



## SECOND PARTY OPINION (SPO)

Sustainability Quality of the Issuer and Green Bond Framework

Teollisuuden Voima Oyj

19 May 2023

### VERIFICATION PARAMETERS

Type(s) of instruments contemplated	<ul style="list-style-type: none"><li>Green Bonds</li></ul>
Relevant standards	<ul style="list-style-type: none"><li>Green Bond Principles, as administered by the ICMA (as of June 2021 with June 2022 Appendix 1)</li><li>EU Taxonomy Complementary Climate Delegated Act (as of July 2022)</li></ul>
Scope of verification	<ul style="list-style-type: none"><li>Teollisuuden Voima Oyj's Green Bond Framework (as of April 19, 2023)</li><li>Teollisuuden Voima Oyj's Eligibility Criteria (as of April 19, 2023)</li></ul>
Lifecycle	<ul style="list-style-type: none"><li>Pre-issuance verification</li></ul>
Validity	<ul style="list-style-type: none"><li>Valid as long as the cited Framework remains unchanged.</li></ul>

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## SCOPE OF WORK

Teollisuuden Voima Oyj (“the Issuer” or “the Company” or “TVO”) commissioned ISS Corporate Solutions (ICS) to assist with its Green Bonds by assessing four core elements to determine the sustainability quality of the instrument:

1. TVO’s Green Bond Framework (as of April 19, 2023) – benchmarked against the International Capital Market Association's (ICMA) Green Bond Principles.
2. The Eligibility Criteria– whether the project category contributes positively to the UN SDGs (See Annex 1).
3. The alignment of the project category with the EU Taxonomy on a best-efforts basis<sup>1</sup> – whether the nominated project category is aligned with the EU Taxonomy Technical Screening Criteria (including the Climate Change Mitigation and Do No Significant Harm Criteria) and Minimum Safeguards requirements as included in the EU Taxonomy Complementary Climate Delegated Act (July 2022)<sup>2</sup>.
4. Linking the transaction(s) to TVO’s overall ESG profile – drawing on the issuance-specific Use of Proceeds category.

## TVO BUSINESS OVERVIEW

Teollisuuden Voima Oyj produces electricity from nuclear power. It provides services to industrial and energy companies. The company was founded on January 23, 1969 and is headquartered in Eurajoki, Finland.

It is classified in the Electric Utility industry, as per ISS ESG’s sector classification.

<sup>1</sup> Whilst the Final Delegated Act for Climate Change Mitigation was published in June 2021, the Commission followed with Complementary Climate Delegated Act in July 2022 providing Technical Screening Criteria which allow for discretion on the methodologies in determining alignment for specific nuclear and gas energy activities. Therefore, at this stage the alignment with the EU Taxonomy has been evaluated on a “best efforts basis”.

<sup>2</sup> European Commission, 2022, Commission Delegated Regulation (EU) 2022/1214 of 9 March 2022 amending Delegated Regulation (EU) 2021/2139 as regards economic activities in certain energy sectors and Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R1214&from=EN>

## ASSESSMENT SUMMARY

SPO SECTION	SUMMARY	EVALUATION <sup>3</sup>
<b>Part 1: Alignment with GBP</b>	The Issuer has defined a formal concept for its Green Bonds regarding use of proceeds, processes for project evaluation and selection, management of proceeds and reporting. This concept is in line with the Green Bond Principles.	<b>Aligned</b>
<b>Part 2: Sustainability quality of the Eligibility Criteria</b>	The Green Bonds will (re-)finance the following eligible asset category: Nuclear power generation.  Nuclear power generation use of proceeds category has a contribution to SDG 13 'Climate action' and an obstruction to SDGs 7 'Affordable and clean energy' and 15 'Life on land'.	<b>Positive</b>
<b>Part 3: Alignment with EU Taxonomy</b>	TVO's project characteristics, due diligence processes and policies have been assessed against the requirements of the EU Taxonomy (Complementary Climate Delegated Act of July 2022), on a best-efforts basis <sup>4</sup> . The nominated project category is considered to be: <ul style="list-style-type: none"> <li>▪ <b>Aligned</b> with the Generic Criteria for Substantial Contribution to Climate Change Mitigation and Do No Significant Harm</li> <li>▪ <b>Aligned</b> with the Additional Criteria pertaining to Substantial Contribution to Climate Change Mitigation</li> <li>▪ <b>Aligned</b> with the Additional Criteria pertaining to Do No Significant Harm</li> <li>▪ <b>Aligned</b> with the Minimum Safeguards requirements</li> </ul>	
<b>Part 4: Linking the transaction to TVO's overall ESG profile</b>	The key sustainability objectives and the rationale for issuing Green Bonds are clearly described by the Issuer. The project category considered are in line with the sustainability objectives of the Issuer.	<b>Consistent with Issuer's sustainability strategy</b>

<sup>3</sup> The evaluation is based on the TVO's Green Bond Framework (April 2023 version) and on publicly available information.

<sup>4</sup> Whilst the Final Delegated Act for Climate Change Mitigation was published in June 2021, the Commission followed with Complementary Climate Delegated Act in July 2022 providing Technical Screening Criteria which allow for discretion on the methodologies in determining alignment for specific nuclear and gas energy activities. Therefore, at this stage the alignment with the EU Taxonomy has been evaluated on a "best efforts basis".

## SPO ASSESSMENT

### PART I: ALIGNMENT WITH GREEN BOND PRINCIPLES

This section evaluates the alignment of the TVO's Green Bond Framework (as of April 19, 2023) with the Green Bond Principles.

GBP	ALIGNMENT	OPINION
1. Use of Proceeds	✓	<p>The Use of Proceeds description provided by TVO's Green Bond Framework is <b>aligned</b> with the GBP.</p> <p>The Issuer's project category aligns with the project categories as proposed by the GBP. Criteria are defined in a clear and transparent manner and environmental benefits are described. The Issuer does not have an exclusion list for harmful projects, but it confirms that its business model and the projects that will be financed under this Framework will solely focus on nuclear power generation.</p>
2. Process for Project Evaluation and Selection	✓	<p>The Process for Project Evaluation and Selection description provided by TVO's Green Bond Framework is <b>aligned</b> with the GBP.</p> <p>The project selection process is defined and structured in a congruous manner. ESG risks associated with the project category is identified and managed through an appropriate process. Moreover, the project category selected shows alignment with the sustainability strategy of the Issuer.</p> <p>The Issuer involves various stakeholders in this process; identifies alignment of its Green Bond framework and its green projects with official or market-wide taxonomies, and reference any green standards or certifications used, in line with best market practice.</p>
3. Management of Proceeds	✓	<p>The Management of Proceeds proposed by TVO's Green Bond Framework is <b>aligned</b> with the GBP.</p> <p>The net proceeds collected will be equal to the amount allocated to eligible projects, with no exceptions. The net proceeds are tracked in an appropriate manner. The net proceeds are managed on an aggregated basis for multiple Green Bonds (portfolio approach). Moreover, the Issuer discloses the temporary investment instruments for unallocated proceeds.</p>

<p><b>4. Reporting</b></p>	<p>✓</p>	<p>The allocation and impact reporting proposed by TVO's Green Bond Framework is <b>aligned</b> with the GBP.</p> <p>The Issuer commits to disclose the allocation of proceeds transparently and to report in an appropriate frequency. The reporting will be publicly available on the Issuer's website. TVO explains the level of expected reporting and the type of information that will be reported. Moreover, the Issuer commits to report annually, until the bonds mature.</p> <p>The Issuer is transparent on the level, on the information reported, and frequency of the impact reporting, in line with best market practices. The Issuer defines the duration of the impact reporting and commits to get the allocation report audited by an external party, in line with best market practices.</p>
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## PART II: SUSTAINABILITY QUALITY OF THE ISSUANCE

### CONTRIBUTION OF THE GREEN BONDS TO THE UN SDGs<sup>5</sup>

Companies can contribute to the achievement of the SDGs by providing specific services/products which help address global sustainability challenges, and by being responsible corporate actors, working to minimize negative externalities in their operations along the entire value chain.




#### 1. Products and services

The assessment of UoP category for (re)financing products and services is based on a variety of internal and external sources, such as the ISS ESG SDG Solutions Assessment (SDGA), a proprietary methodology designed to assess the impact of an Issuer's products or services on the UN SDGs, as well as other ESG benchmarks (the EU Taxonomy Climate Delegated Acts, the ICMA Green and/or Social Bond Principles and other regional taxonomies, standards and sustainability criteria).

The assessment of the UoP category for (re)financing specific products and services is displayed on 3-point scale (see Annex 1 for methodology):



The Green Bonds' Use of Proceeds category has been assessed for its contribution to, or obstruction of, the SDGs:

USE OF PROCEEDS (PRODUCTS/SERVICES)	CONTRIBUTION OR OBSTRUCTION	SUSTAINABLE DEVELOPMENT GOALS
<p><b>Nuclear power generation</b></p> <ul style="list-style-type: none"> <li>▪ <i>Construction and safe operation of new nuclear power plants, for the generation of electricity or heat, including for hydrogen production, using best-available technologies</i></li> <li>▪ <i>Electricity generation from nuclear energy in existing installations</i></li> </ul>	<div style="background-color: green; color: white; padding: 5px; margin-bottom: 10px;">Contribution</div> <div style="background-color: red; color: white; padding: 5px;">Obstruction<sup>6</sup></div>	<div style="margin-bottom: 10px;">  </div> <div>   </div>

<sup>5</sup> The impact of the UoP categories on UN Social Development Goals is assessed with proprietary methodology and may therefore differ from the Issuer's description in the framework.

<sup>6</sup> The 'nuclear power generation' category is assessed according to ISS ESG's methodology applying to any nuclear power generation projects to date. The obstruction reflects uncertainties regarding the negative externalities of nuclear on water and biodiversity, in addition to its dependence on uranium which is a non-renewable resource of which mining is linked to many salient risks from an environmental and social perspective.

## PART III: ALIGNMENT OF THE SELECTION CRITERIA WITH THE EU TAXONOMY COMPLEMENTARY CLIMATE DELEGATED ACT

The alignment of TVO's project characteristics, due diligence processes and policies for the nominated Use of Proceeds project category has been assessed against the relevant Climate Change Mitigation and Do Not Significant Harm Criteria (DNSH) Technical Screening Criteria, and against the Minimum Safeguards requirements of the EU Taxonomy Complementary Climate Delegated Act (as of July 2022)<sup>7</sup>, based on information provided by TVO. Where TVO's project characteristics, due diligence processes and policies meet the EU Taxonomy Criteria requirements, a tick is shown in the table below.

TVO's project selection criteria overlap with the following economic activity in the EU Taxonomy:

4.27 Construction and safe operation of new nuclear power plants

4.28 Electricity generation from nuclear energy in existing installations


All projects financed under the Green Bond Framework are and will be located in Finland.

This analysis only displays how the EU Taxonomy criteria are fulfilled/not fulfilled. For ease of reading, the original text of the EU Taxonomy criteria is not shown. Readers can recover the original criteria at the following [link](#).

<sup>7</sup>European Commission, 2022, Commission Delegated Regulation (EU) 2022/1214 of 9 March 2022 amending Delegated Regulation (EU) 2021/2139 as regards economic activities in certain energy sectors and Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R1214&from=EN>



a) 4.27 Construction and safe operation of new nuclear power plants

PROJECT CHARACTERISTICS AND SELECTION PROCESSES <sup>8</sup>	ALIGNMENT WITH THE EU TAXONOMY'S TECHNICAL SCREENING CRITERIA
1. GENERIC CRITERIA – SUBSTANTIAL CONTRIBUTION TO CLIMATE CHANGE MITIGATION AND DO NO SIGNIFICANT HARM	
<p>TVO confirms that the project category is located in Finland, which has fully transposed Council Directive 2009/71/Euratom and Council Directive 2011/70/Euratom under the Nuclear Energy Act 990/1987 with relevant amendments (269/2011, 499/2013, 964/2020), Radiation Safety Act 859/2018 (replacing 592/1991 for which amendment 500/2013 was made), and the Nuclear Energy Regulation 161/1988 (1039/2020). It also transposed Directive 2013/59/Euratom through national law applicable for companies. In addition, TVO confirms that Finland complies with applicable Union environmental law adopted under Article 192 TFEU, in particular Directive 2011/92/EU and Directive 2000/60/EC.</p> <p>TVO confirms that under Finnish law, nuclear operators are required to have in place long term plans to take care of all nuclear liabilities, including the decommissioning of the plants and radioactive waste management. To do so, the Finnish state set a radioactive waste management fund, which also covers the decommissioning of the plants, where nuclear operators are required to make annual contributions.</p> <p>TVO confirms that Finland ensures every year that it will have the resources available at the end of the estimated useful life of the nuclear power plant corresponding to the estimated cost of radioactive waste management and decommissioning in compliance with Recommendation 2006/851/Euratom. The company confirms that Finland reports annually on the amount of contributions held in its Nuclear Waste Management Fund. TVO also reports on its share in the Nuclear Waste Management Fund in its Annual Reports.</p> <p>TVO confirms that the project has been notified to the EU Commission following Regulation 2587/1999/Euratom, which is a precondition in Finland to get a construction license, and that the EU Commission will perform periodic safety reviews (every 6 years) of nuclear safety in Finland.</p> <p>TVO complies with all relevant legislation that transpose the Euratom Directives, including the evaluation, in particular through stress-tests, of the resilience of the nuclear power plants located on the territory of the Union against extreme natural hazards, including earthquakes.</p> <p>Additionally, according to the Company the technological criteria it follows are covered by the Nuclear Energy Act 990/1987 and the YVL-ohjeet provided by</p>	

<sup>8</sup> This column is based on input provided by the issuer.

Radiation and Nuclear Safety Authority (STUK). TVO complies with the national requirements (YVL-ohjeet) and the guidelines provided by STUK which should ensure compliance with the IAEA and WENRA standards as STUK is committed to implement the IAEA and WENRA in their own guidelines.

Finally, TVO confirms that radioactive waste is disposed of in Finland. It has a disposal facility for all very low-, low- and intermediate-level radioactive waste in Olkiluoto which is already in operation by TVO. This facility is notified to the Commission under Article 41 of the Euratom Treaty or under Article 1(4) of Council Regulation 2587/1999 and included in the national programme updated under Council Directive 2011/70/Euratom.

Regarding the final disposal of high-level radioactive waste, it has a disposal facility operated by Posiva, a joint-venture between TVO and Fortum, which was granted construction license in 2015 to start operation from mid-2020. The Company confirms that the disposal facility incorporates concepts or plans for the post-closure period of a disposal facility's lifetime, including the period during which appropriate controls are retained and the means to be employed to preserve knowledge of that facility in the longer term. As mentioned above, TVO complies with all relevant legislation that transpose Euratom Directives, including the ones relevant for the radioactive waste disposal.

## 2. ADDITIONAL CRITERIA PERTAINING TO SUBSTANTIAL CONTRIBUTION TO CLIMATE CHANGE MITIGATION

TVO confirms that under this Framework, it will finance the construction and safe operation of new nuclear installations for which the construction permit has been issued by 2045 by Member States' competent authorities, in accordance with applicable national law, to produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production (new nuclear installations).

TVO will finance the operations, investments and electricity production from Olkiluoto 3 (OL3) plant unit, which is a new facility that received its construction permit in 2005 and operating license in 2019 but only started operating in May 2023.

With regards to applying the best-available technology as defined by the EU Taxonomy technical screening criteria, TVO confirms that it fully complies with all relevant national legislation that transpose the Euratom Directives, including Directive 2009/71/Euratom. In addition, TVO follows technical criteria which comply with the Nuclear Energy Act 990/1987 and the YVL guidelines (YVL-ohjeet) provided by STUK specifying detailed safety requirements concerning the implementation of safety level in accordance with the above-mentioned Act. These guidelines take into account the technical parameters of the latest IAEA standards and the WENRA Safety objectives and Reference Levels<sup>9</sup>. TVO confirms that the technology is approved by national safety regulator which is a requirement to



<sup>9</sup> Please note that Finland is a member country of the WENRA, thus, are committed to implement updates to the WENRA Safety objectives and Reference Levels in national regulations

receive the construction permit in Finland. License holders are required to follow new safety regulations (any updates to the YVL guidelines) and perform periodical safety checks by the regulator - a global plant level safety check occurs every 10 years but the regulator conducts regular safety checks at plant site as well.

With regards to the use of accident-tolerant fuel, TVO commits to making use of this fuel when it becomes commercially available and to fulfill all EU Taxonomy technical screening criteria for activity 4.27 regarding the use of such fuel. As the Issuer cannot anticipate the year by which accident-tolerant fuel will become commercially available, it will continue to make use of the best-available technology existing as of today regarding fuels tolerance and is investing in technological improvements to increase fuels tolerance. For example, it is making use of new materials to prevent fuel channels distortion, implementing evolutionary fuel assembly designs which substantially improve the ability to shut down the reactor in the event of abnormal, emergency and accidental conditions, etc. TVO commits to continue monitoring both the technical progress and the licensing of accident tolerant fuel by the European Union.

With regards to the life-cycle greenhouse gas (GHG) emissions from the generation of electricity from nuclear energy, TVO assessed that the life-cycle greenhouse gas (GHG) emissions from all plant units financed under this Framework will be below the threshold of 100 g CO<sub>2</sub>e/kWh. TVO commits to having the life cycle GHG emission savings calculated using Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018, and verified by an independent third party in 2023.

### 3. CLIMATE CHANGE ADAPTATION – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM

The company identifies seawater temperature and quality as the main climate-related risks to nuclear plants, as TVO's nuclear power production is reliant on seawater considering the location of the plants on Olkiluoto Island, a separate freshwater reservoir in the Olkiluoto island is only used as a backup source. The company explains that its nuclear power is not affected by changes in wind, temperature, storms, rain, drought or changes in soil. Additionally, the regulator's seismic requirements have been taken into account in the plant design. However, as Finland is not seismically active area, this is not considered as material risk for TVO's nuclear plants.

Physical risks are evaluated and taken in account in the Nuclear Power Plant (NPP) planning and commissioning and are assessed continuously as part of the requirements set by the Finnish Radiation and Nuclear Safety Authority (STUK). The company confirms that necessary changes vis-à-vis climate-related risks will be designed and performed during plant modifications when needed to uphold the safety of the power plants. All nuclear power plants have 10 years or more left on their lifespan. The risk assessment accounts for changes in the climate until the year 2059, projected maximum temperature increase in the Shared Socioeconomic Pathways (SSP) 2-4.5 scenario 2 degrees Celsius by 2059, and 2,2 degrees Celsius in SSP 3-7. These climate risks are considered not to have impact on plant safety,



but rather to produce a change in coolant conditions, possibly affecting the efficiency of the electricity production process. The risk assessment has been produced in and published for internal use in the beginning of 2023 and considers the SSP scenarios. The time period in which implementation of plant modifications are performed varies according to the range and complexity of the modification, thus it is not confirmed that they will be implemented over a period of up to five years. Plant modifications are designed and performed according to the need of the power plants and their safety (i.e., feedwater pumps using the steam from the plant for pumping coolant water into the reactor, replacement of the existing (8) emergency diesel generators and adding one new unit, placing new Emergency Diesel Generator (EDG) units higher to increase the tolerance against flooding). Climate risks are a part of the process in which we are assessing the need for plant modifications. All adaptation solutions are designed to improve the physical assets and their resilience towards external and internal threats and hazards.

The activity complies with the requirements laid down in Article 6(b), Article 8b (1), point (a), and Article 8c(a) of Directive 2009/71/Euratom. The directive is transposed nationally by Finland and such law is setting the rules to demonstrate nuclear safety through the following Finnish legislations: Suomen Säädöskokoelma (269/2011) and Suomen Säädöskokoelma (990/1987). TVO complies with the requirements specified in this legislation.

The activity fulfils the requirements of Directive 2009/71/Euratom, implemented in accordance with the international guidance of the IAEA and WENRA relating to extreme natural hazards, including floods and extreme weather conditions (i.e., surface water treatment in the power plant area). TVO complies with the Euratom directive and implements the guidelines from the Finnish Radiation and Nuclear Safety Authority (STUK) that enact the International Atomic Energy Agency (IAEA) and Western European Nuclear Regulators' Association (WENRA) guidance. TVO has instructions and a process in place detailing how to identify and take into account the legal requirements, regulatory requirements and other applicable requirements and obligations based on voluntary commitments in their operations. Changes in applicable regulations and legislation are monitored regularly by a separate group of experts from different business areas. Necessary changes arising from such changes are then implemented into practice and company manuals and instructions. TVO goes beyond legal commitments through their WANO membership, in which WANO makes regular visits to different plant units as well as provides recommendations (i.e., to improve plant safety). The objective of regular conformity assessment activities is to identify in a timely manner any other measures arising from legislative changes and to maintain the demonstration of conformity. This means that appropriate statutory, regulatory guidelines, authorizations and other requirements to which TVO and Posiva have committed, which it can control and influence, will be taken into account when

implementing and maintaining defined policy and environmental policies. In addition, the procedure in accordance with the guideline ensures that TVO and Posiva's various organizational entities receive sufficient up-to-date information on legal and other requirements. The Guide also directs the monitoring of authorizations applied for and granted to TVO and POSIVA.

#### 4. WATER AND MARINE RESOURCES – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM

All projects comply with relevant national transposition of the EU Water Framework directive. All projects have conducted an Environmental Impact Assessment (EIA).

Risk management evaluations are not public but are developed in consultation with concerned stakeholders defined as the relevant authorities such as the Radiation and Nuclear Safety Authority (STUK) and the environmental authority The Centres for Economic Development, Transport and the Environment (ELY Centres). Olkiluoto on-site fire brigade practices regularly, i.e. management and prevention of oil accidents in the surrounding sea area, and has the preparedness to act if necessary. Outside threats and risks are evaluated and managed by corporate security of TVO. Cooling water implications and quality are monitored constantly, because it is requirement in the technical specifications of the NPP.

There is no risk to thermal anomalies associated with the discharge of waste heat in rivers or lakes as the plants do not use water from lakes or rivers.

Seawater temperature is monitored as required by the environmental permit. One of the permit conditions is that the seawater temperature must not exceed the target value of 30°C when measured as a weekly rolling average at a distance of 500 metres from the cooling water discharge channel. Limit values have also been specified for the amount of cooling water (max. 4,415 million m<sup>3</sup>) and the thermal load (max. 56.9 TWh) in the environmental permit. The permit limits have not been exceeded<sup>10</sup>.

The Issuer shared elements supporting the alignment of its activity with all the DNSH criteria on the “(3) Sustainable use and protection of water and marine resources” environmental objective, except for the criteria related to the Industry Foundation Classes (IFC) standards<sup>11</sup>. According to the Issuer, such criteria is not applicable to mitigate risks related to the sustainable use of water to the extent that it refers to digital communication between architects and constructors and users. Without further guidance on how to assess the compliance of the activity



<sup>10</sup> TVO, 2022 Environmental Report, [TVO Environmental-Report-2022.pdf](#)

<sup>11</sup> Those standards are not mentioned in the “ Technical assessment of nuclear energy with respect to the ‘do no significant harm’ criteria of Regulation (EU) 2020/852 (‘Taxonomy Regulation’)” published by the European Commission

with the IFC standards, ISS is assessing the alignment of the activity with the DNSH criteria on the third environmental objective positively.

Directive 2000/60/EC transposition to the Finnish legislation that is relevant for TVO includes: Ympäristönsuojelulaki (YSL) 527/2014, Vna ympäristönsuojelusta (YSA) 713/2014, Vesilaki 587/2011, Laki vesienhoidon ja merenhoidon järjestämisestä 1299/2004, VNa vesiympäristölle vaarallisista ja haitallisista aineista 1022/2006, VNa vesienhoidon järjestämisestä 1040/2006, Vesihuoltolaki 119/2001, Luonnonsuojeluasetus 160/1997, Laki vaarallisten kemikaalien ja räjähteiden käsittelyn turvallisuudesta 390/2005 and Laki vaarallisten aineiden kuljetuksesta 719/1994. This legislation is monitored by TVO to ensure compliance.

#### 5. CIRCULAR ECONOMY – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM

A plan for the management of both non-radioactive and radioactive waste is in place and detailed in the following, non-publicly available, documents: Waste management at Olkiluoto (106966, Olkidoc), TVO Group's Waste Management and Reporting (168421), Environment and Energy Efficiency Programme (199771), Nuclear Waste Management Programme of Olkiluoto and Loviisa NPP for the years JH-2021), Nuclear Waste Management Manual (Voimalaitoshuollon käsikirja).

The Nuclear Waste Management Manual (Voimalaitoshuollon käsikirja), ALARA-programme (ALARA-ohjelma108286), as well as TVO group-level policies (Konsernitason politiikat 156516) ensure that during operation and decommissioning, the amount of radioactive waste is minimized and the amount of free-release materials is maximized in accordance with Directive 2011/70/Euratom, and in compliance with the radiation protection requirements laid down in Directive 2013/59/Euratom.

These documents are in line with the national programme and Environmental Impact Assessment (EIA) of spent nuclear fuel and radioactive waste management published by the Finnish Government on 1 March 2022. The programme was drawn up by the Finnish Ministry of Economic Affairs and Employment and the Ministry of Social Affairs and Health together with the Radiation and Nuclear Safety Authority (STUK). The programme's aim is to ensure that all spent nuclear fuel and radioactive waste generated in Finland are managed safely and without undue delay.

A financing scheme is in place to ensure adequate funding for all decommissioning activities and for the management of spent fuel and radioactive waste, this scheme is provided by the Nuclear Waste Management Fund, detailed in the Nuclear Energy Act 990/1987.

TVO confirms under this Framework that an Environmental Impact Assessment (EIA) exists for all plant units. Though, OL1 and OL2 plant units were built before




the Environmental Impact Assessment Law in Finland, so their EIA was done during modernization campaign in 1996.

The Finland National Nuclear Waste Management Program has been submitted to the European Commission.

#### 6. POLLUTION – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM

Requirements regarding the Persistent Organic Pollutants (POP) regulation (a) was defined as not relevant as none of the substances listed are used by TVO. Requirements regarding mercury (b) was deemed not relevant as mercury is not in use. Hazardous substances in EE equipment (d, RoHS directive) are not considered relevant since none of the substances mentioned are in use within TVO's electrical and electronic equipment (EEE). No substances that deplete the ozone layer are used by TVO. TVO complies with the requirements in Annex XVII of the Reach regulation. TVO's projects do not contain substances that are on Article 57 and 59 of REACH Regulation (2006), except where they are essential to society. The REACH Regulation is binding and directly applicable in all EU countries, including Finland. As there is no official indication on whether an activity is essential to society or not, we assume the regulation is correctly respected by TVO.

TVO does not have large combustion plants thus the requirement that non-radioactive emissions are within or lower than the emission levels associated with the best available techniques (BAT-AEL) ranges set out in the best available techniques (BAT) conclusions for large combustion plants is not deemed applicable.

1065/2017 Valtioneuvoston asetus keskisuurten energiantuotantoyksiköiden ja -laitosten ympäristönsuojeluvuatomuksista (provisions for medium sized combustion plants) applies to TVO's reserve boilers and emergency diesel generators. TVO complies with this legislation. 

Regarding radioactive discharges to air, water bodies and ground (soil), TVO complies with individual licence conditions for the specific operations, where applicable, or national threshold values in line with Directive 2013/51/Euratom and Directive 2013/59/ Euratom.

Spent fuel and radioactive waste is safely and responsibly managed in accordance with Directive 2011/70/Euratom and Directive 2013/59/Euratom through national legislation. The 2011/70 Euratom is transposed as SäteilyL 859/2018 11. luku & YdinenergiaL 990/1987 6. luku., and the 2013/59 Euratom is transposed as SäteilyL 859/2018 9. luku & VNa ionisoivasta säteilystä 1034/2018 & STMa ionisoivasta säteilystä 1044/2018. The adherence with the above-mentioned legislation is detailed e.g. in the YJH-2021 (nuclear waste management programme).

An adequate capacity of interim storage is available for the project, while national plans for disposal are in place to minimise the duration of interim storage, in compliance with Directive 2011/70/Euratom that considers radioactive waste storage, including long-term storage, as an interim solution, but not an alternative

to disposal. TVO's subsidiary Posiva Oy is constructing a final disposal facility for spent nuclear fuel in Olkiluoto, which is to start operation in the mid-2020s. TVO has adequate capacity for interim storage before the start of final disposal.

#### 7. BIODIVERSITY AND ECOSYSTEMS – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM

TVO confirms that Environmental Impact Assessment (EIA) is completed prior to the construction of a nuclear power plant. The EIA is in line with EU Directive 2011/92/EU as it is transposed to Finnish national regulation through the Act on the Environmental Impact Assessment Procedure 252/2017 and the Regulation on the Environmental Impact Assessment Procedure 277/2017.

All plant units, including the one relevant to this activity, are near Natura 2000 network (within 5 km of the power plant). According to TVO, the EIA-reports address impacts on biodiversity, which are assessed to be minor, hence not being detrimental to the conservation status of any of the habitats or species present in protected areas.

Mitigation measures are implemented through environmental standards, EU Eco-Management and Audit Scheme (EMAS) and ISO 14001:2015, to which TVO is certified. These mitigation measures include but are not limited to efficient land use and projects promoting biodiversity. TVO mitigates the harmful effects of power plant's cooling water on the area affected by the cooling water by paying an annual fishery fee to the stakeholders affected (fishing area and municipalities). It also conducts projects promoting biodiversity every year. For example, a new natural meadow will be established in Olkiluoto in spring 2023.

ISO 14001 defines criteria for environmental management procedures that companies should follow generally in their design and implementation of environmental management systems. This could include biodiversity considerations if they are identified as relevant and an environmental audit to establish objectives and goals with measures to achieve them. Nonetheless, a mandatory public reporting on these measures is not required<sup>12</sup>. Under the EMAS, companies are expected investigate the negative effects on biodiversity and if an impact is found to be significantly material to biodiversity, the company is required to put in place quantifiable objectives with action plans to address and mitigate these impacts and to report on its performance with regards to these objectives<sup>13</sup>.



<sup>12</sup> Lake Constance Foundation and Global Nature Fund, 2016, EMAS & Biodiversity: How to address biodiversity protection through environmental management systems

<sup>13</sup> ibid



*b) 4.28 – Electricity generation from nuclear energy in existing installations*

PROJECT CHARACTERISTICS AND SELECTION PROCESSES <sup>14</sup>	ALIGNMENT WITH THE EU TAXONOMY'S TECHNICAL SCREENING CRITERIA
<b>1. GENERIC CRITERIA – SUBSTANTIAL CONTRIBUTION TO CLIMATE CHANGE MITIGATION AND DO NO SIGNIFICANT HARM</b>	
Please see a) 1.	✓
<b>2. ADDITIONAL CRITERIA PERTAINING TO SUBSTANTIAL CONTRIBUTION TO CLIMATE CHANGE MITIGATION</b>	
<p>The projects financed under this Framework will generate electricity using nuclear energy. TVO confirms it will involve investments into modifications aimed at extending the service time of safe operations for two existing plants, Olkiluoto 1 (OL1) and Olkiluoto 2 (OL2).</p> <p>TVO assessed that the life-cycle greenhouse gas (GHG) emissions from all plant units financed under this Framework will be below the threshold of 100 g CO<sub>2</sub>e/kWh. Lifecycle GHG emission savings will be calculated using Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018 and verified by an independent third party starting from May 2023.</p> <p>With regards to the use of accident-tolerant fuel, TVO commits to making use of this fuel when it becomes commercially available and to fulfill all EU Taxonomy technical screening criteria for activity 4.28 regarding the use of such fuel. As the Issuer cannot anticipate the year by which accident-tolerant fuel will become commercially available, it will continue to make use of the best-available technology existing as of today regarding fuels tolerance and is investing in technological improvements to increase fuels tolerance. For example, it is making use of new materials to prevent fuel channels distortion, implementing evolutionary fuel assembly designs which substantially improve the ability to shut down the reactor in the event of abnormal, emergency and accidental conditions, etc. TVO commits to continue monitoring both the technical progress and the licensing of accident tolerant fuel by the European Union.</p>	✓
<b>3. CLIMATE CHANGE ADAPTATION – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM</b>	
Please see a) 3.	✓
<b>4. WATER AND MARINE RESOURCES – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM</b>	
Please see a) 4.	✓
<b>5. CIRCULAR ECONOMY – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM</b>	
Please see a) 5.	✓
<b>6. POLLUTION – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM</b>	

<sup>14</sup> This column is based on input provided by the issuer.

Please see a) 6.	✓
<b>7. BIODIVERSITY AND ECOSYSTEMS – ADDITIONAL CRITERIA PERTAINING TO DO NO SIGNIFICANT HARM</b>	
Please see a) 7.	✓

### Minimum Safeguards

The alignment of the project characteristics and selection processes in place with the EU Taxonomy Minimum Safeguards as described in Article 18 of the Taxonomy Regulation<sup>15</sup> have been assessed. The results of this assessment are applicable for every Project Category financed under this framework and are displayed below:

PROJECT CHARACTERISTICS AND SELECTION PROCESSES <sup>16</sup>	ALIGNMENT WITH THE EU TAXONOMY REQUIREMENT
<p>TVO adopted and embedded a commitment to HRDD into company policies &amp; procedures (UNGPs 16 &amp; OECD RBD DD Guide Step 1) in TVO Group’s Code of Conduct (The Code), Olkidoc 144890 TVO Group’s Supplier Code of Conduct (The Code), Olkidoc 193544.</p> <p>TVO identifies and assesses adverse impacts, including through stakeholder engagement (UNGP 17, 19 &amp; OECD RBD DD Guide Step 3). TVO arranges regular meetings with the local municipality. In case of larger changes, also the local people are engaged. TVO has a process for supplier evaluation and approval, sanctions monitoring and whistleblowing.</p> <p>TVO intends to take actions to cease, prevent, mitigate, and remediate adverse impacts (UNGP 17, 19 &amp; OECD RBD DD Guide step 3) with quality management software (Kelpo), determination of actions, responsible persons and timetable for actions, internal audits, and third-party audits.</p> <p>TVO tracks the implementation of these actions and its results (UNGP 17, 20 &amp; OECD RBD DD Guide step 4) With quality management software (Kelpo), internal audits, and third-party audits.</p> <p>TVO communicates publicly on the approach to HRDD, and actions taken to avoid and address adverse impacts (UNGP 17, 21 &amp; OECD RBD DD Guide step 5) through their Annual and Sustainability Report, Report of the Board of Directors and Financial Statements, CGS, and Environmental Reports</p>	✓

<sup>15</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0852>

<sup>16</sup> This column is based on input provided by the issuer.

TVO provides or cooperates in remediation, including establishing or participating in grievance mechanisms where individuals and groups can raise concerns about adverse impacts (UNGP 22, 29, 31 & OECD RBD DD Guide step 6).

## PART IV: LINKING THE TRANSACTION TO TVO'S ESG PROFILE

### A. CONSISTENCY OF GREEN BONDS WITH TVO'S SUSTAINABILITY STRATEGY

#### *Key sustainability objectives and priorities defined by the Issuer*

TVO generates environmentally sustainable nuclear electricity. The Issuer aims to be Carbon Neutral in its own operations by 2030 and The Republic of Finland by 2035 in accordance with the Finnish Government Programme. EU aims at reducing greenhouse gas emission by at least 55 percent by 2030 in accordance with EU's 2050 climate neutrality targets.

TVO targets to produce climate friendly electricity and mitigate climate change using nuclear power by using Olkiluoto 3 (OL3) plant for energy production. OL3 plant unit production reduces annual CO<sub>2</sub> emissions by approximately 3.5 million metric tonnes and reduces the import of electricity by about 60 percent. The plant unit reduces the import of electricity by about 60 percent, the GHG emissions at OL3 were estimated to be 4-4.5 gCO<sub>2</sub>/kWh. The aim of the OL3 plant is to reduce the release of radioactive substances, TVO and Posiva target to improve the energy efficiency of the use of energy and raw materials, by minimizing waste volume and recycling waste as material by at least 55% annually by 2025 and 60% annually by 2030. The Finnish Safety and Chemical Agency is the supervising authority for the industrial processing and storage for hazardous chemicals, under which TVO examines and investigates all incidents which have an impact on nuclear safety and defines corrective actions for the cause. The Issuer targets to have no deficiencies in the International Atomic Energy Agency's (IAEA) safety culture, no serious accidents and ensure plant safety with no events on the International Nuclear and Radiological Event Scale 1 (INES) or higher. The Environment and Energy Efficiency program promote biodiversity by aligning the need for natural environment and infrastructure planning with the importance of location in terms of nature conservation areas. By 2023 the Issuer's target is to have efficient land use by producing electricity with respect to the surface area of the built environment and to prepare a natural meadow at Olkiluoto in 2023.

The Issuer has signed the Energy efficiency agreement for 2017-2025, to improve the efficiency of primary energy and the total efficiency of energy production. For 2022-2025, a saving target of 500 MWh is in place with measures like renovation of the ventilation, and expansion of district heating.

TVO complies with the regulations of the Radiation and Nuclear Safety Authority (STUK) which report on the International Atomic Energy Agency (IAEA) and the OECD's Nuclear Energy Agency (NEA). TVO publicly discloses its targets and tracks its progress in the Environmental report. TVO has established a Green Bond Committee which involves senior representatives from TVO's Finance, Sustainability, and Treasury departments, which convene every six months. Climate change risks are assessed using the Probabilistic Risk Assessments (PRA) and Two Shared Socioeconomic Pathways (SSP) scenarios have been used in order to examine the impact of climate change on TVO's operations.

TVO reports its financial risks and opportunities connected with climate change in accordance with the Task Force on Climate-related Financial Disclosures (TCFD). The Annual and Sustainability report has been prepared in compliance with the Global Reporting Initiative (GRI), which covers TVO's most material financial, social, and environmental responsibility aspects.

TVO is a member of FORATOM, a trade association for the nuclear energy industry and the World Association of Nuclear Operators (WANO) with a focus on development of nuclear safety and a member of Nucleareurope, the trade association for the nuclear energy industry in Europe. Furthermore, TVO complies with the recommendations and requirements of the International Atomic Energy Agency (IAEA). The Issuer is a participant to the Finnish and International nuclear power community, the Vuojoki Foundation and Vuojoki Cooperation Group, the Eurajoki Water Protection Association. TVO participates in the international OECD-NEA Studsvik Cladding Integrity Project (SCIP IV) to understand the behavior of fuel rods during various reactor transients as well as phenomena and solutions related to the handling and storage of spent nuclear fuel. In addition, TVO has signed a nuclear alliance<sup>17</sup> to strengthen European cooperation in the field on nuclear energy, to structure cooperation in the entire nuclear value chain and provide Europe with the tools to reach carbon neutrality by 2050. The Issuer has never issued Green Bonds or Social Bonds before.

### *Rationale for issuance*

TVO has set a Green Bond Framework with an aim to produce nuclear power. By issuing Green Bonds, TVO intends to achieve a low carbon economy and mitigate climate change by producing climate-friendly nuclear power to avoid 7.5 million metric tonnes of CO<sub>2</sub> emissions annually. With the energy transition, the Issuer intends to construct a safe operation of nuclear plants for the generation of electricity using the best available technologies.

**Opinion:** *The key sustainability objectives and the rationale for issuing Green Bonds are clearly described by the Issuer. The project category financed is in line with the sustainability objectives of the Issuer.*

<sup>17</sup> Euractiv 2022, Eleven EU countries launch alliance for nuclear power in Europe <https://www.euractiv.com/section/energy-environment/news/eleven-eu-countries-launch-alliance-for-nuclear-power-in-europe/>

## B. TVO'S BUSINESS EXPOSURE TO ESG RISKS

This section aims to provide an overall level of information on the ESG risks to which the Issuer is exposed through its business activities, providing additional context to the issuance assessed in the present report.

### *ESG risks associated with the Issuer's industry*

The Issuer is classified in the Electric Utility sector, as per ISS ESG's sector classification. Key challenges faced by companies in terms of sustainability management in this industry are displayed in the table below. Please note, that this is not a company specific assessment but areas that are of particular relevance for companies within that industry.

ESG KEY ISSUES IN THE INDUSTRY
Worker safety and accident prevention
Protection of human rights and community outreach
Accessibility and reliability of energy supply
Promotion of a sustainable energy system
Environmentally safe operation of plants and infrastructure

### *ESG strengths and points of attention related to the Issuer's disclosures*

Leveraging ISS ESG's Research, the following strengths, and points of attention<sup>18</sup> have been identified:

STRENGTHS	POINTS OF ATTENTION
<p>The company has disclosed information regarding the implementation of an ISO 45001-certified health and safety management system, employee and contractor accident rates, and fatalities.</p> <p>The company has reported information regarding communication of safety issues related to nuclear power plants to the local communities.</p> <p>The company has disclosed its position on climate change, greenhouse gas emission</p>	<p>The company has limited disclosure regarding human rights policy, supplier standards, and human rights due diligence procedures.</p> <p>The company has not publicly disclosed information regarding strategy to promote renewable energy covering quantitative targets and planned investments.</p>

<sup>18</sup> Please note that Teollisuuden Voima Oyj is not part of the ISS ESG Corporate Rating Universe. Thus, the information is based on a disclosure review conducted by the analyst in charge of the Electric Utility sector, based on publicly available information exclusively. No direct communication between the Issuer and the analyst has taken place during the process. The below is not based on an ISS ESG Corporate Rating but considers ISS ESG Research's methodology.

inventory, and climate change risk and mitigation strategy.

The company has reported information related to process and facility safety management, emergency response and preparedness, radioactive waste management and disposal strategy, and nuclear decommissioning.

Please note that the consistency between the issuance subject to this report and the Issuer's sustainability strategy is further detailed in Part III.A of the report.

### *Sustainability impact of products and services portfolio*

Leveraging ISS ESG's Sustainability Solutions Assessment methodology, the contribution of the Issuer's current products and services portfolio to the Sustainable Development Goals defined by the United Nations (UN SDGs) has been assessed as per the table below. This analysis is limited to the evaluation of final product characteristics and does not include practices along the Issuer's production process.

#### *Social impact of the product portfolio:*

The company operates nuclear power plants in Finland. The company's product portfolio is primarily energy generation from nuclear power plants, and it has no positive or negative contribution to achieving social sustainability objectives. Thus, the impact of the product portfolio of the company on social Sustainable Development Goals is considered neutral.

#### *Environmental impact of the product portfolio*

The company operates nuclear power plants in Finland. The company's product segment of generating energy from nuclear power contributes positively towards environmental Sustainable Development Goals such as SDG 13-Climate Action. However, the same nuclear energy portfolio contributes negatively towards environmental Sustainable Development Goals like SDG 7 – Affordable and Clean Energy and SDG 15 – Life on Land. Thus, the impact of the overall product portfolio of the company on environmental Sustainable Development Goals is considered to be limited net obstruction.

### *Breaches of international norms and ESG Controversies*

#### At Issuer level

At the date of publication and leveraging ISS ESG Research, no controversy in which the Issuer would be involved has been identified.

#### At industry level

Based on a review of controversies over a 2-year period, the top three issues that have been reported against companies within the Electric Utilities industry are as follows: Anti-competitive behavior, Failure to prevent radioactive pollution and Failure to mitigate climate change impacts.

Please note, that this is not a company specific assessment but areas that can be of particular relevance for companies within that industry.

## ANNEX 1: Methodology

### EU Taxonomy

The assessment evaluates whether the details of the nominated projects and assets or project selection eligibility criteria included in the Green Bond Framework meet the criteria listed in relevant Activities in the Complementary Climate Delegated Act (as of July 2022).

The evaluation shows if TVO's project category is indicatively in line with the entirety (or some of) the requirements listed in the EU Taxonomy Technical Annex in the Complementary Climate Delegated Act (as of July 2022).

The evaluation was carried out using information and documents provided on a confidential basis by TVO (e.g., Due Diligence Reports). Further, national legislation and standards, depending on the project category location, were drawn on to complement the information provided by the Issuer.

### Assessment of the contribution and association to the SDG

The 17 Sustainable Development Goals (SDGs) were endorsed in September 2015 by the United Nations and provide a benchmark for key opportunities and challenges toward a more sustainable future. Using a proprietary method, the extent to which TVO's Green Bonds contributes to related SDGs has been identified.



## ANNEX 2: Quality management processes

### SCOPE

TVO commissioned ICS to compile a Green Bonds SPO. The Second Party Opinion process includes verifying whether the Green Bond Framework aligns with the ICMA Green Bond Principles and to assess the sustainability credentials of its Green Bonds, as well as the Issuer's sustainability strategy.

### CRITERIA

Relevant Standards for this Second Party Opinion

- ICMA Green Bond Principles
- EU Taxonomy Complementary Climate Delegated Act

### ISSUER'S RESPONSIBILITY

TVO's responsibility was to provide information and documentation on:

- Green Bond Framework
- Eligibility criteria

### ISS ESG's VERIFICATION PROCESS

ISS ESG is one of the world's leading independent environmental, social and governance (ESG) research, analysis and rating houses. The company has been actively involved in the sustainable capital markets for over 25 years. Since 2014, ISS ESG has built up a reputation as a highly reputed thought leader in the green and social bond market and has become one of the first CBI approved verifiers.

This independent Second Party Opinion of the Green Bonds to be issued by TVO has been conducted based on a proprietary methodology and in line with the ICMA Green Bond Principles.

The engagement with TVO took place from April to May 2023.

### ISS' BUSINESS PRACTICES

ISS has conducted this verification in strict compliance with the ISS Code of Ethics, which lays out detailed requirements in integrity, transparency, professional competence and due care, professional behavior and objectivity for the ISS business and team members. It is designed to ensure that the verification is conducted independently and without any conflicts of interest with other parts of the ISS Group.

## About this SPO

ISS ESG is one of the world's leading rating agencies in the field of sustainable investment. The agency analyses companies and countries regarding their environmental and social performance.

We assess alignment with external principles (e.g. the ICMA Green / Social Bond Principles), analyse the sustainability quality of the assets and review the sustainability performance of the Issuer themselves. Following these three steps, we draw up an independent SPO so that investors are as well informed as possible about the quality of the bond / loan from a sustainability perspective.

Learn more: <https://www.isscorporatesolutions.com/solutions/esg-solutions/green-bond-services/>

For more information on SPO services, please contact: [SPOsales@isscorporatesolutions.com](mailto:SPOsales@isscorporatesolutions.com)

For more information on this specific Green Bonds SPO, please contact: [SPOOperations@iss-esg.com](mailto:SPOOperations@iss-esg.com)

### Project team

Project lead	Project support	Project support	Project support	Project supervision
Tuleen Ashour Analyst ESG Consultant	Andrea Torres Associate ESG Consultant	Kushum Mehra Junior Analyst ESG Consultant	Orane Busto Associate ESG Consultant	Marie-Bénédicte Beaudoin Associate Director Head of ISS ESG SPO Operations