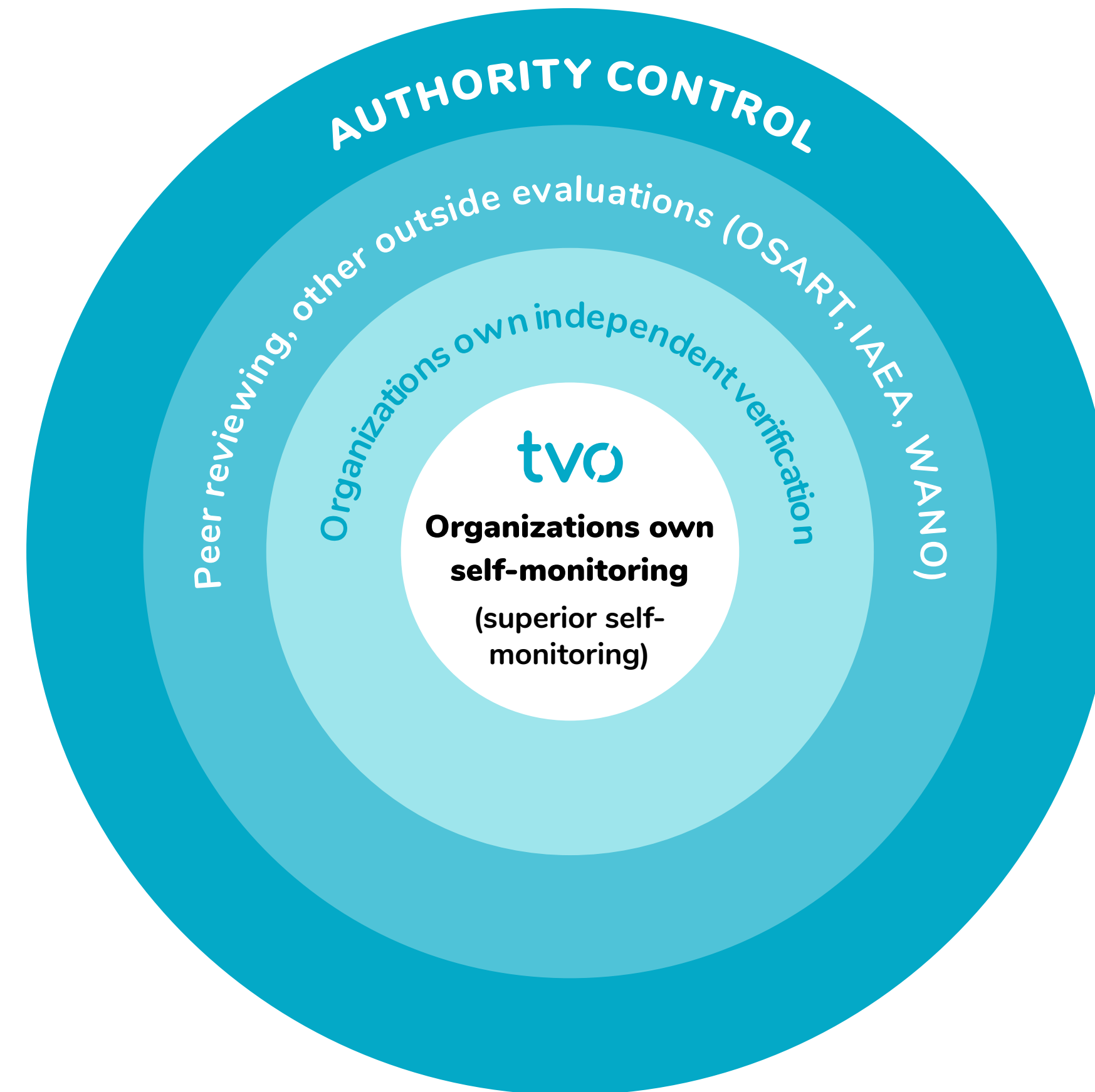
Safety

The safe operation of the Olkiluoto nuclear power plant is based on competent and responsible personnel, high-quality plant technology, the principle of continuous improvement, and independent internal and external supervision. TVO's management system meets the requirements of quality, environmental, and occupational health and safety standards. In order to ensure safe operations, TVO systematically estimates the level of its safety and safety culture, and all of the employees are committed to observing a high-quality safety culture.

TVO regularly assesses the state of its overall safety from the viewpoints of production, nuclear safety, safety and service life management, as well

as management, organization, and personnel. The level of safety is good. The state of the safety culture is regularly assessed according to the IAEA procedure. TVO's safety culture is estimated to be at a level at which the strategic importance of safety has been recognized and proactive practices are used. TVO aims to reach the highest possible level of safety culture. TVO has continued to employ various measures to maintain and develop the safety culture.

TVO regularly assesses the operations of its plant units with the help of internationally used safety indicators. Of the safety indicators, collective radiation dose, unplanned energy unavailability factor, and actual unplanned automatic scrams are described in the table on Objectives and Results of TVO's Responsibility Program.



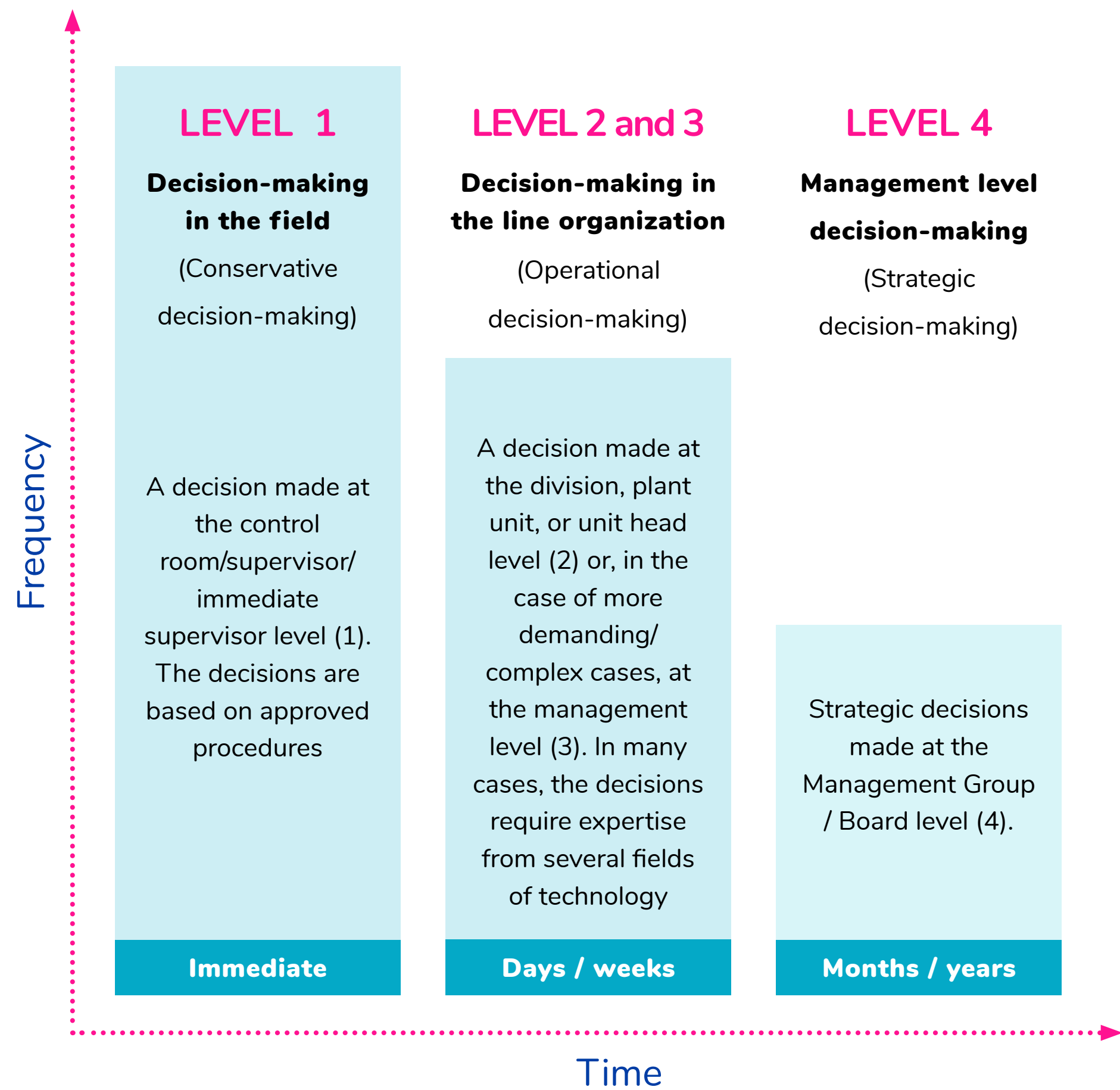
The Olkiluoto nuclear power plant units, OL1 and OL2, operated safely throughout the year. TVO classifies events affecting nuclear safety in accordance with the international INES scale (on a scale of 0–7). In 2020, nine events rated at the severity level 0 on the INES scale (no significance to nuclear or radiation safety) and one event rated at the severity level 1 (an anomaly; an exceptional event affecting safety) occurred at the Olkiluoto nuclear power plant. TVO investigates all events that could have an impact on nuclear safety and determines corrective actions. TVO publishes information on every event with public interest on its website.

Read more
about the INES-scale:
[Click here >>](#)

The onion graph indicates the currently used oversight model. The oversight model consists of the organization's self-monitoring, independent monitoring within the company, peer reviews, and regulatory oversight.

INES events 2020	2020	2019	2018	2017	2016
INES 0	9	6	8	7	2
INES 1	1	0	1	0	0

Operating line's decision making process



Plant modifications to further improve safety

GOOD condition of the Olkiluoto nuclear power plant at all times in terms of production and functionality is ensured through alternating refueling and maintenance outages of the plant units.

The 2020 annual outages of the Olkiluoto nuclear power plant were started with a refueling outage at the OL2 plant unit on May 10. The refueling outage was completed on May 21.

The annual outage carried out at the OL1 plant unit was a maintenance outage, which started on May 24 and was completed on June 8. The duration of the plant unit's annual outage was shortened in March from the planned 25 days to 14 days due to the COVID-19 pandemic. Numerous special procedures and arrangements were put in place during the annual outages to protect peoples' health in Olkiluoto and prevent the possible spread of the virus, as well as to ensure a safe and high-quality annual outage. Modernizations and repair work with safety and availability significance were completed during the annual outages. Other planned modernizations were transferred to be completed in upcoming outages. Preventive maintenance was

carried out normally according to the preventive maintenance programme. A significant task was the modernization of the bushing modules of one containment, which was completed for the first time. Other significant tasks were the modernization of the valve actuator in the cooling system of the shutdown reactor as well as the changing of two valves, the connection of the new recirculation line to one subsystem in auxiliary feed water systems, as well as repair work, preventive maintenance, inspections, and testing.

The annual outages were carried out successfully despite special arrangements due to COVID-19.

No occupational accidents resulting in absence occurred during the annual outages.

In addition to TVO's own personnel, up to 690 contractor employees took part in the outage works.

Proactive environmental safety

THE assessment of environmental risks is part of TVO's comprehensive risk management process. Environmental risks have been identified and assessed, and no risks with significant impact were

detected. TVO also utilizes a proactive safety observation procedure to prevent environmental damage. A total of 94 observations regarding the environment and energy efficiency were made over the course of the year. They involved matters such as the processing of waste, the management of chemicals, energy efficiency, cleanliness, and general order. TVO's initiative operations also support stakeholder group involvement in TVO's environmental management. All of the safety observations and initiatives



A group was set up to plan and coordinate safe operations of the annual outages amid the COVID-19 pandemic. The group convened daily during the annual outages to assess the implementation of procedures.

are monitored, and all deficiencies are corrected without delay.

In 2020, a total of 175 litres of oil leaked into the ground due to broken equipment and machines. All of the oil was recovered. In addition, minimal coolant leaks came from refrigerating machines. The environmental authorities are informed of all significant environmental non-conformances and events.

Preparation for crises and exceptional situations

Laws, decrees, and regulations provide the framework for fire response operations as well as emergency preparedness and physical protection. Regulatory guides define the minimum requirements for the operations. TVO carries out emergency preparedness operations in accordance with its own action plans. In 2020, the TVO Group's preparation for crises and exceptional situations was assessed as part of an international peer assessment.

Several exceptional situation drills were organized in 2020 despite the COVID-19 pandemic, including emergency preparedness drills, joint drills with the fire department, and joint drills with the security organization. In addition, emergency preparedness preparations were put into practice in December 2020 in the form of a real emergency preparedness situation. The emergency preparedness situation in 2020 was short and completely harmless. However, it demonstrated the importance of emergency preparedness, the nature of the activity, and proved how important crisis communications in different forms are. Activities were developed and broadened also regarding emergency preparedness thinking during the year, since normal procedures were not completely possible due to the pandemic restrictions.

Drills are organized every year, and their scope and duration vary in accordance with the objectives of the drill. The purpose of the drills is to test procedures for their coverage and practical feasibility,

and to improve cooperation between various operators. The most important cooperation parties include the Radiation and Nuclear Safety Authority, the police, and the rescue services.

Provisions for exceptional situations are included in TVO's procedures, and they are used as the basis for action, training, and practice plans that relate to emergency preparedness operations, fire safety, and physical protection. Emergency preparedness is seen as an interesting and important part of nuclear professionalism. The procedures are regularly reviewed and updated. TVO has prepared crisis communication procedures and also practices their execution during drills for exceptional situations. Corporate Communications is responsible for crisis communications.

CASE

Disturbance at the Olkiluoto 2 plant unit

THERE was a disturbance at the OL2 plant unit in December, when the plant unit was suddenly disconnected from the grid and a site area emergency was declared at the plant unit. The disturbance quickly proved to be less serious than a site area emergency, and the plant unit was driven down into a cold shutdown state. The situation was caused due to hot water moving into the filters of the reactor water clean-up system, which is when the activity levels (radiation levels) of the steam moving through the main steam lines momentarily rose to about 3 to 4 times higher compared with the normal activity level.

Immediate actions to prevent similar occurrences have been completed, and the disturbance caused an interruption of nine days in OL2's electricity production. The disturbance did not cause harm to people or the environment. STUK classified the event at the severity level 0 on the INES scale, which means it did not have significance in relation to nuclear or radiation safety. The disturbance was reacted upon with the seriousness it required, and the personnel of the emergency organization acted responsibly and according to safety instructions.

Nuclear professionalism

All of TVO's employees, suppliers, and subcontractors are committed to an uncompromising safety culture. According to the safety culture, all factors that affect the nuclear power plant's safety receive attention in proportion to their significance and are given priority in decision-making. Continuous improvement and appropriate safety culture are inherent features of all day-to-day work.

IN practical work, safety culture means operating in accordance with the principles of nuclear professionalism. Nuclear professionalism means following common policies and guidelines, understanding the importance of safety at work, observing, reporting and bold influencing, and learning from new experiences, with the understanding that results come from good collaboration. The most important aspect of nuclear professionalism is having a responsible attitude.

The development of management principles and working policies in a nuclear power plant has been carried out through defining the expectations for a nuclear professional, as well as implementing procedures to enforce these expectations. The expectations for a nuclear professional are a part of TVO's activity-based management system. In addition, TVO has a safety culture program that aims at achieving the IAEA's highest safety culture level, i.e. to create a learning organization.

During 2020, a year defined by COVID-19, the focus was on working as a nuclear professional under special circumstances. In 2020, a safety culture survey was completed at the TVO Group, the results of which had comprehensively improved from the previous survey completed in 2018. Through this positive development and visible results, the deepening of nuclear professionalism will be continued in the spirit of continuous improvement.

Nuclear professionalism



Climate impact and environmental responsibility

Towards a particle-larly cleaner world

THE EU's goal is to reduce greenhouse gas emissions by at least 55 percent from the emission level of 1990 by 2030, so that the EU's target for climate-neutrality by 2050 can be reached. Nuclear power is a low-emission form of electricity production and has a significant role in combating climate change.

74 percent of greenhouse gas emissions are generated from energy production, energy consumption, and traffic.

22 percent of emissions are created by the energy industry. Emission reductions made by the energy industry have a significant effect of Finland's total emissions.

74%

of greenhouse gas emissions are generated from energy production, energy consumption, and traffic.

Contents

The environmental impacts of nuclear power.....	29
Supply of electricity in Finland and climate impact.....	30
Environment and climate.....	31
Environment and energy efficiency program 2019–2021	32
Climate-friendly electricity.....	34
Environmental impact – Low-emission electricity production..	35
Cooling water.....	37
Raw materials and material efficiency	38
Production and energy efficiency.....	40
Emissions to the air	43
Emissions to water and soil.....	44
Waste.....	45
Environmental research and biodiversity	47
Cooperation with authorities	48
Nuclear waste management.....	50



The environmental impacts of nuclear power

The emissions generated by nuclear power are low: throughout the life-cycle, the emissions remain at the same level as for renewable sources of energy. The long service lives and small land areas required by nuclear power plants make them even more environmentally friendly.

NUCLEAR power causes some negative environmental effects as well, such as slight warming of the surrounding sea areas, minor emissions into the air, water, and soil, as well as nuclear waste consisting of spent nuclear fuel.

The final disposal of nuclear waste is a key question in the use of nuclear power. The TVO Group has come up with a unique solution for the final disposal of nuclear waste known all around the world, ONKALO.

14,59 TWh

TVO's electricity production in 2020 covered 18 % of Finland's electricity demand.

30%

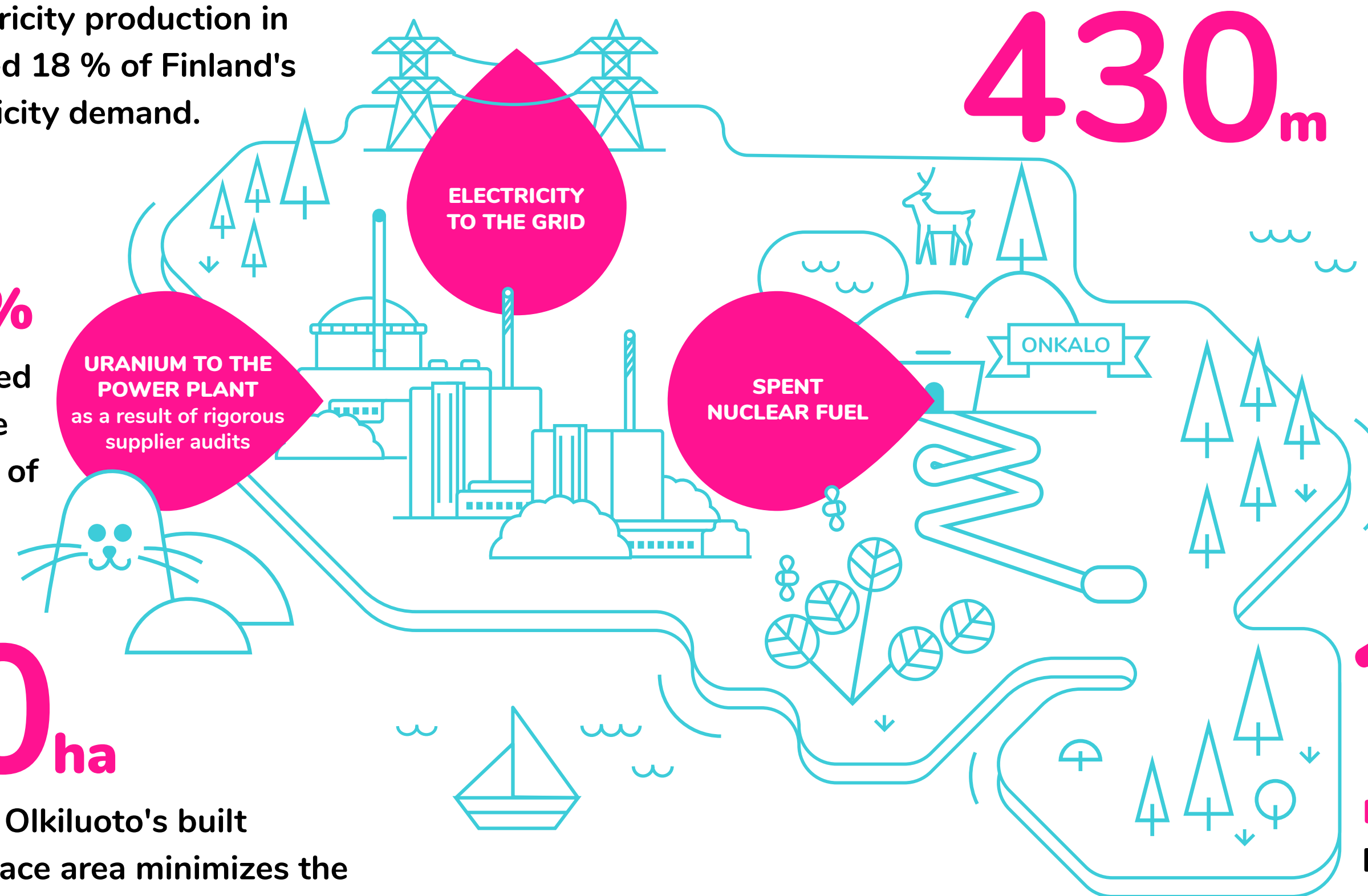
of all electricity produced in Finland will soon be generated on the island of Olkiluoto.

170 ha

The centralization of Olkiluoto's built environment to a small surface area minimizes the environmental impact and makes it possible to preserve other areas in their natural state.

The safe final disposal of spent nuclear fuel in ONKALO, in the depth of approximately 430 m, enables the production of sustainable nuclear electricity.

430 m



Nuclear power enables major emission reductions

Nuclear power production can significantly reduce annual carbon dioxide emissions. If all fossil fuels were replaced with nuclear power, a reduction of 700 million metric tons of CO₂ emissions would be possible in Europe, from which Finland's reduction would account for 20 million tons of CO₂.

During its production history, the Olkiluoto nuclear power plant has produced 525 TWh of electricity. This production volume prevented CO₂ emissions of circa 430 million tons, which corresponds to all the greenhouse gas emissions in Finland during a period of approximately eight years in a scenario where nuclear power was replaced with condensing coal power, the specific emissions of which amount to 820 g/kWh.

12 million tons

By producing electricity at the Olkiluoto nuclear power plant, Finland avoids 12 million tons of carbon dioxide emissions annually.

Supply of electricity in Finland and climate impact

The volume of electricity production at Olkiluoto will be nearly doubled when the operation of the OL3 plant unit starts. This means that the low-emission nuclear electricity produced at Olkiluoto will play a significant role in the economic development, electricity self-sufficiency, and general well-being of the entire country for decades to come.

AS a producer of electricity that is benign to the environment and the climate, TVO safeguards and maintains the diversity of nature. About 22 percent of all electricity produced in Finland and about 18 percent of all electricity consumed in Finland is generated on the small island of Olkiluoto, surrounded by four nature conservation areas. The centralization of energy production to a small area minimizes the environmental impact and makes it possible to preserve other areas in their natural state. The Environmental Management System of TVO has been certified against the requirements of the ISO 14001 standard and registered to EMAS.

The effects that the operation of the Olkiluoto nuclear power plant has on land, sea, and air are monitored constantly, and environmental baseline studies have been carried out in the area already before the start of electricity production, since the 1970s. Based on the monitoring results, environmental loads are minor. Energy production has had no significant impact on the nature of Olkiluoto, which in main parts is rugged and poor in species. The most significant impact on the environment from the power plant is the warming of sea water in the local area.

Finnish people are highly concerned about climate change and the majority consider the fight against climate change extremely important. Nuclear power is seen to play a major role in the common fight against climate change and an increasing number of respondents in TVO's most recent stakeholder survey believe that it is very difficult for Finland to reduce greenhouse gas emissions to the atmosphere without the construction of new nuclear power plants. Nuclear electricity contributes significantly to the

reduction of greenhouse gas emissions and the achievement of climate targets. Without nuclear power, there is no credible path to a low-carbon society. The number of people who are in favor of nuclear power due to environmental reasons is increasing. The production of nuclear power has low carbon dioxide emissions; emissions remain on the same level as hydropower and wind power during the entire lifecycle of nuclear power. TVO's role in the mitigation of climate change and promotion of sustainable development is significant. Low-emission nuclear power creates the basis for a green economy.

22%

About 22 % of all electricity produced in Finland and about 18 % of all electricity consumed in Finland is generated on the small island of Olkiluoto, surrounded by four nature conservation areas.



Environment and climate

With its group-level policies, the TVO Group has committed to the principles of sustainable development, and environmental responsibility is an important part of the company's management system.

ELECTRICITY produced with nuclear power is climate friendly. TVO and Posiva carry their responsibility for the environment by identifying the environmental and energy efficiency aspects of their operations and by minimizing the related adverse impacts. Operational targets are set in accordance with the principle of continuous improvement. The impact of operations on the state of the environment has been monitored since the 1970s, and immediate corrective actions are initiated when necessary. The TVO Group takes care of the environmental competence and expertise of its personnel and others working at the Olkiluoto nuclear power plant.

The TVO Group believes that its overall responsibility for the environment at all stages of the fuel cycle is important. The safe use of nuclear fuel is ensured from raw material acquisition to final disposal.



Employees as well as companies and partners working in the power plant area are expected to demonstrate a responsible attitude towards environmental matters in accordance with group-level policies.

TVO monitors and supervises the environmental management of fuel suppliers.

TVO requires that suppliers act responsibly by ensuring and developing the living conditions in the surroundings of uranium production and processing plants, while taking local people into account. Fuel is dealt with in a responsible manner all the way from uranium mines to final disposal according to the so-called "from bedrock to bedrock" principle. The environmental responsibility of final disposal is also on financially stable ground, since nuclear power companies in Finland bear the costs of nuclear waste management, and the funds for that purpose are collected into the Finnish State Nuclear Waste Management Fund.

The aim at the Olkiluoto nuclear power plants is to prevent and reduce the already low emissions of radioactive substances. Potential exceptional events in the plant process are predicted and preparations for the prevention of potential environmental disadvantages are made.

Energy and material efficiency is taken into account in all operations

ENERGY efficiency requirements are observed and energy efficiency is improved in all operations at Olkiluoto. The efficiency of energy consumption is monitored and continuously improved by taking energy aspects into account in project planning, the procurement of components, and the development of operating practices and procedures. Plant unit modernization projects improve the energy efficiency of the power plant process.

TVO and Posiva improve the efficiency of the use of energy and raw materials, and improve the reuse of waste. The goals are to increase the relative share of waste delivered to reuse and to decrease the amount of radioactive waste. TVO also strives to reduce the amount of spent fuel by optimizing the use and properties of the fuel.

Sustainable utilization of the environment is taken into account in the development

of the Olkiluoto area and the expansion of operations. Surrounded by four nature conservation areas, the small island of Olkiluoto currently produces around one-sixth of all the electricity used in Finland. After the commissioning of OL3, the production volume will increase to around one-third. The concentration of energy production to a small geographic area minimizes the environmental impact and allows the preservation of other areas in their natural state.

Employees as well as companies and partners working in the power plant area are expected to demonstrate a responsible attitude towards environmental matters in accordance with group-level policies.

Environment and energy efficiency program 19-21

An environmental and energy efficiency program has been prepared for the years 2019–2021 to ensure the achievement of the environmental targets specified in group-level policies and to improve the efficiency of the management of significant environmental and energy aspects.

THE set targets are based on the production of stable and environmentally friendly electricity for society and the minimization of adverse environmental impacts of the operations at all stages of the electricity production chain. Procedures, responsibilities, and schedules are set to ensure that the targets are met. To ensure continuous improvement, the achievement of the targets is regularly monitored.

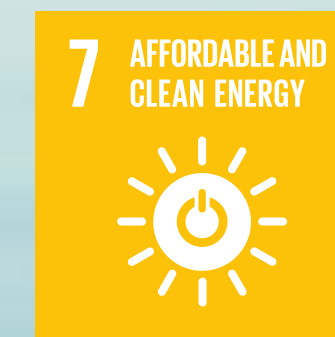
In 2020, the focus of target setting was on the development of environmental risk management, the improvement of energy efficiency, and the implementation of a chemical management system (TLTA) at

the OL3 plant unit. Long-term efforts on the management of radioactive emissions and the thermal load of the cooling water were also continued.

In 2020, the operations at the Olkiluoto nuclear power plant and Posiva's final disposal facility construction site complied with legislation, environmental permits, and the environmental management system.

”

The TVO Group is committed to the promotion of the following climate-related UN Sustainable Development Goals:



Targets and results of the environment and energy efficiency program

Development of the environment and energy efficiency program

- **Development of environmental risk management:** Implementation of HSE risk assessments according to plan. **Actual result:** 80 % of risk assessments of the premises were carried out. The precautionary environmental risk management plan was updated in respect of preparation for pandemics and the management plan for extinction water.
- **Increasing awareness of environmental matters and energy efficiency:** Paying more attention to environmental matters and energy efficiency in projects and modifications, and renewing environmental training. **Actual result:** In the beginning of the year, the environmental safety expectations and managers' supervision responsibilities were reviewed in the management groups of different departments. The incorporation of environmental and energy efficiency aspects to templates in projects and modifications has enhanced their recognition.

Management of environmental load

- **Zero environmental accidents:** There are no serious or significant environmental accidents, there are at least 90 proactive environmental observations. **Actual result:** The environmental accident target was reached. There were 94 proactive environmental observations, the majority of which were related to the management of municipal waste.

- **Production of climate-friendly electricity:** Production goal for 2020: 14,870 GWh. **Actual result:** The OL1 and OL2 plant units produced electricity amounting to 14,587GWh, which means the production goal was not reached. This was partially impacted by the disturbance at OL2 in December, which caused an interruption of nine days in the plant unit's electricity production.
- **Management of cooling water heat load:** No excesses of the environmental permit target values. **Actual result:** The cooling water temperature remained below the target values specified in the environmental permit. Extended voluntary monitoring of seawater temperature was continued in the sea areas near Olkiluoto, and measurements were carried out to obtain more information about the spreading of cooling water into the sea area.
- **Management of environmental issues at OL3:** Harmonizing and updating the environmental systems of TVO and the plant supplier. **Actual result:** A management system based on TVO's general operational system has been specified for OL3 in cooperation with the plant supplier (CFS). Preparations were made for the commissioning of the plant unit by reviewing instructions.
- **Optimal and controlled environmental load from the use of chemicals:** Inspection and maintenance of pools preventing chemical contamination and oil trap wells in accordance with the preventive maintenance program (100 %). **Actual result:** Condition surveys for all structures and components used in the storage, handling, and leak detection of chemicals have been included in the scope of the preventive maintenance pro-

gram, and all inspections and maintenance actions were carried out according to plan. Two action proposals were recorded concerning oil traps.

Improvement of material and energy efficiency and sustainable land use

- **Total energy saving target for the agreement period 2017–2025:** 150 GWh. **Actual result:** An additional savings target of 1 GWh has been set for 2020-2021. Energy efficiency measures carried out in 2020 were the air conditioning renovations of the generator warehouse and the VLJ repository, as well as the HVAC renovation of the OL2 lobby. In addition, more energy meters were installed in the buildings of the area, and the analysis of measurement results was developed during the year. Small teams were taken into use in the energy efficiency group in order to develop the analysis of site inspections, modernizations, plant measurements, and consumption information.
- **Development of circular economy:** Reduction of waste volume and recycling of waste as material (a minimum of 35 % of the overall waste volume, excluding sludge). **Actual result:** 24 % of the site area waste was utilized, which means the target was not reached. The separate collection of plastic waste was started e.g. in the logistics terminal and storage spaces. During the renovation of the central office which started at the end of the year, the target for minimizing the waste volume was not completely achieved e.g. due to the COVID-19 pandemic.

- **Land use planning:** The concentration of energy production to a small geographic area minimizes the environmental impact and allows the preservation of other areas in their natural state. **Actual result:** A steering group for infrastructure and land use adapts infrastructure designed and implemented in the area to the natural environment, paying particular attention to natural sites and nature conservation areas.

Suppliers' environmental responsibility

- **Environmental and energy efficiency in procurement:** Energy efficiency assessment questions will be added to the supplier evaluation procedure. **Actual result:** The TVO Group's procurement terms have been updated. TVO procures products that are durable and have a long lifespan, and takes into account opportunities to recycle or potentially reuse the products at the end of their service lives.
- **Development of supplier monitoring in Olkiluoto:** Evaluating the partners' management of environmental issues and energy efficiency measures. **Actual result:** A cooperation and safety forum for contractors working in Olkiluoto was started in the beginning of the year. The objective of the forum

is to review current HSE matters, as well as to exchange best practices with different operators. Due to the COVID-19 pandemic, the forum was continued remotely during the autumn.

Isolation of radioactivity originating at the power plant from the organic environment

- **Ensuring the purity of the process:** Implementing the TLTA (safety-classified supplies) system at OL3. **Actual result:** TLTA was introduced at OL3.
- **Keeping radioactive emissions into air and water clearly below the limits set by the authorities:** ALARA program targets. **Actual result:** Radioactive emissions into the air and water remained clearly below the limits set by the authorities. The targets of TVO's own ALARA program were partially reached for air and water emissions.
- **Management of nuclear safety risks** **Actual result:** Risks are actively identified, and measured for their probability and consequences by means of up-to-date Probabilistic Risk Assessment (PRA). The identified risks are mitigated applying the Safety As High As Reasonably Achievable (SAHARA) principle. Following the Fukushima accident, TVO has further developed the capabilities of the plant units to withstand extreme natural phenomena and simultaneous loss of power supply. Plant modifications related to these capabilities have significantly reduced the nuclear safety risk.

Climate-friendly electricity

The role of low-carbon energy, such as renewable energy and nuclear power, is crucial in the mitigation of climate change.

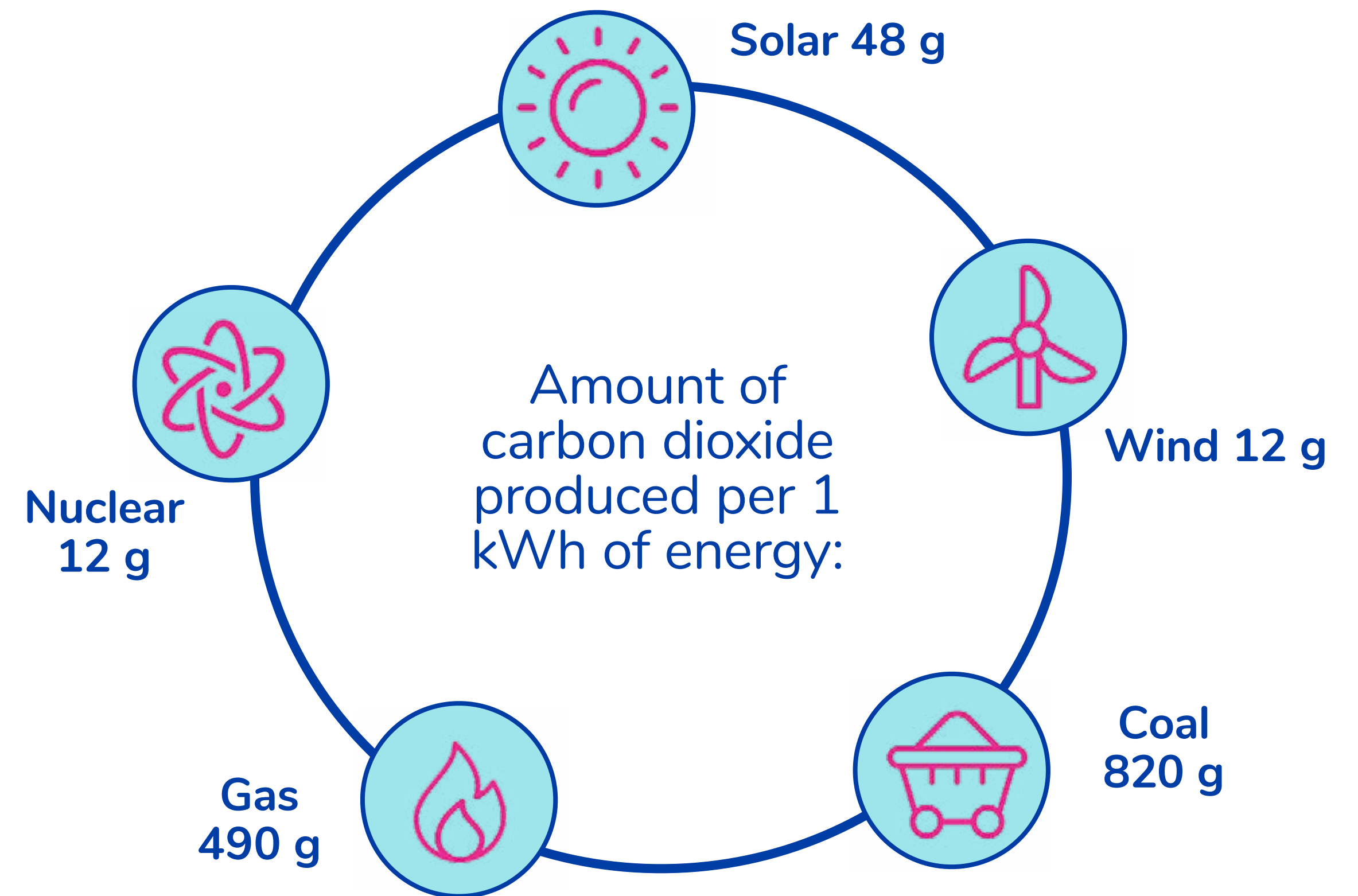
ACCORDING to the most recent Sustainable Development Scenario by the International Energy Agency (IEA), which aims to limit the planet's rising temperature, nuclear power production should increase by 55 percent by 2040. Nuclear power will remain a major part of the energy selection of Finland and the entire EU as we make our way towards a carbon neutral society. In 2020, the share of nuclear power was about 34 percent of all the electricity produced in Finland.

During its entire lifecycle, nuclear electricity is as environmentally friendly an electricity production method in terms of greenhouse gas emissions as wind power, hydropower, and solar power. The use of bioenergy will not add to the amount of carbon dioxide in the atmosphere either. The nuclear power annually produced in Finland helps prevent approximately 20 million metric tons of CO₂ emissions.



The nuclear power produced annually in Finland helps prevent approximately 20 million metric tons of CO₂ emissions. Finland's total annual greenhouse gas emissions are approximately 53 million metric tons.

CO₂ emissions of different production modes during their lifecycle



Environmental impact – Low-emission electricity production

Under normal conditions, the environmental impact from nuclear electricity production does not pose any harm to people or the environment. The impact of the Olkiluoto nuclear power plant's operations on land, sea, and air is continuously monitored. Based on the monitoring results, the operations only cause minor environmental load.

THE most significant environmental aspect of the Olkiluoto nuclear power plant is the production of climate-friendly electricity, and the most significant impact is the local warming of the seawater near the plant. During the year, the plant produced 14.59 TWh of electricity, and the cooling water temperature remained within the limits required by the environmental permit. Radioactive emissions into the air and water from

the nuclear power plant were extremely low. Commissioning tests carried out at OL3 created temporary environmental effects, such as CO₂ emissions due to the commissioning of emergency diesel generators.

Nuclear electricity is climate-friendly, and thus TVO is a significant contributor to the mitigation of climate change and the

promotion of sustainable development. TVO participates in the Energy Efficiency Agreement Scheme, and complies with the associated Action Plan for Energy Production that describes the implementation of actions designed to make the use of energy more efficient and to improve the efficiency of primary energy use as well as the total efficiency of energy production.



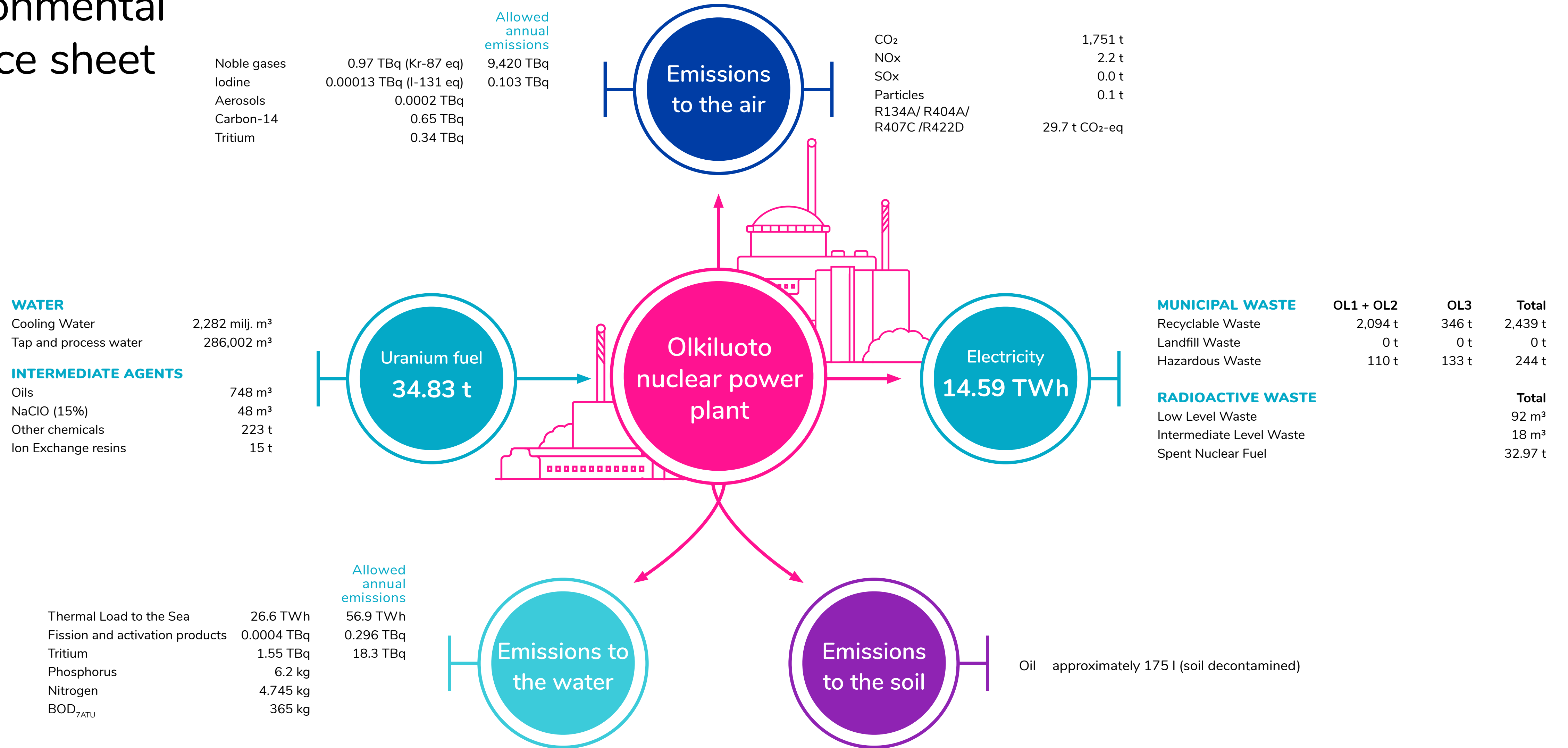
TVO's production of low-emission nuclear power plays a significant role in lowering greenhouse gas emissions and achieving both national and international climate targets.

CASE

The nature surrounding Olkiluoto is monitored with the help of biodiversity indicators

THE TVO GROUP implements indicators which reflect the well-being of biodiversity. With the help of these indicators, it is possible to monitor how the power plant and the site for final disposal of spent nuclear fuel impact the environment and biodiversity in particular. According to Environmental Specialist **Merja Levy**, the TVO Group is committed to the principles of sustainable development, and environmental responsibility is an important part of the management system. – We have followed the environmental impacts of our activities since the beginning of our operations. Information on the natural state and the factors which influence this is presented with the help of indicators, which facilitate environmental management and the continual monitoring of environmental matters. Biodiversity indicators implemented in Olkiluoto track e.g. greenhouse gas emissions related to climate change, the nutrient load discharged into the sea, the surface area of built environment, and foreign species. During 2020, the removal of foreign species, such as the Japanese rose, was carried out in Olkiluoto.

Environmental balance sheet



Cooling water

The warming of seawater due to the thermal load from the cooling water is the most important environmental impact of the Olkiluoto nuclear power plant. The total volume of sea-water used for the cooling of the OL1 and OL2 plant units is approximately 76 m³/sec.

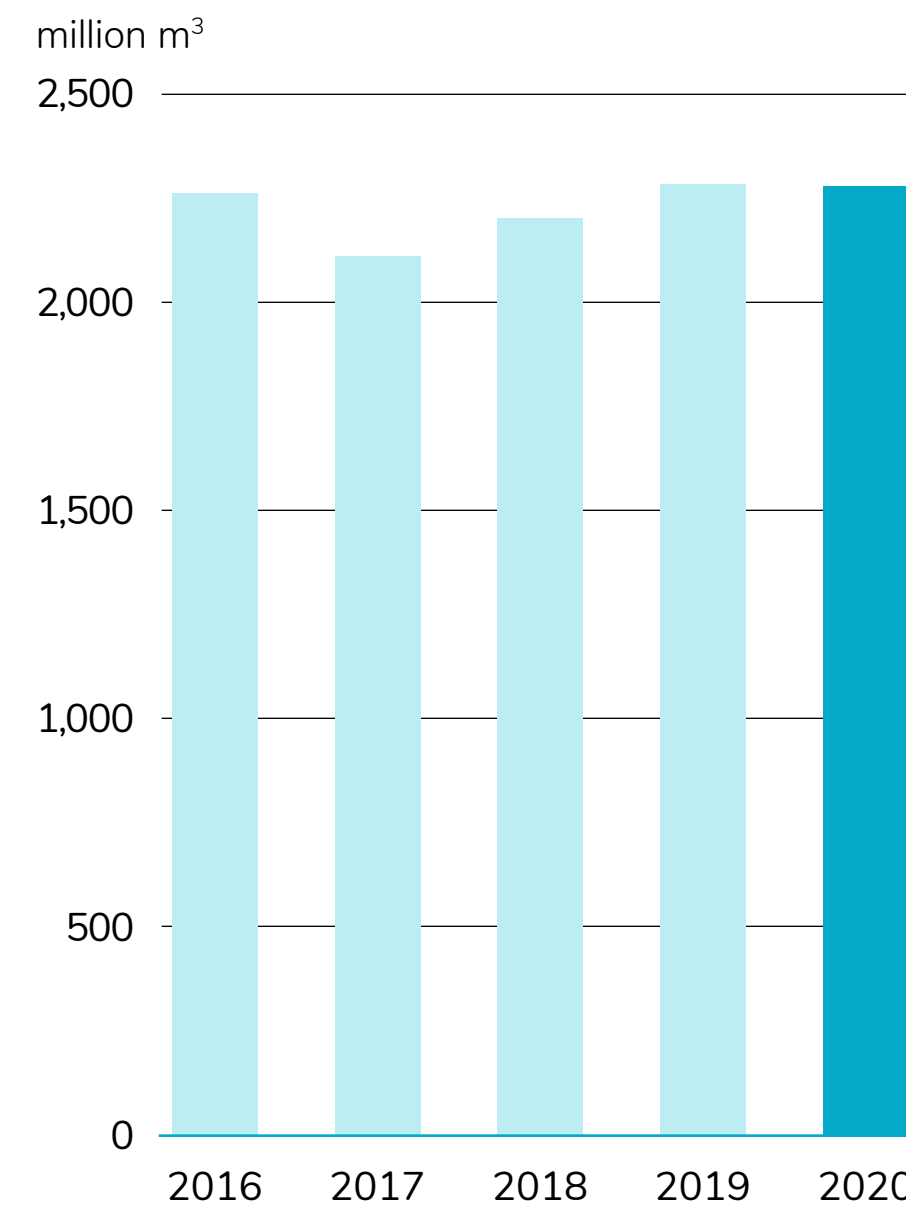
IN 2020, 2,282 million cubic meters of seawater was used for cooling, and the resulting thermal load on the sea was 26.6 TWh. Seawater temperature is monitored as required by the environmental permit. One of the environmental permit conditions is that the seawater temperature does not exceed the target value of 30°C when measured as a weekly average at a distance of 500 meters from the cooling water discharge channel. Limit values have also been specified for the amount of cooling water (max. 4,415 million m³) and the thermal load (max. 56.9 TWh) in the environmental permit. None of the permit limits were exceeded in 2020.

As the cooling water passes through a plant unit, its temperature increases by approximately 10°C, after which it

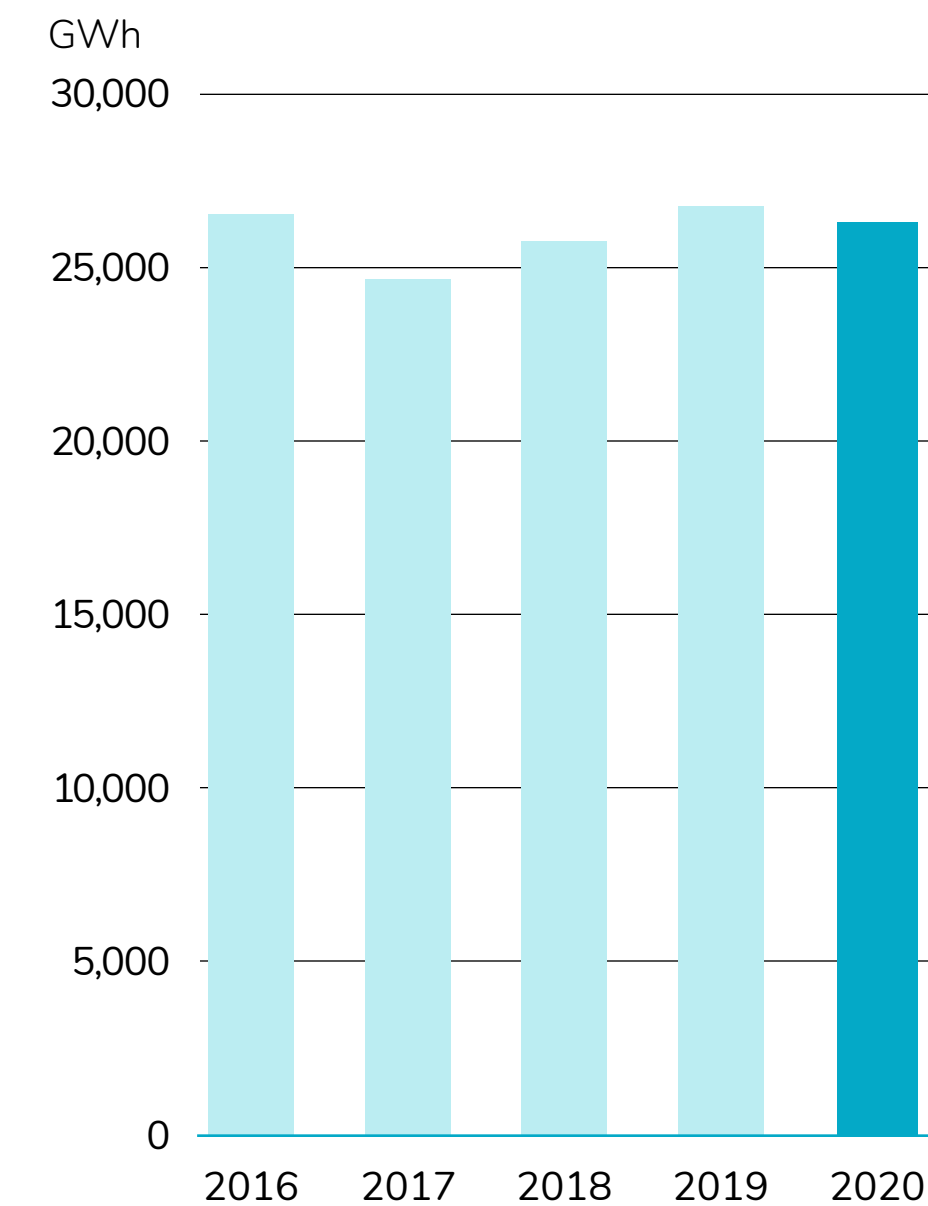
mixes with seawater. The cooling water does not come into direct contact with the power plant's circulating water. Throughout the operation of the power plant, TVO has monitored the impact from cooling water and conducted related surveys. The cooling water accumulates in an extensive sea area in the surface layer, from where part of the heat transfers into the air. Depending on the weather conditions, an increase in temperature can be observed at an approximate distance of 3–5 kilometers from the cooling water discharge location.

The cooling water also causes changes in the ice conditions, as the cooling water discharge area remains unfrozen throughout the winter. The size of the unfrozen and weak ice area varies depending on the winter weather, being at a maximum of around 7 km². TVO issues warnings about the unfrozen area to the local residents in newspapers and with ice warning signs. The warm cooling water extends the growth period in the unfrozen sea area and increases its overall biological production. Other biological effects caused by the cooling water are minor.

Water usage Cooling water



Emissions Thermal load on the sea



TVO monitors seawater temperature as required by the environmental permit. None of the permit limits were exceeded in 2020.

Raw materials and material efficiency

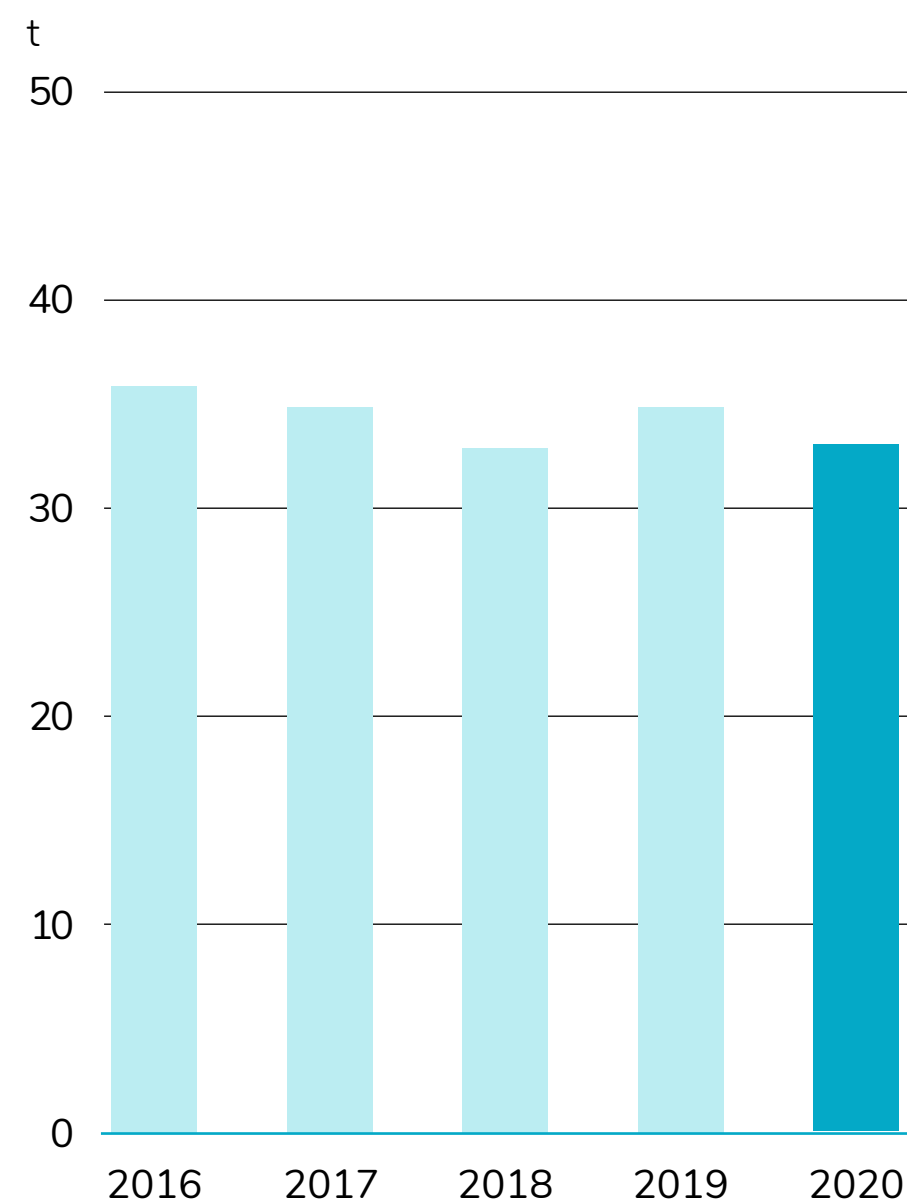
TVO ensures the safe use of the uranium used as nuclear fuel at all stages of the electricity production chain from responsible procurement to safe final disposal. The OL1 and OL2 plant units require an annual total of approximately 40 metric tons of low-enriched uranium for fuel.

TVO uses a diversified nuclear fuel procurement chain, meaning that separate contracts are concluded for the different procurement stages, usually with several suppliers for each stage. Procurement operations are based on long-term contracts with leading suppliers. Uranium is only acquired from suppliers who meet the strict requirements specified by TVO.

Material efficiency through recycling

THE TVO Group procures products that are durable and have a long lifespan, and takes into account opportunities for their recycling and potential reuse at the end of their service lives. The procurement

Material efficiency
Nuclear fuel spent



operations ensure safe, competitive, and reliable production and long-term operation of the plant units.

All purchased products and services must meet the TVO Group's quality, occupational health and safety, and environmental requirements. The availability of products and services necessary for the company's operations is ensured through long-term contracts based on mutual trust and partnership.

Intermediate agents in production

CHEMICALS are extensively stored and processed by TVO. The Olkiluoto nuclear power plant is a safety report establishment. The intermediate agents include the fuel of the emergency diesel genera-

tors, the reserve power boiler plant, and vehicles (oils) and sodium hypochlorite (NaClO) used for hydroid control in the seawater systems. The ion-exchange resin used to clean the circulating water as well as solvents, bitumen, and nitrogen used at the plant (other chemicals) are among the reported additives. Consumption of oil increased due to the commissioning tests of the emergency diesel engines that help ensure safety.

Reducing consumption of water

IN addition to the seawater used as cooling water, the Olkiluoto power plant makes use of fresh water, which is used as tap water and circulating water. The circulating water that boils in the reactor must not contain any salts, impurities, or

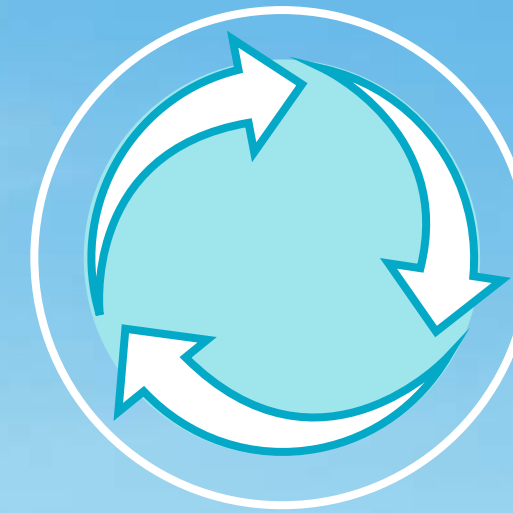
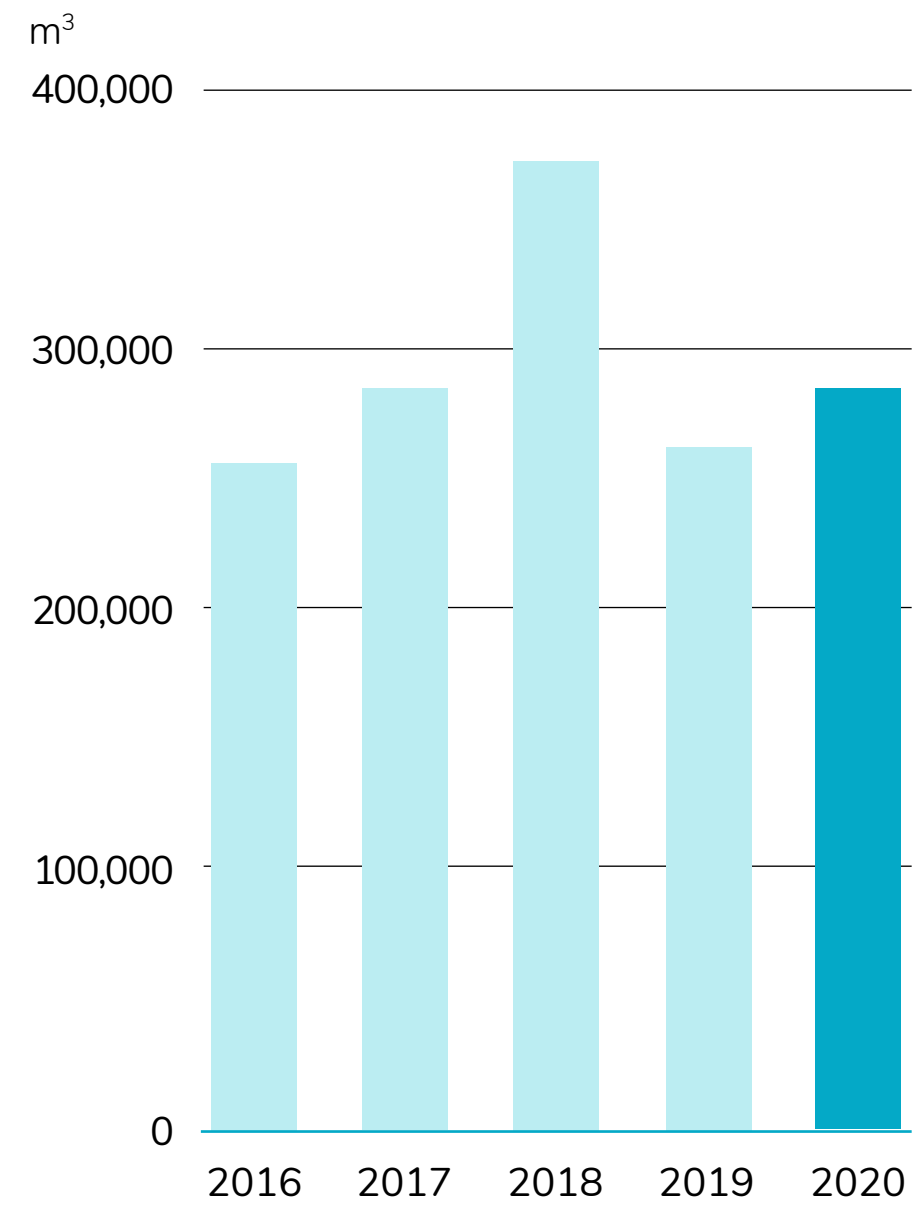
Intermediate agents	2020	2019	2018	2017	2016
Oils (m ³)	748	732	657	258	255
NaClO (15%) (m ³)	48	39	45	40	41
Other chemicals (t)	223	118	137	176	235
Ion exchange resins (t)	15	15	15	17	18



Strict quality, occupational health and safety, and environmental requirements are observed in procurements, which in turn ensure safe, competitive, and reliable production and long-term operation of the plant units.

particles that could damage the reactor internals. Olkiluoto has all the necessary plants for water treatment: a water treatment plant, a demineralization plant, a laboratory, and a wastewater treatment plant. The tap and circulating water are treated at TVO's own water treatment plant. Ion exchange and reverse osmosis methods are used to purify the water used in the power plant process. Circulating water is continuously recycled and purified. During annual outages, the fuel pool water is stored in storage pools to wait for reuse. The recycling of water reduces TVO's need for clean circulating water and the amount of circulating wastewater discharged from the plant by approximately 30,000 m³ each year. During the reporting year, 286,002 m³ of fresh water was taken from the Eurajoki river.

Water usage
Untreated water



30,000 m³

the avoided need of clean circulating water annually due to the recycling of water.

	2020	2019	2018	2017	2016
Raw water treatment					
Amount of water (m ³) ¹⁾	286,002	262,891	372,295	284,874	256,237
Water treatment chemicals (t) ²⁾	54	73	117	83	70

¹⁾ Amount of water pumped from River Eurajoki to Korvensuo.

²⁾ Chemicals used in water processing (H₂SO₄, NaClO (10%), NaOH, sedimentation chemicals)



Production and energy efficiency

In 2020, the combined power output of the Olkiluoto plant units, OL1 and OL2, was 14,587 GWh. The combined load factor of the plant units was 93.8 percent. TVO produces approximately 18 percent of all the electricity consumed in Finland.

output of OL2 was 7,277 GWh and the load factor was 93.3 percent. Nuclear power is used as stable base load power which supports stable electricity production to supplement the variable production of hydropower, wind power, and solar power. With its climate-friendly electricity production, TVO promotes the achievement of emission reduction targets set in the Paris Agreement.

THE plant units operated safely. The net output of OL1 was 7,310 GWh. OL1's load factor was 93.7 percent. The net

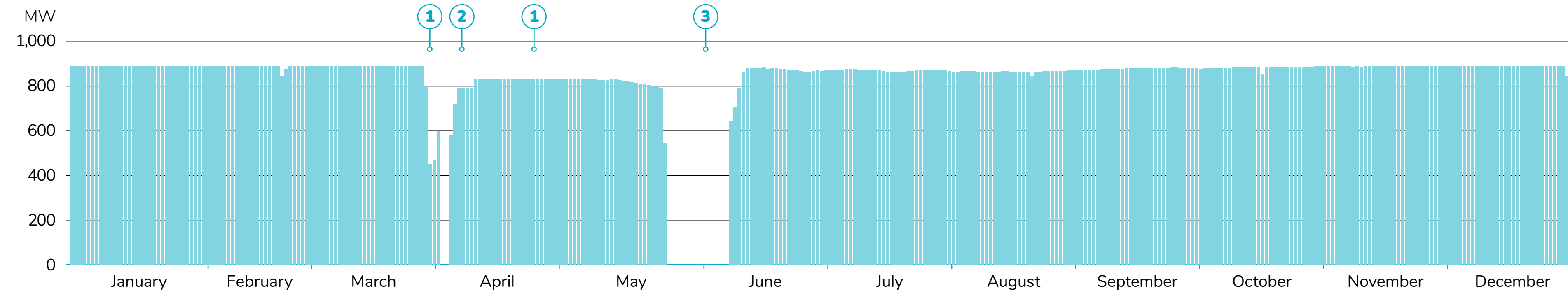
OL1	2020	2019	2018	2017	2016
Net production (GWh)	7,310	7,542	6,755	7,158	7,048
The plant units' own electricity consumption (GWh)	259	268	246	264	258
Capacity factor (%)	93.7	96.9	87.8	93.1	91.4
Efficiency (net) (%)	35.5	35.5	35.3	35.1	35.0

OL2	2020	2019	2018	2017	2016
Net production (GWh)	7,277	7,209	7,334	6,256	7,301
The plant units' own electricity consumption (GWh)	262	258	264	226	265
Capacity factor (%)	93.3	92.7	94.3	81.3	94.6
Efficiency (net) (%)	35.4	35.5	35.4	35.4	35.1



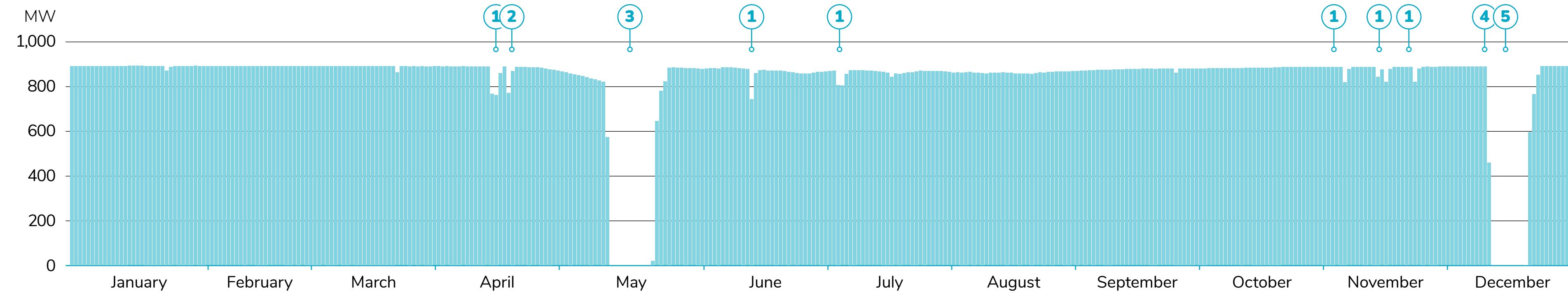
Olkiluoto's nuclear power production is stable and unaffected by weather fluctuations, thus supporting renewable energy sources in the electricity system.

OL1 Production
Average output MW



- 1. Restriction due to fuel
- 2. Repair of the main steam valve
- 3. Annual outage

OL2 Production
Average output MW



- 1. Low electricity demand
- 2. Partial scram due to a failure in temperature measurement
- 3. Annual outage
- 4. Reactor scram due to high activity levels in the main steam lines
- 5. Cold shutdown state due to inspection and repair work



20 GWh

district heating from the plant units to buildings in Olkiluoto. In 2020, more energy meters were added to the buildings of the area, and the analysis of measurements was developed.

Improving energy efficiency

FOR several years, TVO has participated in the voluntary Finnish Energy Efficiency Agreement for Industries. TVO signed the agreement for the first time in 1998. In accordance with the agreement, efforts have been focused on the continuous improvement of energy efficiency at the plant units and in the Olkiluoto area.

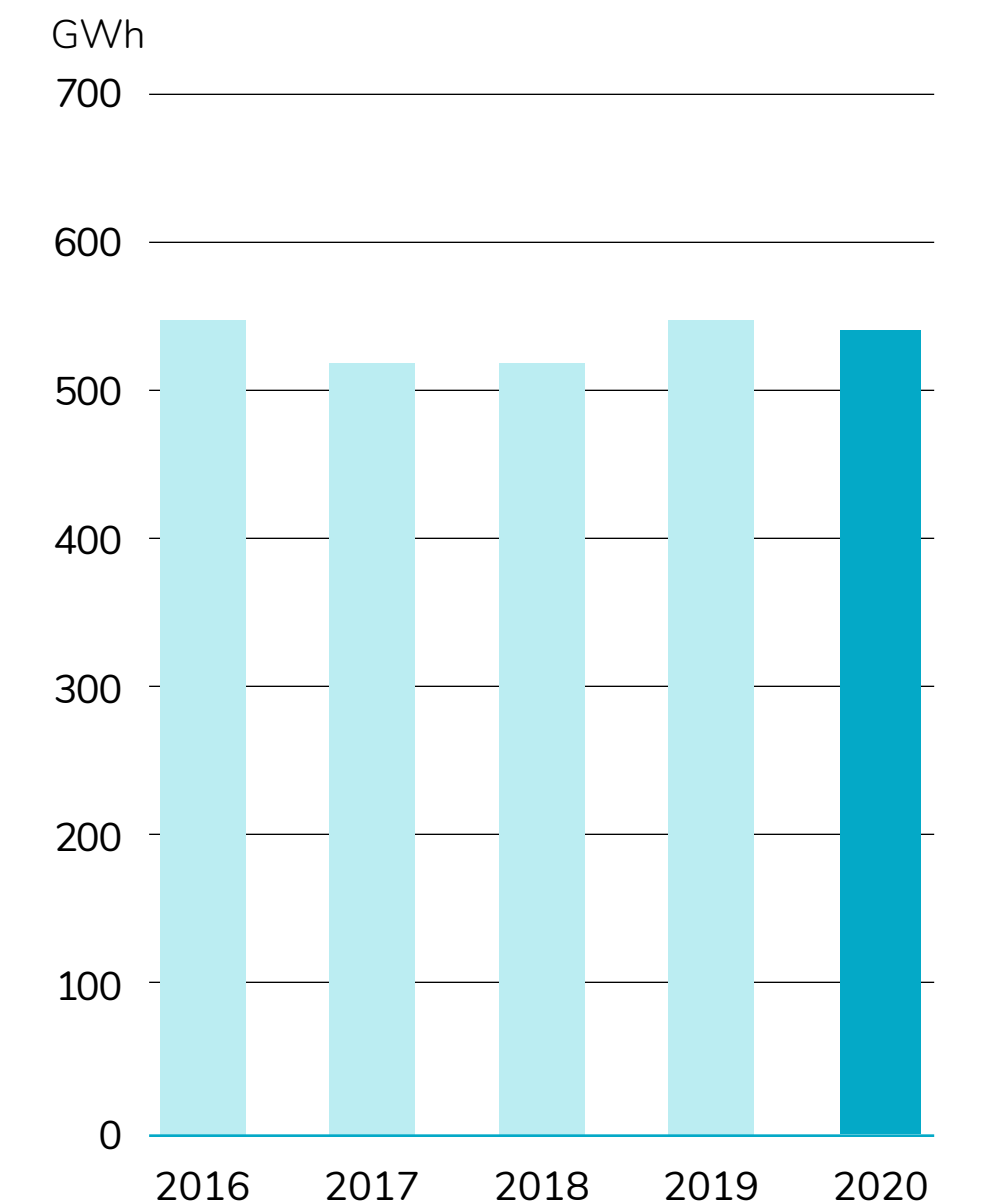
TVO has also signed the Energy Efficiency Agreement for 2017–2025. During this period, the associated Action Plan for Energy Production aims to implement actions designed to make the use of energy more efficient, as well as to improve the efficiency of primary energy use and the total efficiency of energy production. TVO's total energy savings target for 2017–2025 is 150 GWh, which equals the average annual consumption of some 7,500 single family homes heated with electricity. This target was already reached in 2019, so an additional savings target of 1 GWh has been set for 2020–2021.

Energy efficiency measures carried out in 2020 were the air conditioning renovations of the generator warehouse and the VLJ repository, as well as the HVAC renovation of the OL2 lobby. The renovation work at the generator warehouse

was completed during 2020, and the other renovations will continue during 2021. Furthermore, more energy meters were installed in the buildings of the area, and the analysis of measurement results was developed during the year. Measurements and energy analyses were performed in both of the existing plant units after the annual outages.

TVO and Posiva carry out activities related to energy efficiency as part of their normal operations. For TVO, the highest potential for savings involves the improvement of the efficiency of the electricity production process; this has been implemented in the long term by means of plant modernization projects throughout the operational history of the company. Another area of improvement

Energy efficiency TVO's electricity consumption



is the reduction of own energy consumption at the company's site in Olkiluoto.

The energy efficiency system EES+ has been integrated into the TVO Group's environmental management system. It is used to improve energy efficiency in compliance with the principle of continuous improvement in all of the Group's operations.

Emissions to the air

With regard to the management of radioactive substances, TVO always strives to keep any emissions well below both the emission limits set by the authorities and TVO's own target limits, which are more stringent than the official limits. With the electricity production at the Olkiluoto nuclear power plant, approximately 12 million tons of CO₂ emissions are avoided each year, compared with the same amount being produced by fossil fuels.

Radioactive releases into the air

NOBLE gas emissions into the air amounted to 0.01 percent and iodine emissions into the air amounted to 0.12 percent of the allowed limit value specified by the authorities. In March 2020, the collectors used for the determination of H-3 and C-14 emissions to the air used at both operating plant units were renewed.

The theoretical radiation dose caused to neighboring residents in Olkiluoto is estimated to remain clearly below the thres-

hold value. In 2019, the radiation dose was 0.21 µSv (threshold value: 100 µSv).

Carbon dioxide emissions

TVO takes part in Finland's fight against climate change by producing low-emission electricity. The Olkiluoto nuclear power plant is included in the European Union emissions trading scheme that aims at monitoring greenhouse gas emissions and achieving CO₂ reduction goals. Posiva also plays an important role in the mitigation of climate change since the final disposal solution is a part of the lifecycle of nuclear power.

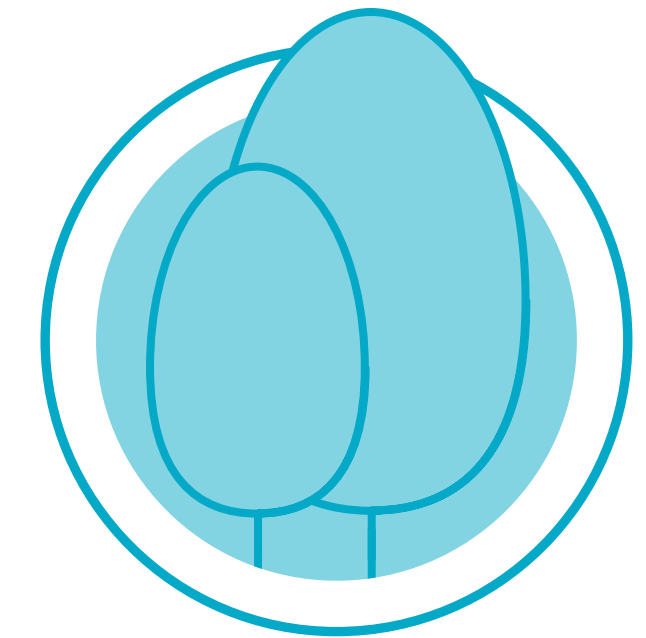
The power plant's actual CO₂ emissions are generated by the releases of the reserve boilers and the emergency diesel generators. The emergency diesel generators would ensure power supply of the plant in a possible but unlikely loss-of-power situation. In order to ensure safety, the emergency diesel generators are regularly tested in compliance with the technical specifications, which means that their emissions cannot be lowered. The replacement of the emergency diesel generators at OL1 and OL2 during the next few years will reduce particulate

Radioactive emissions to the air	2020	2019	2018	2017	2016
Noble gas TBq (Kr-87 equivalent)	0.97	1.76	0.91	3.43	9.69
% of allowed amount	0.01	0.02	0.01	0.04	0.1
Iodine TBq (I-131 equivalent)	0.00013	0.0008	0.0005	0.0009	0.0016
% of allowed amount	0.12	0.74	0.48	0.84	1.50
Aerosols TBq	0.0002	0.0001	0.0006	0.025	0.24
Tritium TBq	0.34	0.82	1.32	1.07	2.65
Carbon-14 TBq	0.65	0.64	0.93	1.02	1.23 ¹⁾

Verified CO ₂ emissions of the Olkiluoto power plant	2020	2019	2018	2017	2016
CO ₂ emissions total (t)	1,751	1,388	1,505	717	737
OL1/OL2 back-up heating boilers (8 MW + 12 MW)	268	17	1	22	95
OL1/OL2 emergency diesels (8 x 1.8 MW + 1 x 2.5 MW)	594	446	380	355	491
OL3 emergency diesels (4 x 6.4 MW, 2 x 2.5 MW, 1 x 1.3 MW)	888	925	1,124	340	152

emissions to the air. A milestone was reached in the biggest modernization project of TVO's history during the summer, when the ninth emergency

diesel generator was taken into use. This unit which is separate from OL1 and OL2, enables the gradual replacement of the original diesels.



TVO's radioactive emissions to the air are less than one per cent of the limits specified by the authorities.

Emissions to water and soil

The emissions of radioactive fission and activation products into water amounted to 0.15 percent and tritium emissions to 8.5 percent of the annual limit value specified by the authorities.

Sanitary wastewater is treated at the Olkiluoto wastewater treatment plant before it is discharged into the sea. In 2020, the amount of treated sanitary wastewater was 90,304 m³. The phosphorus load discharged into the sea was 6.2 kg, the nitrogen load was 4,745 kg, and the biological oxygen demand (BOD_{7ATU}) was 365 kg. The treatment of sanitary wastewater is based on the permit regulations specified for the purification efficiency and loads discharged into water bodies, as well as regulatory requirements. Emissions from the sanitary wastewater treatment plant were a fraction of the nutrient load of the Eurajoki river running to the north of Olkiluoto. Water quality measurements are taken by a third party.

Emissions to the soil

OVER THE COURSE of the year, a total of approximately 175 litres of oil ended up in the soil due to failures of working machines and equipment. All oil was recovered, and the used spill control materials were delivered to appropriate further processing.

Radioactive emissions to water	2020	2019	2018	2017	2016
Fission and activation products TBq	0.0004	0.0001	0.0001	0.0003	0.0002
% of allowed amount	0.15	0.04	0.04	0.09	0.05
Tritium TBq	1.55	1.59	1.62	2.46	2.32
% of allowed amount	8.5	8.7	8.9	13.5	12.7

Wastewater treatment	2020	2019	2018	2017	2016
Amount of water (m³)	90,304	83,545	89,558	97,207	88,606
Concentration (mg/l)¹⁾					
BOD _{7ATU}	4	6.6	10	8.0	13
Phosphorus	0.07	0.37	0.12	0.12	0.24
Treatment efficiency average (%)¹⁾					
BOD _{7ATU}	98	97	96	96	94
Phosphorus	99	96	99	98	98
Load on sea area (kg)					
Phosphorus	6.2	31	11	12	21
Nitrogen	4,745	2,993	4,380	5,840	4,380
BOD _{7ATU}	365	548	913	767	1,132
Water treatment chemicals (t)²⁾	29	32	35	39	34

¹⁾ The permit regulation for the sanitary wastewater: The maximum BOD_{7ATU} value of wastewater discharged into the seas is 13 mg O₂/l and the maximum phosphorus concentration is 0.52 mg P/l. The minimum treating efficiency for the BOD_{7ATU} value and phosphorus is 95 %. All values are calculated as annual averages.

²⁾ Chemicals used for the treatment of sanitary wastewater.



Waste

The TVO Group is committed to reducing the amount of waste and to promoting its utilization. Radioactive waste is isolated from the organic environment until its radioactivity has decreased to a harmless level. The TVO Group disposes of the radioactive waste it generates in a responsible manner.

Radioactive waste

THE waste produced at the power plant is classified, based on radioactivity, into waste exempted from control, low and intermediate level operational waste, high-level waste (spent fuel), and decommissioning waste.

Waste exempted from control contains such a small amount of radioactive substances that the waste can be reused or delivered to the Olkiluoto landfill for final disposal. The waste is produced during the operation and maintenance of the power plant. In 2020, there was no maintenance waste exempted from control. Approximately 18 tons of metal was cleared for recycling.

Protective gear used in operating and maintaining the power plant, compo-

Radioactive waste	2020	2019	2018	2017	2016
Low-level (m ³) ¹⁾	92	150	92	47	86
Intermediate level (m ³) ¹⁾	18	7	53	51	9
Operating waste cleared after monitoring (t)	0	0	44	40	96

¹⁾ Operating waste cleared after monitoring (t)

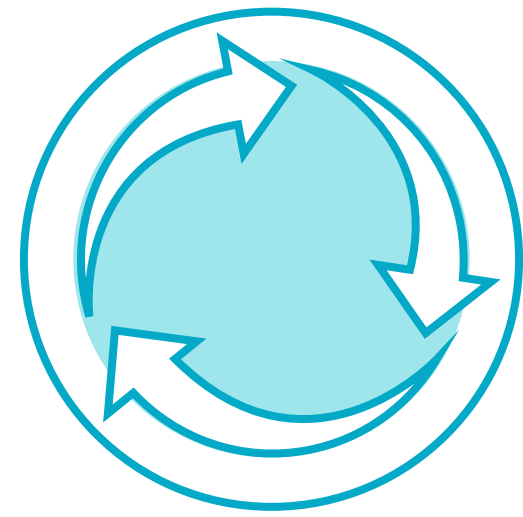
Amount of spent fuel in the OL1 and OL2 storage pools and interim storage, cumulative	2020	2019	2018	2017	2016
Number of assemblies (pcs)	9,524	9,328	9,122	8,922	8,720
Assemblies (t)	1,597.47	1,564.9	1,531.2	1,498.5	1,465.2

nents removed from the process, and insulating materials are low-level waste. Such waste is tightly packaged and placed in the repository for operational waste (VLJ repository) located at an approximate depth of 100 meters in the plant area.

The ion exchange resins used for the treatment of the process water at the power plant are classified as intermediate level waste which is incorporated in bitumen and embedded in the operational waste repository. In 2020, intermediate level waste amounting to 18 m³ and low level waste amounting to 92

m³ was placed in the VLJ repository. In spring 2020, TVO initiated an environmental impact assessment for building a near-surface final disposal facility for very low-level nuclear waste in Olkiluoto.

The total amount of high-level radioactive waste (spent fuel) generated during the year under review was 32.97 t. It is kept in an interim storage in Olkiluoto until it can be embedded in the bedrock of Olkiluoto for final disposal. The final disposal will start in the 2020s. Posiva is the first in the world to implement a safe final disposal solution for spent nuclear fuel. During the construction of



91%

Share of waste recycled as material or energy of the total waste volume.

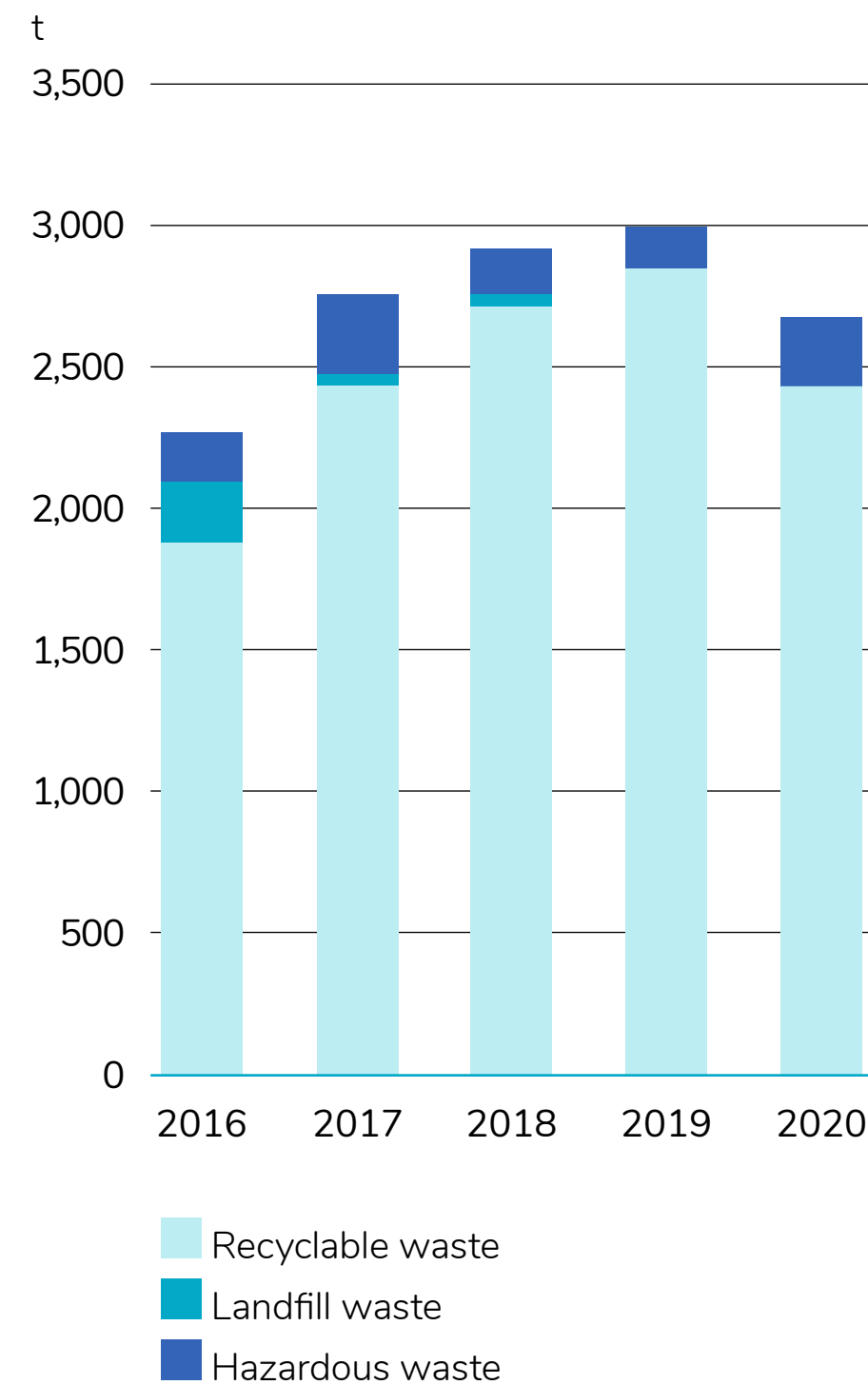
the final disposal facility, approximately half a million solid cubic meters of Olkiluoto bedrock has been excavated by 2020. The majority of the crushed stone has been utilized for construction on the Olkiluoto island and in the local area. The objective in the preparations for final disposal, such as method research and construction of facilities, is to minimize the impacts on the surrounding nature.

Decommissioning waste is waste produced in connection with the demolition of the power plants at the end of the operating life. The final disposal of decommissioning waste will also take place in Olkiluoto.

Municipal waste

THE operation of the power plant also generates municipal waste. The TVO Group is committed to the reduction of the amount of waste and to the improvement of the reuse of waste. This is a requirement for everybody working at Olkiluoto. All waste generated at Olkiluoto is sorted and processed. The sorted waste is recycled as materials whenever possible, or reused as energy. Only waste that cannot be reused in any manner is taken to the landfill. In 2020, there was no such waste. All hazardous waste is collected in the hazardous waste storage to be sent to an appropriate waste treatment plant.

Waste Municipal waste



In 2020, the total amount of waste was 2,683 metric tons. Waste suitable for recycling or reuse as energy amounted to 91 percent of the total amount of waste, and the share of hazardous waste was 9 percent. Most of the hazardous waste was batteries and WEEE (waste electrical and electronic equipment) waste.

Municipal and hazardous waste OL1 and OL2 (metric tons)	2020	2019	2018	2017	2016
Mixed waste to energy ¹⁾	120	64	59	65	103
Landfill waste to TVO's landfill	0	0	44	41	45
Paper and cardboard	95	48	49	50	74
Energywaste	112	113	102	132	114
Biowaste	48	35	57	50	64
Wood	115	111	108	99	67
Metal	86	201	208	107	77
Glass	5	4	5	5	5
Plastic	4	2	-	-	-
Cable refuse	16	8	23	8	7
Crushed brick and concrete	8	5	3	0	0
Screening	38	25	36	79	61
Hazardous waste	103	104	53	62	64
Sludge ²⁾	1,425	990	1 038	933	807

¹⁾ Since 2017, mixed waste has been taken to a waste-to-energy plant where it is used to produce district heating and electricity. ²⁾ Sludge from the wastewater treatment plant, sand water & shellfish water mixture (solid matter 8-10%).

Municipal and hazardous waste OL3 (metric tons)	2020	2019	2018	2017	2016
Mixed waste to energy ¹⁾	56	62	173	168	118
Landfill waste to TVO's landfill	0	0	0	0	44
Paper and cardboard	16	21	26	31	43
Energywaste	93	81	128	140	138
Biowaste	38	31	43	53	35
Wood	106	296	168	214	188
Metal	33	754	43	275	138
Cable refuse	4	3	22	32	65
Crushed brick and concrete	0	0	436	0	20
Cable reels	0	6	0	5	2
Hazardous waste	133	47	112	221	114

¹⁾ Since 2017, mixed waste has been taken to a waste-to-energy plant where it is used to produce district heating and electricity.

Environmental research and biodiversity

Environmental research has been conducted on the Olkiluoto island since the 1970s, years before electricity production was launched. The early baseline studies created a basis for the environmental monitoring programs aimed at facilitating environmental radiation monitoring and determination of the impact on waters.

ENVIRONMENTAL safety at the Olkiluoto nuclear power plant is continuously monitored with many different methods and through the cooperation of several parties. Around 300 samples are taken from the environment of Olkiluoto each year to be analyzed in compliance with an environmental radiation monitoring program approved by the Radiation and Nuclear Safety Authority (STUK). There are also several radioactivity monitors in the immediate vicinity of the plant. They continuously measure radiation and are connected to STUK's automatic network for monitoring external radiation.

Over 100 water samples are taken from the sea surrounding Olkiluoto each year. These samples are subjected to about 1,500 different water quality analyses. Furthermore, the condition of fish stocks

is monitored by, for instance, fishing for record-keeping purposes and surveys among professional and recreational fishermen. Test fishing takes place every four years in the areas surrounding Olkiluoto in accordance with the environmental monitoring plan. The state of aquatic plants is monitored by means of transect line diving every six years.

All the Olkiluoto power plant projects have undergone extensive environmental impact assessments. The final disposal of spent nuclear fuel has been studied since the 1980s, and it has also been evaluated through environmental impact assessments. In spring 2020, TVO initiated an environmental impact assessment for building a near-surface final disposal facility for very low-level nuclear waste in Olkiluoto.

Centralized production protects biodiversity

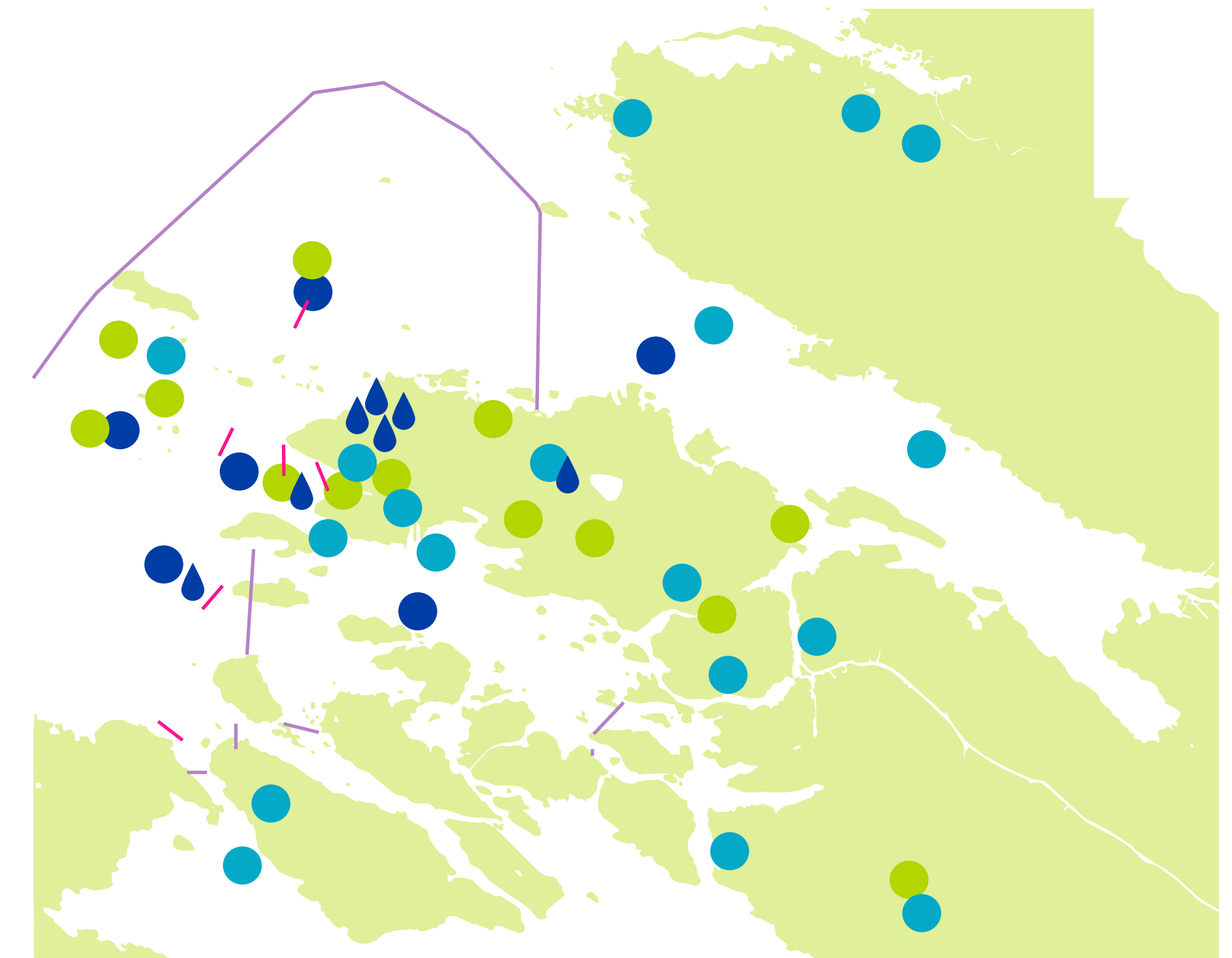
SURROUNDED by four nature conservation areas, the small island of Olkiluoto produces around one-sixth of all the electricity used in Finland. After the commissioning of OL3, the production volume will increase to around one-third. The concentration of energy production

to a small geographic area minimizes the environmental impact and allows the preservation of other areas in their natural state. Climate change also has a major impact on biodiversity. By producing clean and climate-friendly nuclear power-generated electricity, the TVO Group makes a significant contribution to the mitigation of climate change and promotion of sustainable development. The island of Olkiluoto is one of the most researched areas in Finland, and its diverse nature is charted in detail.

The total surface area of the Olkiluoto island is 900 hectares, of which areas constructed for nuclear power and final disposal amount to approximately 170 hectares. The total volume of non-water-permeable areas is 42 hectares. TVO does not own any nature-oriented areas.

TVO and Posiva strive to improve biodiversity in relation to their operations, and cooperate on different schemes with stakeholders. For example, a webinar on migratory fish was supported in 2020, which was organised by the local association for water conservation. The impact of the power plant's cooling water is compensated with an EUR 11,000 annual fishing industry payment.

Environmental measuring points in Olkiluoto



- Radiation, water
- Radiation, air
- Radiation, plants, vegetation, organisms and soil
- Water quality
- Water plants
- Exploratory fishing

Cooperation with authorities

The operation of a nuclear power plant is subject to licenses and permits, and it is governed by authorities. The Radiation and Nuclear Safety Authority (STUK) supervises nuclear and radiation safety in Finland.

THE competent environmental permit authority is the Southern Finland Regional State Administrative Agency, and the supervising authority is the Southwest Finland Centre for Economic Development, Transport, and the Environment. Other authorities involved in the management of environmental issues include the environmental department of the municipality of Eurajoki and the Ministry of Economic Affairs and Employment, which acts as TVO's liaison authority in EIA procedures.

Radiation monitoring samples taken from the Olkiluoto environment are submitted to STUK for analysis. TVO annually prepares a report on the waste and

emissions caused by its operations and submits the report to several regional and national authorities. TVO annually reports its environmental investments and environmental protection activity expenses to Statistics Finland. After verification, the annual carbon dioxide emissions of the emergency diesel generators and reserve boilers are reported to the Energy Authority. Energy savings are reported to Motiva. The Finnish Safety and Chemicals Agency (Tukes) acts as the supervising authority for the industrial processing and storage of hazardous chemicals.

Ten special events in 2020

THE Olkiluoto nuclear power plant units, OL1 and OL2, operated safely throughout the year. TVO classifies events affecting nuclear safety in accordance with the international INES scale (0–7). In 2020, nine events rated as INES category 0 events (no nuclear or radiation safety significance) and

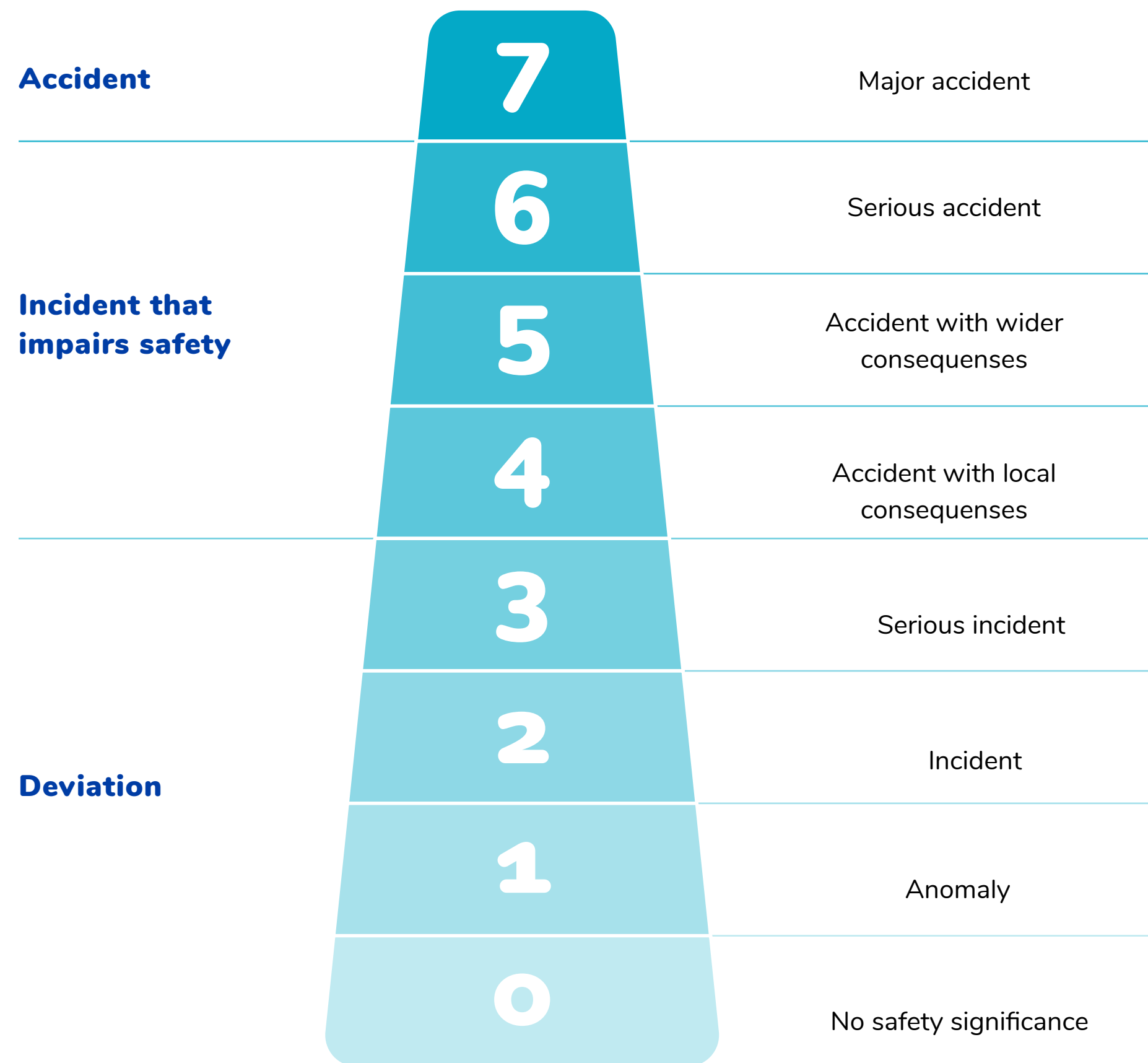


one event rated as INES category 1 (anomaly, exceptional incident with safety effects) took place at the Olkiluoto plant. TVO investigates all events that could have an impact on nuclear safety and determines corrective actions. TVO publishes information on every event with public interest in the News section of its website.

There was a disturbance at OL2 in December, when the plant unit was suddenly disconnected from the grid, and a site area emergency was declared at the plant unit. The disturbance quickly proved to be less serious than a site area emergency, and the plant unit was driven down into a cold shutdown state. The situation was caused due to hot water moving into the filters of the reactor water clean-up system. The plant unit's safety functions operated as planned, and the disturbance did not cause harm to people or the environment. STUK rated the event in the INES category 0, which means it did not have nuclear or radiation safety significance.

TVO also follows events at other nuclear power plants around the world. Operations are continuously developed based on the observations made.

INES-scale



Permits govern the activities

IN addition to legislation pertaining to nuclear energy and radiation safety, the operations are also regulated by requirements laid down in environmental laws. Operating the Olkiluoto power plant is subject to a permit according to the Environmental Protection Act, and cooling water intake is subject to a permit according to the Water Act. The permits decisions are valid until further notice.

Environmental and water permit decisions cover power plant operations and its emergency power generation systems. The permit conditions control the nuclear power plant's cooling water volume and the amount of heat contained in it, wastewater treatment efficiency, the processing of waste, operations in transient and abnormal conditions, as well as monitoring and reporting. In addition, there are separate environmental permits for supporting operations of the Olkiluoto nuclear power plant, such as the landfill and the crushed stone storage area.

Licenses according to the Chemicals Act have been granted for the handling and storage of hazardous chemicals. The reserve boilers of the Olkiluoto nuclear power plant, as well as the emergency diesel generators of OL1, OL2, and OL3 (a total of 16 generators), are included

within the scope of the emissions trading system. In compliance with the Finnish Emissions Trading Act, TVO submits an annual verified emissions report and a verifier's statement to the emissions trading authority.

During the year under review, TVO initiated an environmental impact assessment for building a near-surface final disposal facility for very low-level nuclear waste in Olkiluoto. In addition, the Olkiluoto water management security project for securing the supply of raw water and building a transfer sewer for waste water progressed to the construction engineering stage in autumn 2020.

Compliance with environmental legislation

THE TVO Group continuously monitors statutory regulations and other requirements pertaining to its operations. People in charge of different parts of the operations are in charge of ensuring that the organizations receive sufficient up-to-date information about statutory regulations and their impact on the TVO Group's operations. Compliance with the regulations and requirements is regularly assessed in internal and external audits as well as management reviews. In 2020, the operations complied with environmental legislation, licenses, and permits.

Nuclear waste management

The types of nuclear waste generated at a nuclear power plant include waste exempt from control, low and intermediate level operating waste, and high-level spent fuel. Posiva Oy is responsible for the final disposal of spent nuclear fuel generated at the power plants of its owners, TVO (Olkiluoto NPP) and Fortum (Loviisa NPP).

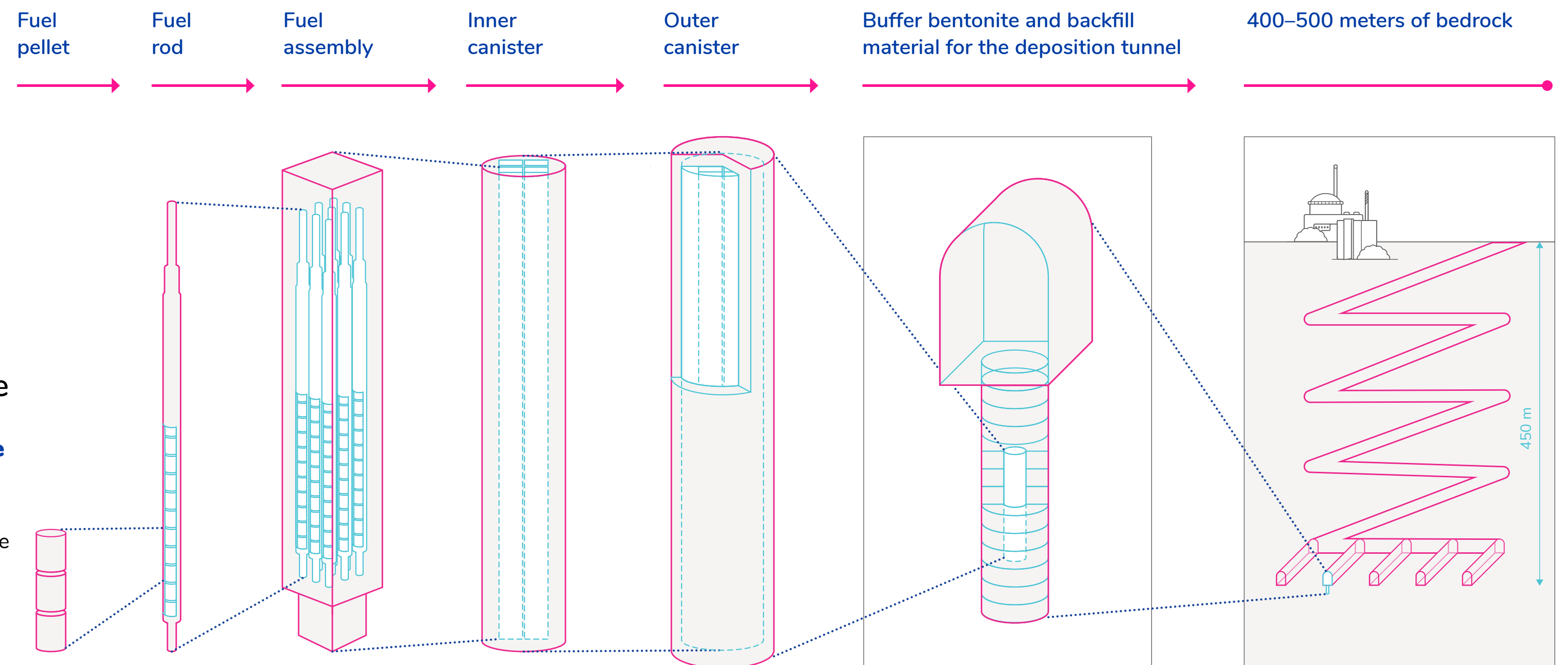
COMPARED to the volume of produced energy, however, the amount of waste and its space requirements are low. The principle of nuclear waste management is to isolate the waste from organic nature until the radioactivity of the waste has decreased to an insignificant level.

The responsibility for nuclear waste management lies with the nuclear power companies. They must carry out the necessary nuclear waste management measures for their own waste at their own cost. According to the Finnish Nuclear Energy Act, nuclear waste

Only safe final disposal is possible

Multi-barrier principle of final disposal:

Several release barriers backing up each other ensure long-term safety.



generated in Finland must be treated, stored, and finally disposed of in Finland and the import of nuclear waste into Finland is prohibited.

Spent nuclear fuel from the nuclear power plants of Teollisuuden Voima and Fortum will be packed in copper canisters and embedded in the Olkiluoto bedrock at a depth of approximately 430 meters. Posiva manages the

research into the final disposal of spent nuclear fuel, construction and operation of final disposal facilities, and eventual closing up of the facilities on behalf of its owner companies.

Posiva and its final disposal solution, ONKALO, are internationally renowned in the nuclear industry. Posiva's subsidiary Posiva Solutions Oy sells this expertise which has been generated through

40 years of multidisciplinary research. Posiva Solutions provides tailored expert services for final disposal and ready-made solution and service models for nuclear waste management companies together with a broad network.

The final disposal of spent nuclear fuel is based on the use of multiple release barriers, which ensure that the nuclear waste cannot be released into organic

nature or become accessible to humans. A deficiency of a single barrier or a predictable geological or other change will not endanger the performance of the insulation. The release barriers include the physical state of the fuel, the disposal canister, the bentonite buffer, the backfilling of the tunnels, and the surrounding rock.

The key to the final disposal of spent fuel is the long-term safety of the solution, which is assessed and demonstrated with a safety case. According to the international definition, a safety case refers to all technological and scientific materials, analyses, observations, trials, tests and other proof used to justify the reliability of the assessments made of the long-term safety of final disposal. Plenty of time has been reserved for the preparation and practical execution of final disposal, and safety is evaluated at many stages. The disposal of spent fuel is scheduled to begin in the 2020s, and it will continue for approximately a hundred years.

In 2019, Posiva started the EKA project, which aims at initiating final disposal operations in the 2020s. The project involves constructing an above-ground encapsulation plant and installing the systems for final disposal in the underground ONKALO facility, obtaining the requisite licenses for the final disposal concept, the facility and its systems, and preparing the supply chains needed for production, before starting the actual final disposal of spent nuclear fuel. The EKA project has a strong impact on vitality - the cost estimate of the large-scale construction project is approximately EUR 500 million, and its employment impact is approximately 2,500

person years. The project will employ a maximum of some 500 people.

Finland is the only country so far to progress to the implementation phase of final disposal, which makes the EKA project internationally significant. Posiva plays an important role in the mitigation of climate change as part of the lifecycle of nuclear power. Many countries using nuclear power have final disposal repositories for low- and intermediate-level waste, but the final disposal of high-level spent fuel has not yet been started anywhere.

Read more about Posiva:
<https://www.posiva.fi/en/index.html>

Advance collection of waste management funds

THE costs of nuclear waste management and final disposal of spent fuel are collected in the price of nuclear electricity from shareholders into a fund for future use.

In Finland, nuclear power companies bear the costs of nuclear waste management, and the funds for that purpose are collected into the Finnish State Nuclear Waste Management Fund. Each year, the



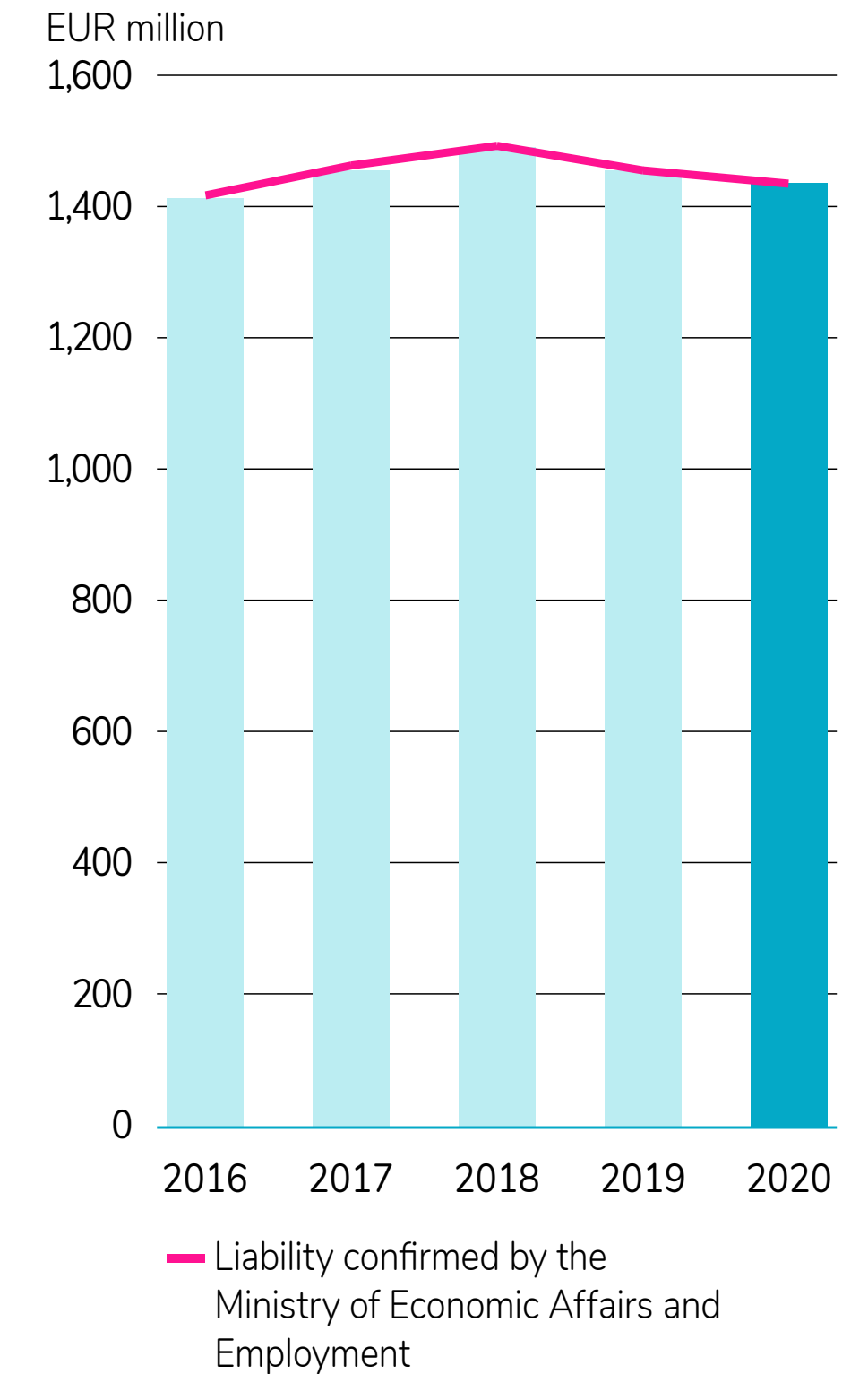
Ministry of Economic Affairs and Employment determines the share of each nuclear power company in the Fund as well as the waste management fee to be paid to the Fund. The liability share of the nuclear power companies in the Fund is decreased by the investments they make in final disposal.

The annual fee payable to the Fund is determined on the basis of the difference between the amount of accumulated nuclear waste for final disposal and the measures implemented for nuclear waste management. The fee is also increased or decreased on the basis of how well the Fund succeeds in its investments: if the interest income is higher than expected, the liability share in the Fund is correspondingly reduced. The objective is to accumulate enough assets in the Fund for the final disposal of accumulated nuclear waste.



**"Posiva's solution for the final disposal of spent nuclear fuel enables the sustainable production of nuclear electricity."
 - IAEA Director General, Rafael Mariano Grossi**

TVO's fund target share in the Finnish state nuclear waste management



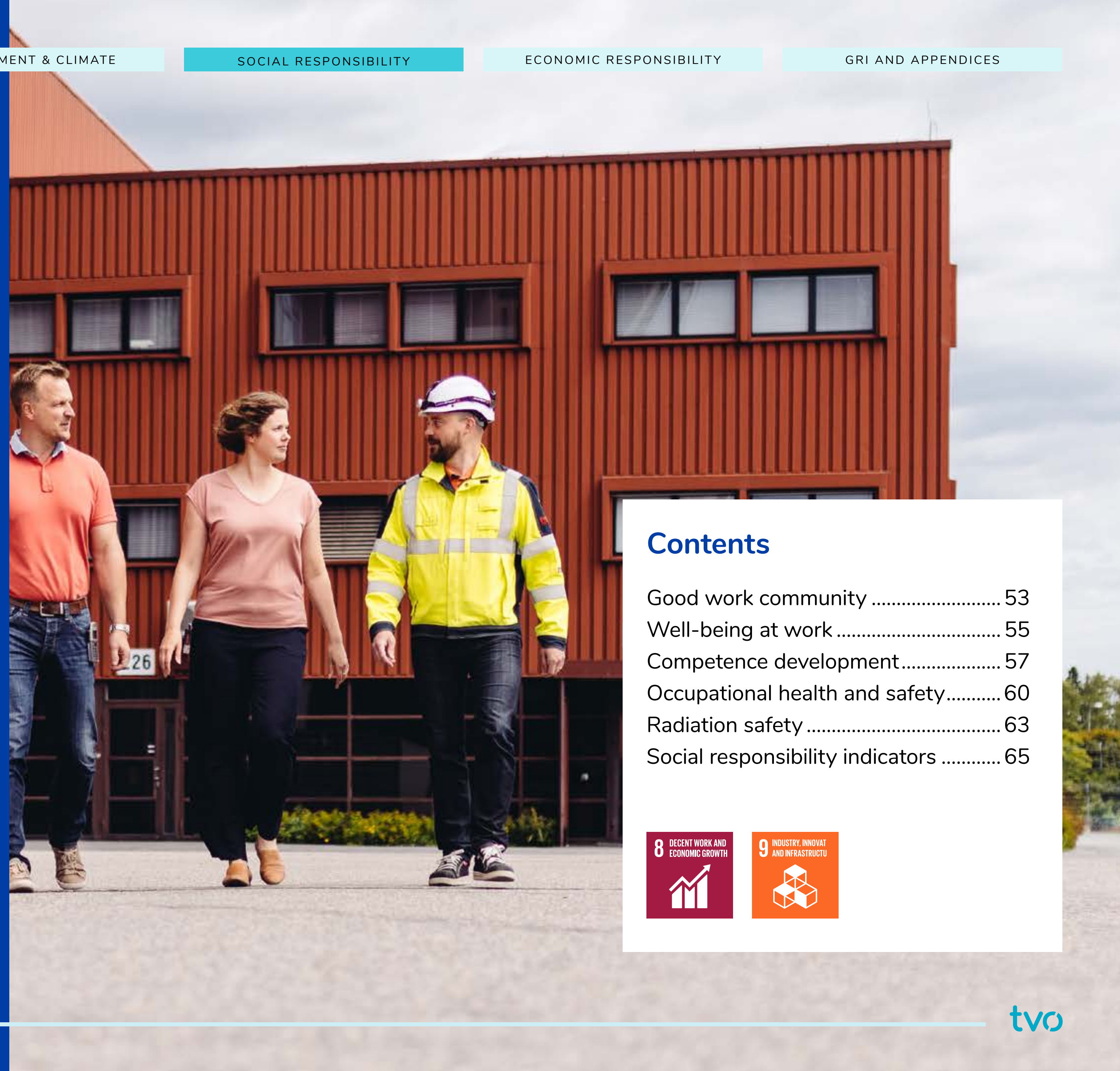
Social responsibility at TVO

Particle-larly great jobs

TVO is a hub of Finnish nuclear power expertise. The company's top-quality results are produced by skilled, professional, and experienced employees. The nuclear industry employs some 4,000 people in Finland, of whom approximately 1,000 work for the TVO Group. In 2020, 77 new employees were hired. In addition, TVO employed a total of 87 summer trainees.

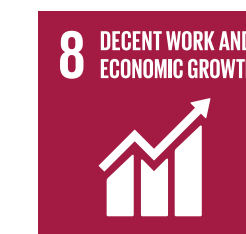
TVO provides its personnel with varied duties and opportunities for professional development. The personnel receive comprehensive training throughout their careers. A high level of competence is achieved with the help of unit-specific training requirements, job rotation, induction training, and work guidance. In 2020, the employees received a total of 10,342 days of training, which means on average 10.6 days per TVO employee.

TVO is aware of its future need of new energy industry experts, and aims to do its part in developing competence in the field. The company is involved in varied and responsible cooperation with educational establishments and student communities, for example.



Contents

Good work community	53
Well-being at work	55
Competence development.....	57
Occupational health and safety.....	60
Radiation safety	63
Social responsibility indicators	65



Good work community

The objective of the TVO Group is to have an equal, healthy working environment that tolerates no discrimination and promotes the realization of equality in practice.

TVO'S Code of Conduct and company-level policies determine the HR policy principles. A prerequisite for TVO's operations is that all of its employees remain motivated, carry out their duties in a responsible manner, and commit to the agreed procedures.

TVO provides its personnel with varied duties and an opportunity for professional and career development. TVO provides competitive rewards for its personnel and encourages everyone to work profitably, to meet their goals, and to operate at a high level every day.

In 2020, TVO continued its activities to develop the work community culture and promote the safety culture. TVO carries out a personnel survey every 18 months.

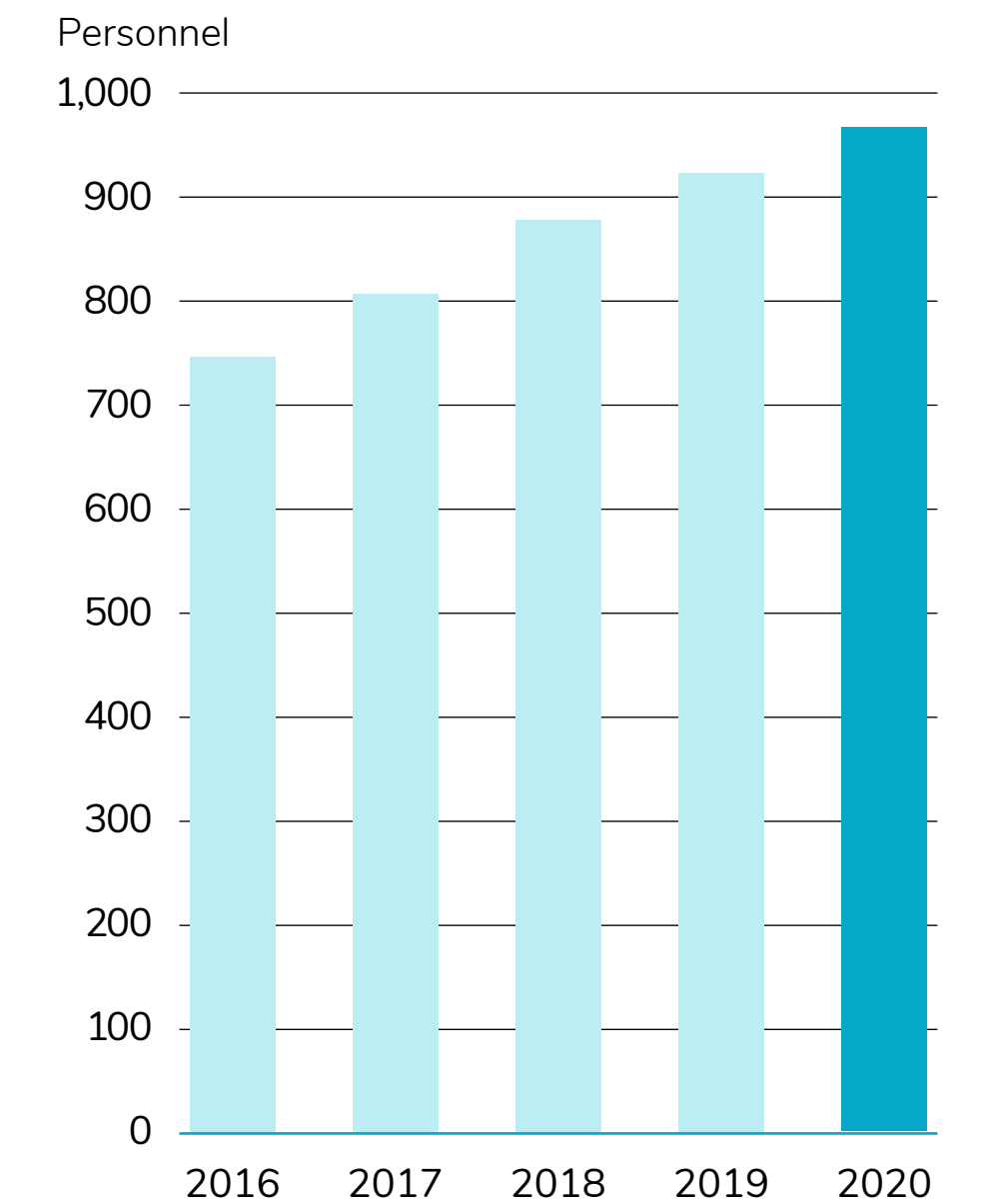
The results of the previous survey, performed by Corporate Spirit Oy, were received in February 2020. The next survey will take place in 2021.

The impact of the COVID-19 pandemic on work arrangements in the TVO Group

DURING the year, the TVO Group prepared for potential COVID-19 contagions and executed various measures to prevent the spread of the virus on the Olkiluoto island. The pandemic resulted in many changes in practices and ways of working. The extensive measures included reducing travel, remote working whenever possible, restricting visitors' access to the TVO Group's facilities, canceling events, and moving training to digital environments. Access restrictions were introduced in the area to redistribute encounters to different areas and to reduce contacts. The staff cafeteria as well as cleaning operations at all sites underwent major changes.



TVO's personnel



More than 70 new employees joined the Olkiluoto team to do a Particle-larly Great Job

A TOTAL of 77 new employees were hired during the year. At the end of 2020, TVO employed 973 people. The average number of employees during the year was 983. Most of TVO's employees work at Olkiluoto, with some 20 people working

in Helsinki. The average age of TVO's employees was 42.7 years in 2020.

At the end of 2020, 22.1 percent of the permanent employees were female. The Board of Directors had ten members, one of them female. The Management Group had thirteen members, four of them female. The Management Group includes three personnel representatives. Two of the personnel representatives were replaced during the year. A total of 45 permanent employees left the company, 11 of them due to retirement. In 2020, TVO succeeded in employing 87 summer trainees amid COVID-19 restrictions. As in the previous year, TVO participated in the Responsible Summer Job campaign, which aims to develop the quality of summer jobs and the readiness of youth between the ages of 16 and 25 to begin their working careers. TVO also continued its cooperation with educational institutions in the adjacent area. In the early part of the year, before the pandemic set in, TVO participated in recruitment events arranged by institutes of higher education in different parts of Finland.

Over the course of the year, 7 percent of TVO's permanent employees took parental leave. The competence and expertise of TVO's employees is based

on systematic development of professional competence and long employment relationships.

TVO complies with the applicable collective labor agreements for the energy sector in all its operations. The current agreements are valid until early 2022. All of the employees fall under the scope of the collective agreements. TVO has freedom of association. The energy sector's agreed salary systems for technical and industrial officials and employees are based on the job requirement categories and support the implementation of an equal salary policy. As a rule, the various employment benefits apply to the entire personnel, excluding very short employment relationships.

Large projects provide employment for thousands of people in Olkiluoto

Olkiluoto 3 is a large international project, and the plant supplier's average workforce at the OL3 construction site was 1,579 in 2020. A high level of safety culture is required from all parties working at the construction site. The occupational health and safety of the employees working at the site remained at a good level.

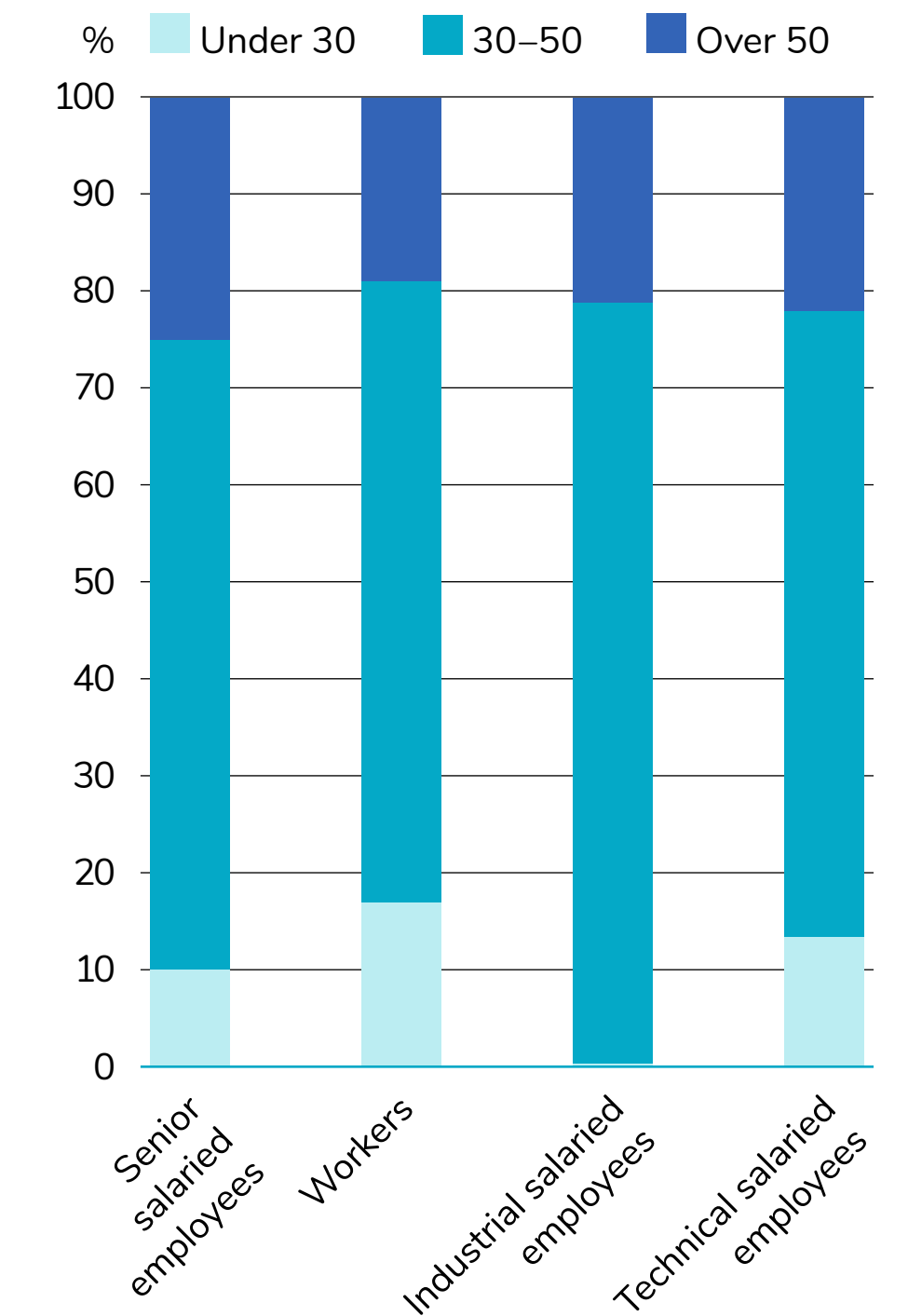
Annual outages of the OL1 and OL2 plant units employ dozens of subcontractors from Finland and abroad every year. A total of 726 external workers participated in the annual outages in 2020, 635 of them Finnish. In addition to companies from Finland, subcontractors from 11 other countries participated in the effort. To ensure safe annual outages during the COVID-19 pandemic, TVO engaged in extensive cooperation with various authorities such as the Satakunta Hospital District and doctors of infectious diseases in the adjacent towns and municipalities. Safety measures were carried out in compliance with the general policies of the Finnish Government and the recommendations of the Finnish Institute for Health and Welfare (THL).

87

summer trainees employed by TVO!



TVO's personnel by age group



Well-being at work

The Better Workplace programme develops the Group's management and operating culture.

GOALS of the Better Workplace programme include boosting operations and ensuring good operational preconditions by developing issues pertaining to the employees' own work, their immediate work community, and the entire Group.

The 2020 themes of Better Workplace were:

- "You, me, us – nuclear industry experts", including the highlighting of concrete safety culture procedures, better and broader communication and processing of the Group's shared issues, experience of shared ownership of the Group's projects, and emphasis on taking responsibility for your own actions. Safety at work was also emphasized.
- Work based on motivation provided by results, aiming at clear decision-making and improved cooperation. The focus was on providing feedback on achieved results, and coaching as a

part of working together. Other topics of interest included the modern working environment and new ways of working. Goal-oriented management of the continued ability to work was also emphasized.

In 2020, Better Workplace continued with measures that focused on themes selected based on the 2020 personnel survey results. Implementation of suggestions for improvements that were received from the field also continued. Goals included promoting the concrete development actions, streamlining practices, and communicating about these. The work of the Better Workplace Steering Committee will continue in 2021, and the operations of the committee will also be further developed.

Well-being at work, every day

Key development actions related to the maintenance and development of well-being at work in 2020 involved the development of operations, safety culture, management of occupational health and safety, and operations organized together with occupational healthcare services.

Due to the COVID-19 pandemic, ways of working had to be changed very quickly, and supervisors received training in remote management to support them in the new management situation.

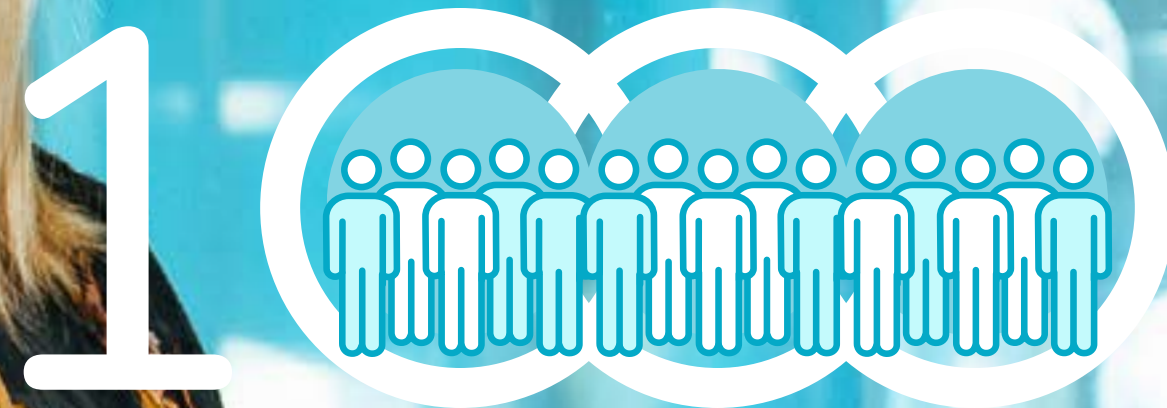
Close cooperation with occupational healthcare services has continued. The company uses an early intervention model and models for substitutive and lighter work. Occupational healthcare services focus especially on proactive management and maintenance of working capacity and risk-based working capacity analyses. An example of this are active small groups which target the factors that threaten the working capacity of special groups.

Well-being at work is also promoted by the comprehensive occupational healthcare services available to all of the Group's employees, and the supplementary insurance coverage. All of the Group's permanent employees have access to additional accident insurance and travel insurance. The employees' ability to reconcile work and leisure is supported by using flexitime and a sabbatical leave system. A working time

account system is used to provide additional support for managing the balance of work and rest periods. Flexiwork as defined in the new Finnish Working Time Act, valid since the beginning of 2020, has been adopted for piloting. The working time account system and the flexitime pilot cover senior officials who are included in the scope of the total compensation system.

Employees of the TVO Group have the Smartum sports and culture balance with the massage service option available to them. Through these systems, TVO as the employer supports the employees' voluntary working capacity maintenance. During the past year, it has not been possible to organize events for the working community as usual due to the COVID-19 pandemic. During this exceptional period, efforts have been made to maintain and promote well-being and the community spirit through events such as an online party for the personnel, and by supporting the employees' voluntary efforts to maintain good working capacity. The employees have access to several holiday locations, with some restrictions during the pandemic.





The nuclear industry employs about 4,000 people in Finland, of whom approximately 1,000 work for the TVO Group.

Navigation discussions – an established part of work

EMPLOYEES' performance, workload, and coping at work are monitored through navigation discussions with their immediate supervisor, arranged three times a year. The focus in management and supervisory work has been shifted from the monitoring of working hours towards the management of performance. This procedure allows for more flexible ways of working, such as telecommuting, for all employees whose job description allows it. During the navigation discussions, all employees can discuss their development proposals involving the operations of the company, their immediate work community, or their own work with their supervisor.

CASE

The power of a good working atmosphere

WHEN the COVID-19 restrictions set in, the nuclear maintenance professionals of OL1, OL2, and OL3 were divided by plant unit. In practice, this means that they work from their own office and only enter the plant area when it is absolutely necessary. The changes were made quickly, and the team of six, including I&C technician **Jani Virta**, started to work from an office in the OL2 building.

Virta says that despite the exceptional circumstances, maintenance work continues – only the practices are a bit different now.

– The daily work itself has not changed: we still need to fix any issues and carry out preventive maintenance.

As a father of three, Virta knows that setting a calm and patient example can get you far. Under the new

circumstances, the close-knit team of six got the job done relying on their positive attitude and sense of humor.

– It's difficult to come up with a single principle that would solve all the problems, but I think it's a good idea to focus on yourself and remember that to calm down the challenging situation you find yourself in, you must begin by calming down yourself. Constructive discussions carried out with a cool head are key.

– A healthy dose of humor, and sometimes loud laughter, has helped us get past this unusual situation. Humor can balance out the insecurity. It's better to laugh than to spend your time worrying.”

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Competence development

The safe operation of a nuclear power plant depends on a qualified personnel interested in competence development.

COMPETENCE management at TVO aims at ensuring and maintaining the professional competence and skills required in the nuclear industry for both TVO's own personnel and for the outsourced workforce. An individual training plan has been prepared for each employee of TVO. The plan is used to track the completion of the training required to reach full qualifications, and to plan any further training that is needed.

High quality, long-term planning and a proactive approach are the key characteristics of personnel development. A high competence level can be achieved with the help of unit-specific training requirements, competence surveys, job rotation, induction training, and work guidance.

The Group prepares an extensive annual training program each year with the aim of maintaining and developing competencies in a centralized manner and with



Despite the COVID-19 situation, many different types of training courses could be organized and the training operations remained at a good level.

smart use of resources. The program takes into account unit-specific training requirements and other training needs identified in the different parts of the organization.

Within the annual training program, training courses are arranged on topics such as plant, nuclear power, and operating technology. The annual training program for 2020 was for the most part implemented according to plan. The employees received a total of 10,342 days of training, which means on average 10.6 days per TVO employee.

The analysis of detailed role-based competences continued in 2020 with the aim of establishing appropriate requirements for training, induction, and competences. TVO's internal online learning environment was also renewed. Despite the COVID-19 situation, many different types of training courses could be organized and the training operations remained at a good level.

The main goal of operation training at OL1 and OL2 was the implementation of high-quality training, with particular

focus on plant modifications. The planned goals were reached.

Competence based on training

THE operating personnel of the nuclear power plant receive comprehensive training throughout their careers. In 2020, operators of OL1, OL2, and OL3 participated in operating training events and advanced simulator courses in the spring and in the fall as required by their refresher training program. The OL3 operators worked in shifts in the operating organization jointly established by the plant supplier and TVO, carrying out system operating and monitoring tasks.

The OL3 training focused on expectations for the work of nuclear professionals and special characteristics of the nuclear industry. These requirements also apply to the personnel of the OL3 plant supplier and subcontractors working at OL3. In the case of the personnel of the Group, increased focus was placed on component and system expertise.



Supervisor training events focusing on a variety of themes were arranged to develop supervisory skills. In addition, a number of people completed special training on supervisory operations.

All employees working at the Olkiluoto nuclear power plant must attend induction training. The general section is intended for everyone working in the Olkiluoto area, while the radiation section is intended for those working in the controlled area. In 2020, a total of 3,527 (3,193) people completed the general section of induction training, and 1,614 (1,707) completed the radiation protection section (reported by January 15, 2021). Both training parts were provided in Finnish and English. They are also available in Finnish and English in both the internal and external learning environments for anyone who needs a refresher.

Basic annual outage competence for OL1 and OL2 was developed with two separate training courses. An access permit can only be granted after the completion of the online annual outage training course and practical training (the “mock-up tent training”). In 2020, the practical training was provided online due to the COVID-19 pandemic. The purpose of these training courses was to ensure that the employees of the Group

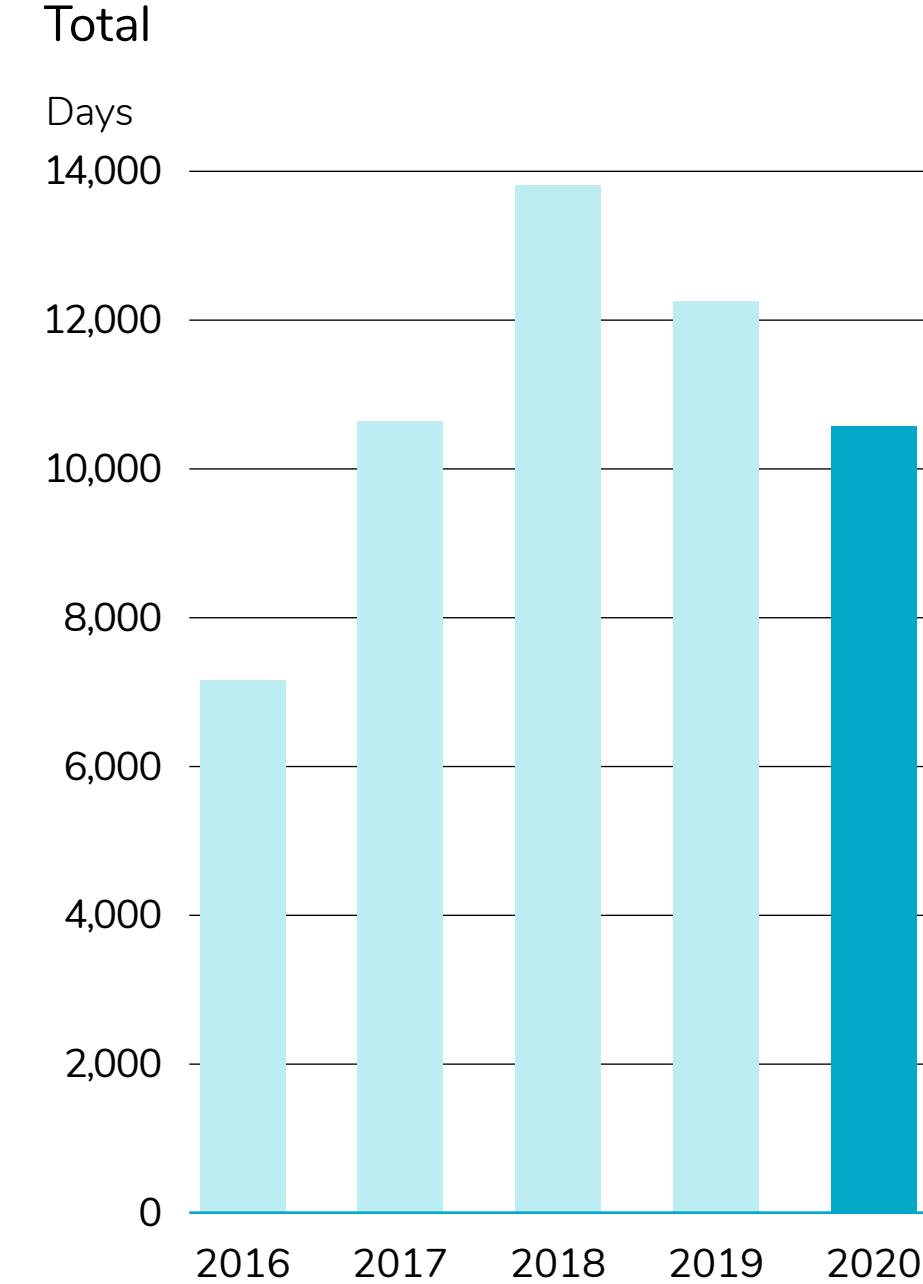
” **1,886 people completed the online annual outage training course.**

and the external annual outage personnel are well aware of the TVO Group’s expectations related to high-quality work performance and safe procedures.

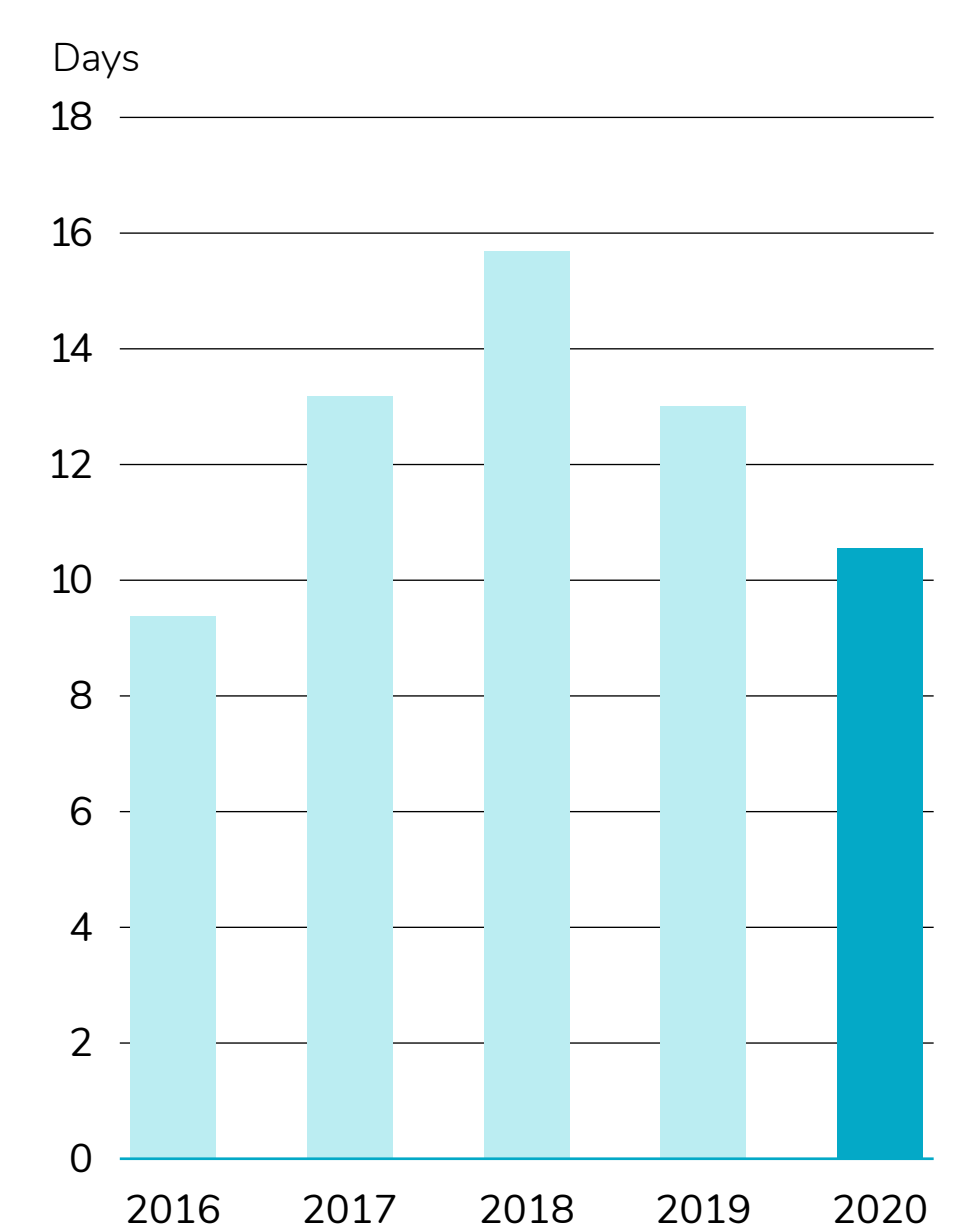
A total of 721 TVO Group employees, 1,165 members of external workforce, and 30 representatives of authorities completed the online annual outage

training course. The total number of people attending the training was 1,886. The practical training was completed by the Group employees who had not participated in it before or felt the need for a refresher (the regular refresher training interval for Group employees is two years). A total of 304 Group employees completed practical training.

Training days Total



Training days /person



The external workforce and authorities also received practical video training. Their number amounted to 1,100, of which 25 were representatives of authorities.

A similar training package was provided for the OL3 plant unit. The purpose of the training was to ensure awareness of

the expectations related to high-quality work performance and to prepare for fuel loading at OL3. The theoretical online section was completed by 689 Group employees and 2,757 members of the external workforce. Mock-up training sessions were organized in a separate facility for a limited number of participants due to the COVID-19 pandemic.



TVO aims to do its part for the continued availability of nuclear energy expertise, being aware of its role as a future employer of new nuclear sector experts.

Other training courses that relate to occupational health and safety risks identified at TVO include training for work in closed and confined spaces, training for manhole guard duty, hot work card training, and training for lifting and the use of fall protection equipment. Training courses related to electrical safety include a basic course for people with no training in electrical engineering who have duties in electrical facilities, and the SFS 6002 safety training that is compulsory for electrical engineering professionals working in Finland. ATEX training is targeted at people who work in explosive environments or who design facilities and equipment for such spaces.

Occupational safety training courses provided information about the occupational health and safety management system and the management system for risks related to work and the environment. Thematic training events on various issues are held each year to promote employee well-being.

Cooperation in competence development

TVO engages in many levels of cooperation with educational establishments and students. The purpose of this work is to contribute to the continued availability of

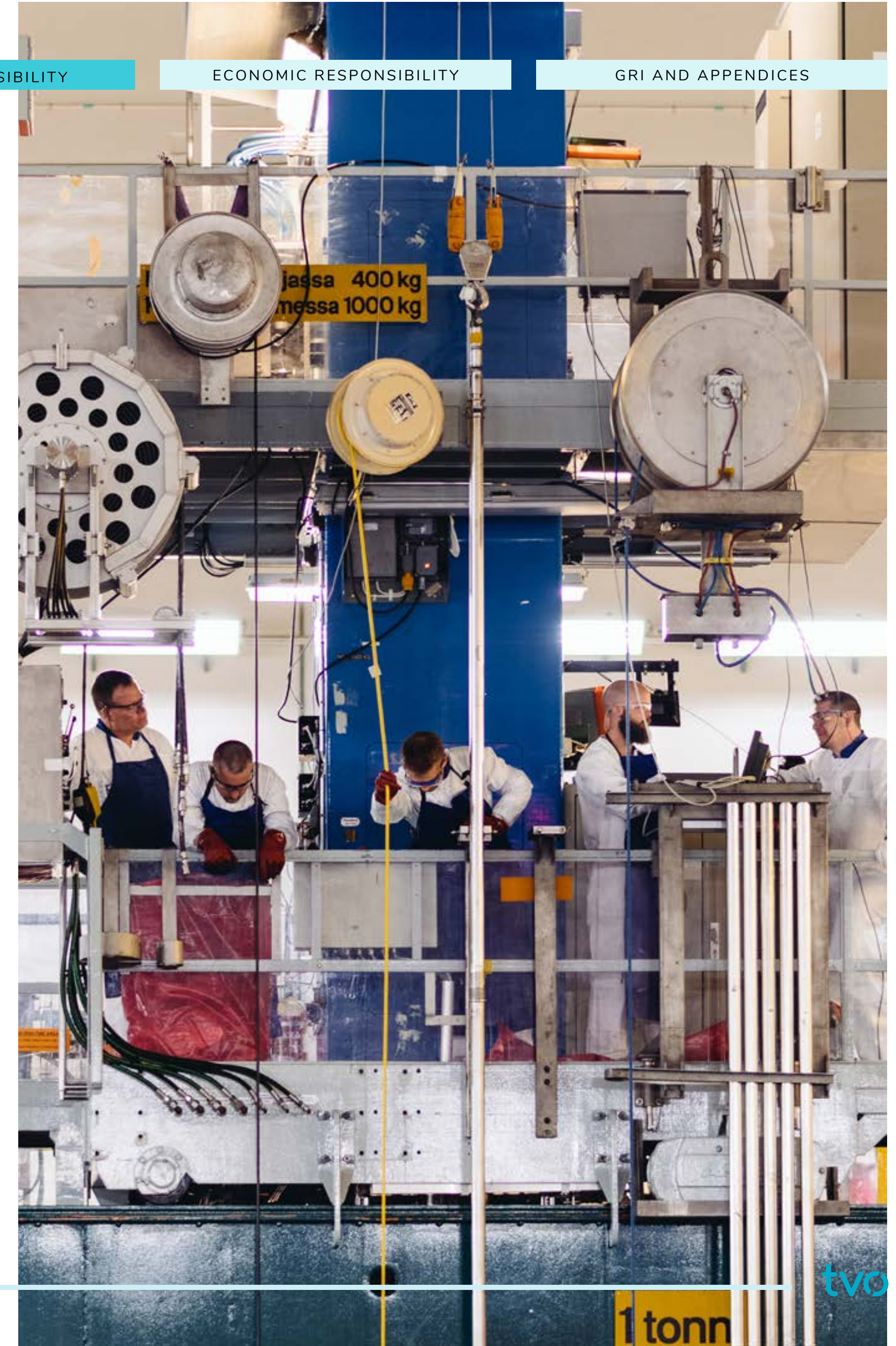
nuclear energy expertise, being aware of the company's role as a future employer of new nuclear sector experts.

Early in 2020, TVO co-organized a national nuclear safety and waste management training course together with other major operators in the industry. Such training courses give students a holistic understanding of the nuclear industry and its central operating models.

Together with Swedish nuclear power companies and Fortum's Loviisa power plant, TVO participated in the Nordic Nuclear Trainee program. The program faced challenges due to the COVID-19 pandemic, but was launched in autumn 2020 with online meetings. The purpose of the training is to raise students' interest towards the nuclear industry as a potential workplace and to help them see the opportunities it can offer in the future. The program is meant to continue in spring 2021.

The mock-up section was completed by 2,944 people during the year. The training package must be completed before an access permit to OL3 indoor facilities can be granted.

Attention to occupational health and safety in training promotes a safe working environment. General safety training is first provided during the TVO induction training, which also includes safety-related working methods and expectations that have been identified as important for the nuclear industry. The annual training program includes regular first aid training that also covers the treatment of electricity-related injuries.

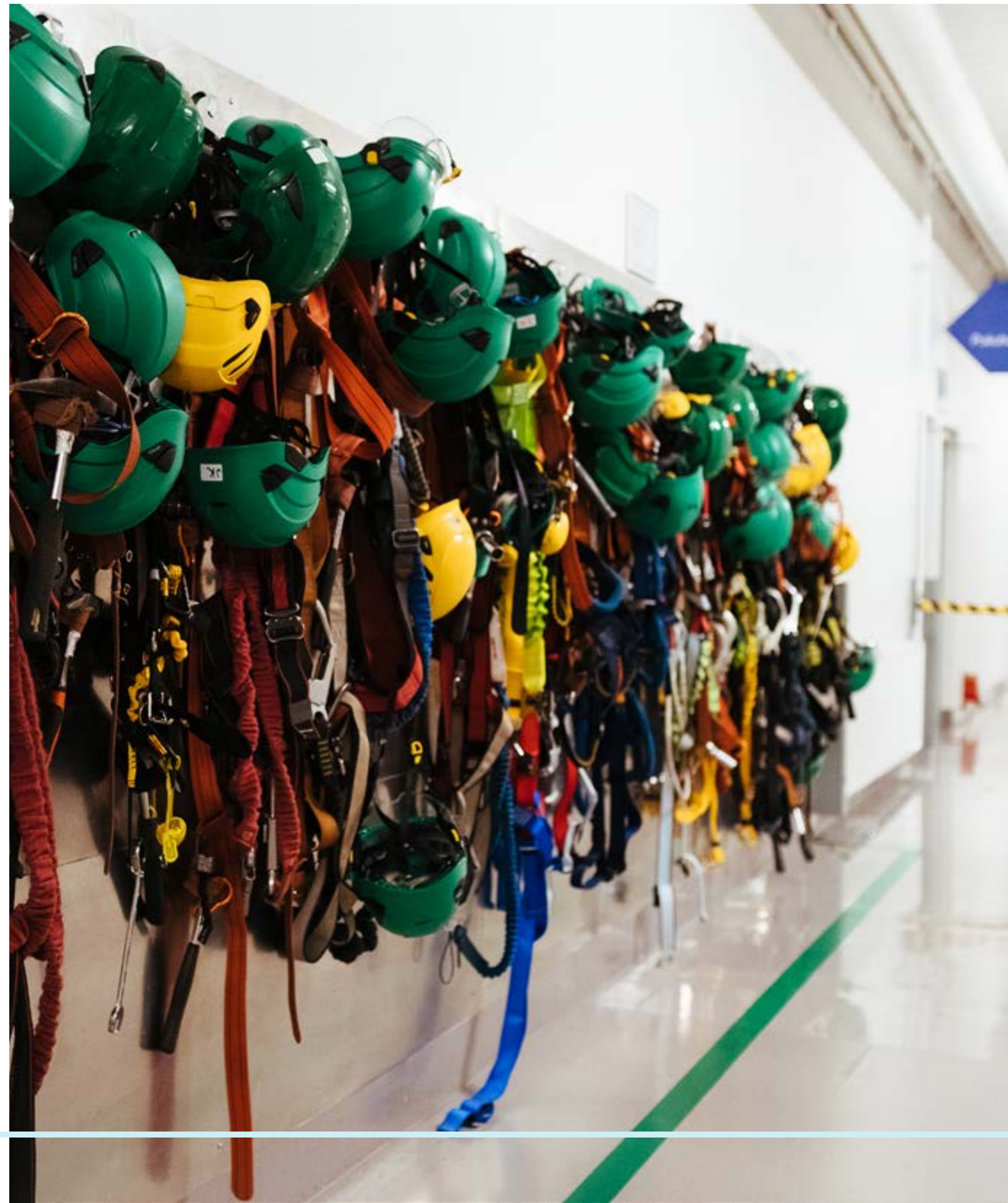


Occupational health and safety

TVO's goals are to guarantee its employees, contractors, and service providers a safe workplace and operating environment, as well as to verify that standardized operating methods are used in the Group's operating area.

THE occupational health and safety operations are guided by an ISO 45001 certified occupational health and safety system (OHS system). The system also covers TVO's share of the OL3 construction phase.

The mission of the OHS organization is to be an expert organization that supports, coaches, monitors, and develops occupational health and safety operations, and helps the line organization and the contractors succeed in this area. The contractors working for the Group in Olkiluoto are responsible operators who work in accordance with the Group's expectations and comply with shared operating models. This ensures that Group employees, partners and contractors can work safely in Olkiluoto, without the work affecting their health. The most important safety objectives for 2020 were clarifying the OHS responsi-



Target	Indicator	Actual
Accident frequency at Olkiluoto (excl. CFS) < 2.4 (accidents per one million working hours)	Monthly cumulative accident frequency monitoring for previous 12 months	4.5

bilities of the line organization, supporting supervisors in their work, strengthening contractor cooperation, and developing the processes for identifying hazards and managing risks.

The occupational health and safety policy is included in the Group-level policy under social responsibility. Starting points of the occupational health and safety policy are zero accidents, maintenance of a good atmosphere and working conditions, as well as zero tolerance in terms of workplace harassment or bullying. The OHS target of all employees is to ensure their own safety and the safety of others. When making decisions about occupational health and safety, the Group is committed to hearing the employees and any employee representatives, as well as ensuring their inclusion. According to the zero accidents principle, all accidents can be avoided by carefully planning the work, using preventive safety measures, and adhering to strict quality standards.



**ACCIDENT FREQUENCY
TARGET 2020**

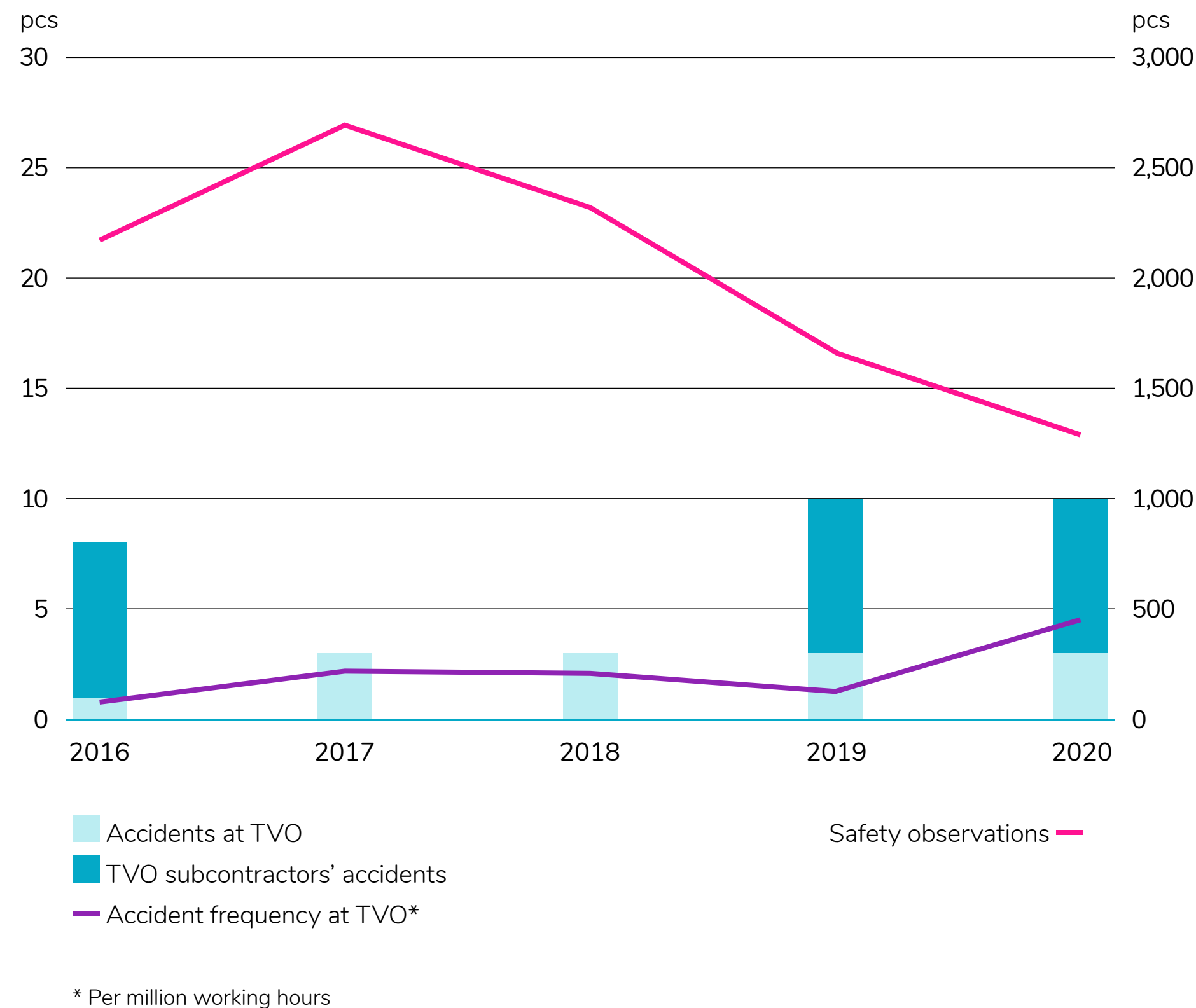
2.4
3.2 (2019)

OHS cooperation across organizational borders

THE occupational health and safety operations are coordinated by OHS experts in the Competence Center's Corporate Security Team. Furthermore, personnel groups (employees and officials) have named industrial safety delegates and deputy delegates from amongst themselves. There is an Olkiluoto OHS team consisting of OHS experts, industrial safety delegates, representatives of the different business functions and units, as well as representatives of occupational healthcare services. The comprehensive assembly of the team ensures that the team is representative of the entire personnel. The purpose of the team is to strengthen the communication between the OHS personnel and the line organization and to support the development of occupational health and safety action.

Reports on functionality of the OHS system and the required corrective measures are submitted to the management twice a year in connection with management reviews. Annually set OHS targets support the development of the operations. The management performs safety walkdowns that focus on different safety-related topics. Observations made during the walkdowns are entered in the

Accidents and safety observations

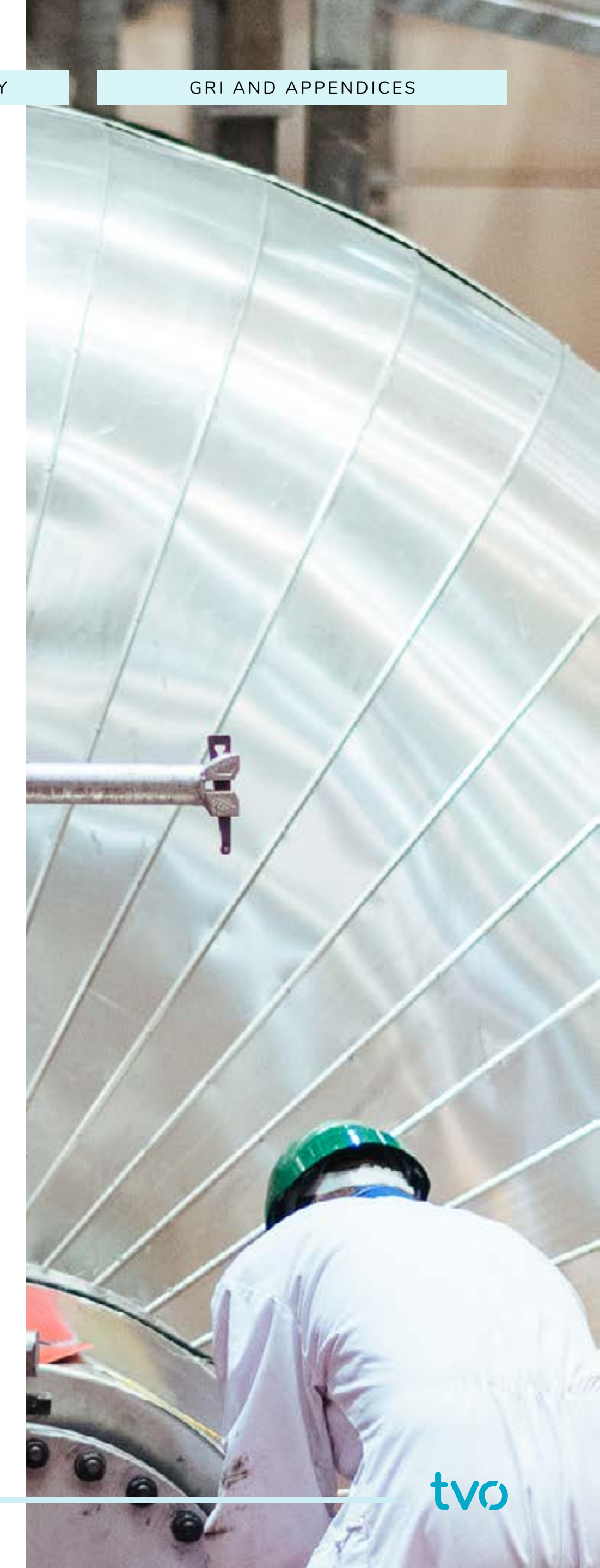


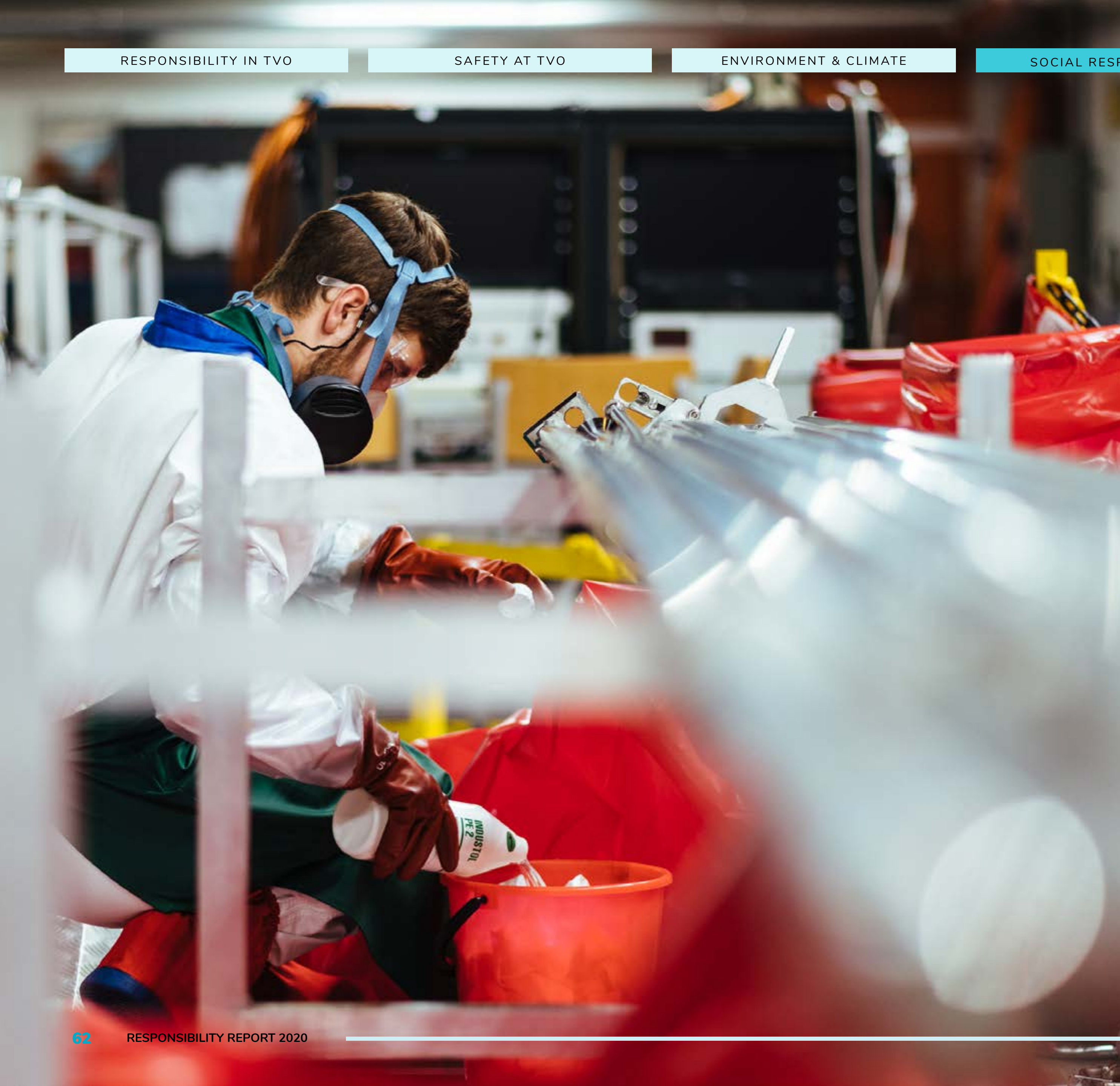
electronic quality management system for further actions. The company's Board of Directors also monitor the development of OHS issues.

The TVO Group's accident frequency target level for 2020 was 2.4 accidents per one million working hours. The annual outages were completed

safely without any accidents leading to absence. This had a favorable impact on the accident frequency, and the Group got close to the target during the summer. The accident frequency figure includes TVO's employees, Posiva's employees, and all contractors operating in Olkiluoto, except for the OL3 construction site, which is reported by the Areva-Siemens plant supplier consortium.

During the course of the year, three accidents leading to a TVO employee being absent from work occurred, none of them serious; accidents that lead to an absence of more than 30 days are classified as serious accidents. The accident frequency for the TVO Group was 4.5 accidents per one million working hours. The total number of absence days due to accidents was seven. Seven commuting accidents took place during the year, two of them leading to absence. All the accidents resulting in absences were investigated and corrective actions were specified to prevent reoccurrence of the accidents. A total of seven accidents resulting in absence happened to TVO's contractors at Olkiluoto, none of them serious, and the accident frequency was 6.2 accidents per one million working hours. The total number of absence days of subcontractor employees due to accidents was 37.





The management of the company has specified goals for 2021 in connection with its strategy planning. Occupational health and safety is included in the planning of the safety strategy. The company-level goal was set as decreasing the combined accident frequency at Olkiluoto to 2.0 or fewer accidents per one million working hours.

Identification of hazards, risk assessment, and accident investigations help prevent future accidents

IDENTIFICATION of hazards and assessment of safety risks are carried out based on a plan. Proactive identification reveals the main hazards that employees may face at the workplace. As a result, the hazards can be removed or assessed and set in an order of importance, and risks resulting from them can be reduced. In addition to task-specific risk assessment, the TVO Group uses a special workbook for identifying on-site hazards. The sheet included in the workbook lists the most common sources of hazards. These are checked before starting work to ensure its safe completion. The assessment of psycho-social risks is an area of special emphasis when developing the risk assessment procedure.

Risk assessment is particularly important for high-risk tasks. At TVO, these include working at heights and close to openings, electrical work, demanding lifts, and working in closed and confined spaces. The personnel receives risk assessment training, and occupational health and safety specialists are involved in the assessment process. Safety observations are another important part of the continuous development of operations. Observations can also be submitted anonymously.

Reporting all observed hazardous situations helps prevent accidents. The investigation of hazardous situations and implementation of corrective actions aim to prevent reoccurrence of the events. In 2020, slipping and tripping as well as various strikes from objects were the most common accident types in the areas managed by the TVO Group.

The unit manager of the injured employee initiates the accident investigation together with the occupational health and safety organization. Accident investigations are reported to the line management, which processes them in its own organizations and ensures that corrective actions are implemented. The safety level of all ongoing construction sites is monitored by means of weekly TR measuring rounds.

Radiation safety

In all their radiation protection activities, TVO and its personnel are committed to following the ALARA (as low as reasonably achievable) principle. According to the principle, individual and collective radiation doses are kept as low as possible by means of practical measures.

LIMITING the doses and keeping the level of radioactive emissions as low as possible are already taken into account when designing the structures and functions. All employees must take radiation protection into account in their own work. Radiation protection operations are developed based on authority guidelines as well as international recommendations.

The radiation doses of everyone working in the controlled area of the nuclear power plant are monitored and measured using dosimeters. According to Section 13 of the Government Decree on Ionizing Radiation (Valtioneuvoston asetus ionisoivasta säteilystä, 1044/2018), the effective dose of a radiation worker must not exceed 20

millisieverts per year. TVO's own targets regarding individual annual doses are keeping the dose obtained by all Olkiluoto employees from their work below 10 mSv per year and keeping doses caused by internal contamination below 0.5 mSv. These targets have been reached.

Radiation exposure below dose limits

THE radiation exposure of employees at Olkiluoto has been low, remaining clearly below the dose limits specified by the authorities. In 2020, the total dose of employees subject to radiation exposure in Olkiluoto was 565 manmSv. A total dose of 413 manmSv was accumulated during the power plant's annual outages.

The combined annual dose of our personnel was 190 manmSv (2019: 155), and that of external personnel 375 manmSv (2019: 492). The highest individual annual dose incurred at Olkiluoto nuclear power plant was 7.8 mSv. The number of personnel under dose moni-

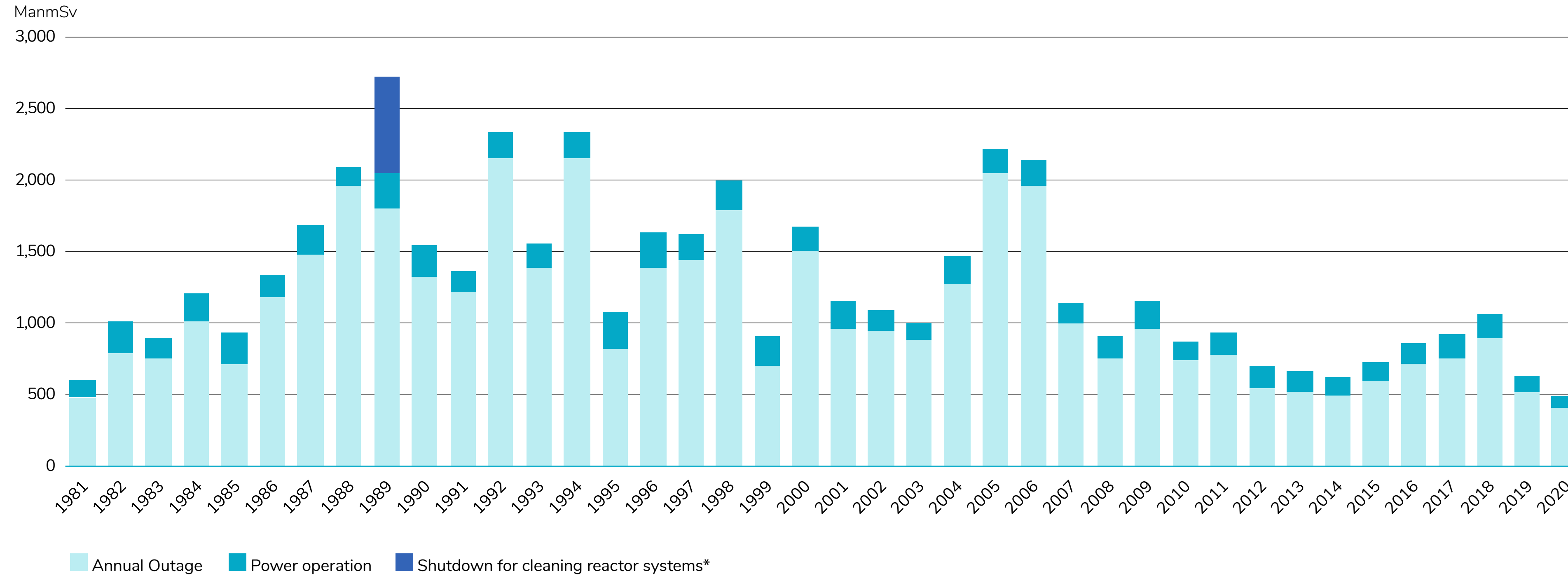
toring was 3,348 (2019: 3,853), with recorded doses accumulated for 667 (2019: 894) employees. The average annual radiation dose received by a person living in Finland from other radiation sources is approximately 5.9 mSv¹.

Note 1. Average effective dose of people living in Finland in 2018, STUK-A263 / April 2020, T. Siiskonen (Ed.), ISBN 978-952-309-446-8

”

The collective radiation dose in 2020 was the lowest in the history of the plant units' operations.

Annual radiation doses at OL1 and OL2



* In 1989, metal particles that had been inside a valve in the OL1 plant unit since its construction started to move and ended up in the reactor, preventing the upwards motion of the control rods. This caused the longest extra shutdown in the history of TVO.

Social responsibility indicators

Personnel

Personnel structure	2020	2019	2018	2017	2016
Personnel, permanent, December 31	954	922	862	783	720
- Male	743	722	679	609	555
- Female	211	200	183	174	165
Personnel, fixed-term, December 31	19	19	15	23	26
- Male	11	13	10	12	14
- Female	8	6	5	11	12
Personnel, part-time, December 31 ¹⁾	18	20	18	11	17
- Male	4	4	6	4	7
- Female	14	16	12	7	10
Average age of employees ²⁾	42.7	42.6	42.7	43.2	43.3
- Male	43.2	43.1	43.2	43.6	43.8
- Female	41.2	40.8	40.7	41.8	41.8
Employees' place of residence (%) ²⁾					
- Eurajoki	18	17	18	19	17
- Rauma	48	48	50	51	53
- Pori	17	17	15	14	14
- Other	17	18	17	16	16
New employees ²⁾	77	116	134	110	48
- Male	55	87	102	92	32
- Female	22	29	31	18	16

¹⁾ The Group employees primarily work full-time.

Personnel structure	2020	2019	2018	2017	2016
Average age of new employees ²⁾	35.9	35.7	34.8	35.8	34.1
- Male	34.6	35.8	35.3	36.2	34.8
- Female	39.3	35.1	33.3	33.7	32.8
Average number of years of employment ²⁾	10	10	11	12	13
Incoming turnover (%) ²⁾	8.1	12.6	15.5	14	6.7
Outgoing turnover (%) ²⁾	4.7	6.1	6.4***	6	8.1**
Number of retirees ²⁾	11	13	9	8	17
Average age of retirees ²⁾	63.9	64.1	63.8	64.6	63.7
Summer employees	87	107	105	92	79
- Male	65	79	78	68	49
- Female	22	28	27	24	30
Board of Directors by age (%)					
- Less than 30	0	0	0	0	0
- 30-50	20	20	40	45	30
- More than 50	80	80	60	55	70
Management Team by age group (%)					
- Less than 30	0	0	0	0	0
- 30-50	15	8	23	21	31
- More than 50	85	92	77	79	69

²⁾ Data reported only for permanent employees.

** The figure includes 9 employees who were transferred to TVO due to a business transfer.

*** The figure includes 12 employees who were transferred to TVO due to a business transfer.

Personnel groups by gender ¹⁾	Female (%)	Male (%)	Total
Senior salaried employees	163 (28%)	422 (72%)	585
Regular employees	1 (1%)	179 (99%)	180
Industrial salaried employees	23 (96%)	1 (4%)	24
Technical salaried employees	24 (15%)	141 (85%)	165

¹⁾ Data reported only for permanent employees.

Personnel groups by age ¹⁾	Total	Under 30	30-50	Over 50
Senior salaried employees	585	61 (10%)	378 (65%)	146 (25%)
Regular employees	180	30 (17%)	116 (64%)	34 (19%)
Industrial salaried employees	24	0 (0%)	19 (79%)	5 (21%)
Technical salaried employees	165	22 (13%)	107 (65%)	36 (22%)

¹⁾ Data reported only for permanent employees.

Permanent personnel hired in 2020 by age group and gender	Male	Female	Total
Under 30	24	5	29
30-50	26	12	38
Over 50	5	5	10

Employment period of employees who left TVO in 2020 by age group and gender	Male	Female	Total ¹⁾
Under 30	2	3	2
30-50	5	6	5
Over 50	32	19	28
Total, on average	16	13	16

¹⁾ Total, on average

Well-being at work

Occupational health and safety indicators	2020	2019	2018	2017	2016
Sick leaves (%)	2.3	2.6	3.1	2.1	2.4
- Male	2.1	2.5	2.9	2.0	2.5
- Female	3.0	3.1	3.6	2.5	2.2
Sick leaves (hours/person)	43	47	55	41	48
Persons with zero absentee rate ¹⁾	394	309	238	300	246
- Male	326	254	192	243	202
- Female	68	55	46	57	44
Occupational disease rate	0	0	0	0	0
Health percentage (%)	40	31.8	27	38	33.8
Proportion of preventive occupational health care and medical care of total costs (%)	46	54.0	68	69.6	66.8
Proportion of medical care of total costs (%)	44	35.0	24	23.1	24.8

¹⁾ Data reported only for permanent employees.

Competence development

Competence indicators	2020	2019	2018	2017	2016
Training days/person	10.6	13.0	15.7	13.2	9.4
Training days total	10,342	12,249	13,813	10,639	7,157
- Male	8,604	10,210	11,946	9,018	6,021
- Female	1,738	2,038	1,866	1,621	1,136
Training days (average)					
- Senior salaried employees (8.9 days/person)	5,224	6,558	7,157	5,343	3,992
- Technical salaried employees (19.8 days/person)	3,269	2,744	4,030	3,475	2,188
- Industrial salaried employees (2.3 days/person)	55	105	121	107	67
- Regular employees (7.6 days/person)	1,373	2,495	2,064	1,436	751
- Fixed-term and others (22.2 days/person)	421	347	440	278	159
Introduction training – general part (in Finnish)					
- Number of attendees	2,471	2,077	2,034	2,119	717
Online refresher course	1,746	1,323	1,113	991	973
Introduction training – general part (in English)					
- Number of attendees	1,056	1,116	1,551	1,950	1,847
- Online refresher course	656	551	454	202	197
Introduction training – radiation part (in Finnish)					
- Number of attendees	980	1,234	1,202	1,397	647
- Online refresher course	810	736	655	637	489
Introduction training – radiation part (in English) ¹⁾					
- Number of attendees	634	473	499	144	137
- Online refresher course	285	88	42		
- Number of persons who completed occupational safety card training ²⁾	-	287	398		

¹⁾ Reported as of 2018.

²⁾ The occupational safety card is no longer required. The topic is included in the induction training.

Occupational health and safety

Työturvallisuuden tunnusluvut	2020	2019	2018	2017	2016
Working hours (incl. TVO) ¹⁾	1,628,034				
Working hours (incl. TVO's subcontractors) ¹⁾	1,123,432				
TVO employee accidents					
Absences, more than one day	3	3	3	3	1
- Male	2	3	3	2	1
- Female	1	0	0	1	0
Absences due to occupational accidents (days)	7	29	81	13	7
- Male	2	29	81	12	7
- Female	5	0	0	1	0
Accident frequency	1.8	1.28	2.1	2.2	0.8
(accidents per one million working hours)					
- Male	1.6	1.9	2.7	2.1	1
- Female	2.8	0	0	3.5	0
Lost day rate (per 100 employees) ²⁾	0.9	4	11.2		
Zero accidents, no absence	7	18	16	8	13
- Male	2	13	11	5	11
- Female	5	5	5	3	2
Commuting accidents	7	18	2	5	1
- Male	5	14	1	4	0
- Female	2	4	1	1	1
Number of safety observations	1,309	1,666	2,319	2,602	2,171
Work-related fatalities (incl. TVO employees and subcontractors)	0	0	0	0	0
TVO subcontractor accidents					
- Absence of more than one day (LTA1)	7	7	6	13	7

¹⁾ Reported as of 2020.

²⁾ Reported as of 2018.

Radiation safety

Radiation safety indicators	2020	2019	2018	2017	2016
Highest radiation dose of personnel (mSv) ¹⁾	7.8	7.5	9.5	9	8.1
Collective radiation dose (manmSv)	565	647	1 101	950	884
Annual outage dose (manmSv)	413	530	918	775	730

¹⁾ The maximum permissible radiation dose is 20 mSv / year.



Economic responsibility at TVO

A Particle-larly exceptional nuclear island

AT the TVO Group, shareholder value is created through customer-oriented and competitive operations. TVO is owned by six shareholders, through which the electricity generated by TVO serves the needs of Finnish industrial and energy companies, some of which were owned by a total of 131 Finnish municipalities in 2020.

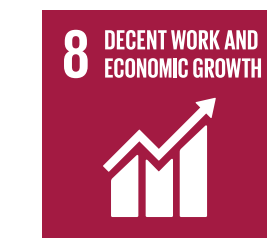
The TVO Group works with a number of diverse projects, which also have a strong vitalizing effect on the surrounding society. The most significant projects include Finland's greatest single act for the climate, Olkiluoto 3, after the completion of which approximately 30 percent of Finland's electricity will come from the Olkiluoto island, and Posiva's EKA project, which aims at starting the final disposal of spent nuclear fuel in the 2020s.

TVO is an important nuclear sector research and development organization. The total R&D expenses in 2020 were EUR 18.5 million, most of which were used for R&D related to nuclear waste management. TVO has been generating electricity for Finnish society for more than forty years. Over the years, the Olkiluoto nuclear power plant units have been modernized in many ways, and their safety has also been improved.

One indication of TVO's nuclear industry expertise is the load factors of the Olkiluoto power plant units, which have been very high even by international standards for a long time now. Ever since the early 1990s, the OL1 and OL2 load factors have ranged between 93 and 97 percent. In 2020, the combined load factor of the OL1 and OL2 plant units was 93.5 percent, the fourth highest in the history of the plant units.

Contents

Creating added value 70



Creating added value

Nuclear power is a competitive, CO₂-free electricity production method. In the future, the EU's stricter and binding emission reduction requirements will further improve the competitiveness of clean energy when compared to fossil fuels.

ONE of the benefits of nuclear energy is its stable and predictable price to the owners. Most of the total costs of nuclear electricity are capital costs, while fuel costs remain fairly low. The construction and production of nuclear power do not require any financial support from society.

For more than forty years, TVO has produced electricity for its industrial and municipal owners at cost price. TVO's nuclear electricity has boosted the competitiveness of the industrial owners and their prerequisites for providing employment in Finland.

Nuclear power is an extremely efficient electricity production method: for example, the amount of uranium

fuel that fits into a matchbox is more than enough to produce electricity for one year for a family of four living in a detached house with electric heating. Electricity produced in Finland brings well-being and offers the preconditions needed for growth – and it will continue to do so in future as well.

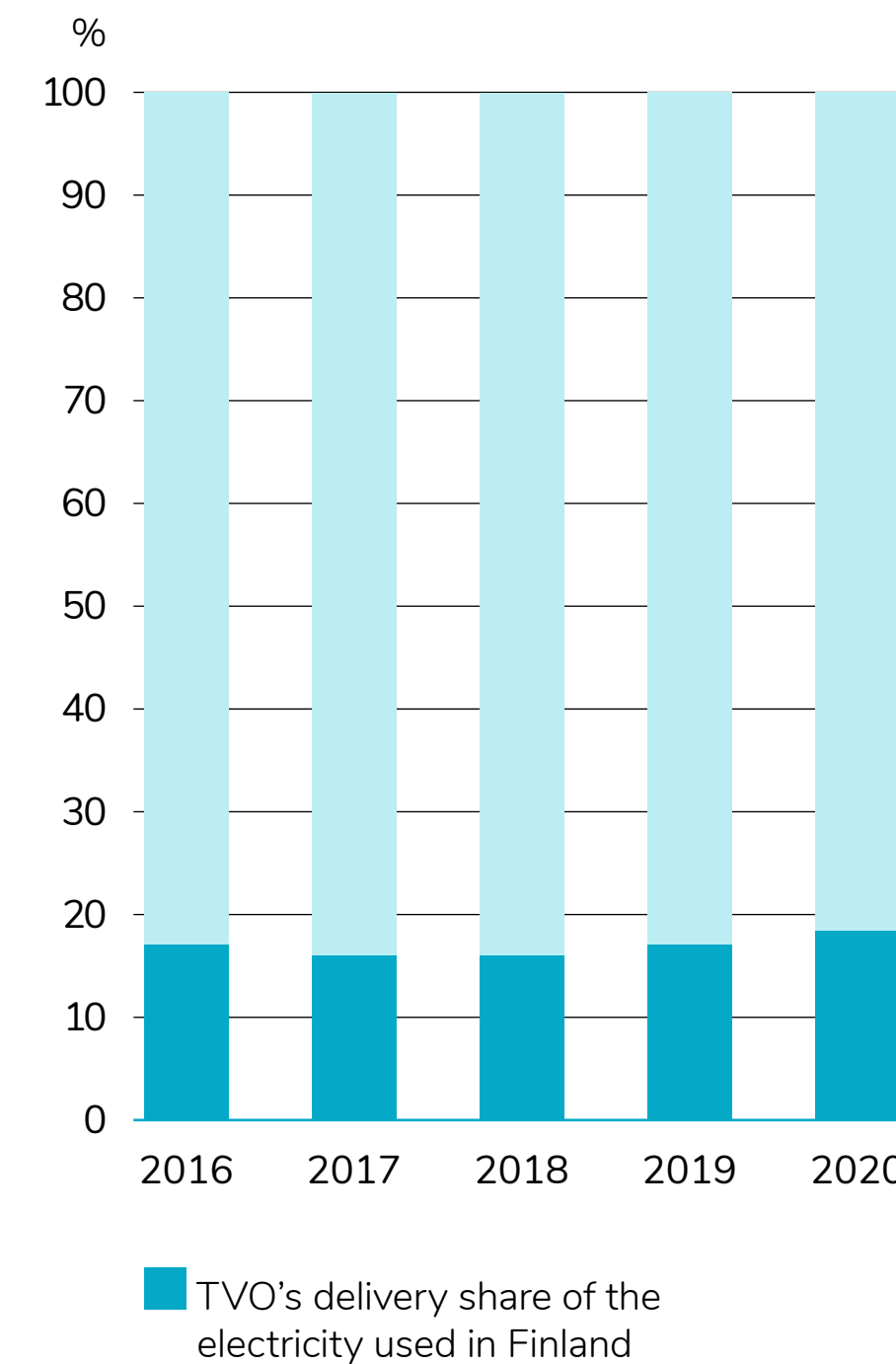
In the case of nuclear power, competitiveness challenges include rising costs and increased price fluctuations due to weather-dependent production. However, operators in the nuclear industry are actively developing the industry to secure future operational preconditions.

Profitable investment

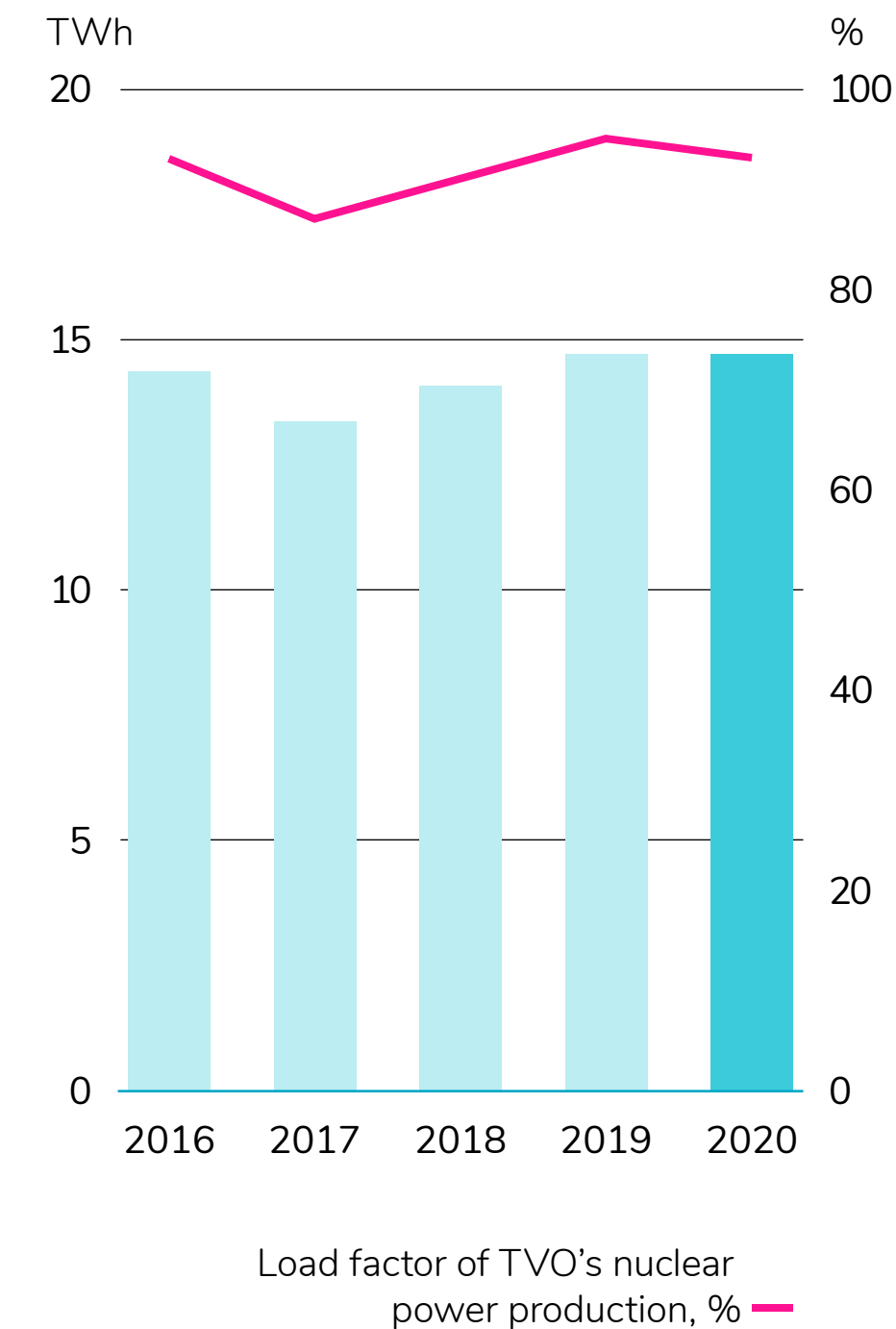
IN 2020, TVO produced approximately one-sixth of the electricity consumed in Finland.

TVO's operations are based on the production of electricity to shareholders at cost price. Owners cover all of TVO's operating costs and, in return, receive electricity pro-rata to their ownership.

TVO's delivery share of the electricity used in Finland



TVO's electricity production



They consume the electricity themselves or sell it to third parties. The cost price model allows electricity companies and electricity users of different sizes to participate in major investments, such as those required for nuclear power, as well as reap the benefits of large-scale production. TVO's owners include 131 municipalities, which means that stable costs and predictability, the benefits of cost-price electricity, are felt all over Finland. Due to the cost price operating principle, TVO cannot be analyzed using conventional financial indicators, as they were created for comparing companies that aim to make a profit. Important indicators to TVO and the owners include the amount of electricity produced and the load factors of the plant units.

In 2020, TVO's most important financial goals included achieving the desired production cost level and reaching the planned electricity delivery volume. The key financial responsibility indicators are discussed in the 2020 financial statements.

Combined electricity production of plant units OL1 and OL2 fourth best in plant history

In 2020, the combined electricity output of the Olkiluoto plant units, Olkiluoto 1

(OL1) and Olkiluoto 2 (OL2), was 14,587 (14,751) GWh, which is the fourth highest result in the plant's history. The combined load factor of the plant units was 93.5 percent.

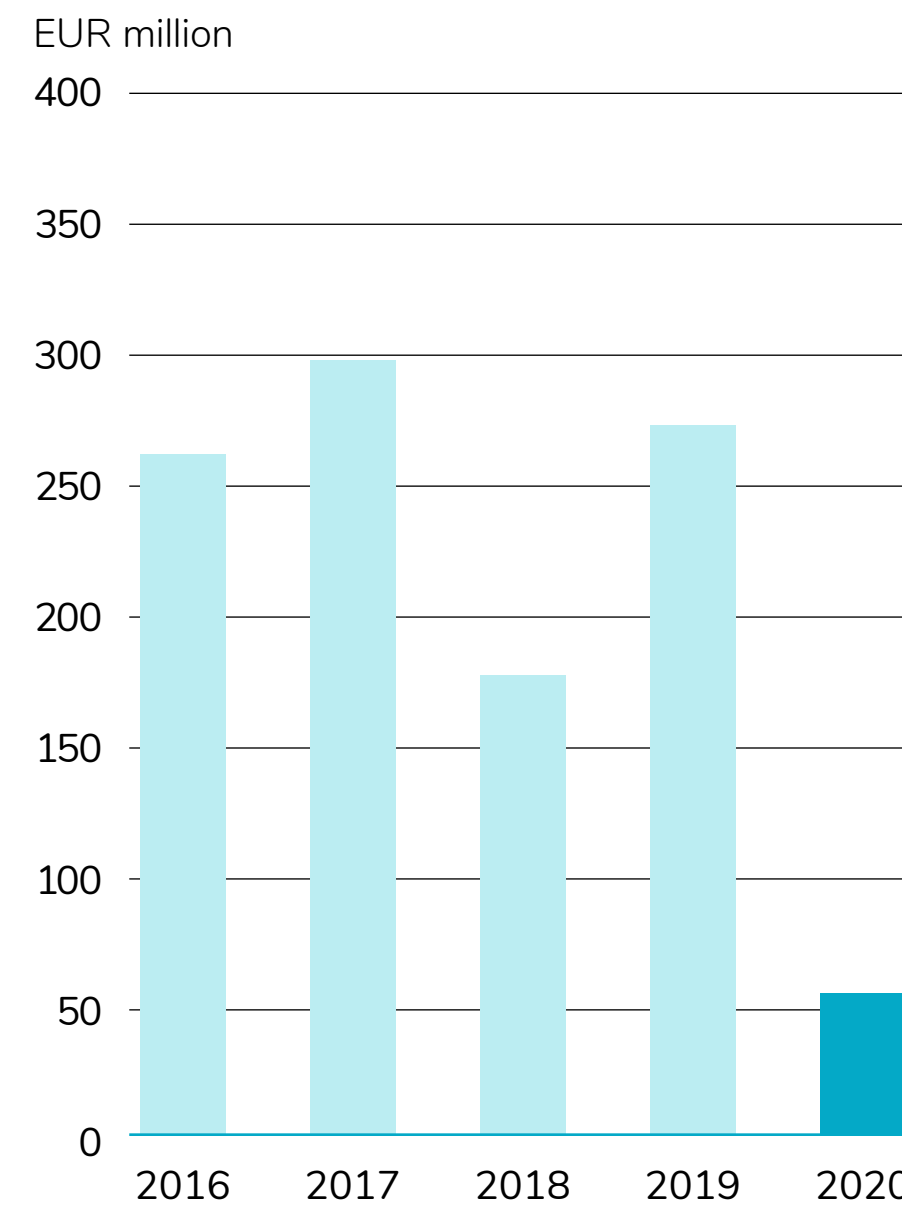
The plant units operated safely. OL1's net production was 7,310 (7,542) GWh and the load factor was 93.7 (96.9) percent. OL2's net production was 7,277 (7,209) GWh and the load factor was 93.3 (92.7) percent.

TVO's investments in 2020 amounted to EUR 52 million, of which the OL3 project accounted for EUR 9 million.

”

In 2020,
the electricity production of OL1
and OL2 was the fourth highest
in the plant units' history.

Investments



CASE

Nuclear power companies' KELPO project elevated licensees' cooperation to a new level

TVO is part of a national nuclear power companies' (TVO, Fortum, Fennovoima) joint project, where the goal is to develop licensing and approval processes of systems and equipment at nuclear power plants in Finland. In 2020, the testing and commissioning phase of common practices and a shared digital platform was reached.

– The project has advanced well. Practices have been simplified, they have been tested in pilots, and bureaucracy has been significantly reduced. The procurement of standard equipment with the help of the shared digital platform is a new and broadly applicable procedure, describes member of the project's steering group **Erkki Korri**.

Through KELPO, both current and future licensees benefit from the development and update of licensing and approval processes in Finland. STUK also takes part in the project as an observer, and supports the work from the perspective of an authority already from an early stage.

Economic impacts

IN the reporting of its economic responsibility, TVO uses the applicable indicators of the Global Reporting Initiative (GRI). TVO also reports some figures that are gathered as a part of the closing of accounts but that are not included in the actual financial statements.

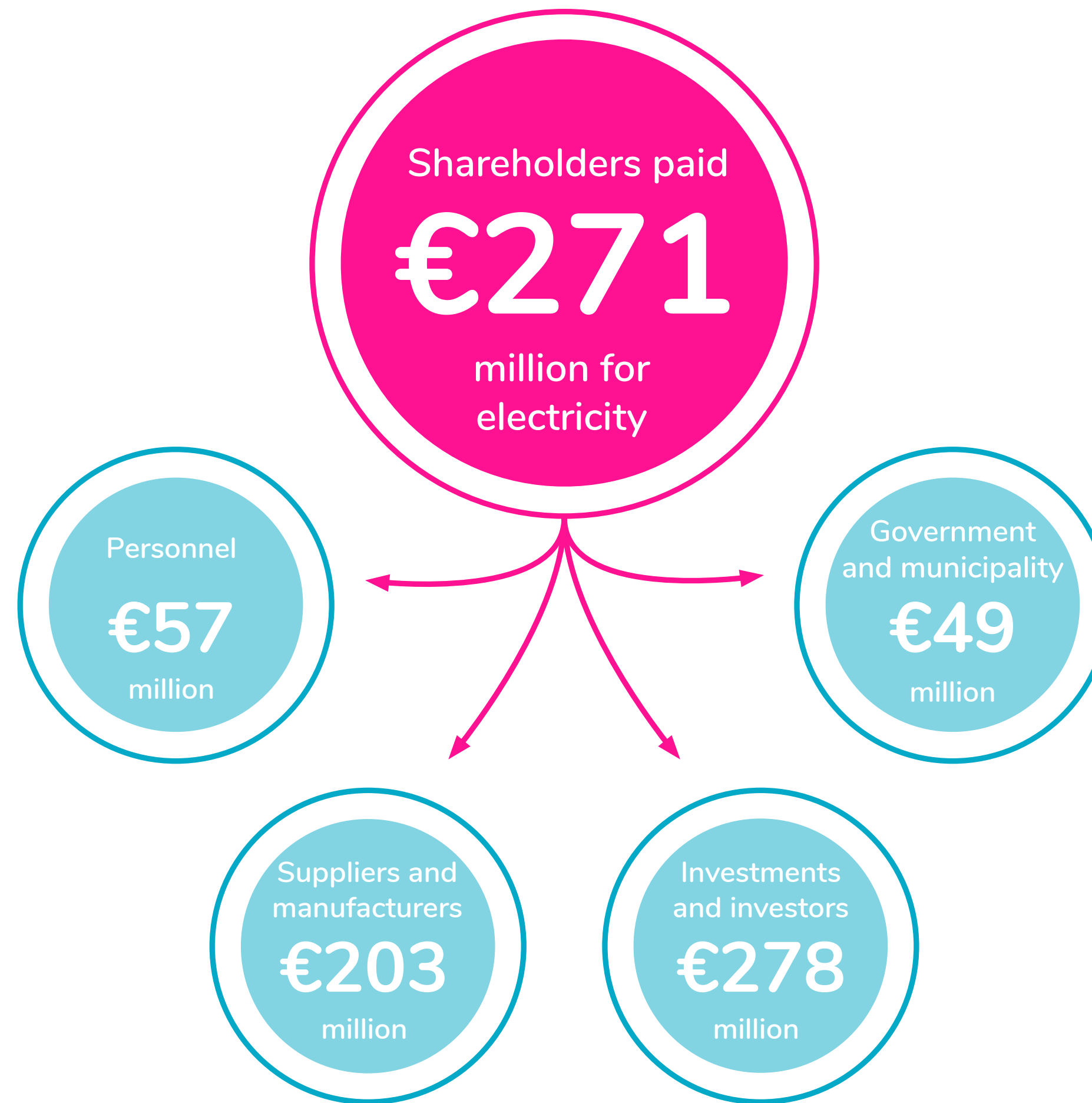
The economic impact (M€) of TVO to the key stakeholders is described in the figure on the right.

Generation of added value

► **Shareholders:** TVO produces electricity to its shareholders at cost price. In 2020, TVO's shareholders paid a total of EUR 271 (251) million for the electricity. TVO supplied 14,563 GWh of electricity, which amounts to approximately one-sixth of the total volume of electricity consumed in Finland.

The electricity is distributed all over Finland via a chain of ownership which consists of TVO's principal owner Pohjolan Voima as well as companies and power utilities of 131 municipalities, which own Pohjolan Voima and receive the produced electricity.

About half of the electricity produced by TVO is used by industrial companies owned by TVO's shareholders at various locations. The other half is consumed by



! The figures in the image have been derived from TVO's income statement and balance sheet. The legend does not include all effects.

households, agriculture, and the service sector.

Distribution of added value

► **Suppliers and subcontractors 205 (203):** A total of 726 external workers participated in the annual outages, 635 of them Finnish. In addition to companies from Finland, subcontractors from 11 other countries participated in the effort.

TVO's major cooperation partners have included Securitas Oy, in charge of security; Rauman Hovi Oy, in charge of the staff restaurant; and RTK-Palvelu Oy, responsible for cleaning and sanitation services. These companies employ over 350 people in Olkiluoto. In total, TVO regularly provided work for almost 800 subcontractors and consultants in Olkiluoto.

Investments and investors:

Investors: At the end of the year, TVO's current and non-current liabilities amounted to EUR 5,109 (4,962) million. The company raised a total of EUR 354 (943) million in non-current liabilities, while repayments amounted to EUR 257 (742) million.

Investments: Good condition of the Olkiluoto nuclear power plant at all times in terms of production and functionality is ensured through alternating refueling and maintenance outages of the plant

units. In the maintenance outage of 2020, major tasks included the modernization of the bushing modules of one containment, the modernization of the valve actuator in the cooling system of the shutdown reactor, as well as the changing of two valves.

In 2020, investments in the OL3 project amounted to EUR 9 (225) million. Despite the COVID-19 pandemic, work at the OL3 construction site has continued under special arrangements, and TVO is now getting ready for nuclear fuel loading at OL3.

Research and development costs totaled EUR 18.5 (24) million. R&D on nuclear waste management accounted for most of this.

► **Personnel:** At the end of the year, TVO employed 973 (942) people.

In 2020, TVO hired 77 (116) new employees, and 11 (13) employees retired.

The OL3 construction site employed almost 1,600 people at the end of the year. In addition, the subcontract work for the project provides employment both in Finland and abroad.

► **State and municipality:** TVO paid the municipality of Eurajoki EUR 16 (16) million in real estate tax.

GRI and appendices

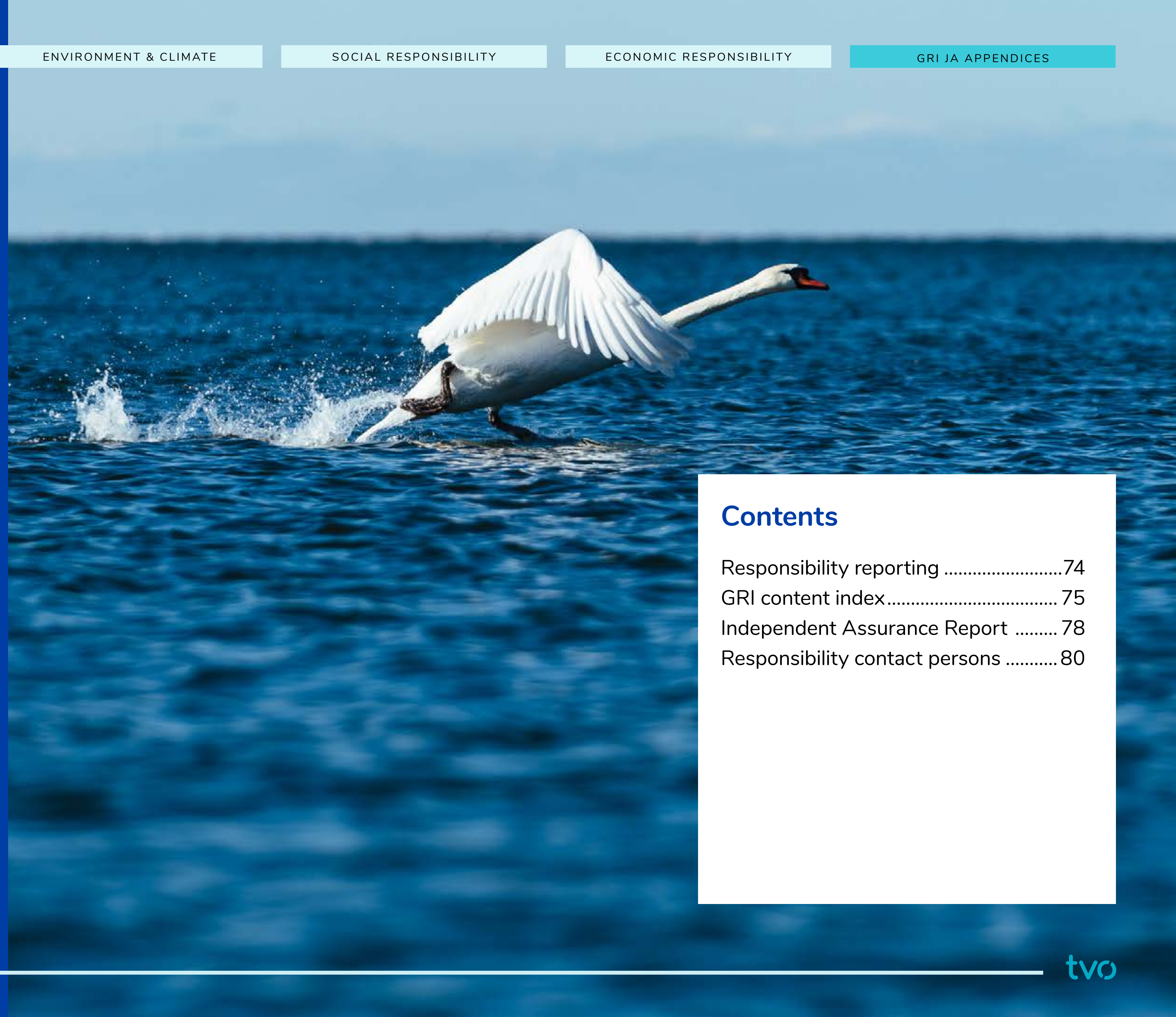
Assured responsibility

TVO'S Responsibility Report has been prepared in compliance with the Core option of the Global Reporting Initiative (GRI) Standards.

The report covers TVO's most material financial, social, and environmental responsibility aspects. The employment, occupational health and safety, and training data in the report has been verified. The environmental reporting data has also been verified by an independent, objective party.

The Responsibility Report 2020 is part of TVO's overall annual reporting. Other reports published in TVO's annual report include the following:

- Report of the Board of Directors and financial statements for 2020, prepared in accordance with the IFRS standard, which provide information on the company's financial development. The Report of the Board of Directors covers the requirement set out in the Finnish Accounting Act for the reporting of non-financial data.
- TVO's Corporate Governance Report 2020, which describes TVO's management systems and the duties of TVO's administrative bodies.
- TVO's Environmental Report 2020, which complies with the EMAS regulation concerning environmental reporting, and the information of which is based on a certified environmental management system.



Contents

Responsibility reporting	74
GRI content index.....	75
Independent Assurance Report	78
Responsibility contact persons	80

Responsibility reporting

TVO has reported on its responsible management of the environment since 1996, and corporate social responsibility aspects since 2001.

TVO'S Corporate Responsibility Report for 2020 (January 1 to December 31, 2020) has been published in Finnish and English on TVO's website. The Corporate Responsibility Report includes an environmental report, which provides information on the environmental impact of TVO's operations, TVO's environmental protection targets, their achievement, and key environmental indicators.

The responsibility reporting data for 2019 was published on TVO's website in February 2020. The 2021 data will be published in spring 2022. Limited external assurance of the Corporate Responsibility Report was carried out by KPMG Oy Ab. The limited assurance covered the information on employment, occupational health and safety, and training in the Corporate Responsibility Report. The assurance report is available under Independent Assurance

Report in the Corporate Responsibility Report. DNV GL Business Assurance Finland Oy Ab, an independent and impartial accredited certification body, has verified the environmental report data. The statement is available under Verification Report in the Environmental Report. The accounting, financial statements, annual report, and administration for 2020 have been audited by PricewaterhouseCoopers Oy, Authorized Public Accountants.

Measurement and calculation principles

TVO'S Corporate Responsibility Report is based on the data required by the Global Reporting Initiative (GRI) Standards for the Core option. The reporting principles pertaining to quality in the GRI Standards have been taken into account during the reporting process.

The report covers the operations of the parent company, Teollisuuden Voima Oyj, as well as operations in the whole of

Finland by regions. During 2020, responsibility reporting has been developed to cover the TVO Group's operations more broadly, and this work is to be continued during 2021. The data in the report is presented with an indication of to which personnel group it pertains. TVO reports accident and training data to some extent for the personnel of the TVO Group (TVO and Posiva) as well as for TVO's contractors. The research into the final disposal of spent fuel implemented by Posiva Oy, a company jointly owned by Fortum Power and Heat Oy and TVO, is described in the reporting. Data on the Meri-Pori coal-fired power plant is not included in the Responsibility Report, as the exclusion of the data will not result in any continuous positive or negative material impact being omitted from reporting. In addition, TVO renounced its share of Meri-Pori's capacity in the beginning of July 2020.

TVO has defined several company-specific aspects for reporting purposes to complement the material aspects included in the GRI Standards. These

describe material responsibility aspects that are typical for TVO. The aspects that are material specifically for TVO include number of subcontractors during the annual outage, average number of subcontractors at the OL3 construction site, occupational health and safety, preparation for emergencies and exceptional situations, level of safety, acceptability of nuclear power, investments to secure the availability and profitability of the plant units, and the decommissioning of nuclear power plants. Any changes to previously reported information are indicated separately in conjunction with the information in question.

The majority of the data presented in the Responsibility Report is based on the data to be reported to the authorities, which has also been published in TVO's other annual reports. The occupational safety information concerning the personnel is based on the occupational health and safety management system. Other personnel information has been collected on the company's or the Group's operations. As concerns the

reporting of economic responsibility, TVO uses the key indicators referred to in the GRI Standards where applicable, and presents in the Corporate Social Responsibility Report some figures obtained from the financial statement process that are not included in the actual financial statements. An independent greenhouse gas verifier has verified the amount of carbon dioxide emissions.

Reporting on financial risks and opportunities related to climate change according to TCFD (*Task Force on Climate-related Financial Disclosures*) recommendations was implemented for the first time in this Responsibility Report, since the climate impact is one of the TVO Group's material responsibility aspects.

GRI content index

This report has been prepared in accordance with the GRI Standards: Core option. The Responsibility Report is published in the Financial Publications section of TVO's website.

TVO's responsibility aspect	Location and comments
GENERAL DISCLOSURES	
Organizational profile	
102-1: Name of the organization	TVO as a company
102-2: Activities, brands, products, and services	TVO as a company
102-3: Location of headquarters	Responsibility contact persons
102-4: Location of operations	TVO as a company
102-5: Ownership and legal form	TVO as a company , Corporate Governance Statement - General
102-6: Markets served	TVO as a company
102-7: Scale of the organization	Good work community, TVO as a company , Financial Statements – Key figures of Teollisuuden Voima Oyj
102-8: Information on employees and other workers	Good work community, Social responsibility indicators
102-9: Supply chain	Responsible procurement, Good work community, Creating added value , Report of the Board of Directors – Nuclear fuel, Nuclear waste management
102-10: Significant changes to the organization and its supply chain	TVO renounced its share of the Meri-Pori coal-fired power plant's capacity in the beginning of July 2020. Subsequently, the Company's C series shares, which entitled to electricity generated at Meri-Pori, were invalidated.
102-11: Precautionary Principle or approach	Safety, Environment and energy efficiency program 2019–2021, Radiation safety , Report of the Board of Directors – Regulatory environment; Risk management, major risks and uncertainties, Nuclear waste management

TVO's responsibility aspect	Location and comments
102-12: External initiatives	Responsible leadership Precautionary principle taken into consideration according to regulatory requirements.
102-13: Membership of associations	Responsible leadership, Social opinion leader
Strategy	
102-14: Statement from senior decision-maker	Review by the CEO 2020
102-15: Key impacts, risks, and opportunities	Review by the CEO 2020, Responsible leadership, Environmental management , Report of the Board of Directors – Risk management, major risks and uncertainties
Ethics and integrity	
102-16: Values, principles, standards, and norms of behaviour	Responsible leadership
102-17: Mechanisms for advice and concerns about ethics	Report of the Board of Directors – Results of Ethical Business
Governance	
102-18: Governance structure	Responsible leadership , Corporate Governance Statement
102-19: Delegating authority	Responsible leadership
102-20: Executive-level responsibility for economic, environmental, and social topics	Responsible leadership , Corporate Governance Statement – Management Group
102-22: Composition of the highest governance body and its committees	Corporate Governance Statement – Board of Directors
102-23: Chair of the highest governance body	Corporate Governance Statement – Board of Directors
Stakeholder engagement	
102-40: List of stakeholder groups	Responsible leadership

TVO's responsibility aspect	Location and comments
102-41: Collective bargaining agreements	Good work community
102-42: Identifying and selecting stakeholders	Responsible leadership
102-43: Approach to stakeholder engagement	Responsible leadership, Social opinion leader
102-44: Key topics and concerns raised	Responsible leadership, Social opinion leader
Reporting practice	
102-45: Entities included in the consolidated financial statements	Report of the Board of Directors - Notes to the consolidated financial statements, Responsibility Reporting
102-46: Defining report content and topic Boundaries	Responsible leadership, Responsibility Reporting
102-47: List of material topics	Responsible leadership, Responsibility Reporting
102-48: Restatements of information	No significant changes.
102-49: Changes in reporting	Responsible leadership, Responsibility Reporting
102-50: Reporting period	Responsibility Reporting
102-51: Date of most recent report	Responsibility Reporting
102-52: Reporting cycle	Responsibility Reporting
102-53: Contact point for questions regarding the report	Responsibility Reporting
102-54: Claims of reporting in accordance with the GRI Standards	Responsibility Reporting
102-55: GRI content index	GRI content index
102-56: External assurance	Responsibility Reporting
MANAGEMENT APPROACH	
103-1: Explanation of the material topic and its Boundary	Responsible leadership, Social opinion leader, Responsible procurement operations, Safety, Supply of electricity in Finland and climate impact, Nuclear waste management, Good work community, Competence development, Creating added value, Responsibility Reporting
103-2: The management approach and its components	Responsible leadership, Environmental management, Social opinion leader, Responsible procurement operations, Safety, Environment and climate, Environment and energy efficiency program 2019–2021, Nuclear waste management, Good work community, Competence development, Occupational health and safety, Creating added value

TVO's responsibility aspect	Location and comments
103-3: Evaluation of the management approach	Responsible leadership, Environmental management, Social opinion leader, Responsible procurement operations, Safety, Environment and climate, Environment and energy efficiency program 2019–2021, Nuclear waste management, Good work community, Competence development, Occupational health and safety, Creating added value
ECONOMIC RESPONSIBILITY	
Economic performance	
201-1: Direct economic value generated and distributed	TVO as a company, Creating added value
Indirect economic impacts	
203-2: Significant indirect economic impacts	Social opinion leader, Research and development, Supply of electricity in Finland and climate impact, Competence development, Economic impacts
ENVIRONMENTAL RESPONSIBILITY	
Materials	
301-1: Materials used by weight or volume	Environment and climate, Raw materials and material efficiency, Cooling water
Energy	
302-1: Energy consumption within the organization	Environment and climate, Raw materials and material efficiency, Production and energy efficiency
302-4: Reduction of energy consumption	Environment and climate, Environmental management, Environment and energy efficiency program 2019–2021, Production and energy efficiency
Water and effluents	
303-1 (2018): Interactions with water as a shared resource	Environmental impact, Environment and energy efficiency program 2019–2021, Cooling water, Raw materials and material efficiency, Emissions to water and soil
303-2 (2018): Management of water discharge-related impacts	Cooling water, Emissions to water and soil
303-3 (2018): Water withdrawal	Cooling water, Raw materials and material efficiency
303-4 (2018): Water discharge	Cooling water, Raw materials and material efficiency
303-5 (2018): Water consumption	Cooling water, Raw materials and material efficiency

TVO's responsibility aspect	Location and comments
Emissions	
305-1: Direct GHG emissions	Environmental impact, Emissions to the air
305-7: Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	Environmental impact, Emissions to the air
Effluents and waste	
306-1: Water discharge by quality and destination	Environmental impact, Cooling water, Emissions to water and soil
306-2: Waste by type and disposal method	Environmental impact, Waste, Nuclear waste management
306-3: Significant spills	Cooling water, Emissions to water and soil
306-5: Water bodies affected by water discharges and/or runoff	Cooling water, Emissions to water and soil
SOCIAL RESPONSIBILITY	
Employment	
401-1: New employee hires and employee turnover	Good work community, Social responsibility indicators
Occupational health and safety	
403-1 (2018): Occupational health and safety management system	Occupational health and safety
403-2 (2018): Hazard identification, risk assessment, and incident investigation	Occupational health and safety
403-3 (2018): Occupational health services	Well-being at work
403-4 (2018): Worker participation, consultation, and communication on occupational health and safety	Occupational health and safety
403-5 (2018): Worker training on occupational health and safety	Competence development
403-6 (2018): Promotion of worker health	Wellbeing at work
403-7 (2018): Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Occupational health and safety
403-8 (2018): Workers covered by an occupational health and safety management system	Occupational health and safety

TVO's responsibility aspect	Location and comments
403-9 (2018): Work-related injuries	Occupational health and safety, Social responsibility indicators
Training and education	
404-1: Average hours of training per year per employee	Competence development, Social responsibility indicators
TVO's OWN INDICATORS	
TVO: Number of employees during annual outage	Safety
TVO: Average number of subcontractors' employees on Olkiluoto 3 construction site	Good work community
TVO: Occupational health and safety TVO: Työterveys ja -turvallisuus	Good work community, Social responsibility indicators
TVO: Disaster/Emergency Planning and Response	Safety
TVO: Level of safety	Safety
TVO: Investments to improve the availability, profitability, and safety of its nuclear power plant	Economic impacts
TVO: Decommissioning of nuclear power plant	Nuclear waste management, Economic impacts

Independent Assurance Report to the Management of Teollisuuden Voima Oyj

This document is an English translation of the Finnish report

We have been engaged by the Management of Teollisuuden Voima Oyj (hereafter “TVO”) to provide limited assurance on selected corporate responsibility indicators presented in TVO’s Corporate Responsibility Report 2020 (hereafter “Selected Corporate Responsibility Information”) for the year ended 31 Dec 2020.

THE SELECTED Corporate Responsibility Information consists of the following indicators presented in the GRI Index:

General Disclosures

- 102-8: Information on employees and other workers
- 102-41: Collective bargaining agreements

Employment

- GRI 103: Management Approach
 - 103-1: Explanation of the material topic and its boundary
 - 103-2: The management approach and its components
 - 103-3: Evaluation of the management approach
- GRI 401: Employment
 - 401-1: New employee hires and employee turnover
 - TVO: Subcontractors working in Annual Outages of OL1 and OL2
 - TVO: Average workforce at the Olkiluoto 3 construction site

Occupational Health and Safety

- GRI 103: Management Approach
 - 103-1: Explanation of the material topic and its boundary
 - 103-2: The management approach and its components

- 103-3: Evaluation of the management approach
- GRI 403: Occupational Health and Safety
 - 403-2: Types of injury and rates of injury, occupational diseases, lost days and absenteeism, and number of work-related fatalities

Training and Education

- GRI 103: Management Approach
 - 103-1: Explanation of the material topic and its boundary
 - 103-2: The management approach and its components
 - 103-3: Evaluation of the management approach
- GRI 404: Training and Education
 - 404-1: Average hours of training per year per employee

Management's responsibilities

THE MANAGEMENT of TVO is responsible for the preparation and presentation of the Selected Corporate Responsibility Information in accordance with the reporting criteria, i.e. *GRI Sustainability*

Reporting Standards, and the information and assertions contained within it. The Management is also responsible for determining TVO’s objectives with regard to sustainable development performance and reporting, including the identification of stakeholders and material issues, and for establishing and maintaining appropriate performance management and internal control systems from which the reported performance information is derived.

Our responsibilities

OUR RESPONSIBILITY is to carry out a limited assurance engagement and to express a conclusion based on the work performed. We conducted our assurance engagement on the Selected Corporate Responsibility Information in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised), *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board IAASB. That Standard

requires that we plan and perform the engagement to obtain limited assurance about whether the Selected Corporate Responsibility Information is free from material misstatement.

KPMG Oy Ab applies International Standard on Quality Control ISQC 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants IESBA, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

Procedures performed

A LIMITED assurance engagement on Selected Corporate Responsibility Information consists of making inquiries, primarily of persons responsible for the preparation of information presented in the Selected Corporate Responsibility Information, and applying analytical and other evidence gathering procedures, as appropriate. In the engagement, we have performed the following procedures, among others:

- Interviewed the members of TVO's senior management and relevant staff responsible for providing the Selected Corporate Responsibility Information;
- Assessed the application of the *GRI Sustainability Reporting Standards* reporting principles in the presentation of the Selected Corporate Responsibility Information;
- Assessed data management processes, information systems and working methods used to gather and consoli-

date the Selected Corporate Responsibility Information;

- Reviewed the presented Selected Corporate Responsibility Information and assessed its quality and reporting boundary definitions and;
- Assessed the Selected Corporate Responsibility Information's data accuracy and completeness through a review of the original documents and systems on a sample basis.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Inherent limitations

INHERENT limitations exist in all assurance engagements due to the selective testing of the information being examined. Therefore fraud, error or non-compliance may occur and not be detected. Additionally, non-financial data may be subject to more inherent limitations than financial data, given both its nature and the methods used for determining, calculating and estimating such data.

Conclusion

BASED on the procedures performed and the evidence obtained, as described above, nothing has come to our attention that causes us to believe that the information subject to the assurance engagement is not prepared, in all material respects, in accordance with the *GRI Sustainability Reporting Standards*.

Helsinki, 17 February 2021

KPMG Oy Ab

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