November 2018

RBC WEALTH MANAGEMENT

Global Insight

Focus Article

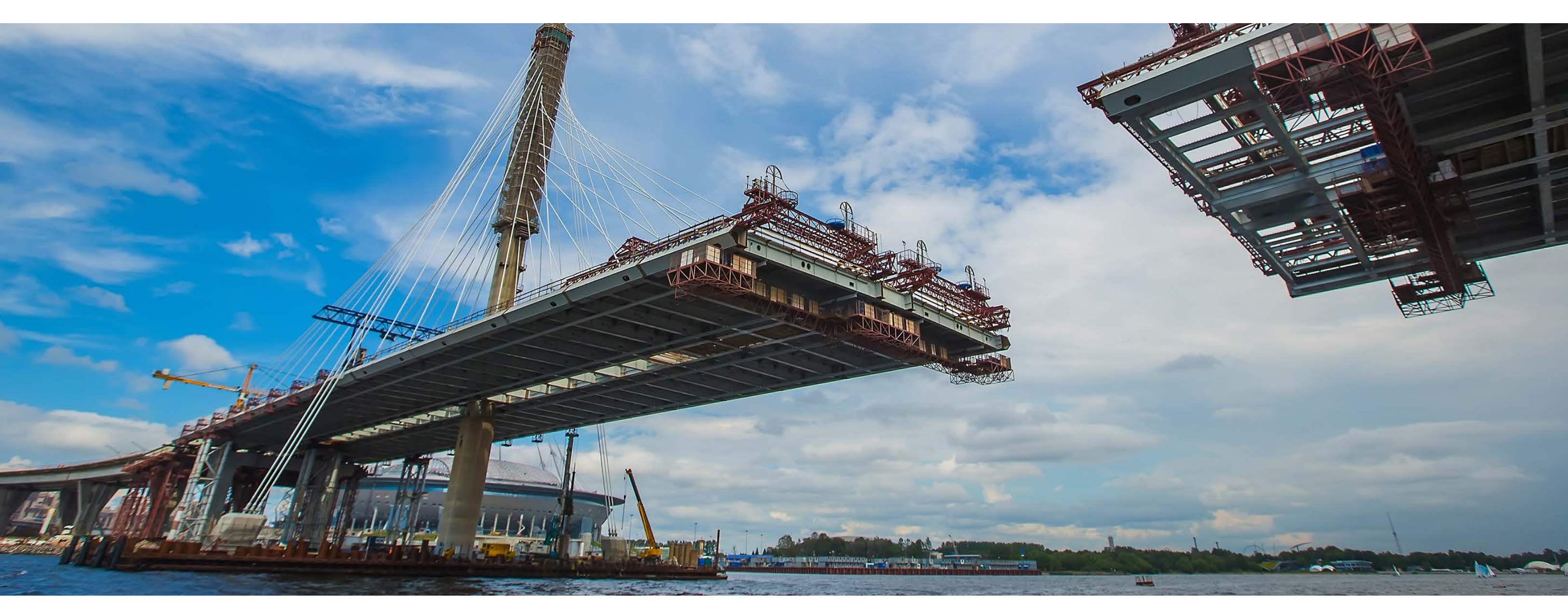
Next-gen backbone:

Infrastructure investing in the 21st century

The world's infrastructure is in line for a 21st century upgrade, and we look at how this theme can enhance the infrastructure of investment portfolios.

Frédérique Carrier

For important and required non-U.S. analyst disclosures, see page 7
All values in U.S. dollars and priced as of November 6, 2018, market close, unless otherwise noted.



Next-gen backbone:

Infrastructure investing in the 21st century

Infrastructure investing is often brushed off as being yesterday's story. With the world's infrastructure in line for a 21st century upgrade, and the private sector filling more and more financing gaps, we look at how this theme can enhance the infrastructure of investment portfolios.

Frédérique Carrier
London, United Kingdom
frederique.carrier@rbc.com

Dearth and decrepitude

The World Economic Forum estimates the world underinvests in infrastructure each year to the tune of a US$1 trillion. Commuters everywhere will not be surprised.

Infrastructure spending not only improves convenience and safety, but also productivity, as poor roads and delayed flights hold back economic growth. With such obvious benefits, why the underinvestment?

Years ago, governments found it far easier to approve infrastructure projects. After WWII a strong public consensus developed everywhere as to the desirability of undertaking large projects that would stimulate growth and put people to work, while modernizing the infrastructure asset base to support a rapidly changing industrial society.

The U.S. Interstate Highway System (built out over 35 years from the late 1950s), high-speed auto routes across Europe, bullet trains in Japan followed by high speed trains in Europe, and massive airports everywhere—these projects were not only sources of national pride, but added substantially to wealth and productivity.

But in today's world, long development times mean politicians who authorize infrastructure projects often take criticism for massive budgets, possible cost overruns, and disturbance, but seldom remain in power long enough to take any credit for the benefits. In the U.S. and elsewhere, the complexity of infrastructure projects is compounded by the required involvement of regional, local, and national governments, which often have conflicting priorities.

The need to overcome these challenges is clear to all, and the need to boost infrastructure spending is one of the few areas of bipartisan agreement in the U.S. Yet a split Congress may make it difficult for any substantial infrastructure bill to pass.

Breaking gridlock

Tangible plans to increase infrastructure commitments are emerging in other countries, as shown in the box below. We expect more national infrastructure initiatives in the future. Fiscal policy will likely play a larger role in counteracting the next recession, given interest rates are unlikely to have room to fall far enough to lever the economy higher unaided. Central banks could conceivably play a role: the Bank of England, Bank of Japan, or the European Central Bank could buy infrastructure bonds, or bonds issued by a state-controlled infrastructure bank.

The changing face of infrastructure investment

Two big changes have occurred within infrastructure investment over the past 40 years: firstly, the expansion of the private sector's role; and secondly, the considerable broadening of the asset class.

Faced with the increasing scale, complexity, and financing needs of infrastructure projects, governments have sought more private sector participation. Meanwhile pension funds, sovereign wealth funds, and insurance companies have found

China's ambitions dwarf others' plans

Key national infrastructure plans

CHINA: "One Belt One Road" initiative (OBOR)
Investment: $5T by 2049*

China intends to build infrastructure in more than 50 countries along the old Silk Road. Formulated by President Xi Jinping, OBOR is now a cornerstone of China's foreign policy.

Examples: China-Pakistan economic corridor ($60B); China-Singapore high speed rail ($23B)

GERMANY: Federal Infrastructure Plan
Investment: EUR 265B by 2030

Germany aims to invest one-third of the total in new projects, with the rest aimed at modernizing existing infrastructure, mainly roads and rail.

INDIA: Prime Minister Narendra Modi's plan
Investment: $250B by 2022

Focuses on roads and the ageing railway system. The plan targets 35,000 km of roads by 2022.

EUROPEAN UNION: The "Juncker Plan"
Investment: EUR 500B to 2020

This programme aims at unlocking private and public investments.

Examples: High-speed fixed broadband, Italy (EUR 0.5B); D4R7 highway, Slovakia (EUR 0.4B)

CANADA: The Canada Infrastructure Bank (CIB)
Investment: CAD 180B by 2029

Creation of the CIB will facilitate federal support to attract private sector investment in new projects.

Example: Montreal light rail expansion (CAD 1.28B)

JAPAN: Prime Minister Shinzo Abe's plan
Investment: $111B by 2020–21

A $61B domestic infrastructure program and a $50B fund to boost infrastructure investment in Asia in response to China's OBOR.

* PwC estimate, if plan is fully implemented. Source - RBC Wealth Management

long life infrastructure assets often match the long-term liabilities they deal with. Infrastructure projects also offer a reliable cash flow once up and running, often including an inflation adjustment mechanism.

The traditional universe of infrastructure projects—bridges, roads, and power generation—has expanded to include rapid transit systems, high speed rail, airports, electricity transmission grids, harbours, and hospitals. Newcomers include: student housing; assisted living accommodation allowing retirees to live closer to healthcare and hospitals; the build-out of 5G, the fifth generation of mobile internet connectivity bringing greater speed and the ability to connect many more devices simultaneously; construction and maintenance of cell tower arrays; and networks of charging stations for electric vehicles.

Infrastructure investing and the economic cycle

Infrastructure investments should perform relatively well in the economic environment we foresee prevailing over the coming decade. Most infrastructure sectors benefit from economic growth and inflation to some extent, while demand tends to be relatively resilient in downturns.

Higher interest rates may make the investment environment more challenging as infrastructure assets tend to be financed by debt, but the impact will depend on the capital structure and return potential of each project.

A diversification tool

Infrastructure investments can offer valuable diversification benefits. Most deliver an income stream from low-risk, stable assets that would be less affected by an

Transport can benefit most from the current environment

Impact of economic growth and inflation

Sector/ Subsector	Higher GDP growth: Impact on revenues		Higher inflation: Impact on revenues		Impact on costs	
Communications: Traditional	Neutral	Pricing pressures offset impact from higher growth	Positive	Tariffs tend to be linked with inflation	Neutral	Established cost base
Communications: 5G infrastructure	Positive	Consumers expected to pay for additional connectivity	Positive	Tariffs tend to be linked with inflation	Neutral	Established cost base
Energy: Natural gas & electric lines	Neutral	Increased competition from Renewables puts pressure on traditional energy	Positive	Prices tend to increase with inflation	Neutral	Established cost base
Energy: Renewables (e.g. solar, wind)	Positive	Secular growth & regulation are biggest drivers	Positive	Subsidies tend to increase with inflation	Positive	Greater efficiency drives costs down
Social: Hospitals, institutions	Neutral	Little impact	Positive	Most tariffs are linked to inflation	Negative	Costs increase
Transport: Road, rail, airports	Positive	Volumes affected by GDP growth	Positive	Most tariffs are linked to inflation	Neutral	Established cost base
Utilities: Regulated (electric, gas, water)	Neutral	Little impact	Positive	Tariffs tend to be linked to inflation	Negative	Costs increase
Utilities: Unregulated (e.g. waste services)	Positive	Demand & prices tend to increase	Neutral	Tariffs linked to inflation, but capped by competition and political pressure	Negative	Costs increase

Positive impact   Neutral impact   Negative impact

Source - RBC Wealth Management

economic downturn. This should mean infrastructure investments will hold up better than the overall market in a downturn.

How effective a diversification tool they are will depend on the investment. Like all asset classes, infrastructure projects are subject to a broad spectrum of risks. At one end are less risky projects, such as conventional power generation in developed economies where costs can be controlled, demand can be more confidently assessed, and the regulatory environment can be relied upon. At the other extreme are unconventional "greenfield" projects in emerging economies where costs can escalate, contracts can be more difficult to enforce, sponsoring governments can change abruptly, and currency volatility can make returns unpredictable. Riskier infrastructure investments behave more like risky equities, potentially reducing or eliminating the diversification benefits of the asset class.

Investing in infrastructure

Infrastructure investment options include individual stocks, funds, or a combination of both. For single stocks, investors could focus on listed utilities, pipelines, or railways; industrial companies providing equipment, engineering services, or materials for projects; or companies that manage infrastructure assets.

For funds, the most significant benefit is the ability to diversify across industries, geographies, and the risk spectrum. Experienced fund managers are well-placed to assess not only each project's complexities, but also political, regulatory, and currency risks. Some factors to consider when choosing a fund include:

- What assets is the fund invested in?
  - Long-life assets with stable cash flows, or riskier assets with projects that are less regulated and may be more exposed to demand risks?
  - Listed, or less-liquid unlisted projects located in developed economies, or in emerging ones with higher risk profiles?
  - Physical assets or service providers or raw materials suppliers that may add cyclicality to returns and variability to any income stream?
  - Established projects, or start-ups that may be risker but offer higher returns?
- Does the fund look to harvest a long-term income stream, or does it buy undervalued assets to capture its returns via capital appreciation over a shorter time frame?

Conclusion

Infrastructure as an investment theme has a long life ahead of it. The demand for repair, replacement, and upgrading of existing infrastructure assets is immense across the developed world. Emerging economies need equally massive infrastructure investment to achieve economic and social goals.

The private sector has become an important source of infrastructure financing. Long-lived assets that provide a predictable stream of income, often inflation-adjusted, offer an attractive alternative for the trillions earning little or nothing in bank accounts ($9T in U.S. bank accounts alone), or for the trillions more that have flowed into lower-quality corporate and emerging market debt in recent years. We expect individual investors will discover the attractions of this asset class to a much greater extent over the coming decade.

Research resources

This document is produced by the Global Portfolio Advisory Committee within RBC Wealth Management's Portfolio Advisory Group. The RBC Wealth Management Portfolio Advisory Group provides support related to asset allocation and portfolio construction for the firm's investment advisors / financial advisors who are engaged in assembling portfolios incorporating individual marketable securities. The Committee leverages the broad market outlook as developed by the RBC Investment Strategy Committee, providing additional tactical and thematic support utilizing research from the RBC Investment Strategy Committee, RBC Capital Markets, and third-party resources.

Global Portfolio Advisory Committee members:

Jim Allworth – Co-chair; Investment Strategist, RBC Dominion Securities Inc.

Kelly Bogdanova – Co-chair; Portfolio Analyst, RBC Wealth Management Portfolio Advisory Group – U.S. Equities, RBC Capital Markets, LLC

Frédérique Carrier – Co-chair; Managing Director, Head of Investment Strategies, Royal Bank of Canada Investment Management (U.K.) Limited

Mark Bayko, CFA – Head, Portfolio Management, RBC Dominion Securities Inc.

Craig Bishop – Lead Strategist, U.S. Fixed Income Strategies Group, RBC Wealth Management Portfolio Advisory Group, RBC Capital Markets, LLC

Laura Cooper – Head of FX Solutions and Strategy, Royal Bank of Canada Investment Management (U.K.) Limited

Janet Engels – Head of Portfolio Advisory Group U.S., RBC Wealth Management, RBC Capital Markets, LLC

Tom Garretson, CFA – Fixed Income Portfolio Strategist, RBC Wealth Management Portfolio Advisory Group, RBC Capital Markets, LLC

Christopher Girdler, CFA – Fixed Income Portfolio Advisor, RBC Wealth Management Portfolio Advisory Group, RBC Dominion Securities Inc.

Patrick McAllister, CFA – Canadian Equities Portfolio Advisor, RBC Wealth Management Portfolio Advisory Group – Equities, RBC Dominion Securities Inc.

Jay Roberts, CFA – Head of Investment Solutions & Products, RBC Wealth Management Hong Kong, RBC Investment Services (Asia) Limited

Alan Robinson – Portfolio Analyst, RBC Wealth Management Portfolio Advisory Group – U.S. Equities, RBC Capital Markets, LLC

Alastair Whitfield – Head of Fixed Income - British Isles, Royal Bank of Canada Investment Management (U.K.) Limited

The RBC Investment Strategy Committee (RISC) consists of senior investment professionals drawn from individual, client-focused business units within RBC, including the Portfolio Advisory Group. The RISC builds a broad global investment outlook and develops specific guidelines that can be used to manage portfolios. The RISC is chaired by Daniel Chornous, CFA, Chief Investment Officer of RBC Global Asset Management Inc.

Required disclosures

Analyst Certification
All of the views expressed in this report accurately reflect the personal views of the responsible analyst(s) about any and all of the subject securities or issuers. No part of the compensation of the responsible analyst(s) named herein is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the responsible analyst(s) in this report.

Important Disclosures

In the U.S., RBC Wealth Management operates as a division of RBC Capital Markets, LLC. In Canada, RBC Wealth Management includes, without limitation, RBC Dominion Securities Inc., which is a foreign affiliate of RBC Capital Markets, LLC. This report has been prepared by RBC Capital Markets, LLC which is an indirect wholly-owned subsidiary of the Royal Bank of Canada and, as such, is a related issuer of Royal Bank of Canada.

Non-U.S. Analyst Disclosure: Jim Allworth, Mark Bayko, Christopher Girdler, and Patrick McAllister, employees of RBC Wealth Management USA's foreign affiliate RBC Dominion Securities Inc.; and Frédérique Carrier, Laura Cooper, and Alastair Whitfield, employees of RBC Wealth Management USA's foreign affiliate Royal Bank of Canada Investment Management (U.K.) Limited; Jay Roberts, an employee of RBC Investment Services (Asia) Limited; contributed to the preparation of this publication. These individuals are not registered with or qualified as research analysts with the U.S. Financial Industry Regulatory Authority ("FINRA") and, since they are not associated persons of RBC Wealth Management, they may not be subject to FINRA Rule 2241 governing communications with subject companies, the making of public appearances, and the trading of securities in accounts held by research analysts.

In the event that this is a compendium report (covers six or more companies), RBC Wealth Management may choose to provide important disclosure information by reference. To access current disclosures, clients should refer to https://www.rbccm.com/GLDisclosure/PublicWeb/DisclosureLookup.aspx?EntityID=2 to view disclosures regarding RBC Wealth Management and its affiliated firms. Such information is also available upon request to RBC Wealth Management Publishing, 60 South Sixth St, Minneapolis, MN 55402.

References to a Recommended List in the recommendation history chart may include one or more recommended lists or model portfolios maintained by RBC Wealth Management or one of its affiliates. RBC Wealth Management recommended lists include the Guided Portfolio: Prime Income (RL 6), the Guided Portfolio: Dividend Growth (RL 8), the Guided Portfolio: ADR (RL 10), the Guided Portfolio: All Cap Growth (RL 12), and former lists called the Guided Portfolio: Large Cap (RL 7), the Guided Portfolio: Midcap 111 (RL 9), and the Guided Portfolio: Global Equity (U.S.) (RL 11). RBC Capital Markets recommended lists include the Strategy Focus List and the Fundamental Equity Weightings (FEW) portfolios. The abbreviation 'RL On' means the date a security was placed on a Recommended List. The abbreviation 'RL Off' means the date a security was removed from a Recommended List.

Distribution of Ratings
For the purpose of ratings distributions, regulatory rules require member firms to assign ratings to one of three rating categories - Buy, Hold/Neutral, or Sell - regardless of a firm's own rating categories. Although RBC Capital Markets, LLC ratings of Top Pick/Outperform, Sector Perform, and Underperform most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis.

Distribution of Ratings - RBC Capital Markets, LLC Equity Research
As of September 30, 2018

			Investment Banking Services Provided During Past 12 Months	
Rating	Count	Percent	Count	Percent
Buy [Top Pick & Outperform]	859	54.33	251	29.22
Hold [Sector Perform]	646	40.86	125	19.35
Sell [Underperform]	76	4.81	5	6.58

Explanation of RBC Capital Markets, LLC Equity Rating System
An analyst's "sector" is the universe of companies for which the analyst provides research coverage. Accordingly, the rating assigned to a particular stock represents solely the analyst's view of how that stock will perform over the next 12 months relative to the analyst's sector average.

Ratings: Top Pick (TP): Represents analyst's best idea in the sector; expected to provide significant absolute total return over 12 months with a favorable risk-reward ratio. **Outperform (O):** Expected to materially outperform sector average over 12 months. **Sector Perform (SP):** Returns expected to be in line with sector average over 12 months. **Underperform (U):** Returns expected to be materially below sector average over 12 months. **Restricted (R)**: RBC policy precludes certain types of communications, including an investment recommendation, when RBC is acting as an advisor in certain merger or other strategic transactions and in certain other circumstances. **Not Rated (NR)**: The rating, price targets and estimates have been removed due to applicable legal, regulatory or policy constraints which may include when RBC Capital Markets is acting in an advisory capacity involving the company.

Risk Rating: The **Speculative** risk rating reflects a security's lower level of financial or operating predictability, illiquid share trading volumes, high balance sheet leverage, or limited operating history that result in a higher expectation of financial and/or stock price volatility.

Valuation and Risks to Rating and Price Target
When RBC Wealth Management assigns a value to a company in a research report, FINRA Rules and NYSE Rules (as incorporated into the FINRA Rulebook) require that the basis for the valuation and the impediments to obtaining that valuation be described. Where applicable, this information is included in the text of our research in the sections entitled "Valuation" and "Risks to Rating and Price Target", respectively.

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors, including total

revenues of RBC Capital Markets, LLC, and its affiliates, a portion of which are or have been generated by investment banking activities of the member companies of RBC Capital Markets, LLC and its affiliates.

Other Disclosures

Prepared with the assistance of our national research sources. RBC Wealth Management prepared this report and takes sole responsibility for its content and distribution. The content may have been based, at least in part, on material provided by our third-party correspondent research services. Our third-party correspondent has given RBC Wealth Management general permission to use its research reports as source materials, but has not reviewed or approved this report, nor has it been informed of its publication. Our third-party correspondent may from time to time have long or short positions in, effect transactions in, and make markets in securities referred to herein. Our third-party correspondent may from time to time perform investment banking or other services for, or solicit investment banking or other business from, any company mentioned in this report.

RBC Wealth Management endeavors to make all reasonable efforts to provide research simultaneously to all eligible clients, having regard to local time zones in overseas jurisdictions. In certain investment advisory accounts, RBC Wealth Management will act as overlay manager for our clients and will initiate transactions in the securities referenced herein for those accounts upon receipt of this report. These transactions may occur before or after your receipt of this report and may have a short-term impact on the market price of the securities in which transactions occur. RBC Wealth Management research is posted to our proprietary Web sites to ensure eligible clients receive coverage initiations and changes in rating, targets, and opinions in a timely manner. Additional distribution may be done by sales personnel via e-mail, fax, or regular mail. Clients may also receive our research via third-party vendors. Please contact your RBC Wealth Management Financial Advisor for more information regarding RBC Wealth Management research.

Conflicts Disclosure: RBC Wealth Management is registered with the Securities and Exchange Commission as a broker/dealer and an investment adviser, offering both brokerage and investment advisory services. RBC Wealth Management's Policy for Managing Conflicts of Interest in Relation to Investment Research is available from us on our Web site at https://www.rbccm.com/GLDisclosure/PublicWeb/DisclosureLookup.aspx?EntityID=2. Conflicts of interests related to our investment advisory business can be found in Part II of the Firm's Form ADV or the Investment Advisor Group Disclosure Document. Copies of any of these documents are available upon request through your Financial Advisor. We reserve the right to amend or supplement this policy, Part II of the ADV, or Disclosure Document at any time.

The authors are employed by one of the following entities: RBC Wealth Management USA, a division of RBC Capital Markets, LLC, a securities broker-dealer with principal offices located in Minnesota and New York, USA; by RBC Dominion Securities Inc., a securities broker-dealer with principal offices located in Toronto, Canada; by RBC Investment Services (Asia) Limited, a subsidiary of RBC Dominion Securities Inc., a securities broker-dealer with principal offices located in Hong Kong, China; and by Royal Bank of Canada Investment Management (U.K.) Limited, an investment management company with principal offices located in London, United Kingdom.

Third-party disclaimers

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard & Poor's Financial Services LLC ("S&P") and is licensed for use by RBC. Neither MSCI, S&P, nor any other party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

References herein to "LIBOR", "LIBO Rate", "L" or other LIBOR abbreviations means the London interbank offered rate as administered by ICE Benchmark Administration (or any other person that takes over the administration of such rate).

Disclaimer

The information contained in this report has been compiled by RBC Wealth Management, a division of RBC Capital Markets, LLC, from sources believed to be reliable, but no representation or warranty, express or implied, is made by Royal Bank of Canada, RBC Wealth Management, its affiliates or any other person as to its accuracy, completeness or correctness. All opinions and estimates contained in this report constitute RBC Wealth Management's judgment as of the date of this report, are subject to change without notice and are provided in good faith but without legal responsibility. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Every province in Canada, state in the U.S., and most countries throughout the world have their own laws regulating the types of securities and other investment products which may be offered to their residents, as well as the process for doing so. As a result, the securities discussed in this report may not be eligible for sale in some jurisdictions. This report is not, and under no circumstances should be construed as, a solicitation to act as securities broker or dealer in any jurisdiction by any person or company that is not legally permitted to carry on the business of a securities broker or dealer in that jurisdiction. Nothing in this report constitutes legal, accounting or tax advice or individually tailored investment advice. This material is prepared for general circulation to clients, including clients who are affiliates of Royal Bank of Canada, and does not have regard to the particular circumstances or needs of any specific person who may read it. The investments or services contained in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about the suitability of such investments or services. To the full extent permitted by law neither Royal Bank of Canada nor any of its affiliates, nor any other person, accepts any liability whatsoever for any direct or consequential loss arising from any use of this report or the information contained herein. No matter contained in this document may be reproduced or copied by any means without the prior consent of Royal Bank of Canada. In the U.S., RBC Wealth Management operates as a division of RBC Capital Markets, LLC. In Canada, RBC Wealth Management includes, without limitation, RBC Dominion Securities Inc., which is a foreign affiliate of RBC Capital Markets, LLC. This report has been prepared by RBC Capital Markets, LLC. Additional information is available upon request.

To U.S. Residents: This publication has been approved by RBC Capital Markets, LLC, Member NYSE/FINRA/SIPC, which is a U.S. registered broker-dealer and which accepts responsibility for this report and its dissemination in the United States. RBC Capital Markets, LLC, is an indirect wholly-owned subsidiary of the Royal Bank of Canada and, as such, is a related issuer of Royal Bank of Canada. Any U.S. recipient of this report that is not a registered broker-dealer or a bank acting in a broker or dealer capacity and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report, should contact and place orders with RBC Capital Markets, LLC. International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign taxation, political instability and different accounting standards.

To Canadian Residents: This publication has been approved by RBC Dominion Securities Inc. RBC Dominion Securities Inc.* and Royal Bank of Canada are separate corporate entities which are affiliated. *Member-Canadian Investor Protection Fund. ®Registered trademark of Royal Bank of Canada. Used under license. RBC Wealth Management is a registered trademark of Royal Bank of Canada. Used under license.

RBC Wealth Management (British Isles): This publication is distributed by Royal Bank of Canada Investment Management (U.K.) Limited and RBC Investment Solutions (CI) Limited. Royal Bank of Canada Investment Management (U.K.) Limited is authorised and regulated by the Financial Conduct Authority (Reference number: 146504). Registered office: Riverbank House, 2 Swan Lane , London, EC4R 3BF, UK. RBC Investment Solutions (CI) Limited is regulated by the Jersey Financial Services Commission in the conduct of investment business in Jersey. Registered office: Gaspé House, 66-72 Esplanade, St Helier, Jersey JE2 3QT, Channel Islands, registered company number 119162.

To Hong Kong Residents: This publication is distributed in Hong Kong by Royal Bank of Canada, Hong Kong Branch which is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission ('SFC'), and RBC Investment Services (Asia) Limited, which is regulated by the SFC. Financial Services provided to Australia: Financial services may be provided in Australia in accordance with applicable law. Financial services provided by the Royal Bank of Canada, Hong Kong Branch are provided pursuant to the Royal Bank of Canada's Australian Financial Services Licence ('AFSL') (No. 246521).

To Singapore Residents: This publication is distributed in Singapore by the Royal Bank of Canada, Singapore Branch, a registered entity licensed by the Monetary Authority of Singapore. This material has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. You are advised to seek independent advice from a financial adviser before purchasing any product. If you do not obtain independent advice, you should consider whether the product is suitable for you. Past performance is not indicative of future performance. If you have any questions related to this publication, please contact the Royal Bank of Canada, Singapore Branch. Royal Bank of Canada, Singapore Branch accepts responsibility for this report and its dissemination in Singapore.

© 2018 RBC Capital Markets, LLC - Member NYSE/FINRA/SIPC
© 2018 RBC Dominion Securities Inc. - Member Canadian Investor Protection Fund
© 2018 RBC Europe Limited
© 2018 Royal Bank of Canada
All rights reserved
RBC1524