North American\textsuperscript{1} Investors and European Infrastructure
A Solution for Capital Deployment, Portfolio Diversification and Long-Term Cash Flow Visibility\textsuperscript{2}

When it comes to private infrastructure, North American institutional investors have considerable dry powder to allocate.\textsuperscript{3} The North American infrastructure market is one of the largest in the world and commonly represents the first choice for domestic investors. However, opportunities in North America are concentrated in the energy sector, and may offer limited scope for portfolio diversification.\textsuperscript{4} Moreover, North American projects are often in the core plus/ value add space, and cash flow may not always match the long-term predictability objectives of institutional investors.\textsuperscript{5}

The European infrastructure market, however, may offer a solution to North American investors, supporting portfolio diversification away from energy.\textsuperscript{6} Moreover, European assets in the core/ core plus space often benefit from mature regulatory and concession frameworks, supporting long-term income visibility. In Europe, private infrastructure returns demonstrated a stable performance\textsuperscript{7} due to several factors, including a wider portfolio diversification potential by sector and country, and a larger availability of assets in the regulated or contracted space. In addition, North American investors allocating to European infrastructure denominated in EUR may also gain a premium from currency hedging, improving return expectations further.\textsuperscript{8} With competition concentrated at the larger end of the market in both regions, Europe also offers a wider set of opportunities in the middle market space where we observe less competition and more sensible pricing.\textsuperscript{9}

North American Market Focused on Energy

Historically, transaction opportunities in North America have been concentrated in energy-related sectors. Renewables, oil & gas and power projects accounted for about 80\% of the total number of transactions achieving financial close between 2009 and 2019, with the majority of these projects in the greenfield space. At the same time, transportation deals accounted for 7\% of total transactions, a level materially below the European average, where transportation accounted for over 30\%.\textsuperscript{10}

Looking at the pipeline of upcoming transaction opportunities, investors interested in accessing the North American market today may continue to find limited opportunities for portfolio diversification. Although the pipeline seems more diversified than in the past, energy-related deals should still account for 64\% of the pipeline, while transportation accounts for a limited 13\%.\textsuperscript{11}

\section*{NORTH AMERICAN TRANSACTIONS (2009 - JULY 2019) (NUMBER OF PROJECTS REACHING FINANCIAL CLOSE)}

\begin{center}
\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart.png}
\caption{North American infrastructure transactions 2009-2019, by sector.}
\end{figure}
\end{center}

Source: Infrastructure Journal, July 2019. U.S. and Canada transactions only. Data from the Infrastructure Journal transaction database exclude following categories: Mining, Oil & Gas Petrochemical, Oil & Gas Upstream, and Oil & Gas Downstream. Past performance is not indicative of future results.

\textsuperscript{1} In this opinion paper, we refer to the United States of America and Canada only.
\textsuperscript{2} Any forecasts provided herein are based on DWS’s opinion at time of publication and are subject to change.
\textsuperscript{3} Based on Preqin database as at 7 August 2019. Past performance is not indicative of future results.
\textsuperscript{4} Based on Infrastructure Journal database, as at July 2019. Past performance is not indicative of future results.
\textsuperscript{5} Core Infra = ‘Low Risk’ in MSCI Infrastructure Investment Style Matrix, includes brownfield assets in geographically mature markets, with significant component of income yield, predictable and regulated revenues, long-term investment horizon, and an investment grade rating profile.
\textsuperscript{6} Core+ = ‘Moderate Risk’, includes brownfield assets with some development risk, in mature markets, with relatively predictable revenues and income and capital, generally contributing equally to total return. Value Add Infrastructure = ‘High Risk’, includes assets in geographically mature or maturing markets with market-based revenues with a high degree of volatility, capital return component is primary driver of total return. Any forecasts provided herein are based on DWS’s opinion at time of publication and are subject to change.
\textsuperscript{7} Based on Infrastructure Journal, as at June 2019. There is no guarantee that the forecast will materialize.
\textsuperscript{8} Based on Preqin, “Preqin infrastructure Funds Statistics Database”, as at September 2018, Notes: Infrastructure fund of funds and secondary have been removed. Past performance is not indicative of future results.
\textsuperscript{9} Based on DWS proprietary methodology estimating hedging costs on the basis of a three year interest rate swap differential between currency of investor domicile and currency of investment destination, as at 7 August 2019.
\textsuperscript{10} Any forecasts provided herein are based on DWS’s opinion at time of publication and are subject to change.
\textsuperscript{11} Based on Infrastructure Journal, as at July 2019. Past performance is not indicative of future results.
U.S. Public Finance Drives Infrastructure Investment

Today U.S. private infrastructure investment falls short compared with European peers particularly for transportation opportunities, including airports, toll roads and mass transit, but also for water networks and social infrastructure, all sectors that have historically relied on financing from Federal, state, and local governments.¹²

With most PPP projects in the hands of buy-and-hold investors, the secondary market for infrastructure assets is more limited compared to Europe.

In addition to PPPs, the Canadian energy market is particularly large, with power generation and renewables deals accounting for a substantial part of the deal flow. Historically, transportation has accounted only for 11% of transaction volume, while the telecommunication sector accounted for a limited 3%.¹⁸

Europe: An Opportunity for Diversification into a Mature Investment Environment

Europe represents a leading global market for infrastructure investment for its market size and track record, offering opportunities that range from the mature Western European countries, to the fast growing economies of Eastern Europe.¹⁹

Municipal bonds play a key role in funding U.S. infrastructure.¹³ The availability of this competitive source of funding is one of the factors that has limited private funding in infrastructure in transportation. In contrast, the telecommunication sector, along with energy infrastructure – including oil and gas pipelines, thermal power generation, and electricity grids – has benefitted from substantial private investment in the past.¹⁴

To date, most U.S. States have a Public Private Partnership (PPP) framework, but its use has been limited so far, and the regulatory regime varies by state.¹⁵ The PPP market is likely to gain ground over time given recent legislative measures.¹⁶

Canada: A Mature PPP Framework Focusing on Social Infrastructure

Canada has one of the most developed PPP frameworks globally, which has been the key driver behind the development of infrastructure, particularly in Ontario and British Columbia. Canadian PPP projects include mainly greenfield projects, with social infrastructure accounting for the majority of the pipeline.¹⁷

While today competition for good quality infrastructure is high, dry powder in Europe is lower than in North America²⁰, particularly in the middle market. Moreover, Europe offers a dynamic secondary market. The pipeline of European opportunities is more skewed towards brownfield assets in the core/ core plus space, compared with North America, and therefore matches well with investment strategies focusing on long-term income stability.²¹

While Western European markets display a mature investment environment and low levels of country risk, largely comparable to Canada and the U.S., in Europe

¹⁸ Based on Infrastructure Journal, as at July 2019. Past performance is not indicative of future results.
¹⁹ World Economic Forum, as at August 2019.
²⁰ Based on Preqin, as at July 2019.
²¹ Based on InfraNews, as at July 2019. There is no guarantee that the forecast will materialize.
infrastructure regulation is transparent and generally has a longer track record in comparison to North America. C22

COUNTRY RISK AND QUALITY OF INFRASTRUCTURE (NORTH AMERICA, EUROPE AND EMERGING MARKETS)

We believe that the European markets with the most relevant fundamentals for long-term infrastructure investment are the United Kingdom, Germany, the Netherlands, Belgium, the Nordics and France, as well as Italy, Spain, and Portugal, which combine slightly higher risk/return potential with conducive market fundamentals. C23

A quality regulatory framework is a key variable for long-term infrastructure investment, providing protection from the volatility of the political cycle, a variable to be considered today in several European markets, including the U.K., and supporting long-term return predictability.

Europe: An Opportunity for Portfolio Diversification Across Sectors

Europe represents a key market for global infrastructure investment for both economic and social infrastructure. We currently observe high levels of transaction activity, and the pipeline of upcoming opportunities is equally deep, particularly across economic infrastructure. C24

European infrastructure can provide North American institutional investors with an opportunity for portfolio diversification, offering a deep pipeline of transaction opportunities in transportation, a sector where investment opportunities in North America (13% of the pipeline) are more limited compared with Europe (26% of the pipeline). C25

Europe: An Opportunity for Return Stabilisation

Historically, private infrastructure funds with North American focus have delivered more volatile returns across different vintages compared to European focused funds. C26

This is largely due to the nature of the North American market, which is more skewed towards energy assets that in the absence of a regulated or contracted revenue profile may have a more cyclical performance. C27

In Europe, returns demonstrated a more stable performance due to several factors, including a wider portfolio diversification potential by sector and country, and by a larger availability of assets that are regulated or contracted in the long term.

PRIVATE INFRASTRUCTURE FUNDS NET IRRS (2005-2015, BY VINTAGE)

Europe: Potential Hedging Gain Opportunity

Today, levered entry return assumptions in mature European markets are in the range of 7.0% to 9.5% (IRR) for core assets and 9.5% to 13.5% (IRR) for core plus space. C28

In addition, looking at total returns, North American

---


C23 Historically, private infrastructure funds have delivered more volatile returns across different vintages compared to European focused funds.

C24 Any forecasts provided herein are based on DWS’s opinion at time of publication and are subject to change.

C25 Sources: Infrastructure Journal, Infrastructure Journal, as at June 2019. There is no guarantee that the forecast will materialize. Past performance is not indicative of future results.

C26 Based on DWS proprietary methodology for ranking unlisted infrastructure funds.
investors may benefit from allocating to European infrastructure denominated in EUR and GBP, as returns could be supported by a further hedging gain.  

**ENTRY TOTAL RETURN ASSUMPTIONS CURRENCY-HEDGED**

<table>
<thead>
<tr>
<th>Investment Destination</th>
<th>EUR</th>
<th>GBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>8.8</td>
<td>7.9</td>
</tr>
<tr>
<td>Italy</td>
<td>10.3</td>
<td>9.4</td>
</tr>
<tr>
<td>Germany</td>
<td>8.1</td>
<td>7.2</td>
</tr>
<tr>
<td>U.K.</td>
<td>7.6</td>
<td>6.7</td>
</tr>
<tr>
<td>Spain</td>
<td>9.5</td>
<td>8.6</td>
</tr>
<tr>
<td>Portugal</td>
<td>10.2</td>
<td>9.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.8</td>
<td>6.3</td>
</tr>
<tr>
<td>Norway</td>
<td>10.2</td>
<td>5.6</td>
</tr>
<tr>
<td>Finland</td>
<td>5.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>7.2</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Source: Based on DWS proprietary methodology for ranking unlisted infrastructure sectors as at 30 April 2019. Total returns for 2019 are based on a ten-year dividend discount model and a terminal value at exit and assume a 75%/50% allocation across core and core plus infrastructure. Dividend yields, leverage, growth, exit assumptions and discount rate vary by country and sector. Hedging cost/ gain estimated on the basis of a three year interest rate swap differential between currency of investor domicile and currency of investment destination as at 8 August 2019, assumed to be rolled over for the remaining investment period (7 years) at the same conditions. Past performance is not a guide to future returns. There is no guarantee the forecast shown will materialise. Forecasts are not a reliable indicator of future returns. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

**European Strategy: Asset Selection and Middle Market Focus**

We believe European private infrastructure will continue to offer a solid risk-adjusted premium over long-term government bond yields. However, not all infrastructure investment opportunities are currently attractive. Liquidity has increased prices in all asset classes, including infrastructure. To seek target returns, asset selection, appropriate due diligence and price discipline are key.

Dry powder is concentrated at the larger end of the market, driven by a growing number of direct investors and infrastructure funds looking to deploy large ticket sizes in competitive auction processes. This is reflected in higher multiples (EV/EBITDA) for transactions at the larger end of the market. We estimate an increase of 0.15x (EV/EBITDA) for every additional EUR 100 million in Enterprise Value over the period from 2009 to the first half of 2019.  

**TRANSACTION MULTIPLES AND ASSET SIZE**

Over the same period, the average private infrastructure equity investment in North America was at USD 740 million, compared with an average of USD 367 million for transactions in Europe. The smaller average investment size in Europe versus North America may signal that investors should be able to access a greater number of assets in Europe for a given portfolio, supporting further diversification.  

Therefore, we believe that investors may want to consider assets in Europe, particularly in the middle market where we observe less competition, and may want to focus on limited auction or strategic bilateral transaction processes.

**Contacts – DWS Alternatives**

Jane Seto, Head of Asset Management
Jane.seto@dws.com

Nicole Thie, Alternatives Investment Specialist
nicole.thie@dws.com

**Contacts – DWS Alternatives Research**

Mark Roberts, Head of Research & Strategy
mark-g.roberts@dws.com

Gianluca Minella, Infrastructure Research
gianluca.minella@dws.com

Aizhan Meldebek, Infrastructure Research
aizhan.meldebek@dws.com

31 Source: DWS, InfraNews, June 2019. For illustrative purposes only. Past performance is not indicative of future results. The information herein reflects our current views only, are subject to change, and are not intended to be promissory or relied upon by the reader. There can be no certainty that events will turn out as we have opined herein.

32 Any forecasts provided herein are based on DWS’s opinion at time of publication and are subject to change. Forecasts are not a reliable indicator of future returns.
Important Information

The brand DWS represents DWS Group GmbH & Co. KGaA and any of its subsidiaries, such as DWS Distributors, Inc., which offers investment products, or DWS Investment Management Americas, Inc. and RREEF America L.L.C., which offer advisory services.

DWS represents the asset management activities conducted by DWS Group GmbH & Co. KGaA or any of its subsidiaries. In the U.S., DWS relates to the asset management activities of RREEF America L.L.C.; in Germany: DWS Grundbesitz GmbH, DWS Real Estate GmbH, and DWS Alternatives GmbH; in Australia: DWS Investments Australia Limited (ABN 52 074 599 401) an Australian financial services incense holder; in Japan: DWS Investments Japan Limited; in Hong Kong: Deutsche Bank Aktiengesellschaft, Hong Kong Branch (for direct real estate business), and DWS Investments Hong Kong Limited (for real estate securities business); in Singapore: DWS Investments Singapore Limited (Company Reg. No. 198701485N); in the United Kingdom: Deutsche Alternative Asset Management (UK) Limited, DWS Alternatives Global Limited and DWS Investments UK Limited; and in Denmark, Finland, Norway and Sweden: DWS Investments UK Limited and DWS Alternatives Global Limited; in addition to other regional entities in the Deutsche Bank Group. Key DWS research personnel are voting members of various investment committees. Members of the investment committees vote with respect to underlying investments and/or transactions and certain other matters subjected to a vote of such investment committee. The views expressed in this document have been approved by the responsible portfolio management team and Infrastructure committee and may not necessarily be the views of any other division within DWS.

This material was prepared without regard to the specific objectives, financial situation or needs of any particular person who may receive it. It is intended for informational purposes only. It does not constitute investment advice, a recommendation, an offer, solicitation, the basis for any contract to purchase or sell any security or other instrument, or for DWS or its affiliates to enter into or arrange any type of transaction as a consequence of any information contained herein. Neither DWS nor any of its affiliates gives any warranty as to the accuracy, reliability or completeness of information which is contained in this document. Except insofar as liability under any statute cannot be excluded, no member of the DWS, the Issuer or any office, employee or associate of them accepts any liability (whether arising in contract, in tort or negligence or otherwise) for any error or omission in this document or for any resulting loss or damage whether direct, indirect, consequential or otherwise suffered by the recipient of this document or any other person.

The views expressed in this document constitute DWS Group’s judgment at the time of issue and are subject to change. This document is only for professional investors. This document was prepared without regard to the specific objectives, financial situation or needs of any particular person who may receive it. No further distribution is allowed without prior written consent of the Issuer.

Investments are subject to risk, including market fluctuations, regulatory change, possible delays in repayment and loss of income and principal invested.

The value of investments can fall as well as rise and you might not get back the amount originally invested at any point in time.

An investment in infrastructure involves a high degree of risk, including possible loss of principal amount invested, and is suitable only for sophisticated investors who can bear such losses. The value of shares/units and their derived income may fall or rise.

Any forecasts provided herein are based upon DWS’s opinion of the market at this date and are subject to change dependent on the market. Past performance or any prediction, projection or forecast on the economy or markets is not indicative of future performance.

In Australia: Issued by DWS Investments Australia Limited (ABN 52 074 599 401), holder of an Australian Financial Services License (AFSLS 499 640). This information is only available to persons who are professional, sophisticated, or wholesale investors as defined under section 761 G of the Corporations Act 2001 (Cth). The information provided is not to be construed as investment, legal or tax advice and any recipient should take their own investment, legal and tax advice before investing. DWS Investments Australia Limited is an asset management subsidiary of DWS Group GmbH & CO. KGaA (“DWS Group”). The capital value of and performance of an investment is not in any way guaranteed by DWS Group. DWS Investments Australia Limited or any other member of the DWS Group. Any forecasts provided herein are based upon our opinion of the market as at this date and are subject to change, dependent on future changes in the market. Any prediction, projection or forecast on the economy, stock market, bond market or the economic trends of the markets is not necessarily indicative of the future or likely performance. Investments are subject to investment risk, including possible delays in repayment and loss of income and principal invested. DWS Investments Australia Limited is not an Authorised Deposit-taking Institution under the Banking Act 1959 nor regulated by APRA.
Notice to prospective Investors in Japan: This document is distributed in Japan by DWS Investments Japan Limited. Please contact the responsible employee of DWS Investments Japan Limited in case you have any question on this document because DWS Investments Japan Limited serves as contacts for the product or service described in this document. This document is for distribution to Professional Investors only under the Financial Instruments and Exchange Law.

Dubai International Financial Centre: Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated by the Dubai Financial Services Authority. Deutsche Bank AG - DIFC Branch may only undertake the financial services activities that fall within the scope of its existing DFSA license. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

Kingdom of Saudi Arabia: Deutsche Securities Saudi Arabia LLC Company, (registered no. 07073-37) is regulated by the Capital Market Authority. Deutsche Securities Saudi Arabia may only undertake the financial services activities that fall within the scope of its existing CMA license. Principal place of business in Saudi Arabia: King Fahad Road, Al Olaya District, P.O. Box 301809, Faisaliah Tower - 17th Floor, 11372 Riyadh, Saudi Arabia.

For Investors in Switzerland: This material is intended for information purposes only and does not constitute investment advice or a personal recommendation. This document should not be construed as an offer to sell any investment or service. Furthermore, this document does not constitute the solicitation of an offer to purchase or subscribe for any investment or service in any jurisdiction where, or from any person in respect of whom, such a solicitation of an offer is unlawful. Neither DWS CH AG nor any of its affiliates, gives any warranty as to the accuracy, reliability or completeness of information which is contained in this document. Past performance or any prediction or forecast is not indicative of future results.

The views expressed in this document constitute DWS Group's judgment at the time of issue and are subject to change. DWS Group has no obligation to update, modify or amend this letter or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, or if research on the subject company is withdrawn. Prices and availability of financial instruments also are subject to change without notice.

The information provided in this document is addressed solely to Qualified Investors pursuant to Article 10 paragraph 3 of the Swiss Federal Act on Collective Investment Schemes (CISA) and Article 6 of the Ordinance on Collective Investment Schemes. This document is not a prospectus within the meaning of Articles 1156 and 652a of the Swiss Code of Obligations and may not comply with the information standards required thereunder. This document may not be copied, reproduced, distributed or passed on to others without the prior written consent of DWS CH AG or its affiliates.

For investors in the United Kingdom: FOR PROFESSIONAL CLIENTS ONLY

Issued and approved by DWS Investments UK Limited of Winchester House, 1 Great Winchester Street, London EC2N 2DB, authorised and regulated by the Financial Conduct Authority (“FCA”).

This document is a “non-retail communication” within the meaning of the FCA’s Rules and is directed only at persons satisfying the FCA’s client categorisation criteria for an eligible counterparty or a professional client. This document is not intended for and should not be relied upon by a retail client. This document may not be reproduced or circulated without written consent of the issuer.

This document is intended for discussion purposes only and does not create any legally binding obligations on the part of DWS Group GmbH & Co. KGaA and/or its affiliates (“DWS”). Without limitation, this document does not constitute investment advice or a recommendation or an offer or solicitation and is not the basis for any contract to purchase or sell any security or other instrument, or for DWS to enter into or arrange any type of transaction as a consequence of any information contained herein. The information contained in this document is based on material we believe to be reliable; however, we do not represent that it is accurate, current, complete, or error free. Assumptions, estimates and opinions contained in this document constitute our judgment as of the date of the document and are subject to change without notice. Past performance is not a guarantee of future results. Any forecasts provided herein are based upon our opinion of the market as at this date and are subject to change, dependent on future changes in the market. Any prediction, projection or forecast on the economy, stock market, bond market or the economic trends of the markets is not necessarily indicative of the future or likely performance. Investments are subject to risks, including possible loss of principal amount invested.

When making an investment decision, potential investors should rely solely on the final documentation relating to the investment or service and not the information contained herein. The investments or services mentioned herein may not be appropriate for all investors and before entering into any transaction you should take steps to ensure that you fully understand the transaction and have made an independent assessment of the appropriateness of the transaction in the light of your own objectives and circumstances, including the possible risks and benefits of entering into such transaction. For general information regarding the nature and risks of the proposed transaction and types of financial instruments please go to https://www.db.com/company/en/risk-disclosures.htm. You should also consider seeking advice from your own advisers in making this assessment. If you decide to enter into a transaction with us you do so in reliance on your own judgment.

August 2019. The information herein reflects our current views only, is subject to change, and is not intended to be promissory or relied upon by the reader. There is no certainty that events will turn out as we have opined herein. No assurance can be given that any forecast, target or opinion will materialise. Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect. Past performance is not a reliable indicator of future returns.
Any opinions expressed herein may differ from the opinions expressed by Deutsche Bank AG and/or any other of its affiliates ("DB"). DB may engage in transactions in a manner inconsistent with the views discussed herein. DB trades or may trade as principal in the instruments (or related derivatives), and may have proprietary positions in the instruments (or related derivatives) discussed herein. DB may make a market in the instruments (or related derivatives) discussed herein. You may not distribute this document, in whole or in part, without our express written permission.

DWS SPECIFICALLY DISCLAIMS ALL LIABILITY FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL OR OTHER LOSSES OR DAMAGES INCLUDING LOSS OF PROFITS INCURRED BY YOU OR ANY THIRD PARTY THAT MAY ARISE FROM ANY RELIANCE ON THIS DOCUMENT OR FOR THE RELIABILITY, ACCURACY, COMPLETENESS OR TIMELINESS THEREOF.

Any reference to “DWS”, “Deutsche Asset Management” or “Deutsche AM” shall, unless otherwise required by the context, be understood as a reference to asset management activities conducted by DWS Group GmbH & Co. KGaA and/or any of its affiliates. Clients will be provided DWS products or services by one or more legal entities that will be identified to clients pursuant to the contracts, agreements, offering materials or other documentation relevant to such products or services. DWS’s infrastructure investment business is part of the Alternatives platform. In the U.S., DWS relates to the asset management activities of RREEF America L.L.C.; in Germany: DWS Grundbesitz GmbH, DWS Real Estate GmbH, and DWS Alternatives GmbH; in Japan: DWS Investments Japan Limited; in Hong Kong: Deutsche Bank Aktiengesellschaft, Hong Kong Branch (for direct real estate business), and DWS investments Hong Kong Limited (for real estate securities business); in Singapore: DWS Investments Singapore Limited (Company Reg. No. 198701485N); in the United Kingdom: Deutsche Alternative Asset Management (UK) Limited, DWS Alternatives Global Limited and DWS Investments UK Limited; and in Denmark, Finland, Norway and Sweden: Deutsche Bank AG; in Australia: DWS Investments Australia Limited (ABN 52 074 599 401) an Australian financial services license holder.

© 2019. All rights reserved.

For investors in Nordics: Deutsche Bank AG is authorised under German Banking Law (competent authority: European Central Bank and the BaFin, Germany’s Federal Financial Supervisory Authority), Deutsche Bank AG Stockholm branch ("DBS", Bolagsverket nr. 516401-9985) is authorised by BaFin and regulated by Finansinspektionen for the conduct of licensed activities in Sweden, Denmark, Norway and Finland. Deutsche Bank branches operate within the EEA on the back of the legal entity (Deutsche Bank AG) EU Passports within the European Economic Area (“EEA”). Reference is made to European Union Regulatory Background and Corporate and Regulatory Disclosures at https://www.db.com/en/content/eu_disclosures_uk.htm. Details about the extent of our authorisation and regulation by BaFin and respective Nordic Region Financial Supervisory Authority are available from us on request.

Without limitation, this document and any attachment does not constitute an offer or a recommendation to enter into any transaction with DBS. This material and attachments is for information purposes only and is not intended to be an offer or an advice or recommendation or solicitation, or the basis for any contract to purchase or sell any security, or other instrument, or for DB to enter into or arrange any type of transaction as a consequence of any information contained herein. The implicit or explicit views and recommendations expressed in marketing or other financial presentation material as well as any financial proposals are solely those of the issuer of such material, and forwarded to you on behalf of the contracting party.

The views set out in this presentation are those of the author and may not necessarily the views of any other division within Deutsche Bank, including the Sales and Trading functions of the Corporate and Investment Bank or the Global Client Group of Deutsche Asset Management and Private Wealth Management; all services provided by these the Sales and Trading functions of the Corporate and Investment Bank are purely on a non-advised, execution-only basis. DB may engage in transactions in a manner inconsistent with the views discussed herein. DB trades or may trade as principal in the instruments (or related derivatives), and may have proprietary positions in the instruments (or related derivatives) discussed herein. DB may make a market in the instruments (or related derivatives) discussed herein. DB may make a market in the instruments (or related derivatives) discussed herein. Sales and Trading personnel are compensated in part based on the volume of transactions effected by them. You may not distribute this document, in whole or in part, without our express written permission.

DBS is solely acting for and on behalf of Deutsche Bank AG and/or any of its affiliates. Potential investors should be aware that if they decide to enter into a transaction with Deutsche Bank AG or any of its affiliates acting in their capacity as principal to the transaction ("contracting party"), any and all agreements will be entered into with that contracting party (unless re-negotiated) and pursuant to the financial laws and regulations of the country where the contracting party is licensed.

Unless DBS is entering into a separate and explicit contractual relationship with you for the provision of investment services, it is neither obliged to categorise you in accordance with MiFID nor perform MiFID suitability and/or appropriateness assessment (as enacted into Swedish laws and regulations). The investments or services mentioned in this material or an attachment thereto may not be appropriate for all investors and before entering into a transaction you should take steps to ensure that you fully understand the transaction and have made an independent assessment.
of the appropriateness of the transaction in the light of your own objectives and circumstances, including the possible risks and benefits of entering into such transaction. You should also consider seeking advice from your own advisers in making this assessment. If you decide to enter into a transaction with a contracting party you do so in reliance on your own judgment. For general information regarding the nature and risks and types of financial instruments please go to www.globalmarkets.db.com/riskdisclosures.

DB SPECIFICALLY DISCLAIMS ALL LIABILITY FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL OR OTHER LOSSES OR DAMAGES INCLUDING LOSS OF PROFITS INCURRED BY YOU OR ANY THIRD PARTY THAT MAY ARISE FROM ANY RELIANCE ON THIS DOCUMENT OR FOR THE RELIABILITY, ACCURACY, COMPLETENESS OR TIMELINESS THEREOF.

For Investors in Belgium: The information contained herein is only intended for and must only be distributed to institutional and/or professional investors (as defined in the Royal Decree dated 19 December 2017 implementing MiFID directive). In reviewing this presentation you confirm that you are such an institutional or professional investor. When making an investment decision, potential investors should rely solely on the final documentation (including the prospectus) relating to the investment or service and not the information contained herein. The investments or services mentioned herein may not be adequate or appropriate for all investors and before entering into any transaction you should take steps to ensure that you fully understand the transaction and have made an independent assessment of the suitability or appropriateness of the transaction in the light of your own objectives and circumstances, including the possible risks and benefits of entering into such transaction. You should also consider seeking advice from your own advisers in making this assessment. If you decide to enter into a transaction with us you do so in reliance on your own judgment.

For investors in Bermuda: This is not an offering of securities or interests in any product. Such securities may be offered or sold in Bermuda only in compliance with the provisions of the Investment Business Act of 2003 of Bermuda which regulates the sale of securities in Bermuda. Additionally, non-Bermudian persons (including companies) may not carry on or engage in any trade or business in Bermuda unless such persons are permitted to do so under applicable Bermuda legislation.

© 2019 DWS Group GmbH & Co. KGaA. All rights reserved. I-069738-2.0 (08/2019)