



Nova Scotia  
Teachers' Pension Plan  
Trustee Inc.

# TPP 2022 Annual Report



# The Nova Scotia Teachers' Pension Plan (Plan or TPP) Annual Report details the Plan's investment performance and financial health at December 31, 2022.

The Plan is a defined benefit registered pension plan that offers you a lifetime pension benefit when you retire. It is one of the largest public sector pension plans in the Province. Your pension benefit is funded by contributions made by you and your employer, as well as investment income generated by the Plan's investment assets.



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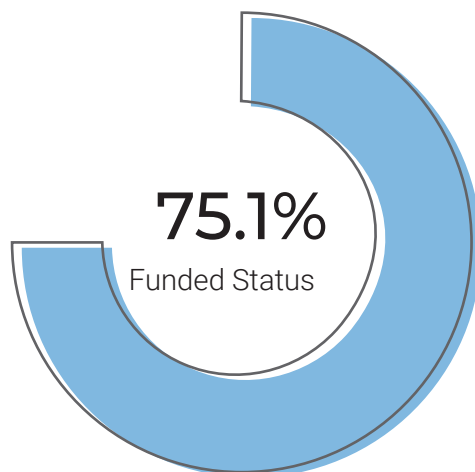
### 68. Glossary

*All information presented in this document is premised on the Plan rules and criteria which currently exist under the Teachers' Pension Act and the Regulations made thereunder. This document explains in plain language the financial status of the Nova Scotia Teachers' Pension Plan. Plan members, beneficiaries, and others who wish to determine their legal rights and obligations under the Plan should refer to the Plan text. In the event of a discrepancy between the information provided in this document and the Plan text, the latter takes precedence.*

# 2022 PLAN PERFORMANCE

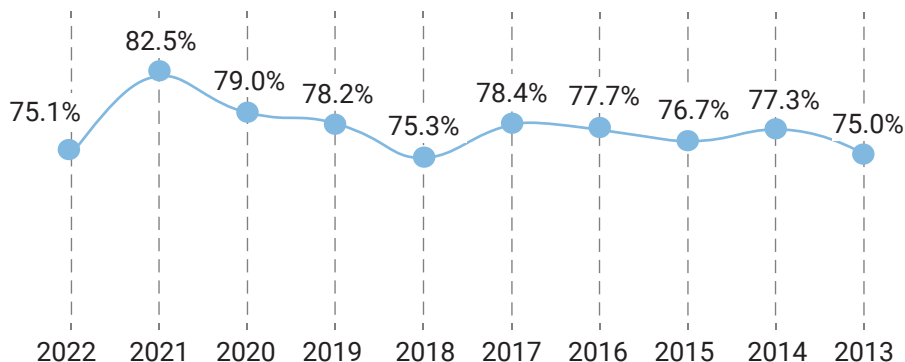
*At a glance...*

as at December 31, 2022



The Plan's funded status decreased to 75.1 per cent, on a going-concern basis, from 82.5 per cent in 2021. A funded status of 100 per cent or more would mean that the Plan is fully funded.

## Funded Status 2022-2013



## Investment return



The Plan achieved an absolute one-year return of -4.05 per cent, net of investment management fees (-3.88 per cent, gross of investment management fees). The Fund underperformed the actuarial assumed rate of return, or discount rate, of 5.70 per cent and modestly underperformed the policy benchmark of -3.69 per cent.

# 2022 PLAN PERFORMANCE

*At a glance...*

as at December 31, 2022

## Financial Position

### Assets available for Benefits

**\$5.480** billion

\$5.856 b  
2021

\$5.519 b  
2020

\$5.358 b  
2019

\$4.938 b  
2018

### Liabilities\*

**\$7.299** billion

\$7.096 b  
2021

\$6.986 b  
2020

\$6.855 b  
2019

\$6.556 b  
2018

### Unfunded Liability

**-\$1.819** billion

-\$1.240 b  
2021

-\$1.467 b  
2020

-\$1.497 b  
2019

-\$1.618 b  
2018

\* For an explanation on the breakdown of Plan liabilities, in dollar amounts by each member group, see the Going Concern Actuarial Plan liabilities chart on page 12.

### Contributions

**\$296** million

paid in contributions to the Plan

Plan member and employer contributions, including purchases of past service, totalled \$234 million. In addition, the Province made a special contribution of \$62 million.

### Benefits Paid

**\$426** million

paid out in benefits

Benefits paid out for retiree, survivor and disability benefits, and refunds totalled \$426 million.

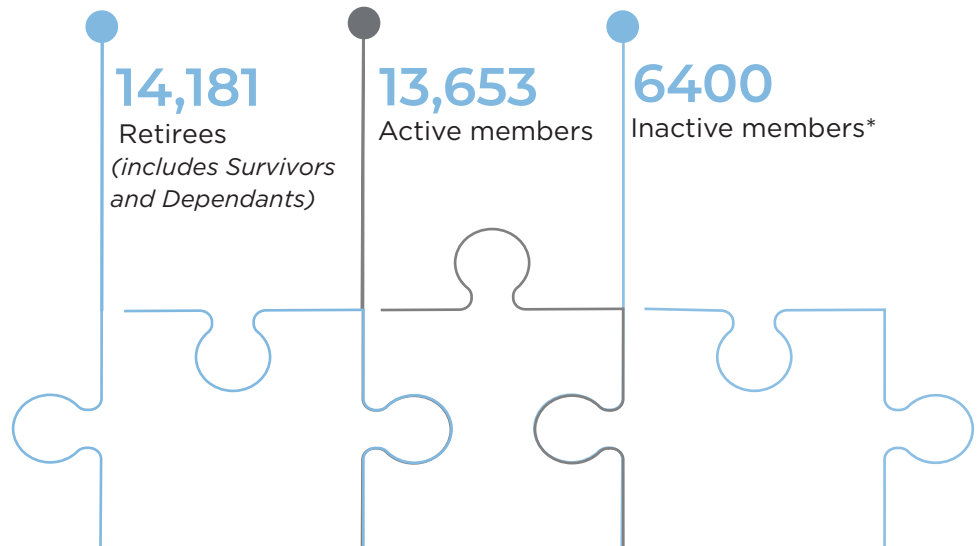
# PLAN MEMBERSHIP *Highlights*

as at December 31, 2022

## 34,234

Total members

The Plan had a total of 34,234 members. In 2022, the number of retirees grew by 128 from 14,053 to 14,181, while the number of active Plan members increased by 447 from 13,206 to 13,653.



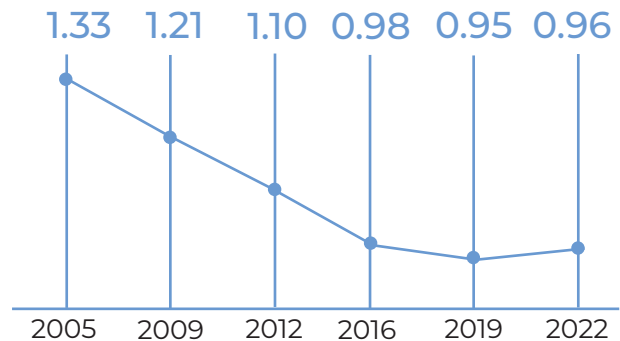
\* Includes Plan members who have not contributed to the Plan in the past 1.5 years and have not retired or removed their funds from the Plan.

## Plan Maturity

The Plan had 0.96 active member for 1 retiree.

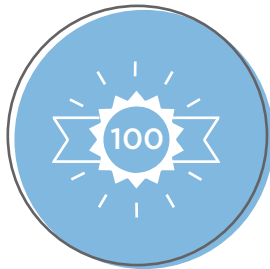
While the Plan's continuing maturity remains a significant concern, we did see a modest increase in the active member to pensioner ratio. However, it remains amongst the lowest in the country. Each year, the TPP experiences a net outflow of approximately \$150-\$200 million, the difference between pension benefits paid out and contributions collected from active members and employers. This places an ongoing and unfair burden on active members paying high contribution rates.

## Membership ratio over the years:



Average member age

**43.7**   **73.3**  
Active member   Retired member



Retirees and survivors  
over 100 years of age

**30**  
Members



Average  
pensionable earnings

**\$79,219**  
Active members



Average  
lifetime pension

**\$28,820**  
Retirees



## Message from the Trustee Chair

John Rogers, KC, ICD.D

On behalf of Teachers' Pension Plan Trustee Inc. (TPPTI), it is my privilege to present the 2022 Teachers' Pension Plan Annual Report. This Report provides you with details on the financial health of the Plan at December 31, 2022 and a comprehensive review of its investment activities.

The global economy continued to face significant challenges across the investment landscape in 2022. Driving these challenges included COVID-19 recovery efforts, geopolitical conflicts, supply chain disruptions, extreme weather events, high levels of inflation and rapidly increasing interest rates. While the TPP was not immune to these challenges, it is important to remember that TPPTI invests for the long term, maintaining a large and very diverse portfolio, and follows robust investment strategies.

### Plan Performance

The Teachers' Pension Fund achieved an absolute one-year return of -4.05 per cent, net of investment management fees (-3.88 per cent, gross of investment management fees). The Fund underperformed the actuarial assumed rate of return, or discount rate, of 5.70 per cent and modestly underperformed the policy benchmark of -3.69 per cent. However, the significant headwinds of 2022 in public equity and fixed income investments resulted in material losses for most Canadian pension plans. The TPP's diversified asset mix was built to weather tough times and did so effectively in 2022. We are pleased with the way the TPP held up in 2022 and with its performance compared to most plans in Canada.

At December 31st, the Plan was 75.1 per cent funded on a going-concern basis. This represents a decrease over last year's funded ratio of 82.5 per cent, which was the highest funded status the Plan had seen since the October 2008 financial crisis. The Plan's deficit was \$1.819 billion, being the difference between the net assets available for payment of benefits of \$5.480 billion and the actuarially-calculated liabilities of \$7.299 billion. The decrease in the funded ratio year-over-year was due to the asset losses in 2022 and, importantly, to the fact that the Plan's discount rate was maintained at 5.70%. On the advice of the Plan's actuarial consultant, the Plan added substantially to the 'provision for adverse deviation (PfAD)'. The PfAD acts like a reserve fund – to be available for use to buttress the Plan's financial situation in especially challenging times. With the increase from 0.52% in 2021, and from an average of 0.26% for the 8-year period of 2013-2020, the TPP's 2022 PfAD of 0.83% now sits at a much higher level than it has for many years.

While the Plan's continuing maturity remains a significant concern, we did see a modest increase in active membership to 13,653, from 13,206 in 2021. However, the Plan also added more pensioners and their survivors (14,181 in 2022 compared to 14,053 in 2021). As a result, the active member to pensioner ratio remains amongst the lowest in the country (0.96 in 2022; 0.94 in 2021). Each year, the TPP experiences a net outflow of approximately \$150-\$200 million – that is, the difference between pension benefits paid out and contributions collected from active members and employers. This places an ongoing and unfair burden on active members paying high contribution rates.

### Plan Review

In 2020, the Plan Sponsors, Province of Nova Scotia (Province) and Nova Scotia Teachers Union (NSTU), agreed to jointly appoint an independent panel of pension experts (TPP Panel) to review the ongoing challenges facing the Plan. The TPP Panel's mandate was to review and analyze the Plan, educate and consult with members and stakeholders, and make non-binding recommendations to fully fund the Plan within a reasonable period of time. In August 2022 the TPP Panel's non-binding recommendations were submitted to the Province and the NSTU for review and consideration.

As indicated above, the Plan's funded position and mature demographic profile remain very significant concerns for the TPPTI Board. The Board continues to urge the Plan Sponsors to act decisively and effect changes that will improve the Plan's long-term financial sustainability. The TPPTI Board is hopeful that the TPP Panel's report and recommendations will catalyze meaningful steps by the Province and the NSTU.

### Acknowledgments

On behalf of TPPTI, I would like to acknowledge and thank outgoing Board director, Vicki Clark. Vicki's contributions to the Board over the years have helped strengthen the retirement security of all TPP members. I would also like to welcome Dr. Toyin Akindoju to the Board.

Lastly, I would like to recognize the talented and dedicated staff of NS Pension for their ongoing support to the Board and their high service levels and dedication to our Plan members throughout 2022.

**John Rogers, KC, ICD.D**  
TPPTI Chair

## Your Teachers' Pension Plan Trustee Inc.

Teachers' Pension Plan Trustee Inc. (TPPTI) is the Trustee of the Plan. TPPTI was established in 2006 under a joint trust agreement between the Nova Scotia Teachers Union (NSTU) and the Province of Nova Scotia (Province). TPPTI has the fiduciary responsibility for the Plan, is responsible for its operations and manages its investment assets. TPPTI ensures that the Plan is operated with strong controls and risk management practices, transparent reporting, and prudent management of the Plan's investment assets.

TPPTI directors oversee all aspects of the Plan through three committees:



### **Audit and Actuarial Committee (AA):**

Oversight of the Plan's auditors and actuaries. Conducts a detailed review of the audited financial statements and actuarial valuation reports. Reviews quarterly compliance reports.



### **Governance, Communications, and Member Services Committee (GCMS):**

Ensures TPPTI's duties and responsibilities are clear and sets the goals for the Plan administrator.



### **Investment Committee (Invest.):**

Reviews, monitors, and approves all investment management policies and investment decisions.



## Teachers' Pension Plan Trustee Inc. *BOARD OF DIRECTORS*

*As at December 31, 2022*

The TPPTI Board of Directors is comprised of nine members. Four directors are appointed by the Nova Scotia Teachers Union (NSTU) and four directors are appointed by Nova Scotia's Minister of Finance and Treasury Board (Minister). The independent Chair of the TPPTI Board is mutually appointed by the NSTU and the Minister. The Board meets five to six times a year.



**John Rogers, KC, ICD.D**  
Chair

The Chair is an ex-officio member  
on all committees.  
Appointed: 2020



**Dionne Reid**  
NSTU Representative

Teacher  
Committee: GCMS  
Appointed: 2020



**Kyle Marryatt**  
NSTU Representative

Staff Officer, Member Services  
Nova Scotia Teachers Union  
Committee: GCMS (Chair)  
Appointed: 2018



**Sara Halliday**  
Government Representative

Associate Deputy Minister  
Department of Education and Early  
Childhood Development  
Committee: GCMS  
Appointed: 2022



**Allan MacLean**  
NSTU Representative

Retired Teacher and Nova Scotia  
Teachers Union, Staff Officer  
Committee: Invest.  
Appointed: 2018



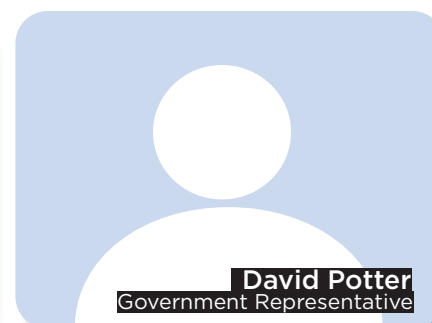
**Nancy-Beth Foran**  
NSTU Representative

Treasurer, Treasury and Investments  
Dalhousie University  
Committee: Invest., AA  
Appointed: 2022



**Shannon York**  
Government Representative

Mgr., Derivatives & Quantitative Evaluation  
Department of Finance & Treasury Board  
Committee: AA, Invest.  
Appointed: 2022



**David Potter**  
Government Representative

Committee: Invest.  
Appointed: 2022



**Vicki Clark, CPA, CMA**  
Government Representative

Retired Director of Compliance & Reporting  
Department of Finance & Treasury Board  
Committee: - Invest. (Chair), AA (Chair)  
Appointed: 2016

For more information on TPPTI and its policies, please visit our website at:

**[www.nstpp.ca/teachers-pension-plan](http://www.nstpp.ca/teachers-pension-plan)**

# PLAN GOVERNANCE

The roles and responsibilities within the Plan's governance structure are highlighted below:



## The Plan Sponsors Role

The Plan Sponsors are the NSTU and the Province. The Sponsors are advised by the Teachers' Pension Board. The Sponsors are responsible for determining contribution rates, Plan regulations and benefits, and the Plan's funding targets. The Sponsors are also responsible for setting the Plan's actuarial assumptions.



## Teachers' Pension Board \*

Recommends the actuarial assumptions used to value Plan liabilities and advises the Plan Sponsors on:

- Plan regulations and benefits
- Employer and member contribution rates
- The Plan's funding targets



## The Trustee's Role

### *Teachers' Pension Plan Trustee Inc. (TPPTI) \**

- Fiduciary responsibility for the Plan and its investment assets
- Responsible for the Plan's overall operations and investment decisions
- Sets policy framework and strategic direction for the investment assets



## The Administrator's Role

### *Nova Scotia Pension Services Corporation (NS Pension)*

- Manages the day-to-day operation of Plan investments and pension administration
- Provides Plan member, retiree, and employer services
- Jointly owned by TPPTI and Public Service Superannuation Plan Trustee Inc (PSSPTI)



## The Board of Directors of Nova Scotia Pension Services Corporation

- Oversight of NS Pension
- Sets strategic direction, approves operational budget, and makes key decisions

*\* Includes directors from TPPTI and PSSPTI*

*\* Includes representatives from the NSTU and the Province.*

To learn more about the TPP governance structure and the *Teachers' Pension Act*, please visit our website at:  
[www.nstpp.ca/about/plan-governance](http://www.nstpp.ca/about/plan-governance)

# Nova Scotia Pension Services Corporation

## Member Services

Our member and employer services teams are responsible for providing pension services to all Plan members (employees and retirees, and their eligible beneficiaries). When an employee retires, our service teams manage pension payments and provide assistance throughout the retirement process. We also assist employees with support in making informed retirement decisions.



### 2022 Service Results



**90%**

of calls were answered  
in less than 20 seconds  
Increased from 87% in 2021.



**20,527**

The number of plan member  
calls that were received.



**14**

We held 14 pre-retirement  
seminars across the province  
and online

### My Retirement Plan (MRP) website usage



**6,504**

The number of times  
the Pension Projection  
tool was used



**3,616**

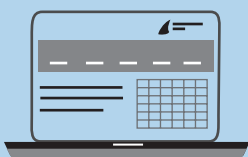
The number of times  
the Annual Statement  
tool was used



**1,349**

The number of times  
the Pension Profile  
tool was used

The My Retirement Plan (MRP) website, <https://nspensions.hroffice.com>, is a secure website that provides active members with access to personalized pension information. Active members can view their annual Member Statement, use the Pension Projection Tool, and access other retirement planning information. Once an active member retires, they will no longer have access to the MRP website. Retirees can contact us by phone or email for information relating to their pension.



#### Visit us online:

[www.novascotiapension.ca](http://www.novascotiapension.ca)  
[www.nstpp.ca](http://www.nstpp.ca)

#### Follow us on Social Media:



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[www.facebook.com/yourNSTPP](https://www.facebook.com/yourNSTPP)

# The Plan's Financial Position

As at December 31, 2022

## Plan Assets

Plan assets were \$5.480 billion and the Plan's funded ratio was 75.1 per cent. The funded ratio is the ratio of Plan assets to Plan liabilities. The funded ratio decreased by 7.4 per cent from 82.5 per cent in 2021.

The Plan is not at risk of being unable to meet its pension obligations over the short term; however, with a funding deficit of \$1.819 billion, the Plan remains significantly under-funded.

## Plan Liabilities

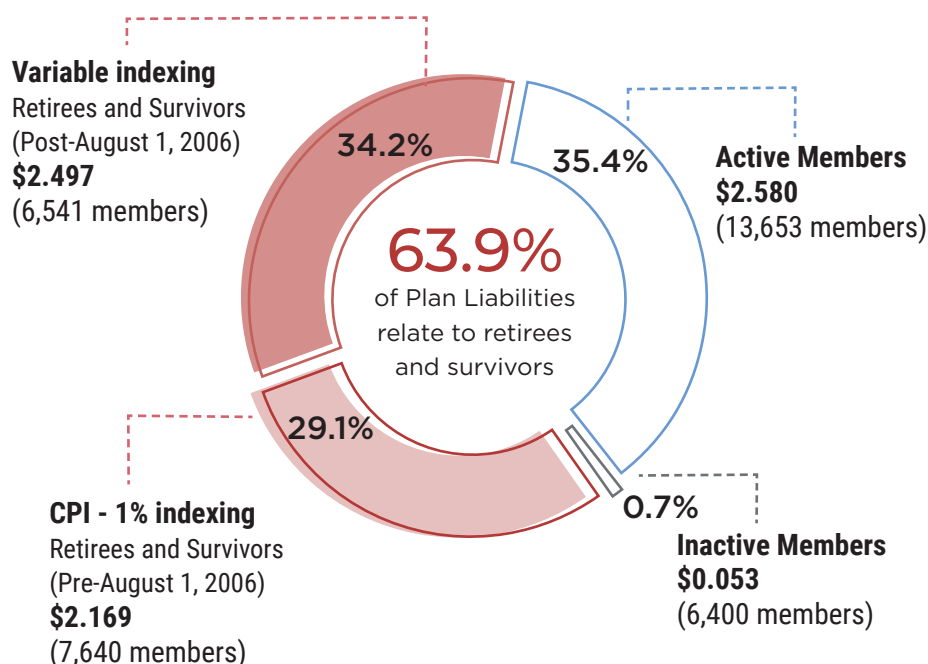
Plan liabilities were calculated to be \$7.299 billion. The calculation of Plan liabilities is derived by using several key assumptions. The most impactful assumption is the discount rate, which is based on a forecast of the long-term rate of return from investment assets.

For the 2022 valuation, the discount rate for the TPP was 5.70%.

### Going Concern Actuarial Plan liabilities increased to \$7.299 billion

The chart below details the Plan liabilities, in dollar amounts\*, by each member group.

(Rounded to the nearest billion)



(in billions)

## 2022

Net Assets: **\$5.480**  
Liabilities: **\$7.299**  
Unfunded Liability: **-\$1.819**

## 2021

Net Assets: **\$5.856**  
Liabilities: **\$7.096**  
Unfunded Liability: **-\$1.240**

## 2020

Net Assets: **\$5.519**  
Liabilities: **\$6.986**  
Unfunded Liability: **-\$1.467**

## 2019

Net Assets: **\$5.358**  
Liabilities: **\$6.855**  
Unfunded Liability: **-\$1.497**

## 2018

Net Assets: **\$4.938**  
Liabilities: **\$6.556**  
Unfunded Liability: **-\$1.618**

Detailed information on the Plan's investment performance is in the Investment Management Discussion and Analysis section of this Annual Report on page 13.

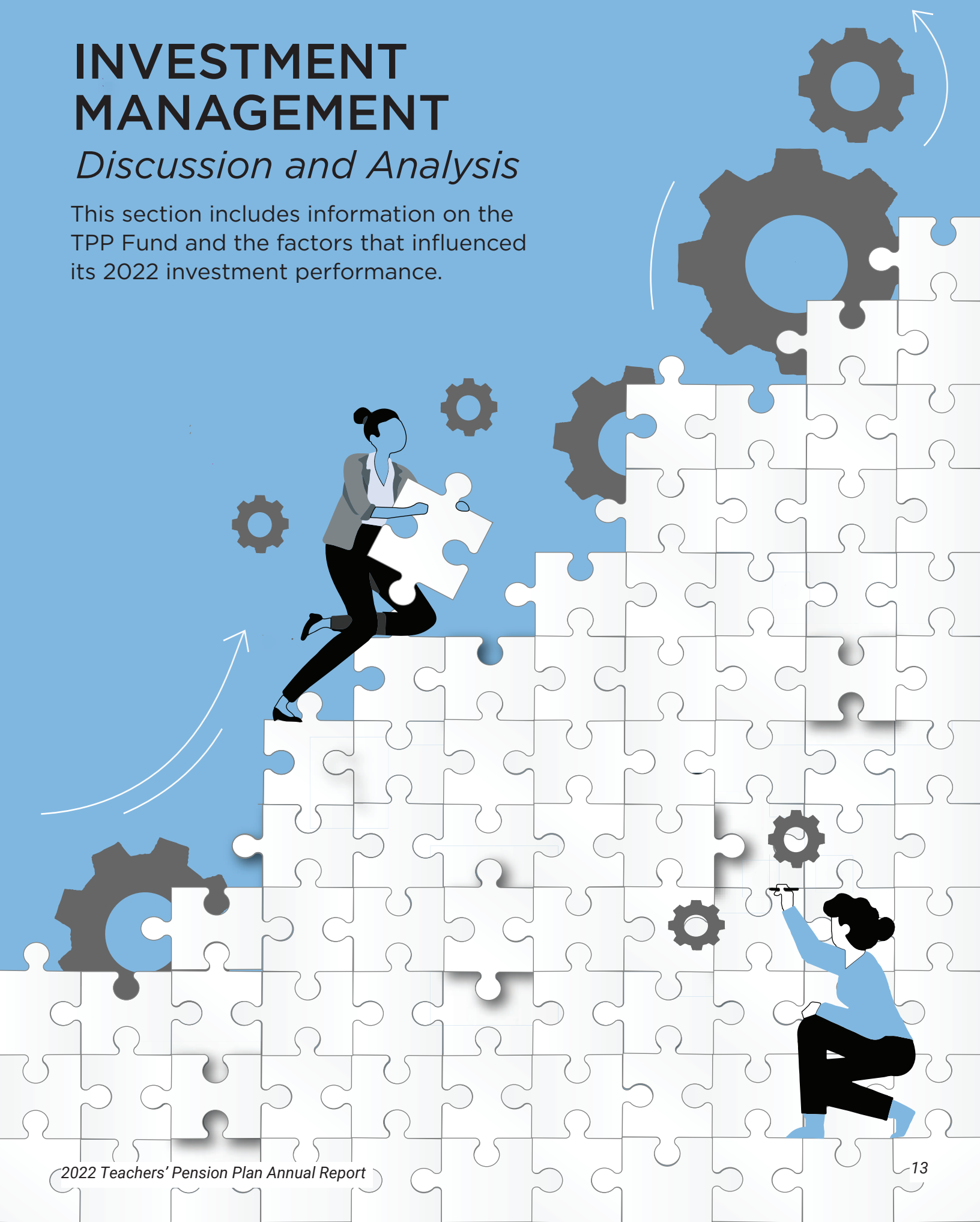
You can learn more about the financial position of the Plan by referring to the audited financial statements for the year ended December 31, 2022 located on page 23 of this Annual Report.

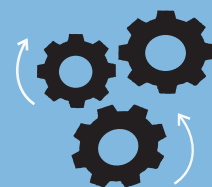
You can also refer to the Actuarial Valuation Report as at December 31, 2022, which is available on our website: [www.nstpp.ca](http://www.nstpp.ca)

# INVESTMENT MANAGEMENT

## *Discussion and Analysis*

This section includes information on the TPP Fund and the factors that influenced its 2022 investment performance.





## The Goal

The primary goal of the Teachers' Pension Fund (Fund) is to satisfy pension obligations.

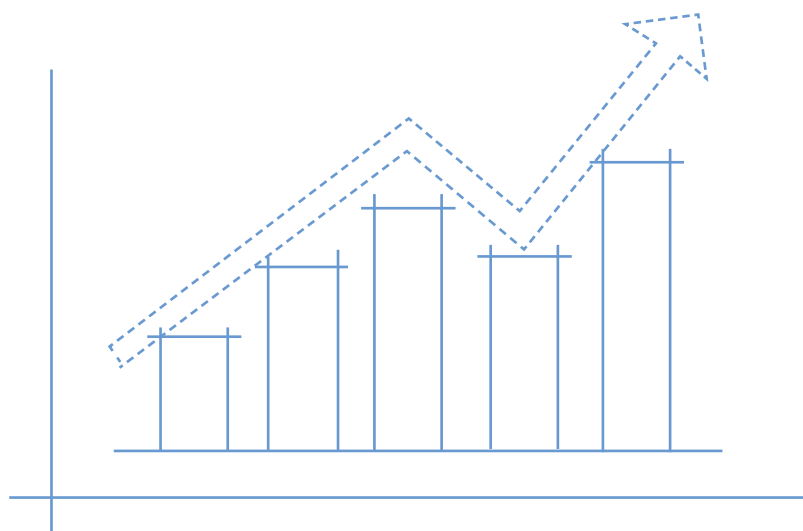
## The SIP&G

The investment of Plan assets is guided by the Fund's Statement of Investment Policies & Goals (SIP&G) as written by Teachers' Pension Plan Trustee Inc. The SIP&G sets out the parameters within which investments may be made.

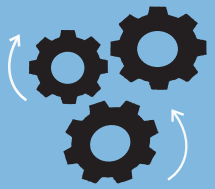
These parameters include permissible investments and the policy asset mix. The investment beliefs, also found within the SIP&G, state the general principles upon which the investments are made.

## Objectives

The Fund must operate in the long-term interest of beneficiaries to ensure that the assets, together with the expected contributions, are invested in a prudent manner so as to meet the liabilities of the Plan and reduce surplus risk.

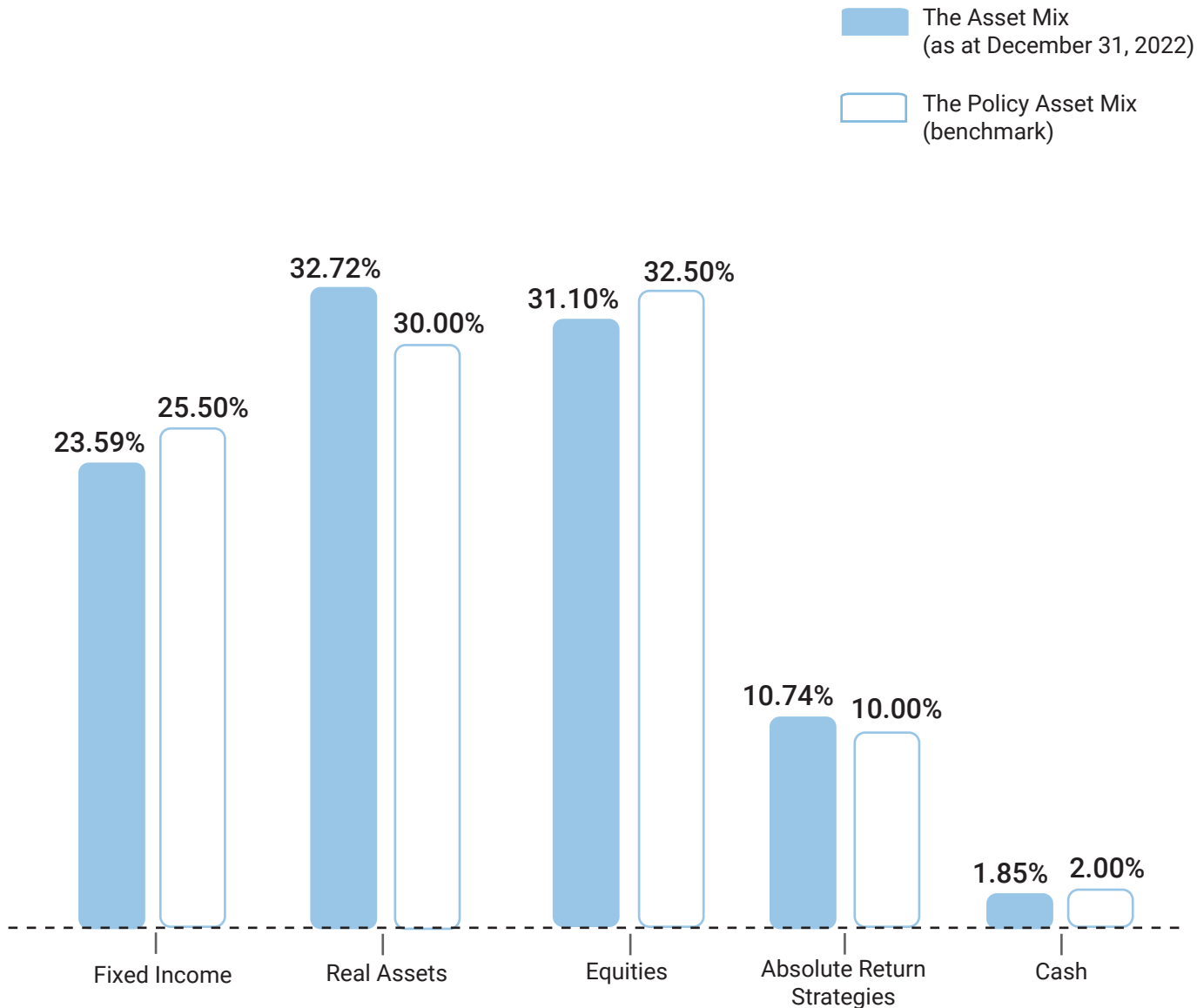


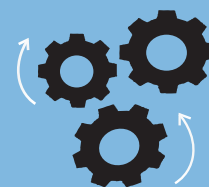




## The Asset Mix

Over the year, the fund completed the asset mix transition from the previous asset liability study.

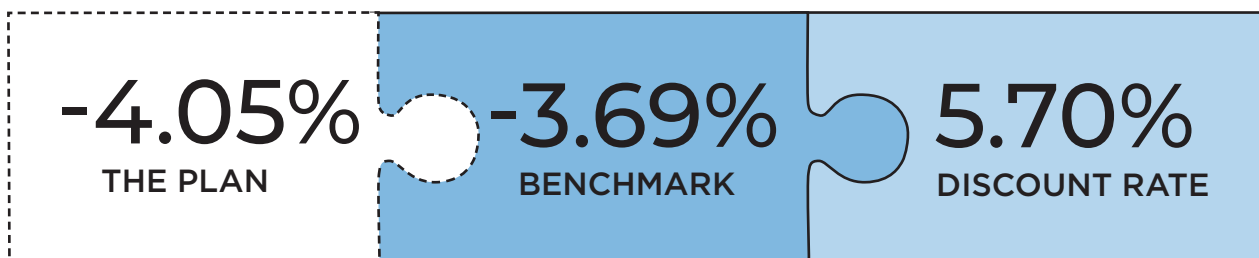




## 2022 Investment Performance

In 2022, the Fund achieved a one-year return of -4.05 per cent net of investment management fees (-3.88 per cent, gross of investment management fees). The Fund underperformed the policy benchmark of -3.69 per cent on a net basis and underperformed the actuarial assumed rate of return of 5.70 per cent.

### 2022 Investment return



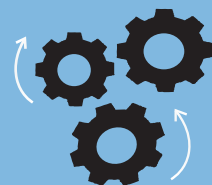
Slowing economic growth, rising interest rates to combat extreme inflationary pressures not experienced since the 1980's, and the Russian invasion of Ukraine pressured equity and fixed income markets around the globe. Equity markets rallied in the later part of the year on signs that inflation may have peaked and that central banks may slow the pace of rate hikes.

The US equity market, as measured by the S&P 500 Index, declined 18.11 per cent during the year. US equities had their worst year since 2008. Persistently high inflation, coupled with the aggressive measures taken by the Fed to control inflation, stoked fears that the US would enter a recession. Growth stocks faced the sharpest declines, as the rising cost of capital heavily penalized companies with low profitability and higher leverage. Energy was the leading sector in the index. This was largely due to the spike in oil prices after Russia launched an invasion of Ukraine in February 2022.

Canadian equities, as measured by the S&P TSX Composite index, declined 5.84 per cent. Canadian equities performed relatively well vs other developed markets thanks to the larger exposure to the energy sector and minimal exposure to information technology.

International equities, as measured by the MSCI EAFE index, declined 7.00 per cent. European equities declined during the year as record high inflation, rising interest rates, and Russia's invasion of Ukraine combined to pressure European economies. Political turmoil weighed on investor sentiment amid contentious leadership changes that occurred in Italy and the UK. In Japan, equities declined as the economy struggled with high inflation and a weakening currency. This led to the Bank of Japan intervening in the foreign exchange market in September for the first time in 20 years in an effort to stop the yen's decline against the US Dollar. Similar to North American markets, Information Technology stocks suffered steep declines, while the Energy sector had positive returns.





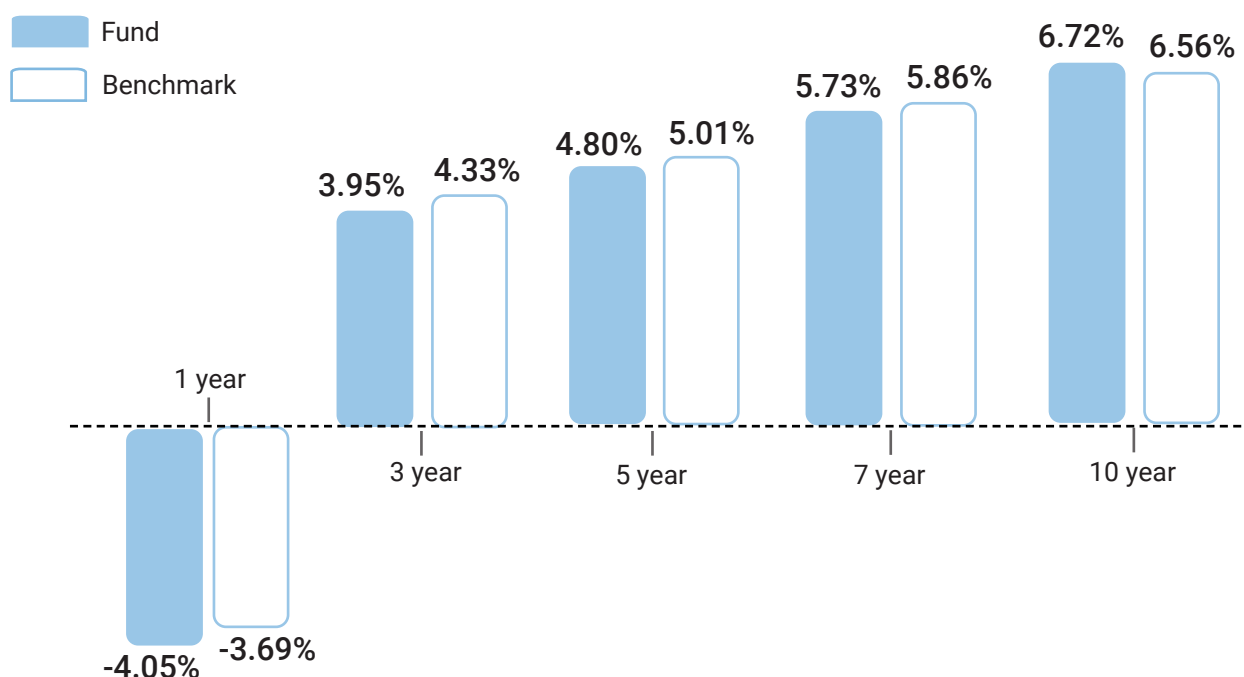
## 2022 Investment Performance continued...

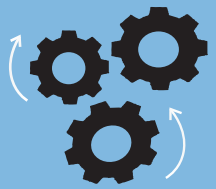
Emerging market equities, as measured by the MSCI EM index, declined 15.54 per cent. Emerging market equities faced significant challenges during the year as China's economy slowed and the aggressive rate hikes from the US central bank added strength to the US dollar. China's zero-Covid policy led to shutdowns in key manufacturing and technology hubs which took a toll on economic growth and investor sentiment. Countries that are heavily reliant on commodity exports did benefit from the increase in energy and other commodity prices. China relaxed the zero-Covid policy later in the year which resulted in a rally to bring their market off of extreme lows.

US fixed income, as measured by the Bloomberg US Credit index, declined 15.27 per cent and Canadian fixed income, as measured by the FTSE Canada Universe Bond Index, declined 11.69 per cent. Central banks aggressively raised interest rates during the year to combat the highest inflation increases in decades causing bond prices to fall. Credit spreads widened during the "risk off" tone during much of the year.

For the Fund, active performance was negative. The Fund's overall performance, on a net basis, trailed the benchmark by 47 basis points. For much of the year, active performance was positive and added value during the market downturn, however it lagged during the significant market rebound at the end of the year, pushing the overall active performance negative for the year. Positive value add can be attributed to the ACWI equity, hedge fund, and the credit fixed income portfolios. Meanwhile, Canadian and EAFE equity managers and the real asset portfolio were the largest detractors to excess return during the year.

## Investment Returns *(net of fees)*





## 2022 Economic Review

**Global growth is estimated to be 3.4 per cent in 2022.<sup>1</sup>** The global central bank fight against soaring inflation, Russia's invasion of Ukraine, and the resurgence of Covid-19 in China weighed on global growth during the year. Despite the headwinds to growth, real GDP was resilient in several economies. This strength came from stronger than expected private consumption and investment amid strong labour markets and greater than expected fiscal support. Supply chain issues eased in 2022 and the declining cost of transportation reduced pressures on input prices, allowing for a rebound in previously constrained sectors such as motor vehicles. However, this strength in economic growth is expected to have moderated somewhat in the fourth quarter as activity indicators such as consumer sentiment and purchasing manager surveys pointed to slower growth. Slowing growth to fight inflation is part of the mandate of the central banks so while growth is welcome, growth plus high inflation makes for a difficult macro environment.

**Canada's economy is expected to have grown by 3.5 per cent in 2022.<sup>2</sup>**

Positive resource and energy sector activity helped offset slower growth in services during the year, however industry data suggests that activity is slowing after the earlier post pandemic rebound. Business sentiment declined during the middle of the year as sales were expected to slow and price pressures continued to impact consumers. The Canadian labour market continued to be surprisingly robust with 409 thousand jobs added during 2022 but showed some signs of slowing relative to population growth in the later part of the year. The Canadian housing market started to weaken as higher borrowing costs weighed on sales, putting pressure on high price levels. Inflation in Canada reached record levels during the year but found some relief from lower energy prices towards the end of the year. Food and services inflation remains high, although business' inflation expectations eased slightly towards the later half of the year.

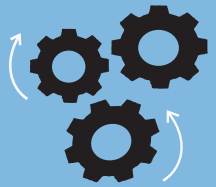
**In the United States, the economy is expected to grow by 2.0 per cent in 2022<sup>3</sup>,**

however showed signs of slowing at year end. Personal consumption expenditures continued to increase, but at a slower pace and investment in housing slowed as costs of borrowing increased. The labour market remains strong, and unemployment has returned to pre-Covid lows. However, there are indications that labour demand growth is moderating, although some sectors continued to experience labour shortages. Nominal wages continued to rise, contributing to ongoing inflationary pressures. While goods price inflation remains high, services inflation also gradually increased. The direct economic impact from Russia's invasion of Ukraine has been more limited to the US than in many other countries. The US is a net exporter of energy and other commodities that have experienced trade disruptions due to the war. US exports of natural gas and wheat have increased in response to shortages on global markets. Despite increased exports globally, domestic food and gasoline prices remain elevated compared with the pre-pandemic period.

<sup>1</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023

<sup>2</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023

<sup>3</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023



## 2022 Economic Review continued...

### **Economies in the Euro area are expected to grow by 3.5 per cent in 2022.<sup>4</sup>**

European economic growth in 2022 was much more resilient than expected in the face of the war in Ukraine. This resilience is visible in consumption and investment data and aided by significant fiscal support by many European governments to households and firms hit by the energy crisis. Natural gas prices actually declined during the year due to higher than expected non-Russian pipeline and liquefied natural gas flows, compression of demand for gas, and a warmer-than-usual winter. However, activity indicators toward the end of the year suggest that the manufacturing and services sectors are contracting and consumer confidence and business sentiment have worsened. With inflation at 10 per cent or above in several Euro area countries and the United Kingdom, household budgets remain stretched. The accelerated pace of rate increases by the Bank of England and the European Central Bank is tightening financial conditions and cooling demand in the housing and other sectors.

**Japanese economic growth is estimated to be 1.4 per cent in 2022.<sup>5</sup>** Japan suffered a Covid-19 resurgence starting in late June 2022 and recorded the highest number of infections and deaths since the beginning of the pandemic. However, the government did not implement confinement measures which limited the impact on economic activity. Energy and food prices remain the biggest driver of headline consumer price inflation, which reached 3 per cent in August and September. However, cost increases have been only partly passed through into prices, and government measures, such as price caps on oil, have helped keep inflation relatively muted. The labour market has been tightening, but wage growth remains sluggish and domestic demand is recovering slowly. Supply chain disruptions arising from Russia's war in Ukraine and China's zero-Covid policy held back production, investment and exports. Widening interest rate differentials with other advanced economies have led the yen to depreciate to decade lows, adding upward pressures on the prices of imported energy, food and raw materials.

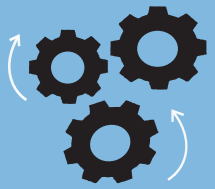
### **Emerging market economic growth for 2022 is estimated to be 3.9 per cent.<sup>5</sup>**

Economic activity in the emerging markets largest economy, China, slowed amid multiple large Covid-19 outbreaks in Beijing and other densely populated cities. Renewed lockdowns accompanied the outbreaks until the relaxation of Covid-19 restrictions in November and December, which paved the way for a full reopening. Real estate investment continued to contract, and developer restructuring is proceeding slowly, amid the lingering property market crisis. Consumer and business sentiment remained subdued well into 2022. China's slowdown helped reduce global trade growth and international commodity prices as the year progressed.

<sup>4</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023

<sup>5</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023

<sup>6</sup> World Economic Outlook, Inflation Peaking amid Low Growth Update January 2023



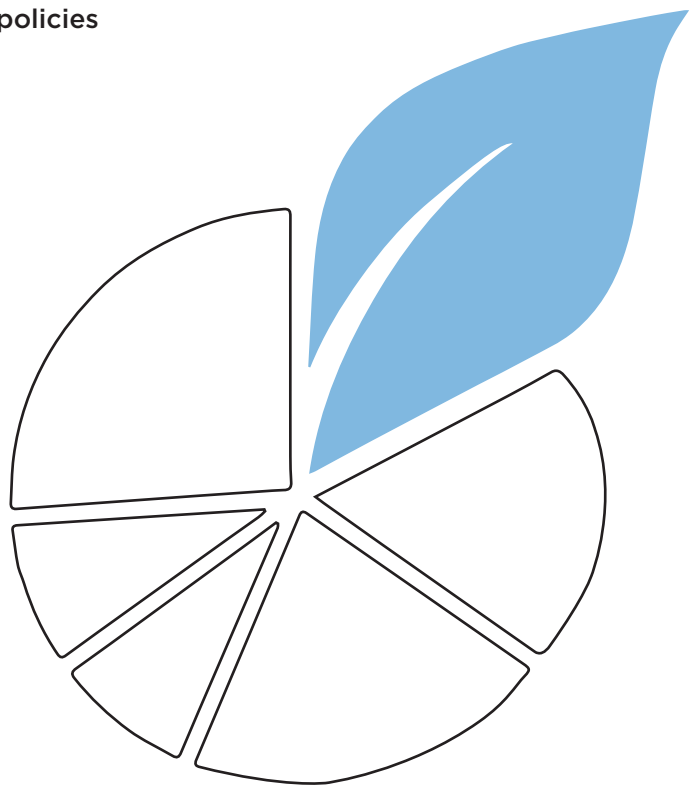
## Sustainable Investing

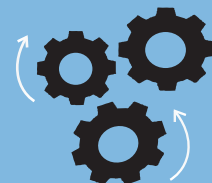
Sustainable investing and climate risk continues to be a focus for TPPTI. Sustainable investing is an investment approach that, in addition to achieving targeted investment returns, considers long-term investing and environmental, social and corporate governance factors. A Sustainable Investment Policy was first approved in 2015 and since then an annual Sustainable Investment Report became a reoccurring item on the TPPTI Board's agenda.

A sustainability report is also posted on the TPP website to provide members with more information on ongoing sustainable investment activities. Work continues on how to improve the resiliency of investment portfolios such as real estate to protect assets that could be negatively impacted by climate change, infrastructure portfolio investing in renewable energy sources to continue to meet global growth and demand and agriculture and timber investments with a lens on the shifting landscape of supply and demand of natural resources.

TPPTI continues to engage with its investment managers, like-minded partners and broader industry groups to progress their sustainable investment programs. TPPTI welcomes the emergence of Canadian pension plan and global association groups taking a leading approach to sustainable investing. TPPTI will look to further integrate these industry best practices in the years to come.

You can view the TPP Sustainable Investment Report on our website at:  
[www.nstpp.ca/investments/investment-policies](http://www.nstpp.ca/investments/investment-policies)

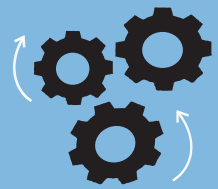




## Our focus during 2022

The implementation of the new TPPTI approved policy asset mix, a result of the 2020 asset liability study, continued during the first half of 2022. The pace of the increase to real assets (real estate, infrastructure, and timber/agriculture), and corresponding decreases in government bond and equity assets was accelerated by the turmoil in many financial markets. As well, new EAFE small-cap and emerging market equity external manager searches were completed, and mandates funded. The net result was that TPPTI was able to fully implement the new asset mix by mid-2022, much earlier than previously planned.

Given the elevated market volatility during much of 2022, the relative weights of various asset classes drifted higher or lower to a greater extent than normal. Other than the implementation of the new policy asset mix, TPPTI was also focused on maintaining ample liquidity during the year. Rebalancing within, and between, liquid asset classes (equities and fixed income) and illiquid asset classes was of paramount importance for the pension fund community during the year.



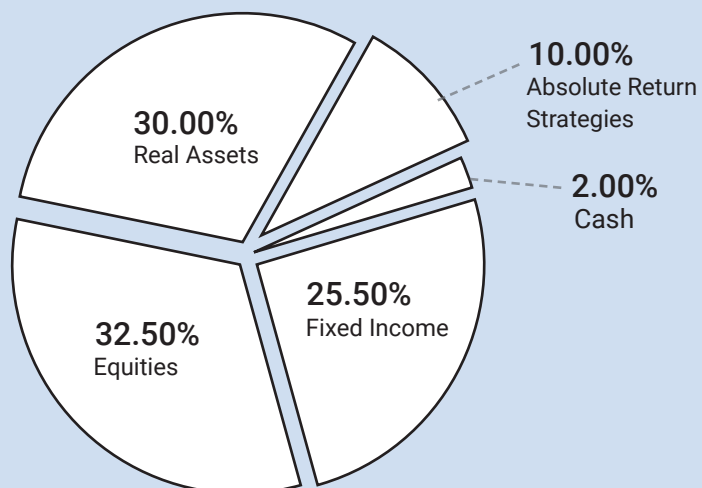
## Looking Ahead to 2023

With heightened market volatility expected to continue well into 2023, TPPTI expects the portfolio to experience periods of variation against benchmark that will need to be monitored and managed. Central banks remain focused on fighting inflation while global economies and markets continue to absorb the effect of the significant 2022 interest rate increases. China's reopening, the ongoing Russia/Ukraine conflict, energy concerns in Europe, pressure on banks, labour market shortages and slowing growth provide opposing forces that will add to continued market volatility and put pressure on pension plans to maintain focus on long term goals while maintaining ample liquidity.

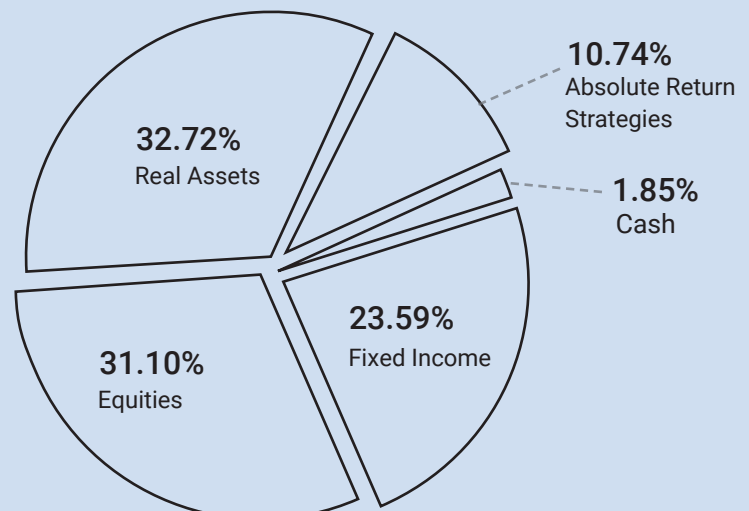
The past year was tough for pension plans across the globe from an absolute investment perspective and 2023 has started off with continued heightened volatility. Fixed income yields, however, are arriving at levels not seen in decades presenting an opportunity for pension plans to once again add diversification with yield from the bond markets. Furthermore, as markets transition away from an era of low interest rates to being more rational and fundamentally based, the benefits of broadly diversified portfolios as well as active portfolio management should become apparent.

With the asset mix transition complete, TPPTI will focus on portfolio optimization at an asset class basis and look for opportunities to take advantage of potential market dislocations, while carefully monitoring private market weights and liquidity. New strategies are being developed for asset classes considering the current environment to enhance portfolio return at the total plan level, while risk management tools will continue to be enhanced. TPPTI will continue to manage the plan investments with a long-term focus despite heightened short term volatility.

### Target Policy Asset Mix



### Current Asset Mix



# Financial Statements of TEACHERS' PENSION PLAN Year ended December 31, 2022



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Halifax NS B3J 3N2  
Canada  
Tel 902-492-6000  
Fax 902-429-1307

## INDEPENDENT AUDITOR'S REPORT

To the Teachers' Pension Plan Trustee Inc.

### ***Opinion***

We have audited the financial statements of Teachers' Pension Plan (the "Entity"), which comprise:

- the statement of financial position as at December 31, 2022;
- the statement of changes in net assets available for benefits for the year then ended;
- the statement of changes in pension obligation for the year then ended;
- the statement of changes in deficit for the year then ended;
- and notes to the financial statements, including a summary of significant accounting policies.

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at December 31, 2022, and its changes in net assets available for benefits and its changes in pension obligation for the year then ended in accordance with Canadian accounting standards for pension plans.

### ***Basis for Opinion***

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the **"Auditor's Responsibilities for the Audit of the Financial Statements"** section of our auditor's report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.



***Responsibilities of Management and Those Charged with Governance for the Financial Statements***

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for pension plans, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

***Auditor's Responsibilities for the Audit of the Financial Statements***

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.



Page 3

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

A handwritten signature in black ink that reads 'KPMG LLP'. The signature is written in a cursive, stylized font. Below the signature is a horizontal line that starts under the 'K' and ends under the 'P'.

Chartered Professional Accountants

Halifax, Canada  
April 18, 2023

# Financial Statements of TEACHERS' PENSION PLAN

## Year ended December 31, 2022

### Contents

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# Financial Statements

## Statement of Financial Position

December 31, 2022, with comparative information for 2021

2022


2021

(in thousands of dollars)

<b>Net assets available for benefits</b>		
<b>Assets</b>		
Cash	\$ 127,768	\$ 149,261
Contributions receivable:		
Employers'	8,197	7,726
Employees'	2,655	2,789
Receivable from pending trades	25	5,759
Accounts receivable	1,437	1,455
Accrued investment income	10,727	10,853
Investments (note 5)	5,379,691	5,743,655
<b>Total assets</b>	<b>5,530,500</b>	<b>5,921,498</b>
<b>Liabilities</b>		
Due to administrator (note 12)	813	1,124
Payable for pending trades	33,012	58,594
Accounts payable and accrued liabilities	2,805	3,417
Investment-related liabilities (note 5)	14,166	2,840
<b>Total liabilities</b>	<b>50,796</b>	<b>65,975</b>
<b>Net assets available for benefits</b>	<b>\$ 5,479,704</b>	<b>\$ 5,855,523</b>
<b>Accrued pension obligation and deficit</b>		
Accrued pension obligation (note 7)	\$ 7,298,511	\$ 7,095,756
Deficit (note 7)	(1,818,807)	(1,240,233)
Commitments (note 8)		
<b>Accrued pension obligation and deficit</b>	<b>\$ 5,479,704</b>	<b>\$ 5,855,523</b>

The accompanying notes are an integral part of these financial statements.

On behalf of the Board:



John Rogers  
Chair



Sara Halliday  
Director



Kyle Marryatt  
Director

# Financial Statements

## Statement of Changes in Net Assets Available for Benefits

December 31, 2022, with comparative information for 2021	2022	2021
(in thousands of dollars)		
<b>Increase in assets</b>		
Contributions (note 4)	\$ 295,541	\$ 240,356
Transfers from other pension plans	3,999	2,978
Investment income (note 5)	128,460	146,449
Change in market value of investments (note 5)	-	386,932
Total increase in assets	428,000	776,715
<b>Decrease in assets</b>		
Benefits paid (note 9)	426,112	417,426
Transfers to other pension plans	2,395	3,011
Administrative expenses (note 10)	18,357	19,500
Change in market value of investments (note 5)	356,955	-
Total decrease in assets	803,819	439,937
<b>(Decrease) increase in net assets available for benefits</b>	<b>(375,819)</b>	<b>336,778</b>
<b>Net assets available for benefits, beginning of year</b>	<b>5,855,523</b>	<b>5,518,745</b>
<b>Net assets available for benefits, end of year</b>	<b>\$ 5,479,704</b>	<b>\$ 5,855,523</b>

The accompanying notes are an integral part of these financial statements.

# Financial Statements

## Statement of Changes in Pension Obligation

December 31, 2022, with comparative information for 2021	2022	2021
(in thousands of dollars)		
<b>Accrued pension obligation, beginning of year</b>	<b>\$ 7,095,756</b>	<b>\$ 6,986,076</b>
<b>Increase in accrued pension benefits</b>		
Interest on accrued pension obligation	397,025	390,859
Benefits accrued	160,059	156,024
Transfers from other pension plans	3,999	2,978
Changes in actuarial assumptions (note 7)	36,297	40,721
Net experience losses (note 7)	33,882	-
	<b>631,262</b>	<b>590,582</b>
<b>Decrease in accrued pension benefits</b>		
Benefits paid	426,112	417,426
Transfers to other pension plans	2,395	3,011
Net experience gains (note 7)	-	60,465
	<b>428,507</b>	<b>480,902</b>
<b>Net increase in accrued pension benefits</b>	<b>202,755</b>	<b>109,680</b>
<b>Accrued pension obligation, end of year</b>	<b>\$ 7,298,511</b>	<b>\$ 7,095,756</b>

## Statement of Changes in Deficit

December 31, 2022, with comparative information for 2021	2022	2021
(in thousands of dollars)		
<b>Deficit, beginning of year</b>	<b>\$ 1,240,233</b>	<b>\$ 1,467,331</b>
Decrease (increase) in net assets available for benefits	375,819	(336,778)
Net increase in accrued pension obligation	202,755	109,680
<b>Deficit, end of year</b>	<b>\$ 1,818,807</b>	<b>\$ 1,240,233</b>

See accompanying notes to financial statements.

# Notes to Financial Statements

Year ended December 31, 2022  
(in thousands of dollars)



## Authority and description of Plan

The following description of the Teachers' Pension Plan (the "Plan") is a summary only. For more complete information, reference should be made to the Plan legislative documents and agreements.

### General

The Plan is governed by the *Teachers' Pension Act* (the "Act") as part of the Acts of Nova Scotia. It is a contributory defined benefit pension plan covering public school and community college teachers and is co-sponsored by the Province of Nova Scotia (the "Province") and the Nova Scotia Teachers' Union (the "Union"). The Act established the Nova Scotia Teachers' Pension Fund (the "Fund") for the purpose of crediting employer and employee contributions, investment earnings and meeting the Plan's obligations.

The detailed provisions of the Plan, including pension eligibility criteria and benefit formulas, are contained in the Act and in the Regulations made under the Act.

As part of the June 22, 2005 Agreement between the Province and the Union, the Province and the Union agreed to joint and equal participation in the governance of the Plan including the sharing of any actuarial surpluses or deficits between the Province and the beneficiaries of the Plan upon the transfer of the Plan to a newly formed trustee entity. Teachers' Pension Plan Trustee Inc. (the "TPPTI") was incorporated to act as trustee of the Fund and on April 1, 2006, the TPPTI became the trustee of the Fund. The 2005 Agreement was rescinded and replaced in 2014 with a new agreement, last amended on November 17, 2015. However, there were no changes to the governance of the Plan or the sharing of actuarial surpluses or deficits.

The TPPTI is responsible for the administration of the Plan and the investment management of the Fund assets. The investment of the Fund assets is guided by the Fund's Statement of Investment Policies & Goals (the "SIP&G") as written by the TPPTI. The SIP&G sets out the parameters within which the investments are made. These parameters include permissible investments and the policy asset mix. The Investment Beliefs, also found within the SIP&G, state the general principles upon which the investments are made.

### Funding

Plan benefits are funded by contributions and investment earnings. Contributions are made by active members of the Plan and are matched by either the Province or participating employers. The determination of the value of the benefits and required contributions is made based on periodic actuarial valuations (note 7).

In accordance with the Plan regulations, employers and employees are required to contribute 11.3% of salary up to the Year's Maximum Pensionable Earnings (the "YMPE") per the Canada Pension Plan (the "CPP") and 12.9% of salary above the YMPE.

## Authority and description of Plan (continued)

### Retirement benefits

The pension benefit consists of two components. The lifetime pension, for every year of pensionable service, is 1.3% times the 5-year highest average salary at retirement (the “HAS-5”) up to the average YMPE, plus 2.0% times the portion of the HAS-5 in excess of the average YMPE (if applicable). The bridge benefit, for every year of pensionable service, is 0.7% times the lesser of (i) the HAS-5, and (ii) the average YMPE. The lifetime pension is payable for life, while the bridge benefit is payable until age 65, at which point it ceases as a result of integration with the CPP.

Plan members are eligible for a pension upon reaching any of the following criteria:

- 35 years of service;
- age 50 with 30 years of service (reduced pension);
- age 55 with an age plus service factor of 85 “Rule of 85”;
- age 55 with two years of service (reduced pension);
- age 60 with 10 years of service;
- age 65 with two years of service.

### Indexing

For pensions with an effective date before August 1, 2006, the rate is equal to the increase in the 12-month average Consumer Price Index (“CPI”) for Canada, less 1%, to a maximum of 6%.

Indexing in a given year for pensions with an effective date on or after August 1, 2006, as well as those of existing pensioners who opted for the new indexing arrangement, depends on the funding level of the Plan. If the funding level as at December 31 of the preceding fiscal year is less than 90%, no indexing will be provided. At a funding level of between 90% and 100%, indexing may be granted at 50% of the increase in the 12-month average CPI up to a maximum of 6%, at the discretion of the Board of Trustees.

If the funding level is greater than 100%, indexing will be provided at 100% of the increase in the 12-month average CPI up to a maximum of 6%, to the extent that it does not reduce the funding level to below 100%; however, pensions will be increased by at least 50% of the increase in the 12-month average CPI up to a maximum of 6%. For the purposes of the valuation, it was assumed that indexing would not be paid in years in which it is discretionary.

### Disability benefits

Prior to August 1, 2014, active members who became mentally or physically disabled were entitled to apply for a disability pension from the Plan. Effective August 1, 2014, however, disability coverage was moved to the Union’s long-term disability insurance plan, and the ability to apply for a disability pension from the Plan was discontinued except in very limited circumstances.



## Authority and description of Plan (continued)

### Death benefits

Upon the death of a vested member, the surviving spouse is entitled to receive 60% of the vested member's pension benefit payable for life, or a higher percentage if the member elected an optional form of pension. Eligible children are entitled to receive 10% of the vested member's pension benefit, payable until age 18 (or 25 while still in school).

### Termination benefits

Upon termination of employment, a vested member may choose to defer their pension until they satisfy one of the above eligibility criteria, or they may remove their funds from the Plan in the form of a commuted value (or refund of contributions, for service prior to January 1, 1988).

### Refunds

The benefit payable upon termination or death of a non-vested member, or upon death prior to retirement of a vested member with no eligible survivors, is a lump sum refund of the member's contributions with interest.

## 2.

## Basis of preparation

### a. Basis of presentation

These financial statements are prepared in Canadian dollars, which is the Plan's functional currency in accordance with the accounting standards for pension plans in Part IV of the Chartered Professional Accountants (CPA) Canada Handbook (Section 4600). Section 4600 provides specific accounting guidance on investments and pension obligations. For accounting policies that do not relate to either investments or pension obligations, the Plan must consistently comply with either International Financial Reporting Standards ("IFRS") in Part I or Accounting Standards for Private Enterprises in Part II of the CPA Canada Handbook. The Plan has elected to comply on a consistent basis with IFRS in Part I of the CPA Canada Handbook. To the extent that IFRS in Part I is inconsistent with Section 4600, Section 4600 takes precedence.

Consistent with Section 4600, investment assets and liabilities are presented on a non-consolidated basis even when the investment is in an entity over which the Plan has effective control. Earnings of such entities are recognized as income as earned and as dividends are declared. The Plan's total investment income includes valuation adjustments required to bring the investments to their fair value.

These financial statements are prepared on a going concern basis and present the aggregate financial position of the Plan as a separate reporting entity.

These financial statements were authorized for issue by the Board of Trustees of the Teachers' Pension Plan Trustee Inc. on April 18, 2023.

### b. Basis of measurement

The financial statements have been prepared on the historical cost basis except for financial instruments which are measured at fair value through the statement of changes in net assets available for benefits and derivative financial instruments which are measured at fair value. Units of subsidiaries held are measured at the fair value of the underlying assets and liabilities.

### c. Use of estimates and judgments

The preparation of the financial statements in conformity with Section 4600 and IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities at the date of the statement of financial position, the reported amounts of changes in net assets available for benefits and accrued pension benefits during the year. Actual results may differ from those estimates. Significant estimates included in the financial statements relate to the valuation of real estate, infrastructure, agriculture & timber and the determination of the accrued pension obligation.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future years affected.

## 3.

## Significant accounting policies

### a. Investment transactions, income recognition and transaction costs

#### i. Investment transactions:

Investment transactions are accounted for on a trade date basis.

#### ii. Income recognition:

Investment income is recorded on an accrual basis and includes interest, dividends, and distributions. Change in market value of investments includes gains and losses that have been realized on disposal of investments and the unrealized appreciation and depreciation in the fair value of investments.

#### iii. Transaction costs:

Brokers' commissions and other transaction costs are recorded in the statement of changes in net assets available for benefits when incurred.

### b. Foreign currency translation

Transactions denominated in foreign currencies are translated into Canadian dollars at the rates of exchange prevailing on the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are re-translated into Canadian dollars at the exchange rate at that date.

Foreign currency differences arising on re-translation are recognized in the statement of changes in net assets available for benefits as a change in market value of investments.

### c. Financial assets and liabilities

#### i. Non-derivative financial assets:

Financial assets are recognized initially on the trade date, which is the date that the Plan becomes a party to the contractual provisions of the instrument.

The Plan classifies all its financial assets at fair value through the statement of changes in net assets available for benefits. Financial assets are designated at fair value through the statement of changes in net assets available for benefits if the Plan manages such investment and makes purchase and sale decisions based on their fair value in accordance with the Plan's documented risk management or investment strategy. Upon initial recognition, attributed transaction costs are recognized in the statement of changes in net assets available for benefits as incurred. Financial assets at fair value through the statement of changes in net assets available for benefits are measured at fair value and changes therein are recognized in the statement of changes in net assets available for benefits.

#### ii. Non-derivative financial liabilities:

All financial liabilities are recognized initially on the trade date at which the Plan becomes a party to the contractual provisions of the instrument.

Financial assets and liabilities are presented in the statement of financial position. The net amount is presented in the statement of financial position, when and only when, the Plan has a legal right to offset the amounts and it intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

The Plan considers its amounts payable to be a non-derivative financial liability.

## Significant accounting policies (continued)

### iii. Derivative financial instruments:

Derivative financial instruments are recognized initially at fair value and their related transaction costs are recognized in the statement of changes in net assets available for benefits as incurred. Subsequent to initial recognition, derivatives are measured at fair value, and all changes are recognized immediately in the statement of changes in net assets available for benefits.

Derivative-related assets and liabilities are presented in the statement of financial position. The net amount is presented in the statement of financial position, when and only when, the Plan has a legal right to offset the amounts and it intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

### d. Fair value measurement

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction on the measurement date.

As allowed under IFRS 13, if an asset or a liability measured at fair value has a bid and an ask price, the price within the bid-ask spread that is the most representative of fair value in the circumstances shall be used to measure fair value. The Plan uses closing market price as a practical expedient for fair value measurement.

When available, the Plan measures the fair value of an instrument using quoted prices in an active market for that instrument. A market is regarded as active if quoted prices are readily and regularly available and represent actual and regularly occurring market transactions on an arm's length basis.

If a market for a financial instrument is not active, then the Plan establishes fair value using a valuation technique. Valuation techniques include using recent arm's length transactions between knowledgeable, willing parties (if available), reference to the current fair value of other instruments that are substantially the same, discounted cash flow analyses and option pricing models.

The best evidence of the fair value of a financial instrument at initial recognition is the transaction price, i.e. the fair value of the consideration given or received, unless the fair value of that instrument is evidenced by comparison with other observable current market transactions in the same instrument or based on a valuation technique whose variables include only data from observable markets. When a transaction price provides the best evidence of fair value at initial recognition, the financial instrument is initially measured at the transaction price and any difference between this price and the value initially obtained from a valuation model is subsequently recognized in profit or loss on an appropriate basis over the life of the instrument but not later than when the valuation is supported wholly by observable market data or the transaction is closed out.

All changes in fair value, other than interest and dividend income and expense, are recognized in the statement of changes in net assets available for benefits as part of the change in market value of investments.

## Significant accounting policies (continued)

### Fair values of investments are determined as follows:

- i. Fixed income securities and equities are valued at year-end quoted closing prices, where available. Where quoted prices are not available, estimated fair values are calculated using comparable securities.
- ii. Short-term notes, treasury bills, term deposits, and agreements to repurchase or resell securities maturing within one year, and promissory notes payable on demand are stated at cost, which together with accrued interest income approximates fair value given the short-term nature of these investments.
- iii. Pooled fund investments include investments in fixed income, equities, real estate and commodities. Pooled funds are valued at the unit values supplied by the pooled fund administrator, which represent the Plan's proportionate share of underlying net assets at fair values determined using closing market prices. These net asset values are reviewed by management.
- iv. Directly held real estate is valued based on estimated fair values determined by appropriate techniques and best estimates by management, appraisers, or both. Where external appraisers are engaged to perform the valuation, management ensures the appraisers are independent and compares the assumptions used by the appraisers with management's expectations based on current market conditions and industry practice to ensure the valuation captures the business and economic conditions specific to the investment.
- v. Private fund investments include investments in real estate, infrastructure, and agriculture & timber assets. The fair value of a private fund investment where the Plan's ability to access information on underlying individual fund investments is restricted, such as under the terms of a limited partnership agreement, is equal to the value provided by the fund's general partner unless there is a specific and objectively verifiable reason to vary from the value provided by the general partner. These net asset values are reviewed by management.
- vi. Derivatives, including futures, options, interest rate swaps, credit default swaps, total return swaps, and currency forward contracts, are valued at year-end quoted market prices, interest, spot and forward rates, where available. Where quoted prices are not available, appropriate alternative valuation techniques are used to determine fair value. The gains or losses from derivative contracts are included in the realized and unrealized gains or losses on investments.
- vii. Absolute return strategy investments, comprised of hedge funds, are recorded at fair value based on net asset values obtained from each of the hedge funds' administrators. These net asset values are reviewed by management.

## Significant accounting policies (continued)

### e. Non-investment assets and liabilities

The fair value of non-investment assets and liabilities are equal to their amortized cost value and are adjusted for foreign exchange where applicable.

### f. Receivable/payable for pending trades

For securities transactions, the fair value of receivable from pending trades and payable for pending trades approximate their carrying amounts due to their short-term nature.

### g. Accrued pension obligation

The value of the accrued pension obligation of the Plan is based on a going concern method actuarial valuation prepared by an independent firm of actuaries using the projected unit credit method. The accrued pension obligation is measured in accordance with accepted actuarial methods using actuarial assumptions and methods adopted by TPPTI for the purpose of establishing the long-term funding requirements of the Plan. The actuarial valuation included in the financial statements is consistent with the valuation for funding purposes.

### h. Contributions

Basic contributions from employers and members are recorded on an accrual basis. Service purchases that include but are not limited to leaves of absence and transfers from other pension plans are recorded and service is credited when the purchase amount is received.

In certain years, an additional contribution to the Plan may be required from the Minister of Finance and Treasury Board. In any indexing period in which there is an actuarial deficit and clause 27B(3)(a) of the Teachers' Pension Plan Regulations applies, the Minister must contribute to the Plan, no later than the beginning of the following indexing period, an amount equal to the actuarial value, as calculated by the Plan's actuary at the beginning of the indexing period, of the difference between:

- i. the indexing of all pensions to which subsection 27B(3) applies for that indexing period at a rate of one-half of the percentage increase in the 12-month average CPI for that indexing period over the 12-month average CPI for the preceding indexing period to a maximum of 6% and, for all future indexing periods, at a rate of one-half of the assumed percentage increase in the 12-month average CPI determined in accordance with the actuarial assumptions and methods; and
- ii. no indexing of all pensions to which subsection 27B(3) applies for that indexing period and, for all future indexing periods, indexing at a rate of one-half of the assumed percentage increase in the 12-month average CPI determined in accordance with the actuarial assumptions and methods.

## Significant accounting policies (continued)

### i. **Benefits**

Benefit payments to retired, surviving and disabled members, commuted value payments and refunds to former members, and transfers to other pension plans are recorded in the period in which they are paid. Accrued benefits are recorded as part of the accrued pension benefit obligation.

### j. **Administrative expenses**

Administrative expenses, incurred for plan administration and direct investment management services, are recorded on an accrual basis. Plan administration expenses represent expenses incurred to provide direct services to the Plan members and employers. Investment management expenses represent expenses incurred to manage the Fund. Base external manager fees for portfolio management are expensed in investment management expenses as incurred.

### k. **Income taxes**

The Fund is the funding vehicle for a registered pension plan, as defined by the *Income Tax Act* (Canada) and, accordingly is not subject to income taxes.

### l. **Future changes to accounting policies**

No relevant new guidance has been issued by the International Accounting Standards Board.

## 4.

## Contributions

	2022	2021
(in thousands of dollars)		
<b>Employer</b>		
Matched current service	\$ 116,876	\$ 115,091
Matched past service	5	6
	<b>116,881</b>	<b>115,097</b>
<b>Employee</b>		
Matched current service	116,876	115,091
Matched past service	5	6
Unmatched past service	137	497
	<b>117,018</b>	<b>115,594</b>
<b>Special contribution from the Province of Nova Scotia</b>	<b>61,642</b>	<b>9,665</b>
	<b>\$ 295,541</b>	<b>\$ 240,356</b>



## 5.

## Investments and investment-related liabilities

- a. The fair value of the Plan's investments and investment-related liabilities along with the related income as at and for the year ended December 31 are summarized in the following tables:

	2022		2021	
(in thousands of dollars)				%
<b>Investments</b>				
<b>Fixed income</b>				
Money market	\$	109,839	2.0	\$ 121,686 2.1
Canadian bonds & debentures		214,921	4.0	475,515 8.3
Non-Canadian bonds & debentures		826,084	15.4	879,419 15.3
Canadian real return bonds		171,103	3.2	213,620 3.7
<b>Equities</b>				
Canadian		236,067	4.4	380,419 6.6
US		754,456	14.0	879,110 15.3
Global		676,761	12.6	867,364 15.1
<b>Real assets</b>				
Real estate		941,875	17.5	706,436 12.3
Infrastructure		728,248	13.5	504,967 8.8
Agriculture & timber		113,672	2.1	59,089 1.0
<b>Absolute return strategies</b>				
Hedge funds		587,422	10.9	571,662 10.0
<b>Investment-related receivables</b>				
Agreements to resell securities		-	-	56,715 1.0
Promissory note		14,592	0.3	22,183 0.4
Derivative-related, net		4,651	0.1	5,470 0.1
	\$	5,379,691	100.0	\$ 5,743,655 100.0
<b>Investment-related liabilities</b>				
Agreements to repurchase securities	\$	-	-	\$ (465) 16.4
Derivative-related, net		(14,166)	100.0	(2,375) 83.6
	\$	(14,166)	100.0	\$ (2,840) 100.0
<b>Net investments</b>	\$	5,365,525		\$ 5,740,815

## Investments and investment-related liabilities (continued)

**2022**

(in thousands of dollars)

Changes in market value of investments and derivatives

	Investment income	Changes in market value of investments and derivatives		
		Realized	Unrealized	Total
Fixed income	\$ 52,125	\$ (24,130)	\$ (152,258)	\$ (176,388)
Equities	30,733	126,220	(260,099)	(260,099)
Commodities	-	-	-	-
Real assets	42,137	30,331	111,524	141,855
Absolute return strategies	-	35,531	20,117	55,648
Derivatives	6	(105,360)	(12,611)	(117,971)
Other	3,459	-	-	-
	\$ 128,460	\$ 62,592	\$ (419,547)	\$ (356,955)

**2021**

(in thousands of dollars)

Changes in market value of investments and derivatives

	Investment income	Changes in market value of investments and derivatives		
		Realized	Unrealized	Total
Fixed income	\$ 48,417	\$ 3,989	\$ (59,529)	\$ (55,540)
Equities	40,170	191,627	127,708	319,335
Commodities	-	(20,794)	43,461	22,667
Real assets	61,428	16,817	12,888	29,705
Absolute return strategies	-	13,258	5,183	18,441
Derivatives	(5,527)	74,575	(22,251)	52,324
Other	1,961	-	-	-
	\$ 146,449	\$ 279,472	\$ 107,460	\$ 386,932

### b. Derivatives

Derivatives are financial contracts, the value of which is “derived” from the value of underlying assets or interest or exchange rates. The Plan utilizes such contracts to provide flexibility in implementing investment strategies and for managing exposure to interest rate and foreign currency volatility.

Notional amounts of derivative contracts are the contract amounts used to calculate the cash flows to be exchanged. They represent the contractual amount to which a rate or price is applied for computing the cash to be paid or received. Notional amounts are the basis upon which the returns from, and the fair value of, the contracts are determined. They do not necessarily indicate the amounts of future cash flows involved or the current fair value of the derivative contracts. They are a common measure of volume of outstanding transactions but do not represent credit or market risk exposure. The derivative contracts become favourable (assets) or unfavourable (liabilities) as a result of fluctuations in either market rates or prices relative to their terms. The aggregate notional amounts and fair values of derivative contracts can fluctuate significantly.

## Investments and investment-related liabilities (continued)

Derivative contracts transacted either on a regulated exchange market or in the over-the-counter (“OTC”) market, directly between two counterparties include the following:

### Futures

Futures are transacted in standardized amounts on regulated exchanges and are subject to daily cash margining. The futures contracts that the Plan enters into are as follows:

- Government futures - contractual obligations to either buy or sell at a fixed value (the contracted price) government fixed income financial instruments at a predetermined future date. They are used to adjust interest rate exposure and replicate government bond positions. Long future positions are backed with high grade, liquid debt securities.
- Money market futures - contractual obligations to either buy or sell money market financial instruments at a predetermined future date at a specified price. They are used to manage exposures at the front end of the yield curve. Futures are based on short-term interest rates and do not require delivery of an asset at expiration. Therefore they do not require cash backing.

### Options

Options are contractual agreements under which the seller (writer) grants the purchaser the right, but not the obligation, either to buy (call option) or sell (put option), a security, exchange rate, interest rate, or other financial instrument or commodity at a predetermined price, at or by a specified future date. The seller (writer) of an option can also settle the contract by paying the cash settlement value of the purchaser’s right. The seller (writer) receives a premium from the purchaser for this right. Purchased options are used to manage interest rate volatility exposures. Written options generate income in expected interest rate scenarios and may generate capital losses if unexpected interest rate environments are realized. Both written and purchased options will become worthless at expiration if the underlying instrument does not reach the strike price of the option. In-the-money portion of written options are covered by high grade, liquid debt securities.

Swaptions are contractual agreements that convey to the purchaser the right but not the obligation to enter into or cancel a swap agreement at a fixed future date or at any time within a fixed future period. The seller receives a premium from the purchaser for this right.

## Investments and investment-related liabilities (continued)

### Credit default swaps

Credit default swaps (“CDS”) provide protection against the decline in value of the referenced asset as a result of specified events such as payment default or insolvency. The purchaser pays a premium to the seller of the CDS in return for payment related to the deterioration in the value of the referenced asset. The referenced asset for CDS is a debt instrument. They are used to manage credit exposure without buying or selling securities outright. Written CDS increase credit exposure (selling protection), obligating the Plan to buy bonds from counterparties in the event of a default. Purchased CDS decrease exposure (buying protection), providing the right to “put” bonds to the counterparty in the event of a default. Net long exposures are backed with high grade, liquid debt securities. Underlying credit exposures are continuously monitored.

### Interest rate swaps

Interest rate swaps involve contractual agreements between two counterparties to exchange fixed and floating interest payments based on notional amounts. They are used to adjust interest rate yield curve exposures and substitute for physical securities. Long swap positions increase exposure to long-term interest rates and short positions decrease exposure. Long swap positions are backed with high grade, liquid debt securities.

### Total return swaps

Total return swaps are contractual agreements under which the total return receiver assumes market and credit risk on a bond or loan, where the total return payer forfeits risk associated with market performance but takes on the credit exposure that the total return receiver may be subject to. The total return receiver receives income and capital gains generated by an underlying loan or bond. In return, the total return receiver must pay a set rate and any capital losses generated by the underlying loan or bond over the life of the swap.

### Currency forwards

Currency forwards are contractual obligations to exchange one currency for another at a specified price or settlement at a predetermined future date. Forward contracts are used to manage the currency exposure of investments held in foreign currencies. The notional amount of a currency forward represents the contracted amount purchased or sold for settlement at a future date. The fair value is determined by the difference between the market value and the notional value upon settlement.

## Investments and investment-related liabilities (continued)

The following tables set out the notional values of the Plan's derivatives and their related assets and liabilities as at December 31:

2022					
(in thousands of dollars)					
	Notional value	Fair value			
		Assets	Liabilities	Net	
<b>Derivatives</b>					
Futures	\$ 24,808	\$ 17	\$ (743)	\$	(726)
Options	-	-	-		-
Credit default swaps	2,400	80	-		80
Interest rate swaps	53,900	1,537	(2,509)		(972)
Total return swaps	97,980	-	(2,183)		(2,183)
Currency forwards	2,266,404	-	(8,610)		(8,610)
	\$ 2,445,492	\$ 1,634	\$ (14,045)	\$	(12,411)
<b>Cash collateral</b>		3,017	(121)		2,896
<b>Notional and fair value</b>	\$ 2,445,492	\$ 4,651	\$ (14,166)	\$	(9,515)

2021					
(in thousands of dollars)					
	Notional value	Fair value			
		Assets	Liabilities	Net	
<b>Derivatives</b>					
Futures	\$ 12,857	\$ 84	\$ (323)	\$	239
Options	34,300	-	(17)		(17)
Credit default swaps	2,300	154	(41)		113
Interest rate swaps	53,900	385	(635)		(250)
Total return swaps	107,911	1,832	-		1,832
Currency forwards	1,714,641	1,793	(1,357)		436
	\$ 1,925,909	\$ 4,248	\$ (2,373)	\$	1,875
<b>Cash collateral</b>		1,222	(2)		1,220
<b>Notional and fair value</b>	\$ 1,925,909	\$ 5,470	\$ (2,375)	\$	3,095

## Investments and investment-related liabilities (continued)

The following tables set out the contractual maturities of the Plan's derivatives and their net related assets and liabilities as at December 31:

### 2022

(in thousands of dollars)

	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
<b>Derivatives, net</b>					
Futures	\$ (726)	\$ -	\$ -	\$ -	\$ (726)
Options	-	-	-	-	-
Credit default swaps	-	80	-	-	80
Interest rate swaps	-	(972)	-	-	(972)
Total return swaps	-	(2,183)	-	-	(2,183)
Currency forwards	(8,610)	-	-	-	(8,610)
	\$ (9,336)	\$ (3,075)	\$ -	\$ -	\$ (12,411)
<b>Cash collateral, net</b>					2,896
<b>Fair value, net</b>	\$ (9,336)	\$ (3,075)	\$ -	\$ -	\$ (9,515)

### 2021

(in thousands of dollars)

	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
<b>Derivatives, net</b>					
Futures	\$ (239)	\$ -	\$ -	\$ -	\$ (239)
Options	(17)	-	-	-	(17)
Credit default swaps	-	114	-	-	114
Interest rate swaps	-	(250)	-	-	(250)
Total return swaps	8	1,823	-	-	1,831
Currency forwards	436	-	-	-	436
	\$ 188	\$ 1,687	\$ -	\$ -	\$ 1,875
<b>Cash collateral, net</b>					1,220
<b>Fair value, net</b>	\$ 188	\$ 1,687	\$ -	\$ -	\$ 3,095

Cash is deposited or pledged with various financial institutions as collateral if the Plan was to default on payment obligations on its derivative contracts. On the statement of financial position, collateral is represented as part of the net balance of derivative-related receivables and liabilities.

# 6.

## Financial Instruments

### a. Fair Values

The fair values of investments and derivatives are as described in note 3(d). The fair values of other financial assets and liabilities, being cash, contributions receivable, receivable from pending trades, accrued investment income, and payable for pending trades, approximate their carrying values due to the short-term nature of these financial instruments.

Fair value measurements recognized in the statement of financial position are categorized using a fair value hierarchy that reflects the significance of inputs used in determining the fair values.

Level 1: Fair value is based on inputs that reflect unadjusted quoted prices in active markets for identical assets or liabilities that the Investment Manager has the ability to access at the measurement date. Level 1 primarily includes publicly listed investments.

Level 2: Fair value is based on valuation methods that make use of inputs other than quoted prices included in Level 1, that are observable for the asset or liability, either directly or indirectly, including inputs in markets that are not considered to be active. Level 2 primarily includes debt securities and derivative contracts not traded on a public exchange and public equities not traded in an active market.

Level 3: Fair value is based on valuation methods where inputs that are based on non-observable market data have a significant impact on the valuation. Level 3 primarily includes real return bonds, real estate, infrastructure, and agriculture & timber investments valued based on financial statements and or investor statements. Promissory notes are valued at cost.

## Financial Instruments (continued)

**2022**

(in thousands of dollars)

	Level 1	Level 2	Level 3	Total
<b>Investments</b>				
<b>Fixed income</b>				
Money market	\$ 8,118	\$ 101,721	\$ -	\$ 109,839
Canadian bonds & debentures	53,123	161,798	-	214,921
Non-Canadian bonds & debentures	79,628	746,456	-	826,084
Canadian real return bonds	-	103,999	67,104	171,103
<b>Equities</b>				
Canadian	148,665	87,402	-	236,067
US	361,467	392,989	-	754,456
Global	590,444	86,317	-	676,761
<b>Real assets</b>				
Real estate	-	40,722	901,153	941,875
Infrastructure	-	-	728,248	728,248
Agriculture & timber	-	-	113,672	113,672
<b>Absolute return strategies</b>				
Hedge funds	-	587,422	-	587,422
<b>Investment-related receivables</b>				
Agreements to resell securities	-	-	-	-
Promissory notes	-	-	14,592	14,592
Derivative-related, net	3,034	1,617	-	4,651
	\$ 1,244,479	\$ 2,310,443	\$ 1,824,769	\$ 5,379,691
<b>Investment-related liabilities</b>				
Agreements to repurchase securities	\$ -	\$ -	\$ -	\$ -
Derivative-related, net	(864)	(13,302)	-	(14,166)
	\$ (864)	\$ (13,302)	\$ -	\$ (14,166)
<b>Net investments</b>	\$ 1,243,615	\$ 2,297,141	\$ 1,824,769	\$ 5,365,525



## Financial Instruments (continued)

**2021**

(in thousands of dollars)

	Level 1	Level 2	Level 3	Total
<b>Investments</b>				
<b>Fixed income</b>				
Money market	\$ 34,996	\$ 86,690	\$ -	\$ 121,686
Canadian bonds & debentures	130,065	345,450	-	475,515
Non-Canadian bonds & debentures	27,299	852,120	-	879,419
Canadian real return bonds	-	133,585	80,035	213,620
<b>Equities</b>				
Canadian	181,286	199,133	-	380,419
US	445,904	433,206	-	879,110
Global	664,832	202,532	-	867,364
<b>Real assets</b>				
Real estate	-	64,316	642,120	706,436
Infrastructure	-	-	504,967	504,967
Agriculture & timber	-	-	59,089	59,089
<b>Absolute return strategies</b>				
Hedge funds	-	571,662	-	571,662
<b>Investment-related receivables</b>				
Agreements to resell securities	-	56,715	-	56,715
Promissory notes	-	-	22,183	22,183
Derivative-related, net	1,306	4,164	-	5,470
	\$ 1,485,688	\$ 2,949,573	\$ 1,308,394	\$ 5,743,655
<b>Investment-related liabilities</b>				
Agreements to repurchase securities	\$ -	\$ (465)	\$ -	\$ (465)
Derivative-related, net	(342)	(2,033)	-	(2,375)
	\$ (342)	\$ (2,498)	\$ -	\$ (2,840)
<b>Net investments</b>	\$ 1,485,346	\$ 2,947,075	\$ 1,308,394	\$ 5,740,815

There were no significant transfers between level 1, level 2, and level 3 financial instruments during the years ended December 31, 2022, and 2021.

## Financial Instruments (continued)

The following tables present the changes in the fair value measurement in Level 3 of the fair value hierarchy:

### 2022

(in thousands of dollars)

	Fixed income	Real assets	Investment- related receivables	Total
<b>Balance, beginning of year</b>	\$ 80,035	\$ 1,206,176	\$ 22,183	\$ 1,308,394
Purchases, contributed capital	-	480,116	-	480,116
Sales, capital returned	(2,205)	(78,905)	(7,591)	(88,701)
Realized gains	502	16,962	-	17,464
Unrealized gains	(11,228)	118,724	-	107,496
<b>Balance, end of year</b>	\$ 67,104	\$ 1,743,073	\$ 14,592	\$ 1,824,769

### 2021

(in thousands of dollars)

	Fixed income	Real assets	Investment- related receivables	Total
<b>Balance, beginning of year</b>	\$ 85,668	\$ 981,280	\$ 6,981	\$ 1,073,929
Purchases, contributed capital	-	228,598	15,202	243,800
Sales, capital returned	(1,211)	(27,373)	-	(28,584)
Realized gains	276	4,170	-	4,446
Unrealized gains (losses)	(4,698)	19,501	-	14,803
<b>Balance, end of year</b>	\$ 80,035	\$ 1,206,176	\$ 22,183	\$ 1,308,394

The total realized and unrealized gains included in the change in market value of investments from level 3 financial instruments held as at December 31, 2022 and 2021, respectively, was \$124,960 and \$19,249.

#### Fair value assumptions and sensitivity

Level 3 financial instruments are valued using various methods. Listed real return bonds are valued by a third-party using broker prices and comparable securities. Certain unlisted real estate, infrastructure, and agriculture & timber funds are valued using various methods including overall capitalization method and discount rate method. Real estate subsidiaries are valued using the overall capitalization method and discount rate method and the valuations are significantly affected by non-observable inputs, the most significant of which are the capitalization rate and the discount rate.

## Financial Instruments (continued)

Significant unobservable inputs used in measuring fair value:

The table below sets out information about significant unobservable inputs used at December 31, 2022 in measuring financial instruments categorized as level 3 in the fair value hierarchy.

(in thousands of dollars)				
Description	2022 Fair value	2021 Fair value	Valuation technique	Unobservable inputs
Unlisted real estate subsidiaries	\$ 736,222	\$ 595,663	Income approach technique: overall capitalization rate method and discounted cash flow method	Capitalization rates, discount rates
Unlisted funds: real estate, infrastructure, agriculture & timber	1,006,851	610,513	Net asset value – audited financial statements	Information not available
Listed real return bond	67,104	80,035	Vendor supplied price - proprietary price model	Information not available
Unlisted promissory notes	14,592	22,183	Issued by subsidiaries; valued at cost	N/A
	\$ 1,824,769	\$ 1,308,394		

The following analysis illustrates the sensitivity of the Level 3 valuations to reasonably possible capitalization rate and discount rate assumptions for real estate properties where reasonably possible alternative assumptions would change the fair value significantly.

Valuations determined by the direct capitalization method and discount cash flow method are most sensitive to changes in the capitalization rates and discount rates.

	2022	2021
(in thousands of dollars)		
<b>Unlisted direct real estate subsidiaries</b>		
<b>Direct capitalization method</b>		
Minimum capitalization rate	3.50%	3.25%
Maximum capitalization rate	7.25%	6.75%
Increase of 25 basis points in capitalization rate	\$ (40,543)	\$ (38,574)
Decrease of 25 basis points in capitalization rate	\$ 44,801	\$ 41,299
<b>Discounted cash flow method</b>		
Minimum discount rate	3.40%	3.40%
Maximum discount rate	9.52%	8.05%
Increase of 25 basis points in discount rate	\$ (18,395)	\$ (16,992)
Decrease of 25 basis points in discount rate	\$ 18,454	\$ 16,925

Note: 1 basis point is equal to 0.01%

## Financial Instruments (continued)

The Plan does not have access to underlying information that comprises the fair market value of real return bonds, and certain real estate and infrastructure fund investments. The fair market value is provided by the general partner or other external managers. In the absence of information supporting the fair market value, no other reasonably possible alternative assumptions could be applied.

### Significant investments

The Plan's investments, each having a fair value or cost exceeding one per cent of the fair market value or cost of net investment assets and liabilities are as follows:

#### As At December 31, 2022

(in thousands of dollars)

	Number of investments		Fair value		Cost
Public market investments	1	\$	67,104	\$	26,984
Private market investments	21		2,426,735		1,860,251
	22	\$	2,493,839	\$	1,887,235

#### As At December 31, 2021

(in thousands of dollars)

	Number of investments		Fair value		Cost
Public market investments	1	\$	80,035	\$	28,687
Private market investments	15		2,109,521		1,453,832
	16	\$	2,189,556	\$	1,482,519

The Plan's significant private market investments consist of fixed income and equity pooled funds, commodities, real estate, infrastructure, and agriculture & timber.

## Financial Instruments (continued)

### **b. Investment risk management**

Risk management relates to the understanding and active management of risks associated with all areas of the business and the associated operating environment. Investments are primarily exposed to interest rate volatility, market price fluctuations, credit risk, foreign currency risk and liquidity risk. The Plan has set formal goals, policies, and operating procedures that establish an asset mix among equity, fixed income, real assets, absolute return strategy investments and derivatives that requires diversification of investments within categories and set limits on the size of exposure to individual investments and counterparties. Risk and credit committees have been created to regularly monitor the risks and exposures of the Plan. Trustee oversight, procedures and compliance functions are incorporated into Plan processes to achieve consistent controls and to mitigate operational risk.

#### **i. Interest rate risk**

Interest rate risk refers to the fact that the Plan's financial position will change with market interest rate changes, as fixed income securities are sensitive to changes in nominal interest rates. Interest rate risk is inherent in the management of a pension plan due to prolonged timing differences between cash flows related to the Plan's assets and cash flows related to the Plan's liabilities. To properly manage the Plan's interest rate risk, appropriate guidelines on the weighting and duration for the bonds and other fixed income investments are set and monitored.

## Financial Instruments (continued)

### 2022

(in thousands of dollars)

	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total	Average yield (%)(1)
<b>Fixed income</b>						
Money market	\$ 107,346	\$ -	\$ -	\$ -	\$ 107,346	-
Bonds & debentures	72,618	192,303	191,701	172,829	629,451	4.3
Real return bonds (2)	-	-	-	67,104	67,104	5.3
	\$ 179,964	\$ 192,303	\$ 191,701	\$ 239,933	\$ 803,901	3.8
Pooled funds					518,046	
<b>Total fixed income</b>					\$ 1,321,947	

### 2021

(in thousands of dollars)

	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total	Average yield (%)(1)
<b>Fixed income</b>						
Money market	\$ 119,466	\$ -	\$ -	\$ -	\$ 119,466	-
Bonds & debentures	16,018	254,203	292,984	284,499	847,704	3.6
Real return bonds (2)	-	-	-	80,035	80,035	5.3
	\$ 135,484	\$ 254,203	\$ 292,984	\$ 364,534	\$ 1,047,205	3.3
Pooled funds					643,035	
<b>Total fixed income</b>					\$ 1,690,240	

1. The average effective yield reflects the estimated annual income of a security as a percentage of its year-end fair value. The total average yield is the weighted average of the average yields shown.
2. Real return bond yields are based on real interest rates. The ultimate yield will be impacted by inflation as it occurs.

The fair value of the Plan's investments is affected by short-term changes in nominal interest rates. Pension liabilities are exposed to the long-term expectation of rate of return of the Fund as well as expectations of inflation and salary escalation.

## Financial Instruments (continued)

### Interest rate sensitivity

The Plan's investments in fixed income and fixed income related derivatives are sensitive to interest rate movements. The following table represents the assets held in the Plan as at December 31, subject to interest rate changes, average duration due to a one percent increase (decrease) in interest rate and the change in fair value of those assets:

	2022		2021	
(in thousands of dollars)				
<b>Interest rate sensitive assets</b>	\$	<b>802,997</b>	\$	1,049,866
Average duration for 1% increase in interest rates		<b>(4.9)</b>		(6.3)
Sensitivity to 1% increase in interest rates		<b>(39,480)</b>		(66,586)
<b>Fair value after 1% increase in rates</b>	\$	<b>763,517</b>	\$	983,280
Average duration for 1% decrease in interest rates		<b>4.9</b>		6.3
Sensitivity to 1% decrease in interest rates		<b>39,480</b>		66,586
<b>Fair value after 1% decrease in rates</b>	\$	<b>842,477</b>	\$	1,116,452

### ii. Market price risk

Market price risk is the risk of fluctuation in market values of investments from influences specific to a particular investment or from influences on the market as a whole, such as geopolitical risk. Market price risk does not include interest rate risk and foreign currency risk which are also discussed in this note. As all of the Plan's financial instruments are carried at fair value with fair value changes recognized in the statement of changes in financial position, all changes in market conditions will directly result in an increase (decrease) in net assets. Market price risk is managed by the Plan through the construction of a diversified portfolio of instruments traded on various markets and across various industries.

## Financial Instruments (continued)

### Market sensitivity

The Plan's investments in equities are sensitive to market fluctuations. The following table represents the change in fair value of the Plan's investment in public equities due to a ten percent increase (decrease) in fair market values as at December 31

	2022	2021
(in thousands of dollars)		
<b>Total equity</b>	<b>\$ 1,667,284</b>	<b>\$ 2,126,893</b>
10% increase in market values	<b>166,728</b>	212,689
<b>Fair value after 10% increase in market values</b>	<b>\$ 1,834,012</b>	<b>\$ 2,339,582</b>
10% decrease in market values	<b>(166,728)</b>	(212,689)
<b>Fair value after 10% decrease in market values</b>	<b>\$ 1,500,556</b>	<b>\$ 1,914,204</b>

### iii. Credit risk

Credit risk is the risk of loss in the event the counterparty to a transaction fails to discharge an obligation and causes the other party to incur a loss. Credit risk is generally higher when a non-exchange traded financial instrument is involved because the counterparty for the traded financial instrument is not backed by an exchange clearing house. Credit risk associated with the Plan is regularly monitored and analyzed through risk and credit committees.

### Fixed income

The Plan's Fixed Income Program includes two main sectors: the Government Sector and the Corporate Sector. One benefit to managing these two pieces separately is to provide the opportunity to access physical government bonds when required. When markets are at their utmost distress these may be the only securities available for liquidation. Managing the Corporate Sector and the Government Sector separately allows for the adjustment of credit risk within the Fixed Income Program by changing the allocation between these two sectors - increasing the Government Sector through periods of market duress and increasing the Corporate Sector through periods of stability. This approach also allows the active management of the Corporate Sector and taking active decisions where returns can be maximized. In order to minimize the exposure to credit risk, a comprehensive investment policy has been developed. There were no significant concentrations of credit risk in the portfolio in 2022.



## Financial Instruments (continued)

The fair values of the Plan's fixed income investments exposed to credit risk are categorized in the following table as at December 31:

	2022	2021
(in thousands of dollars)		
<b>Fixed income</b>		
<b>Canadian</b>		
Governments	\$ 133,269	\$ 399,650
Corporate	153,076	94,739
<b>Non-Canadian</b>		
Governments	79,628	27,299
Corporate	437,928	525,517
	\$ 803,901	\$ 1,047,205
<b>Pooled funds</b>	518,046	643,035
<b>Total fixed income</b>	\$ 1,321,947	\$ 1,690,240

## Financial Instruments (continued)

### Derivatives

The Plan is exposed to credit-related losses in the event counterparties fail to meet their payment obligations upon maturity of derivative contracts. The Plan limits derivative contract risk by dealing with counterparties that have a minimum “A” credit rating. In order to mitigate this risk, the Fund:

- i. Deals only with highly rated counterparties, with whom International Swap and Derivative Association agreements have been executed, normally major financial institutions with a minimum credit standard of “A” rating, as supported by a recognized credit rating agency; and
- ii. Credit risk represents the maximum amount that would be at risk as at the reporting date if the counterparties failed completely to perform under the contracts, and if the right of offset proved to be non-enforceable. Credit risk exposure on derivative contracts is represented by the receivable replacement cost of contracts with counterparties, less any prepayment collateral or margin received, as at the reporting date.

### Securities lending

The Plan engages in securities lending to enhance portfolio returns (see note 11). Through a securities lending program at the Plan’s custodian, the Plan lends securities for a fee to approved borrowers. Credit risk associated with securities lending is mitigated by requiring the borrowers to provide high quality collateral. In the event that a borrower defaults completely or in part, the custodian will replace the security at its expense. Regular reporting of the securities lending program ensures that its various components are continuously being monitored.

### iv. Foreign currency risk

Foreign currency risk is the risk that the value of future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Plan primarily invests in financial instruments and enters into transactions denominated in various foreign currencies, other than its measurement currency. Consequently, the Plan is exposed to risk that the exchange rates of the various currencies may change in a manner that has an adverse effect on the value of the portion of the Plan’s investment and non-investment assets or liabilities denominated in currencies other than the Canadian dollar. Foreign currency risk is hedged by using foreign exchange forward contracts. A policy of hedging up to 100% of the currency exposure helps to mitigate this risk.

The Plan’s currency policy allows for the management of risk of investment and non-investments assets and liabilities held in the Fund through hedging strategies that are implemented through the purchase of forward currency contracts. The forward currency contracts offset the Plan’s foreign currency exposure, hence reducing the Plan’s foreign currency risk.

## Financial Instruments (continued)

The Plan's investment and non-investment assets and liabilities that are held in the Fund are represented as unhedged and hedged currency exposures as at December 31 in the following table:

December 31, 2022	Unhedged		Hedged	
(in thousands of dollars)				
<b>Summary FX exposure</b>				
Canadian dollar	\$	1,820,970	\$	3,945,688
United States dollar		2,933,490		1,387,374
Euro		287,292		(123,718)
British pound sterling		135,710		53,924
Japanese yen		98,325		98,656
Other		203,537		108,789
	\$	5,479,324	\$	5,470,713

December 31, 2021	Unhedged		Hedged	
(in thousands of dollars)				
<b>Summary FX exposure</b>				
Canadian dollar	\$	2,302,954	\$	3,941,115
United States dollar		2,797,824		1,594,313
Euro		289,513		(20,491)
British pound sterling		128,376		59,777
Japanese yen		104,802		104,799
Other		223,853		168,245
	\$	5,847,322	\$	5,847,758

After the effect of hedging, and without change in all other variables, a ten percent increase (decrease) in the Canadian dollar against all other currencies would (decrease) increase the fair value of the Plan's investment and non-investment assets and liabilities held in the Fund, respectively.

## Financial Instruments (continued)

The following table below represents these changes in the Plan's investment and non-investment assets and liabilities held in the Fund as at December 31:

	2022	2021
(in thousands of dollars)		
<b>Fund assets and liabilities</b>	<b>\$ 5,470,713</b>	<b>\$ 5,847,758</b>
10% increase in Canadian Dollar	<b>(138,639)</b>	<b>(173,331)</b>
<b>Fund assets and liabilities after increase</b>	<b>\$ 5,332,074</b>	<b>\$ 5,674,427</b>
10% decrease in Canadian Dollar	<b>169,447</b>	<b>211,849</b>
<b>Fund assets and liabilities after decrease</b>	<b>\$ 5,640,160</b>	<b>\$ 6,059,607</b>

### v. Liquidity risk:

Liquidity risk is the risk that the Plan's does not have sufficient cash to meet its current payment liabilities and acquire investments in a timely and cost-effective manner. Liquidity risk is inherent in the Plan's operations and can be impacted by a range of situation specific and market-wide events including, but not limited to, credit events and significant movements in the market. Cash obligations are fulfilled from contributions to the Plan, cash income of the Plan and planned dispositions of Plan assets as required. Cash requirements of the Plan are reviewed on an ongoing basis to provide for the orderly availability of resources to meet the financial obligations of the Plan. The Plan's cash management policy ensures that the quality and liquidity of the investment vehicles within the cash portfolios are consistent with the needs of the Plan.

Approximately 33% (2021 - 39%) of the Plan's investments are in liquid securities traded in public markets, consisting of fixed income and equities. Pooled funds consisting of exchange traded fixed income, equities, and real estate are approximately 21% (2021 - 26%) of the Plan's investments and are liquid within 30 days or less. Although market events could lead to some investments becoming illiquid, the diversity of the Plan's portfolios should ensure that liquidity is available for benefit payments. The Plan also maintains cash on hand for liquidity purposes and for payment of Plan liabilities. At December 31, 2022, the Plan had cash in the amount of \$127,768 (2021 - \$149,261).

# 7.

## Accrued pension obligation

### a. Actuarial assumptions

The actuarial present value of the accrued pension obligation is an estimate of the value of pension obligations of the Plan in respect of benefits accrued to date for all active and inactive members including pensioners and survivors. As the experience of the Plan unfolds, and as underlying conditions change over time, the actual value of accrued benefits payable in the future could be materially different than the actuarial present value.

Actuarial valuations of the Plan are required every year by the Act and provide an estimate of the accrued pension obligation (Plan liabilities) calculated using various economic and demographic assumptions, based on membership data as at the valuation date. The Plan's consulting actuaries, Eckler Limited, performed a valuation as at December 31, 2022 and issued their report in April 2023. The report indicated that the Plan had an unfunded liability of \$1,818,807 (2021 - \$1,240,233).

The actuarial valuation calculates liabilities for each member on the basis of service earned to date and the employee's projected five-year highest average salary at the expected date of retirement, or in the case of pensioners and survivors, on the basis of the amount of pension being paid to them. The projected unit credit method was adopted for the actuarial valuation to determine the current service cost and actuarial liability.

	2022	2021
Discount rate	5.70% per annum	5.70% per annum
Inflation	2.10% per annum	2.00% per annum
Salary	2.10% per annum plus promotional ranging from 0.00% to 7.50%	2.00% per annum plus promotional ranging from 0.00% to 7.50%
YMPE and maximum pension increase	2.85% per annum	2.75% per annum
Indexing	1.20% per annum for retirements prior to August 1, 2006 and no indexing for retirements on or after August 1, 2006	1.10% per annum for retirements prior to August 1, 2006 and no indexing for retirements on or after August 1, 2006
Retirement age	50% of active members who achieve eligibility for an unreduced pension under the rule of 85 prior to age 62 will retire when they first become eligible; the remainder of active and all inactive members will retire at the earliest of: <ul style="list-style-type: none"> <li>• age 65 with 2 years of service,</li> <li>• 35 years of service; and</li> <li>• age 62 with 10 years of service</li> </ul>	50% of active members who achieve eligibility for an unreduced pension under the rule of 85 prior to age 62 will retire when they first become eligible; the remainder of active and all inactive members will retire at the earliest of: <ul style="list-style-type: none"> <li>• age 65 with 2 years of service,</li> <li>• 35 years of service; and</li> <li>• age 62 with 10 years of service</li> </ul>
Mortality	107% (male)/99% (female) of 2014 Public Sector Mortality Table projected generationally with CPM improvement Scale B	107% (male)/99% (female) of 2014 Public Sector Mortality Table projected generationally with CPM improvement Scale B

## Accrued pension obligation (continued)

The assumed real rates of increases in pensionable earnings (i.e. increase in excess of the assumed inflation rate) are dependent on the attained age of the members.

Demographic assumptions are used to estimate when future benefits are payable to members and beneficiaries, including assumptions about mortality rates, termination rates, and patterns of early retirement. Each of these assumptions is updated periodically, based on a detailed review of the experience of the Plan and on the expectations for future trends.

### b. Experience losses/gains

Experience losses of \$33,882 arose during the year ending December 31, 2022, from differences between the actuarial assumptions and actual results, causing an increase to the accrued pension obligation. For the year ending December 31, 2021, these differences resulted in experience gains of \$60,465 causing a decrease in the accrued pension obligation.

## 8.

### Commitments

The Plan has committed capital to investments in real estate, infrastructure, and agriculture & timber over a definitive period of time. The future commitments are generally payable on demand based on the capital needs of the related investment. The table below indicates the capital amount committed and outstanding as at December 31, 2022.

December 31, 2021	Committed	Outstanding
(in thousands of dollars)		
<b>United States dollar</b>		
Real estate	25,000	4,403
Infrastructure	481,037	106,747
Agriculture & timber	20,300	818
	USD 526,337	USD 111,968
<b>Euro</b>		
Infrastructure	75,000	42,937
	EUR 75,000	EUR 42,937
<b>Canadian dollar</b>		
Infrastructure	5,000	25
	CAD 5,000	CAD 25

# 9.

## Benefits

	2022	2021
(in thousands of dollars)		
Pension benefits paid	\$ 376,125	\$ 368,060
Survivor benefits paid	27,149	26,594
Disability benefits paid	18,891	19,058
Refunds paid to terminated members	3,947	3,714
	\$ 426,112	\$ 417,426

## 10.

## Administrative Expenses

The Plan is charged by its service providers, including Nova Scotia Pension Services Corporation, a related entity, for professional and administrative services. The following is a summary of these administrative expenses.

	2022	2021
(in thousands of dollars)		
<b>Plan administration:</b>		
Office and administration services	\$ 5,724	\$ 5,318
Actuarial & consulting services	98	105
Legal services	59	80
Audit services	58	44
Other professional services	30	32
	5,969	5,579
<b>Investment expenses:</b>		
Investment management services	9,131	10,590
Transaction costs	647	668
Custody services	506	474
Advisory & consulting services	307	286
Information services	215	216
	10,806	12,234
<b>HST</b>	1,582	1,687
	\$ 18,357	\$ 19,500

Investment management and performance fees included in the unrealized gains/(losses) on investments consisting of pooled funds, limited partnerships and subsidiaries are estimated at \$24,664 (2021 - \$22,258) using financial statements and or investor statements where available, and when not available, estimates based on investment management contracts. These fees are not direct expenses of the Plan and therefore are not included in administrative expenses.



## 11.

## Securities lending

The Plan participates in a securities lending program where it lends securities that it owns to third parties for a fee. For securities lent, the Plan receives a fee and the borrower provides readily marketable securities of higher value as collateral which mitigates the credit risk associated with the program. When the Plan lends securities, the risk of failure by the borrower to return the loaned securities is alleviated by such loans being continually collateralized. The securities lending agent also provides indemnification if there is a shortfall between collateral and the lent security that cannot be recovered. The securities lending contracts are collateralized by securities issued by, or guaranteed without any limitation or qualification by, the government of Canada or the governments of other countries.

The following table represents the estimated fair value of securities that were loaned out and the related collateral as at December 31:

	2022		2021	
(in thousands of dollars)				
<b>Securities on loan</b>	\$	<b>154,928</b>	\$	264,844
<b>Collateral held</b>	\$	<b>167,026</b>	\$	286,766

## 12.

## Related party transactions

Investments held by the Plan include bonds & debentures of the Province of Nova Scotia. The total fair value of these investments is \$904 (0.02% of Fund assets and liabilities) as at December 31, 2022 (\$9,760 (0.2% of Fund assets and liabilities) at December 31, 2021).

The Plan's administrator, Nova Scotia Pension Services Corporation, an entity co-owned by Teachers' Pension Plan Trustee Inc. and Public Service Superannuation Plan Trustee Inc. for the purpose of providing pension plan administration and investment services, charges the Plan at cost, an amount equal to the expenses incurred to service the Plan. As Nova Scotia Pension Services Corporation operates on a cost recovery basis, the Plan loans cash to its administrator, as required to pay upcoming expenses or to purchase capital assets. The administration expense charged to the Plan for the year ending December 31, 2022 was \$6,032 (2021 - \$9,255). The amount due to the administrator as at December 31, 2022 was \$813 (2021 - \$1,124).

## 13.

## Interest in subsidiaries

The Plan's subsidiaries were created for the purposes of providing investment earnings from real estate, infrastructure and other investment arrangements. The Plan's subsidiaries are presented on a non-consolidated basis. The following table shows the fair values of the Plan's subsidiaries as at December 31:

Subsidiary	Purpose	Ownership %	2022 Fair value	2021 Fair value
(in thousands of dollars)				
TPP Investments RE Inc.	Real estate	100	\$ 719,057	\$ 476,042
NT Combined Investments Inc.	Equities	48	308,802	433,206
TPP Investments CS Inc.	Infrastructure	100	233,564	109,737
TPP Investments II Inc.	Real estate	100	146,487	125,734
TPP Investments BR Inc.	Infrastructure	100	102,589	62,021
TPP Investments AX Inc.	Infrastructure	100	58,441	57,631
TPP Investments ES Inc.	Real estate	100	35,609	40,344
HV Combined Investments Inc.	Hedge funds	37	25,182	24,074
TPP Investments KA Inc.	Infrastructure	100	20,873	10,891
TPP Investments MU Inc.	Infrastructure	100	21,013	6,524
TPP Investments AC Inc.	Infrastructure	100	13,856	12,029
			\$ 1,685,473	\$ 1,358,233

The Plan either has 100% controlling interest or significant influence over its subsidiaries' cash flows. Funding is made via capital investment from the Plan. Certain subsidiaries have commitments that must be funded directly through capital investment by the Plan. These amounts are included in the Plan's commitments (note 8). Financing is provided as required via shareholder loans and is payable on demand to the Plan.

## 14. Capital management

The main objective of the Fund is to sustain a certain level of net assets in order to meet the Plan's pension obligations. The TPPTI (see note 1) manages the contributions and plan benefits as required by the Act and its related Regulations. The TPPTI approves and incurs expenses to administer the commerce of the Fund as required by agreement between the Province and the Union.

Under the direction of the TPPTI, the Fund provides for the short-term financial needs of current benefit payments while investing members' contributions for the longer-term security of pensioner payments. The TPPTI exercises duly diligent practices and has established written investment policies and procedures, and approval processes. Operating budgets, audited financial statements, yearly actuarial valuations and reports, and as required, the retention of supplementary professional, technical and other advisors, are part of the Fund governance structure.

The Fund fulfils its primary objective by adhering to specific investment policies outlined in its SIP&G, which is reviewed annually by TPPTI. The Fund manages net assets by engaging knowledgeable investment managers who are charged with the responsibility of investing existing funds and new funds (current year's employee and employer contributions) in accordance with the SIP&G. Increases in net assets are a direct result of investment income generated by investments held by the Fund and contributions into the Fund by eligible employees and participating employers. The main use of net assets is for benefit payments to eligible Plan members.

Under the 2014 Agreement, minimum funding targets were established, with objectives of having assets of the Plan reach levels of 80-90% of the actuarial liabilities on or before December 31, 2025, at least 85-95% on or before December 31, 2030, and at least 90-100% on or before December 31, 2035. These funding targets are required to be regularly reviewed, including a comprehensive review in 2020 and further reviews every 5 years thereafter.

# GLOSSARY

**Actuarial assumed rate of return (discount rate):**

The long term rate of return assumed by the Plan's external actuary in determining the value of the Plan's liabilities. Also, referred to as the discount rate.

**Asset(s):** Financial and real items owned by the Plan which have a monetary value, including cash, stocks, bonds, real estate, etc.

**Asset Mix:** The allocation of funds to be used for investment purposes between different types of assets, including cash, stocks, bonds, real estate, etc.

**Asset Liability Study:** An asset liability study analyzes a pension fund's risk and reward profile by examining not only the plan's assets but also the Plan's liabilities. The study is designed to evaluate the probable change in liabilities over time in order to develop asset allocation recommendations that best meet these liabilities.

**Benchmark:** A standard against which the performance of the Plan's return on investment can be measured.

**Equity(ies):** Common or preferred stock representing ownership in a company.

**Funded Ratio:** A ratio of the Plan's assets to liabilities, expressed as a percentage. A ratio above 100 per cent indicates that the Plan has more assets than required to fund its future estimated liabilities.

**Gross Domestic Product (GDP):** Is the total market value of all final goods and services produced in a country in a given year. GDP is one of the primary indicators used to gauge the health of a country's economy.

**Gross of investment management fees:** Refers to the fact that the return on investment is reported before the deduction of management fees or expenses.

**Indexing:** Refers to the linking of retirement payments made to some retirees with overall price increases in the economy, as measured by the Consumer Price Index.

**International Monetary Fund (IMF):**

An organization of 188 countries working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

**Liabilities:** An estimate of the current value of future obligations of the Plan as a result of retirement commitments made to past, current, and future employees.

**MSCI Europe, Australasia and Far East (EAFE)**

**Index:** s a stock market index that is designed to measure the equity market performance of developed markets outside of the U.S. and Canada.

**MSCI Emerging Markets (EM) Index:** Is a stock market index that captures large and mid-capitalization representation across 23 emerging market countries.

**Net of investment management fees:** Refers to the fact that the return on investment is reported after the deduction of management fees or expenses.


**Overweight/Underweight:** Refers to the difference relative to the benchmark portfolio. Underweight indicates less than the benchmark, while overweight indicates more than the benchmark.

**Return on investment(s):** A performance measure used to evaluate the efficiency of the Plan's investments, expressed as a percentage gain or loss on the initial investment at the beginning of the period.

**Unfunded Liability:** An unfunded liability is present when the Plan's funded ratio is below 100 per cent. The unfunded liability is a measure, in dollars, of the amount by which the Plan's liabilities exceed its assets.


**Volatility:** A measure of the variation in the price of a security or the returns of the Plan. High volatility indicates increased risk.


# pension

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