°CICERO Shades of Green

# Ontario Teachers' Pension Plan Board
## Green Bond Second Opinion

November 6, 2020

**Ontario Teachers' Pension Plan Board ("OTPPB") is the administrator of Canada's largest single-profession pension plan,** holding a portfolio with a net asset value of C$207.4 billion as of December 2019 in multiple sectors including real estate, industrials and energy. Eligible Green Assets in this framework may be based around the world, with an initial focus on North America and Europe.

**Under this framework, Ontario Teachers' will undertake both equity and debt investments, where the majority of financing will go towards the Dark Green shaded categories of renewable energy and natural resources and land use.** Multiple categories will adhere to the energy efficiency requirements set out in the IEA SDS and/or the EU Taxonomy. Ontario Teachers' will determine which thresholds will apply to each asset on a case-by-case basis.

**Ontario Teachers' has excluded investments that lead to an increase in greenhouse gas emissions as well as direct equity investments in fossil fuel based companies and assets.** Companies must have all or substantially all of their revenues within eligible green assets in order to be eligible for investment, and any other revenues must be climate-neutral. Still, we note that it is difficult to control the end-use of equity investments, even with a policy of active ownership. Ontario Teachers' intends to mitigate this by continuously monitoring the end-use of their investments to ensure that they remain within the eligibility criteria.

**Governance procedures under this framework are robust and include multiple relevant climate factors**, such as climate resilience and risk mitigants, supply chain considerations, life cycle assessments and consideration of rebound and lock-in effects. While Ontario Teachers' does report on Scope 1 and 2 emissions, they are still working on developing quantified climate targets. Ontario Teachers' aligns with multiple initiatives and organisations, including UN Global Compact and Climate Action 100+, and have implemented the TCFD recommendations.

Based on the overall assessment of the eligible green assets under this framework, the expected majority share of investments in Dark Green shaded categories, and governance and transparency considerations, OTPPB's green bond framework receives a **CICERO Dark Green** shading and a governance score of **Excellent**. It will be the issuer's responsibility to ensure the framework is implemented in a manner that adheres to the Dark Green ambition. To achieve this, Ontario Teachers' must follow robust procedures, both within their active ownership policies to ensure demonstrated impact, as well as when determining sufficiently ambitious energy efficiency thresholds for each asset. In addition, Ontario Teachers' would benefit from implementing quantitative climate targets for both investments and operations.

### SHADES OF GREEN

Based on our review, we rate OTPPB's green bond framework **CICERO Dark Green.**

Included in the overall shading is an assessment of the governance structure of the green bond framework. CICERO Shades of Green finds the governance procedures in OTPPB's framework to be **Excellent.**


### GREEN BOND PRINCIPLES

Based on this review, this Framework is found in alignment with the principles.

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# 1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated November 2020**.** This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

### Expressing concerns with 'shades of green'

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

| CICERO Shades of Green | Examples |
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| **Dark green** is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated. | Wind energy projects with a strong governance structure that integrates environmental concerns |
| **Medium green** is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered. | Bridging technologies such as plug-in hybrid buses |
| **Light green** is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them. | Efficiency investments for fossil fuel technologies where clean alternatives are not available |
| **Brown** is allocated to projects and solutions that are in opposition to the long-term vision of a low carbon and climate resilient future. | New infrastructure for coal |

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green bond are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

# 2 Brief description of Ontario Teachers' Pension Plan Board's green bond framework and related policies

OTPPB[1] is the administrator of Canada's largest single-profession pension plan, undertaking active investments on behalf of 329,000 active and retired Ontario teachers. Ontario Teachers' Finance Trust ("OTFT") will be the entity issuing the green bonds, which are fully and unconditionally guaranteed by OTPPB.

As of the end of 2019, Ontario Teachers' net assets amounted to C$207.4 billion. Equity investments (including public & private equities, and real assets) are mostly within real estate, industrials, consumer and financial sectors, and energy and utilities. A portion of the energy sector investments are in the fossil fuel industry. Ontario Teachers' is a global pension fund, with investments around the world. Investments financed under this framework may be based around the world but are initially expected to be primarily directed at North America and Europe.

### Environmental Strategies and Policies

Ontario Teachers' has an overarching goal to successfully manage the pension plan through the transition to a low-carbon future, and ensure the sustainability of the pension plan for current and future generations of their members. Ontario Teachers' has a four-pronged approach toward its investments to promote long-term sustainability: Integrate, Engage, Influence and Evolve. These principles are designed to allow Ontario Teachers' to integrate ESG risk, engage with companies they invest in, use their influence as a global investor to promote a sustainable business environment, and evolve to build their institutional knowledge and keep ahead of the curve. In addition, the investments under the green bond framework will be chosen with the three Ontario Teachers' Green Investments Principles in mind: (1) Enable net-zero transition, (2) Reduce greenhouse gas emissions, and (3) Build a sustainable economy. Ontario Teachers' has also identified 7 of the UN Sustainable Development Goals that the Green Bond Framework strives to contribute towards.

Ontario Teachers' aims to drive improvements in ESG standards and processes by conducting extensive ESG due diligence of the companies, industries and markets they invest in. They work with their portfolio company boards and management teams to monitor ESG performance and share good ESG practices. Since 2018, Ontario Teachers' has developed ESG Maturity Frameworks for different industries as a tool to assess companies based on ESG expectations. Both physical and transition climate risks are considered for all direct investments. If assessed as relevant, deeper assessment is conducted through climate scenario analysis and stress tests, sometimes with the help of external consultants. Ontario Teachers' leverages a strategic partnership with climate experts to help them integrate climate science research into their investment decisions and conduct in-depth risk analyses focused on private equities, real estate and infrastructure assets. Depending on materiality of risk and existing mitigants, as well as the level of influence that Ontario Teachers' has, they will develop mitigation plans to improve resilience against identified risks. Their Low-Carbon Economy Transition framework also provides a reference point for investment teams to understand risks and opportunities related to the low-carbon transition.

[1] The use of the terms "Ontario Teachers'", "they" and "their" include OTPPB together with its subsidiaries, including Ontario Teachers' Finance Trust ("OTFT"), unless the context otherwise requires.

Ontario Teachers' has an exclusion policy that outlines exclusion criteria for their investments. They do not exclude fossil fuel investments, but instead intend to use their influence and engagement with their portfolio companies to bring about positive change. Ontario Teachers' will refrain from investing where investments present heightened ESG risks. Ontario Teachers' current exclusions include tobacco, landmines, cluster munitions, biological and chemical weapons manufacturers. Ontario Teachers' has an elevated review process for managing controversies arising within assets.

Ontario Teachers' further uses their influence with industry through multiple initiatives and organizations to assess their own individual assets and to promote further disclosure initiatives. This includes the Sustainability Accounting Standards Board (SASB), of which they are a founding member and past chair, the Investor Advisory Group, as well as consideration of the UN Global Compact principles, and the adoption and promotion of the TCFD recommendations. Ontario Teachers' has implemented the TCFD recommendations for its own reporting and risk management, and has also encouraged the companies it invests in to do the same by prioritising engagements with companies that are emissions-intensive and have not adopted the TCFD recommendations. The Head of Responsible Investing sits on the board of GRESB BV, and Ontario Teachers' is a founding member of GRESB's infrastructure assessment and encourages real estate and infrastructure assets to report regularly on their sustainability practices, metrics and goals. Additionally, Ontario Teachers' is a member of Climate Action 100+.

Ontario Teachers' has not yet developed quantitative climate targets, however they conduct extensive and transparent reporting on the Scope 1 and 2 emissions of their investments, broken down by sector, as part of their Climate Change Report.[2] A description of calculation methodology detailing how equity share and market exposure are accounted for is also included in the report. Ontario Teachers' also calculates Scope 1 and 2 emissions from its own operations, but these are not publicly reported as these emissions are considered immaterial compared with emissions from investments. Scope 3 emissions are omitted due to the lack of consistency in obtaining information for calculations, although Scope 3 emissions are considered when assessing environmental factors in due diligence and ongoing asset management. Carbon emissions associated with the 2019 portfolio were 15% lower than in 2018, reducing from 93 $tCO_2e$/C$ millions to 79 $tCO_2e$/C$ millions, largely due to the sale of a high carbon-intensity private asset. Reporting was limited to the public equity portfolio in 2017, but in 2018, it was expanded to include the carbon footprint of their private holdings. Reporting therefore now represents 60% of the total portfolio, including real assets. Other assets are excluded due to lack of methodology to measure carbon footprint. Conducting a portfolio carbon footprint enables Ontario Teachers' to encourage the companies they invest in to measure and manage their own carbon footprint, and has led to an increase in emissions reporting by these companies from 38% of market exposure in 2018 to 49% in 2019. The carbon footprint of the public equities (203 $tCO_2e$/C$ millions) is significantly higher than the private assets (41 $tCO_2e$/C$ millions) due to the higher proportion of the carbon intensive utilities, materials and energy industries in public equity indices.

## Use of proceeds

An amount equivalent to the net proceeds of the green bonds will be allocated via equity participation or debt investments (through direct lending not through green bonds) to finance or refinance in whole or in part eligible green assets that align with both the Ontario Teachers' Green Investment Principles and the ICMA Green Bond Principles.

Eligible Green Assets may include both existing and potential new investments, the majority of which are expected to be in the ICMA categories of renewable energy, natural resources and land use, energy efficiency, with a small share in sustainable water and wastewater management. Other project categories that may receive investment are clean transportation, green buildings, pollution prevention and control, and circular economy. Investments are

[2] OTPP Climate Change Report. https://www.otpp.com/documents/10179/1021270/2019+Climate+Change+Report/f3eae93f-7531-440e-92ea-91275ec52980

expected to be primarily located in North America and Europe, although Ontario Teachers' portfolio spans global established markets.

Existing investments made up to 36 months prior to the issuance date of any green bond are eligible. Eligible assets are investments in businesses that derive all or a substantial share of their revenues from eligible activities. In order to ensure alignment to the Ontario Teachers' green principles, investments will be mostly focused on pure play companies or companies where all or significantly all of the business is in eligible green assets.

While Ontario Teachers' believes shareholder engagement is more effective than divesting from investments, they do exclude investments in companies or sectors that they deem as presenting heightened ESG risks. All eligible green assets must adhere to the Ontario Teachers' Green Investment Principles that a green investment must contribute to a low-carbon economy by enabling the transition, reducing emissions, or supporting a sustainable world. Each asset is assessed on a case-by-case basis. Multiple frameworks are consulted in the ESG assessment, including the EU Taxonomy Do-No-Significant-Harm criteria, Global Compact principles regarding labour, human rights and the environment and the OECD Multinational Enterprise Guidelines and other relevant international standards. External consultants may be involved to assess material environmental and social issues. Additionally, proceeds will only be allocated to assets where it is possible to report on at least one environmental performance indicator.

The energy efficiency thresholds will be based on an evaluation conducted by the Responsible Investing team of the potential technology and the existence of EU Taxonomy thresholds and IEA Sustainable Development Scenario (SDS) trajectories. In the absence of defined EU Taxonomy thresholds for certain green assets, the IEA SDS targets will be used, e.g., average 3% annual efficiency improvement over the lifetime of the investment.

Ontario Teachers' has further specified that any investments resulting in an increase in the use of fossil fuels or net increase in carbon emissions on a lifecycle basis would not qualify under the Ontario Teachers' Green Investment Principles of contributing to a low carbon transition, and therefore will be excluded in this framework. Note, however, that some investments may be indirectly linked to fossil fuel related infrastructure or equipment. Further, equity investments may include companies where some share of revenues are not in eligible categories, but are climate-neutral, e.g., consultancy services.

## Selection

The selection process is a key governance factor to consider in CICERO Green's assessment. CICERO Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the governance process.

To aid in the selection process, OTPPB and OTFT will maintain a Green Bond Council (GBC), comprised of representatives from its Treasury, Responsible Investing and various investing departments, as well as a representative from OTFT. The GBC will be chaired by the Head of Treasury and vice-chaired by the Head of Responsible Investing. The Responsible Investing team has technical and environmental expertise and is independent from the investing teams, thus providing a distinct and separate assessment of the alignment to the eligible categories. The GBC may choose to employ the use of external environmental and social consultants to help identify environmental and social risks and mitigants. The GBC is responsible for confirming alignment with the eligibility criteria and selecting assets to be included in the Green Bond Register, managing the Green Bond Register over the lifetime of the bond issuances, and monitoring developments in the wider green bond market as well as Ontario Teachers' wider responsible investment strategy and updating the framework and eligibility criteria accordingly.

Investment teams will identify and propose eligible green assets to the GBC, and all assets proposed will be subject to a review for consistency with Ontario Teachers' Green Investment Principles and existing ESG expectations, including alignment with the UN Global Compact Principles and the OECD Guidelines for Multinational Enterprises.

ESG considerations are integrated throughout the selection process and investment cycle to manage risk. This includes requiring, where relevant, that eligible green assets contribute to a reduction in GHG emissions, relative to best available technologies at the time of assessment, as well as considerations on materials sourcing, supply chain and subcontractors. Lifecycle assessments are also included where relevant, e.g., in determining the environmental impact of batteries.

## Management of proceeds

CICERO Green finds the management of proceeds of Ontario Teachers' to be in accordance with the Green Bond Principles.

The list of Eligible Green Assets across Ontario Teachers' investment portfolios and green bonds issued by OTFT under this framework will be systematically tracked by the Green Bond Council through a Green Bond Register. Ontario Teachers' will maintain an aggregate amount of eligible green assets that is at least equal to the aggregate net proceeds of all green bond issuance that is concurrently outstanding under this framework. Proceeds will be allocated as a portfolio of disbursements. Any assets that are sold or terminated will be removed from the register.

Any unallocated proceeds will be used in accordance with the normal liquidity activities of OTFT. Ontario Teachers' has further specified that unallocated proceeds will not be invested in fossil fuel-related industries. The balance of unallocated proceeds will be disclosed.

## Reporting

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs. Procedures for reporting and disclosure of green finance investments are also vital to build confidence that green finance is contributing towards a sustainable and climate-friendly future, both among investors and in society.

As long as there are outstanding green bonds, OTFT will publish a Green Bond report covering both allocation and impact reporting on the Ontario Teachers' website. This report will include a list of outstanding Green Bond issuances by OTFT, including issuance date, size, maturity date, currency and format. Eligible Green Assets within the Green Bond Register will be reported on according to ICMA Green Bond Principles category, assets by geography where feasible and case studies on assets being financed. Assets that may fall under more than one eligible project category will be listed under the most relevant category in the allocation reporting

The report will, where feasible and depending on state of development of the asset, include qualitative and quantitative environmental performance indicators on the Eligible Green Assets, reported at category level. Impact metrics are on multiple KPIs as listed in OTPPB's Green Bond Framework. The methodology for impact reporting will be made available where feasible. Grid emissions factors will be location-based.

Allocation and, where feasible, impact reporting will be externally reviewed to determine whether they meet the eligibility criteria. This review will be published alongside the Green Bond report. If assets are found to be non-compliant with eligibility criteria, they will be removed from the Green Bond Register.

# 3 Assessment of Ontario Teachers' Pension Plan Board's green bond framework and policies

The framework and procedures for Ontario Teachers' green bond investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where Ontario Teachers' should be aware of potential macro-level impacts of investment projects.

## Overall shading

Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in OTPPB's green bond framework, we rate the framework **CICERO Dark Green.**

## Eligible projects under OTPPB's green bond framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds aim to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

| Ontario Teachers' Green Investment Principle | | Category | Eligible Green Assets | Green Shading and some concerns |
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| Enable net-zero transition | Products or services that replace direct fossil-fuel use | Renewable energy | • Generation, transmission, and distribution of renewables, e.g., wind, solar, geothermal, marine, bioenergy, hydro, green hydrogen and renewable natural gas, the lifecycle impacts of which are 100g $CO_2$/kWh or less<br>• Biomass projects restricted to sustainable feedstocks that, at a minimum, are certified by the Forest Stewardship | **Dark Green**<br>✓ This category comprises the majority of expected investments<br>✓ Renewable energy is a key part of net-zero transition<br>✓ Renewable energy technologies sometimes have high scope 3 emissions. Ontario Teachers' mitigates this by including an emissions threshold for the whole life cycle.<br>✓ Bioenergy is widely seen as a renewable energy source due to its reliance on tree growth which absorbs $CO_2$ in the growing phase. Certified biomass ensures feedstocks are sustainably produced, taking into account |

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| | | | Council (FSC), Sustainable Biomass Program, Green Gold Label, or equivalent third party standard, as well as waste sources that do not compete with food products or contribute to deforestation, such as palm oil.<br>• Hydro projects restricted to run-of-the-river facilities with generation capacity of 25 MW or less. | biodiversity and climate impacts. We note however, bioenergy assets emit $CO_2$ at combustion – often at levels comparable to coal. Due to resource constraints biomass is unlikely to represent a significantly scalable solution from a 2050 perspective.<br>✓ Additionally, assets in biomass energy production will use best-in-class technology to maximise energy production and reduce $NO_x$ and $SO_x$ emissions.<br>✓ Note that the threshold of 100g$CO_2$/kWh is relevant for the whole lifecycle of the project, including transmission and distribution. |
| | Technologies or infrastructure to facilitate low-carbon solutions | Renewable energy | Equipment to enable the generation, development, and integration of renewables, noted above, e.g., sensors, communications & controls, microgrids | **Dark Green**<br>✓ Equipment in this category will be only for renewable energy projects.<br>✓ Note that materials used in infrastructure equipment may have high Scope 3 emissions and environmental impacts. |
| | | Clean transportation | Fundamental infrastructure for deployment of clean transportation, e.g., mass public transportation, electrification of rail infrastructure.<br>Zero-carbon transport assets, e.g., electric or other clean energy vehicles | **Dark Green**<br>✓ Only zero direct emissions vehicles are eligible. This includes public transportation, passenger rail (interurban), and passenger and commercial vehicles. Hybrid and natural gas related vehicles are not eligible under this framework.<br>✓ The production of batteries and sourcing of raw materials can have substantial climate and environmental impact.<br>✓ Be aware of potential lock-in effects through the construction of infrastructure projects (e.g., new railways, and railway stations, technical buildings related to new railways that |

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| | | | | follow no further requirements beyond regulations.) |
| Reduce net GHG emissions | Products or services that significantly reduce emissions | Energy efficiency  | Technologies, products or systems that improve energy efficiency, and consider sector decarbonization trajectories as outlined in the International Energy Agency's Sustainable Development Scenario (IEA SDS) and/or the EU Taxonomy and that consider lock-in and rebound effects<br><br>(e.g., district heating and cooling technologies based on deep lake cooling or other zero emission sources.)<br><br>Projects in heavily emissions-intensive industries such as cement and steel, are excluded. | **Medium Green**<br>✓ Ontario Teachers' has specified that investments in fossil fuel infrastructure are excluded from financing under this framework, except where they will be replaced by clean alternatives.<br>✓ We note the lack of specific efficiency thresholds. However, Ontario Teachers' has specified that energy efficiency thresholds will be evaluated on a case-by-case basis and will align with the EU Taxonomy and/or the IEA SDS trajectories.<br>✓ The production of heat from waste may bring rebound effects where the incineration of waste materials is prioritised over recycling. Ontario Teachers' has specified that such rebound effects will be identified and mitigated against through LCA analyses. |
| | | Green buildings[3]   | New or existing commercial or residential buildings that achieve Energy Star[4] certification and are verified by third-party green building standards, (e.g., LEED: Platinum or Gold, or equivalent certification schemes) | **Light to Medium Green**<br>✓ Given the global nature of Ontario Teachers' investments, there will be vast variations in national building regulations. It will therefore be necessary to consider the ambition and energy performance of the Green building project in the context of the current national building regulations.<br>✓ Buildings that are certified to the LEED Gold and LEED Platinum level are often considered advanced good practice and best practice respectively, however this does not necessarily |

[3] It is not expected that the buildings and other properties managed by Cadillac Fairview held in the Ontario Teachers'-Cadillac Fairview Properties Trust (OT-CFPT) will be included in Ontario Teachers' Eligible Green Assets.
[4] Energy Star certified buildings must deliver energy and emissions savings in the top quartile of similar buildings nationwide.

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| | | | | guarantee that all relevant climate factors e.g., climate resilience are taken into account.<br>✓ Location-based climate risk assessments screening for flooding, heat stress, etc., will be undertaken to determine risk on the asset level. Ontario Teachers' has specified they identify mitigation plans to improve resilience in the face of identified risks.<br>✓ Ontario Teachers' has included additional energy efficiency thresholds through the ENERGY STAR certification, which leads to, on average, 35% lower energy demand than similar building stock. To achieve ENERGY STAR, the facility must perform in the top 25 percent of similar facilities nationwide for energy efficiency.[5] We note, however, given global scope of Ontario Teachers' investments, there will be variations in baseline values. Absolute impact will therefore vary by location.<br>✓ Climate factors such as energy-, waste-, and water-efficiency, as well as low carbon transport infrastructure and materials sourcing are included in general ESG assessments before selection.<br>✓ Note that green buildings may be heated by district heating, which often have fossil fuel elements in the energy mix, or direct natural gas based heating. Similarly, buildings may be powered by fossil fuel generated electricity.<br>✓ Ontario Teachers' has not specifically excluded fossil-fuel companies as tenants. |

[5] https://www.energystar.gov/buildings/about-us/press-room/media-faqs

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| | | Energy efficiency  | Investments that improve efficiency in the delivery of bulk energy services and consider sector decarbonization trajectories as outlined in the IEA SDS and/or the EU Taxonomy and that consider lock-in and rebound effects, e.g., smart grids, power grid stabilization | **Medium Green**<br>✓ Be aware that there is no guarantee that grid stabilisation will support cleaner grids.<br>✓ We note the lack of defined efficiency targets. However, Ontario Teachers' has informed us that the efficiency thresholds will be evaluated on a case-by-case basis and will align with the EU Taxonomy and/or the IEA SDS trajectories.<br>✓ Smart grids and grid stabilisation play a key role in improving the flexibility of the power system, particularly as renewable energy, which is often intermittent and unpredictable, takes a greater share of the energy supply mix.<br>✓ Ontario Teachers' has specified that investments in upgrading district heating systems are excluded, given their direct exposure to fossil fuels. |
| | | Energy efficiency  | Investments to monitor and/or optimize energy consumption and consider sector decarbonization trajectories as outlined in the IEA SDS and/or the EU Taxonomy and that consider lock-in and rebound effects<br><br>(e.g., energy storage, sub-metering, load control systems, sensors) | **Medium Green**<br>✓ Ontario Teachers' excludes investments with direct exposure in fossil fuels. Thus, energy storage will be for renewables only, and sub-metering is directed at end-user consumption. Note that Ontario Teachers' is not able to control whether these measures (e.g., smart metering) are based on fossil fuel infrastructure.<br>✓ Ontario Teachers' has excluded direct investments in fossil fuel assets. However, there could be indirect investments in efficiency improvements to fossil fuel-based equipment, especially for measures such as smart metering which are directed at end-user consumption. Where such financing is involved, efficiency improvements should lead to a |

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| | | | | significant reduction in fossil fuel consumption and should avoid the risk of lock-in of emissions.<br>✓ Efficiency thresholds will be determined on a case-by-case basis and will align with the EU Taxonomy and/or IEA SDS thresholds. |
| | Products or services that remove/store carbon | Pollution prevention and control  | Activities that demonstrate considerable sequestration of GHG emissions, (e.g., carbon sequestration technologies or products, direct air capture and removal of carbon) | **Dark Green**<br>✓ There is no specific minimum threshold for carbon sequestration.<br>✓ Reforestation and afforestation would not be included in this category.<br>✓ Sequestration projects should not be deployed if they will indirectly contribute to an extension of fossil fuel powered equipment or infrastructure.<br>✓ The construction and/or production of such facilities may impose large Scope 3 emissions and should be considered in the process. Materials should be sourced responsibly. The completion of an LCA analysis can capture these aspects. |
| Build a sustainable economy | Products or services that help to adapt to climate change impacts | Climate change adaptation  | Projects to support climate change adaption, including information support systems, e.g., climate observation, early warning systems | **Dark Green**<br>✓ IT systems may have carbon intensities due to high storage and data requirements. Ontario Teachers' has specified that they will include energy efficiency thresholds vs BAU to mitigate the high carbon intensity of data centres.<br>✓ Early warning systems can be part of a helpful climate adaptation strategy.<br>✓ These technologies are often run on electricity. |

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| | Products or services that preserve or conserve scarce resources | Sustainable Water and Wastewater Management   | Projects that reduce water consumption or improve the efficiency of resources and results in a substantial reduction in water leakage, as well as, emissions efficiency improvements will consider sector decarbonization trajectories as outlined in the IEA SDS and/or the EU Taxonomy and that consider lock-in and rebound effects, (e.g., collection, treatment, recycling or reuse of water, rainwater or wastewater, water distribution)<br><br>Where anaerobic digestion systems are used, plants should be designed to capture, scrub, dry and use waste as a source of power.<br><br>Note: The energy source and $CO_2$ emissions of wastewater management facilities are considered. | **Light to Medium Green**<br>✓ Improving water efficiency and decentralising water sources will be a key step towards improving water resilience, reducing water-risk and water scarcity in drought-prone areas.<br>✓ Note that, dependent on available technology, wastewater management facilities will likely be powered by fossil fuels. Ontario Teachers' has specified that financed facilities will align with IEA SDS trajectory and/or the EU Taxonomy to improve energy efficiency. Further, as an active investor, Ontario Teachers will engage with companies to adopt best practices for reducing carbon footprint.<br>✓ Methane and $CO_2$ is emitted where wastewater and residual sludge are handled under anaerobic conditions.<br>✓ Ontario Teachers' has specified that they will focus financing toward equipment that does not generate significant methane, such as water pipelines, collection points, lift stations, aerated ponds.<br>✓ Note that large construction projects will have significant associated emissions. Ontario Teachers' will use LCAs to determine where there is a risk of high emissions. |
| | | Natural resources and land use  | Activities that contribute to sustainable management of natural resources and land use, e.g., certified sustainable timberland (focused on providing timber) and agriculture (focused on permanent crop), biological crop protection, drip irrigation | **Dark Green**<br>✓ This category is expected to receive a moderate portion of financing under this framework.<br>✓ Wood will be certified with one of multiple certifications, including FSC and PEFC, which is an umbrella organization including SFI and Responsible Wood. These standards set |

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| | | | The following lists the certifications that we would consider:<br>• Forest Stewardship Council<br>• Sustainable Forestry Initiative<br>• Responsible Wood<br>• Programme for the Endorsement of Forest Certification<br>• Leading Harvest<br>• California Certified Organic Farmers | requirements for reducing environmental impacts of timber, including controlling for deforestation and conserving old growth forests. FSC is considered to be very stringent, while PEFC does not cover all aspects of sustainable forestry.[6]<br>✓ Eligible assets in timberland will primarily focus on lumber/saw logs, but some small amount of by-products may be used for biomass.<br>✓ Agriculture will be certified with either Leading Harvest, which addresses 13 sustainability principles including sustainable agriculture, energy use and climate change, and waste and material management, or by CCOF Certified Organic, which means crops are organically grown without sewage sludge, GMOs, ionizing radiation and most synthetic pesticides and fertilisers.<br>✓ Biological crop protection projects will not necessarily include any climate benefits in the form of emissions reductions. Organic farming often requires more land area than non-organic farming practices. We note, however, there are environmental benefits in reducing pesticide use.<br>✓ Assets not aligned with a low-carbon economy are excluded, e.g., assets relating to livestock, deforestation and conversion of virgin forest.<br>✓ The drip irrigation technique has been found to reduce water usage by up to 70% and to increase crop yield by 90% compared to conventional |

[6] https://wwf.panda.org/?246871/WWF-Forest-Certification-Assessment-Tool-CAT

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| | | | | irrigation alternatives[7]. Ontario Teachers' has specified irrigation projects will take into account water scarcity. |
| | | Pollution prevention and control | Projects that reduce and manage emissions and waste generated, e.g., recycling (metals, plastic and paper) plants, waste diversion, soil remediation | **Light Green**<br>✓ Ontario Teachers' has indicated that this may include some fossil fuel-based infrastructure and/or equipment, depending on best available equipment.<br>✓ Ontario Teachers' has specified that assets will be screened to ensure that measures for local pollution control (e.g., particle filter retrofits) will not lead to an increase in greenhouse gas emissions.<br>✓ Preventing pollution at the source should be a core consideration to prevent incineration of waste and to reduce waste volumes. The success and ambition of waste recycling and waste reduction are dependent on the quality of waste collection and sorting capacity.<br>✓ The issuer has informed CICERO Green that any new construction of facilities will be on brownfield sites. |
| | | Pollution prevention and control | Separate collection, transport, and >50% recovery of non-hazardous waste of landfill diversion | **Medium Green**<br>✓ Separate waste collection is a precondition for reuse and recycling and the whole process often leads to a net reduction in emissions.[8] Additional emissions resulting from waste collection are minimal compared to overall net GHG emission reduction of reuse and recycling activities. Projects in this category should |

[7] Shamsherry, P., et al. (2017) Modeling the future of irrigation: A parametric description of pressure compensating drip irrigation emitter performance. https://doi.org/10.1371/journal.pone.0175241

[8] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

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| | | | | be able to demonstrate a clear accounting of emissions and proven reductions.<br>✓ Investments in this category will be primarily directed at waste management companies that recover waste and divert waste from landfills. This includes reuse, repurpose, recycle processes. |
| | | Circular economy | Solutions that extend product-life, significantly improve resource use, reduce waste and pollution, are designed to be fully recyclable or composted and innovative technologies that enable circular business models (e.g., substitution of virgin raw materials in the production of resource efficient packaging and products that are entirely or nearly entirely (>90%) produced with recycled content that prevents the use of raw materials) | **Medium to Dark Green**<br>✓ Financing in this category is focused on consumer packaging.<br>✓ Eligible projects would maximise use of recycled plastics, reduce amount of materials in packaging and improve design and structural efficiencies that reduce transportation costs. |

Table 1. Eligible project categories

## Background

The asset management sector plays a major role in global climate change, both in terms of absolute emissions and influence. FinanceMap is a newly launched platform, which has mapped the Paris Portfolio Alignment of the underlying real assets in 50,000 listed fund portfolios, based on the IEA-defined Beyond 2 Degrees Scenario, which provides a pathway for a 50% chance of limiting warming to 1.75°C. [9] The report finds that significant portions of the portfolio holdings of investors globally are within climate-sensitive sectors such as the automotive, electric utilities and fossil fuel production sectors. These sectors are together worth US $8 trillion in market value, which is close to 10% of all global listed equity value. The FinanceMap further highlights that the world's 15 largest asset management groups, which hold a total $37 trillion in assets in all classes, or 20% of the total value of global capital markets[10], are all deviated from the Paris Aligned targets. Subsequently, the report has mapped each sector's level of alignment with the Paris agreement and the 1.75-degree target. Investments in renewable power are misaligned by -21% and electric vehicles by -59%, indicating a need for rapid acceleration in shifting investment strategies toward these technologies.

[9] https://www.sustainablefinance.ch/upload/rm/financemap-report-nov-2019-final-1.pdf?_=1575638165000
[10] Securities Industry and Financial Markets Association (SIFMA), Capital Markets Fact Book, 2019. https://www.sifma.org/wp-content/uploads/2019/09/2019-Capital-Markets-Fact-Book-SIFMA.pdf

A 2019 AODP report ranking the world's 100 largest public pension funds based on their approach to climate-related risks and opportunities also illustrates the need for greater action on the pension fund level.[11] The assessment further finds a large gap in formal climate-risk assessment of portfolios, with only 10% of funds being subject to a formal investment policy that seeks alignment with the goals of the Paris agreement. Over 60% of pension funds publish little to no information on their climate responses, and more than 80% of funds do not currently undertake and do not plan to undertake TCFD-aligned reporting. Around 50% of pensions funds were found to engage with investee companies on climate issues, although this engagement is often limited to improving disclosure instead of driving action. In this context, Ontario Teachers' Pension Plan is ranked 16 out of 100, placing them in the "Challengers" category, which is the second highest level after the "Leaders" category.

The asset management sector must undergo a rapid acceleration in climate action in order to align the global markets with global trajectories, through prioritising more robust engagement with a focus on not only accelerating individual corporate transitions to low carbon technologies and activities, but also on getting companies to align their policy lobbying with Paris targets. The finance sector has developed multiple initiatives in order to accelerate the low-carbon transition, including the Principles for Responsible Investment and the Climate Action 100+ initiative, of which Ontario Teachers' is a member. A 2015 survey of investors showed that 36% of respondents had divested assets during the previous year in response to ESG factors, with a further 27% planning to monitor ESG risks more closely[12]. However, currently only smaller players and only a portion of the largest asset managers are showing evidence of engaging sufficiently[13]. In order to facilitate the alignment with the Paris agreement, efforts amongst major players will need to be significantly ramped up.

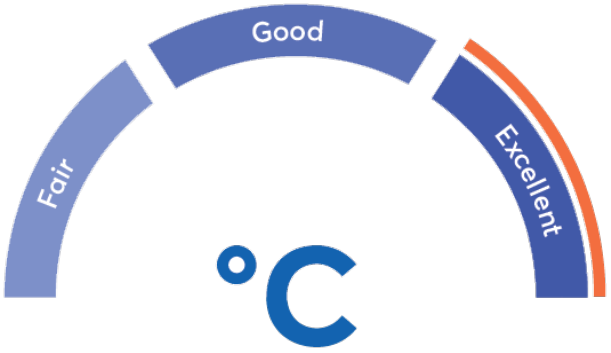
## Governance Assessment

Four aspects are studied when assessing the Ontario Teachers' governance procedures: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the Eligible Green Assets to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

Ontario Teachers' conducts emissions reporting for Scope 1 and 2 emissions for its portfolio. Scope 3 emissions are omitted due to lack of consistent methodology for all invested companies. Ontario Teachers' emissions from operations are also recorded but not publicly disclosed as the emissions are considered to be immaterial compared with the emissions from investments. Climate risk and transition risk are integrated into their investment strategy with the help of climate experts. Ontario Teachers' has various ESG due diligence tools which can involve many relevant factors including considerations of climate resilience and mitigants to climate risk, supply chain, lock-in effects, and rebound effects. Ontario Teachers' has implemented the TCFD recommendations and encourages their investee companies to do the same. They are a member of multiple other initiatives and organisations including SASB and GRESB. The selection process is compliant with the GBP. Projects are brought before the Council only after they have been screened for ESG eligibility by the Responsible Investing team, who have environmental backgrounds. External consultants are included where necessary. There is also an escalation process for managing controversies arising within investments.

[11] https://aodproject.net/wp-content/uploads/2019/01/AODP-PensionsChangingClimate.pdf
[12] https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/banking-and-capital-markets/ey-climate-change-and-investment.pdf
[13] https://www.sustainablefinance.ch/upload/rm/financemap-report-nov-2019-final-1.pdf?_=1575638165000

We note, however, that Ontario Teachers' has not yet implemented quantitative climate targets for their operations or investments, although they are currently working on developing these targets. Further, Ontario Teachers' does not specifically exclude investments in fossil fuel related companies in their regular procedures, although they actively seek investments in companies with green activities and engage with carbon-intensive companies to influence positive changes.




The overall assessment of Ontario Teachers' governance structure and processes gives it a rating of **Excellent**.

### Strengths

Ontario Teachers' has clear and extensive procedures for ESG due diligence that incorporate many relevant factors on climate risk and resilience, supply chain considerations and lock-in and rebound effects. All Eligible Green Assets will be systematically assessed for climate risk, including through climate scenario analyses and life cycle assessments. Ontario Teachers' consults with multiple frameworks and benchmarks, as well as external consultants where necessary. This includes Ontario Teachers' own ESG Maturity Framework and Low Carbon Economy Transition Framework, which can be used as tools to systematise the due diligence process and allows Ontario Teachers' to effectively screen for investments that fulfil multiple strict environmental requirements.

Ontario Teachers' recognises its global role as an asset manager and strives to use its influence towards change to drive the low-carbon transition. They are a member of and/or align with multiple organisations and initiatives, including amongst others TCFD, SASB, Climate Action 100+, and GRESB.

### Weaknesses

Ontario Teachers' will use Green Bond proceeds to invest into private companies that deliver eligible green projects, where the screening process for eligible projects and companies is based on ESG due diligence and eligibility screening by the Responsible Investing team and the GBC. Ontario Teachers' has informed us that they only classify as eligible for the allocation of Green Bond proceeds if all, or substantially all, of a company's revenues fall within the eligible investment categories. The remaining share of company revenues must be within climate-neutral activities, as determined by Ontario Teachers'. For example, an energy efficiency solution provider may have a share of revenues within non-eligible activities such as consultancy services. However, it remains vague what the critical eligibility threshold is, and there is no documented procedure on which basis (e.g., revenue shares of a company's portfolio) the eligibility will be assessed, as well as what constitutes a climate-neutral activity. To partially mitigate this weakness, Ontario Teachers will use an active ownership strategy to engage with companies to adopt best practices for reducing carbon footprint.

### Pitfalls

It is commendable that Ontario Teachers' has the ambition to accelerate the transition and is financing efficiency improvements, however multiple categories under the framework are limited by the availability of technology and zero carbon alternatives, which leads to financing of efficiency improvements for fossil fuel based equipment and infrastructure, e.g., within the Energy Efficiency and Pollution Prevention and Control categories in this framework. In their Climate Change and Responsible Investing reports, Ontario Teachers' cites their engagement

as active owners that will encourage companies to consider energy efficiency measures, however this may be insufficient to accelerate improvements at the rate required and may lead to lock-in of assets. Ontario Teachers' intends to conduct evaluations of which EU Taxonomy and IEA SDS efficiency thresholds will apply to each asset on a case-by-case basis. There is, however, no documented process for how these evaluations will be conducted, making it difficult to assess the level of ambition in these categories.

Further, although Ontario Teachers' robust governance procedures will likely ensure that the level of ambition in the framework will be raised over time, especially given their alignment with the IEA Sustainable Development Scenario, there is still a risk that financed fossil fuel efficiency improvements will have a long life-time, e.g., in the wastewater management category. Rigorous mitigation efforts for rebound and lock-in effects will be required to prevent an increase in greenhouse gas emissions. Ontario Teachers' conducts life cycle assessments and identifies rebound and lock-in effects, however in order to reduce the risk of error in these processes, Ontario Teachers' may consider to significantly limit the number of eligible assets that use fossil fuels as energy sources.

Ontario Teachers' policy of active ownership in investee companies allows direct engagement to help companies participate in the low carbon transition, and they have been classified as a "Challenger" in their engagement with polluting companies (see Background section). Ontario Teachers' has the distinct opportunity to ramp up their efforts to become "Leaders" and robustly engage with all aspects of business activities. This includes ensuring that polluting companies are not only disclosing their climate data, but also implementing and lobbying for Paris-aligned policies. Nevertheless, there remains a concern that active ownership is not always effective and may not lead to emissions reductions at the desired scale or rate, especially where the issuer is not the majority stakeholder.

Despite a clear ambition to contribute to the low-carbon transition, we note a lack of quantitative climate targets in this framework, as well as in Ontario Teachers' overall environmental strategy and policies. While Ontario Teachers' has informed CICERO Green that targets are under discussion, it will be necessary to accelerate this process in order to ensure a more systematic approach toward emissions reductions in Ontario Teachers' investments and operations.

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# Appendix 1: Referenced Documents List

| Document Number | Document Name | Description |
|---|---|---|
| 1 | OTPPB Green Bond Framework. | Green bond framework for Ontario Teachers', dated November 2020. |
| 2 | 2019 Responsible Investing Report. | Responsible Investing report for Ontario Teachers' for the year 2019. |
| 3 | 2019 Climate Change Report. | Climate change report for Ontario Teachers' for the year 2019. |
| 4 | 2018 Responsible Investing Report. | Responsible Investing report for Ontario Teachers' for the year 2018. |
| 5 | 2018 Climate Change Report. | Climate change report for Ontario Teachers' for the year 2018. |
| 6 | Ontario Teachers' Responsible Investing Guidelines. | Responsible Investing Guidelines document, dated September, 2020 |

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# Appendix 2:
# About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD).