

May 2022

The 3Ds

How Digitization, Decarbonization and
Disparity Are Shaping the Future of Investing





The current global environment poses genuine challenges for investors. In addition to the pandemic's impact on business operations and financial markets, heightened geopolitical tensions represent a threat to global stability.

At Ontario Teachers' Pension Plan, we are keeping a close eye on these developments, and positioning the plan to navigate these challenges. Our partners look to the systems and skills that we have developed over our 32-year history to provide fully funded pensions for members for the decades to come. To do this, we must balance short-term investment considerations with decisions that support our long-term goals. We believe it is critical to anticipate the broad forces that will shape the global economy not just in the coming years but far into the future.

In looking at the changes taking place around us, we are focused on what we call the Three Ds: digitization, decarbonization and disparity. Digitization has accelerated and challenged business models and is changing consumer behaviour. Climate change has become more urgent, making decarbonization a business imperative. Disparity is increasing, threatening some of the foundations on which successful investments depend.

As a long-term, international investor, we are embracing these trends. We are investing in technology to ensure that our portfolio companies succeed in a more digital world, and are supporting fast-growth, disruptive companies with international aspirations. We are helping to shape the energy transition, by reducing our own emissions intensity and proactively working with investee companies on their decarbonization plans. Equally, we will continue to pursue investments that foster equality and help level the playing field for consumers and employees.

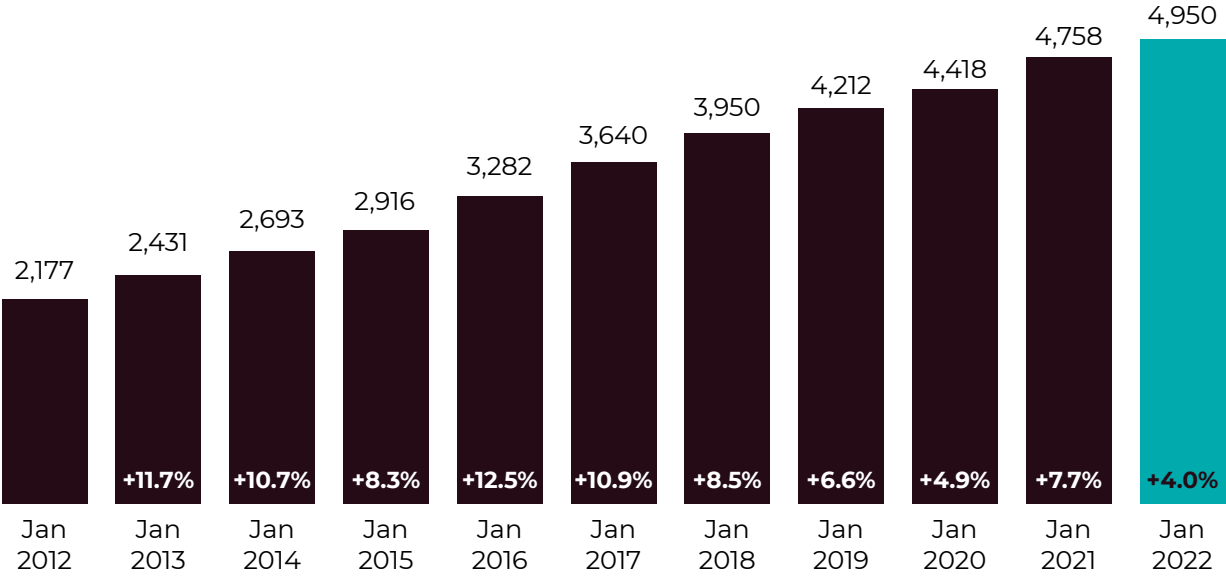
We believe the best way to provide retirement security for our members is to use our scale and influence to invest in growing companies around the world that can shape a better future for their local communities.

Jo Taylor, President and CEO

DIGITIZATION

Remote work. Telemedicine. Online shopping. A more digital way of life was already underway when the pandemic supercharged it. It is now clear that we are in the midst of a seismic transformation that will test people, businesses and governments—and open up opportunities to do things better. For investors, the challenge will be supporting businesses as they adapt to a more digital world. And identifying disruptive companies that are using digital technology to create new products and new business categories.

Global Internet usage has more than doubled in a decade
Number of Internet users worldwide (in millions) and year-on-year change



(SOURCE: Datareportal Digital 2022 Global Overview Report)



The pandemic made digital a business imperative.

During the pandemic, digital-first companies were better positioned to manage the shift to remote work and the surge in volumes through digital channels. The rewards were significant: they saw sharp increases in revenue and market value. Their ability to get stronger during the crisis pointed to the widening digital divide among businesses.

Digital first is more than cutting costs or reaching customers in a new way. It means adopting agile business processes and leveraging the data and analytics that digitization offers to respond to rapidly changing circumstances.

Research from McKinsey shows that high-performing companies implement and adjust digital strategies at a faster pace than other companies. And they are doing so faster now than just a few years ago. These companies analyze data from multiple sources, reallocate digital talent, and look at the composition of their portfolios through a digital lens on at least a monthly basis, McKinsey found.

As digitization shortens product lifecycles and even corporate lifespans, the pressure to digitize or risk disappearing will only increase.

A rapidly digitizing world needs capital and expertise.

In 2021, IT spending overall rose 9% from a year earlier to US\$4.2 trillion, Gartner says, and it predicts more growth as businesses shift from crisis-era spending to longer-term technology investments. Spending on digital transformation is expected to hit US\$1.8 trillion this year, and to reach US\$2.8 trillion by 2025, according to Statista.

Backing successful businesses in the digital era is about more than providing funds. Companies are looking for investment partners that can help them acquire digital capabilities and attract the right digital talent. They are looking for board members that can understand digital technologies and their ramifications, including regulatory scrutiny. For investors that can provide both capital and expertise, there will be more opportunities.

By 2025, technology changes could

displace		create
85M	and	97M
jobs		new ones

(SOURCE: World Economic Forum Future of Jobs Report 2020)

Investors must support positive digital transformation.

Technological change has the potential to benefit individuals and communities. Digitization can eliminate dangerous tasks and make people more mobile. Harnessing data can produce meaningful insights in how to do business better—and live better.

But in a world where digital technologies play a greater role in sensitive sectors like healthcare and education, and where connected devices become ubiquitous, it will be imperative for business to get digital right. That will include protecting data privacy and designing AI systems that don't entrench existing biases. It will mean supporting workers displaced by technological change, and helping them retrain for the opportunities that new digital processes will create.

How we're driving digital innovation

We created Koru, a venture foundry that works with our portfolio companies to test, create and build scalable new digital businesses. With Koru as a partner, our portfolio companies are leveraging digital technologies to achieve breakout growth and stay on top of disruption. Koru has launched businesses in sectors ranging from regenerative agriculture to parent-daycare communications.

Digitization:

Making field crews safer and more productive

Utility and construction crews perform essential work, ensuring gas and water mains keep flowing, roads are maintained, and more. Working out in the field brings operational challenges. That's where FYLD comes in. The startup emerged from our incubator, Koru, with a goal to make field work safer and more productive through technology.

FYLD replaces traditional paper-based risk assessments, including “digital paper” approaches that replicate old ways of working on digital forms. It delivers dynamic risk assessments through video and voice analytics. Simply put, a field worker equipped with a mobile device and the FYLD app can walk around a job site, take video and talk about what they see. FYLD's AI-driven engine then flags potentially dangerous conditions and prompts control measures.

In the first year of deployment with FYLD's inaugural customer—U.K. gas distributor SGN, an Ontario Teachers' portfolio company—the platform reduced worker injuries and incidents by 20% and cut time spent on risk assessments by 75%. In addition to seeing cost savings of almost £3 million, SGN was able to better manage crew fatigue and reduce the number of kilometres supervisors spent driving to various sites.

In 2020, FYLD won the prestigious “Emerging Technology of the Year Award” at the UK IT Industry Awards. Its technology is now being deployed across water infrastructure, highway construction and maintenance, and will soon be used for the rollout of 5G cabling.

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Having a centralized, data-driven hub of operational information is vital for the productivity, safety and efficiency for field teams. Ontario Teachers' Pension Plan has this digitization of processes at the forefront of its activities, encouraging and enabling the development and implementation of ground-breaking technologies like FYLD. ”

Shelley Copsey, CEO of FYLD



DECARBONIZATION

Drought in Chile. Floods in India. Wildfires in the western U.S. As extreme weather events multiply, efforts to mitigate the worst effects of climate change have accelerated. While fighting the climate crisis has long been seen as a government responsibility, the private sector is increasingly spearheading emissions reductions. Around 700 of the biggest companies around the world have set net zero targets. And investors are playing a key role in the climate fight, both by setting their own emissions-reduction targets and pushing for change at the companies in which they invest.

Private capital's role in the energy transition cannot be understated. A global survey of CEOs indicates almost a third of them see investors as among the most influential stakeholders in managing future sustainability efforts.

The hottest seven years on record have all been since 2015

The pace of energy-transition investment needs to accelerate.

Significant sums are being invested in renewable energy, battery storage, greener buildings and other climate-friendly projects. Investment in the global energy transition totaled a record US\$755 billion last year, according to a BloombergNEF report—up 27% from 2020 and almost three times higher than a decade earlier. The total doesn't include US\$165 billion pumped into new climate technologies.

Even this pace won't be enough. The International Energy Agency says transition-related investment needs to rise to around US\$4 trillion annually if the world is to get on track for net zero emissions by 2050. Getting there will require efforts by governments and households. However, the private sector could drive 70% of the investment needed.

How we're supporting the energy transition

We have invested \$33 billion in green and transition assets. This includes renewable power and a growing portfolio of electricity assets which will support a cleaner, more electrified future. It also includes investments to make buildings and communities more energy efficient.



Clear government policy and common disclosure standards will be essential.

For decarbonization efforts to be transformational, the private sector would benefit from greater clarity and support from governments on several issues. Countries can do more to outline, communicate and implement emissions-reductions plans. They can fund research into new climate technologies, and support workers retraining for the low-carbon economy. International cooperation on carbon-pricing mechanisms is also critical.

Business would especially like to see the current patchwork of climate-disclosure rules replaced with consistent, globally accepted standards. There's progress on that front. At COP26 in November 2021, the IFRS Foundation, which is responsible for international accounting standards, said it would create a new body to develop a single set of international climate-disclosure standards that jurisdictions could then adopt. Standardized information will enable investors to make better decisions when assessing the relative opportunities and risks that come with investing in decarbonization.

Over 2,600 organizations with a combined market value of US\$25 trillion have pledged support for climate reporting, according to the Task Force on Climate-related Financial Disclosures

The road to decarbonization will be bumpy.

The investment needed to transition the world to a low-carbon future represents a significant opportunity for private capital. It's also one that carries significant financial, regulatory and reputational risk. We will have to solve for the variability of renewable power. Some promising technologies may not pan out. Consumer preferences will influence what technologies are adopted. Geopolitical developments will influence investment and operating decisions around critical energy sources. Investors will have to engage with stakeholders on difficult decarbonization choices.

Only 18% of CEOs said governments have provided the clarity needed to operate their businesses in line with a 1.5°C warming trajectory.

(SOURCE: United Nations Global Compact–Accenture CEO study on sustainability)

The path to net zero: Electrify everything

Electrifying areas currently powered by fossil fuels will be critical to decarbonization. Along the way, we'll need to make grids cleaner, smarter, more connected and more resilient.

Selected Key Milestones for Electrification in IEA's Net Zero Emissions by 2050 Scenario

	2020	2030	2050
Share of electricity in total final consumption	20%	26%	49%
Million people without access to electricity	786	0	0
Industry			
Share of steel production using electric arc furnace	24%	37%	53%
Transport			
Share of electric vehicles in stock: cars	1%	20%	86%
heavy trucks	0%	8%	59%
Buildings			
Share of heat pumps in energy demand for heating	7%	20%	55%

(SOURCE: Net Zero by 2050 – A Roadmap for the Global Energy Sector)

Decarbonization:

Investing in a cleaner Australian electricity grid

Australia has historically relied heavily on coal for electricity generation. That is changing as the country moves to embrace a cleaner future. Households have done their part, installing rooftop solar panels in record numbers. Some of the country's biggest coal-fired power plants are set to close and be replaced by large-scale renewable power. These changes will require a significant buildout of Australia's transmission infrastructure. That's where we are playing a role in Australia's energy transition, too, through our investment in Spark Infrastructure.

Spark Infrastructure owns interests in electricity transmission and distribution businesses that collectively serve more than 5 million homes and businesses in Australia. In recent years, it has also made a move into renewable power generation. Under our ownership, Spark Infrastructure's electricity distribution businesses, Victoria Power Networks and South Australia Power Networks, will be strengthened and augmented to enable Australia's shift to widespread rooftop solar generation. Meanwhile, its electricity transmission business, Transgrid, will be responsible for the construction of hundreds of kilometers of new transmission lines across the state of New South Wales, where more than 10GW of coal-fired generation needs to be retired over the next 25 years to clean up Australia's grid.

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Spark Infrastructure is very proud to be an important contributor to the energy transition in Australia. South Australian Power Networks is the first gigawatt distributor to be a net exporter of electricity to the transmission system in the world and have done so without incurring significant costs, in addition they are working with other distributors and regulators in Australia to pass on their learnings. Both distributors provide connection services to renewable projects through their unregulated businesses, and Transgrid is involved in the substantial transmission build that is required to support the growth of large-scale renewable generators in New South Wales. ”

Laura Reed, Chair of Spark



DISPARITY

Uneven access to vaccines. Rising debt loads. Soaring food prices. The pandemic both widened disparity and shone an uncomfortable spotlight on it. Governments in advanced economies cushioned the blow with massive relief programs, while countries with fewer fiscal options faced more hardship. The global economic recovery has been uneven, testing people, policymakers and businesses alike. Because it reduces economic opportunity and increases political and social risks, growing disparity is a major concern for investors.

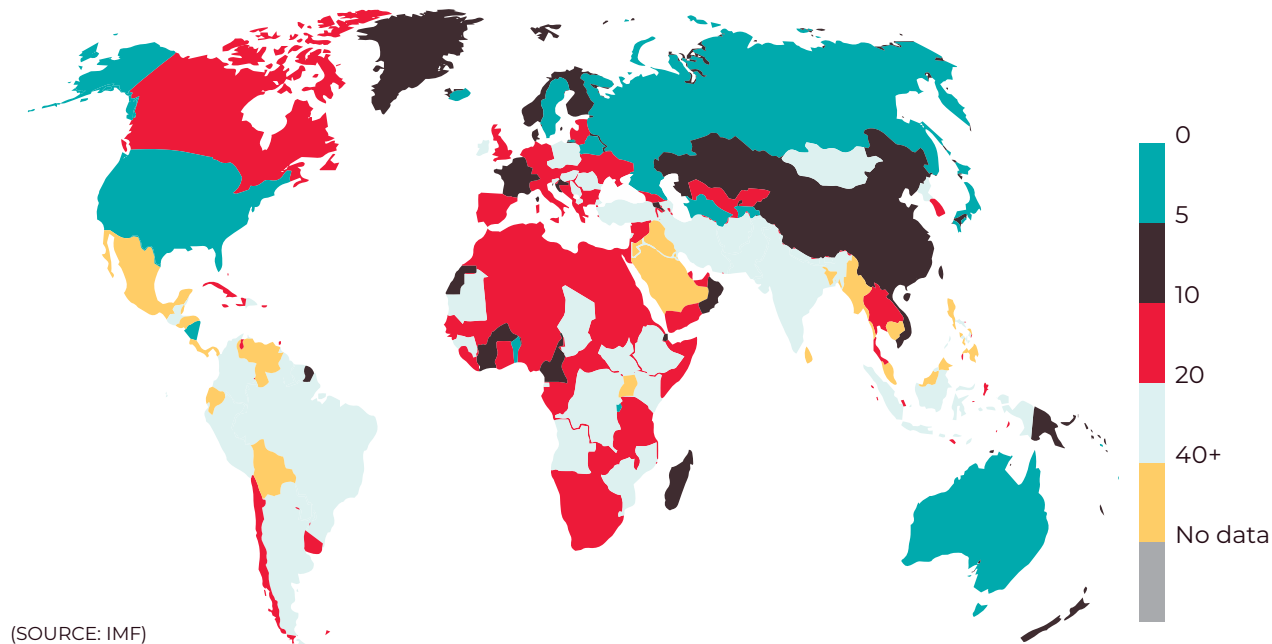
The pandemic disrupted years of improving health and prosperity.

The pandemic halted a lengthy stretch of improvements in life expectancy in many countries. Extreme poverty also rose for the first time in more than 20 years, which is one reason the World Bank dubbed the crisis “the inequality pandemic.” Income loss was steepest among the world’s poorest 20%. And by keeping hundreds of millions of children around the world out of the classroom, the pandemic threatened to set a generation back in terms of potential education and income attainment.

Growing disparity hurts the broader investment environment by creating political and regulatory instability.

Children in developing countries lost more class time during the pandemic

(total duration of full school closures, in weeks*)



(SOURCE: IMF)



Investors can play a role in reducing disparity.

Investors are focused on financial returns. But more than ever, they recognize that ensuring strong returns over the long term depends on the existence of a more equitable and sustainable world. And that they have a critical role to play in making that happen. Investors can help fund sustainable infrastructure projects that aid economic development and provide critical jobs and skills training. They can also invest in digital infrastructure that help narrow the digital divide. And finally, they can use investments to support the global energy transition.

81%

Percent who say CEOs should be personally visible when discussing public policy with external stakeholders or work their company has done to benefit society

(SOURCE: Edelman Trust Barometer 2022)

Investors face greater pressure to consider their impact.

While COVID-19 caused a global health crisis, it coincided with rising public attention to racial injustice and the climate crisis. Investors understand that the world in which they operate has changed. Even prior to the pandemic, many were under pressure to demonstrate core values beyond profit maximization. That pressure has increased.

Business leaders are being called upon to show that their activities also have an environmental or social benefit, or at the very least don't contribute to inequality, social divisions or the climate crisis.

The rise of stakeholder capitalism can be seen in major businesses' adoption of ESG principles and in increased support for social and environmental shareholder proposals at the annual meetings of major companies. Institutional investors have been broad backers of this shift, bolstered by evidence that considering the needs of multiple stakeholders can lead to better relative financial performance.

The digital divide

Percentage of individuals using the Internet, 2019

86.6%

Developed countries

19.1%

Least-developed countries

(SOURCE: International Telecommunication Union)

How we're investing to lessen disparity

We believe the best way to build sustainable, long-term value for our members is to invest in ways that improve social and environmental outcomes. That includes supporting efforts to limit global warming, and promoting good governance practices. It also means investing in companies and projects that shape a better future, in sectors ranging from water infrastructure to microfinance and accessible healthcare.

Disparity:

Leveling the playing field for students

Improving access to quality education is a way to tackle disparity. One of our investments, ApplyBoard, a Canadian company whose platform connects international students to post-secondary educational opportunities in the U.S., the U.K., Canada, and Australia, is an innovator in this space. ApplyBoard was founded by Martin, Massi, and Meti Basiri, three brothers who left Iran to pursue higher education in Canada and later used their experience to simplify and improve the application experience for others.

Through technology and expert counselling, ApplyBoard supports students from the early stages of selecting a school right through to obtaining a visa and traveling to a new country. The company has helped 300,000 students from 125 countries with the process of applying to their desired educational program—and its clients have received about \$50 million in scholarships and financial aid in the last two years alone. For many of ApplyBoard's student clients, studying abroad is about more than obtaining strong academic credentials. It is often a first step to obtaining critical international work experience or to immigrating to secure a better future.

ApplyBoard is a critical partner for post-secondary institutions too, helping them to generate critical revenue, expand and diversify their student body, and attract the world's brightest students.

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We are so pleased to be working with OTPP and we could not imagine having a better partner. Who else could better understand the importance of education, and share in our drive to tackle global disparity in access to education, than a pension plan that invests on behalf of teachers? With OTPP's support we have been able to remove barriers for thousands of students. ”

Martin Basiri, Co-Founder and Co-CEO of ApplyBoard

This report was published in May 2022 and is only current as of that date. It continues to be made available only for historical information and reference purposes.

