Cities and Climate Change

The key piece of the puzzle

Cities are responsible for most of the world’s emissions...

...and will feel the impact of climate change disproportionately...

...making urban policies key in the move towards net zero

This is an abridged version of a report by the same title published on 06-Dec-21. Please contact your HSBC representative or email AskResearch@hsbc.com for more information.
Snapshot: cities and climate change

Cities are likely to feel the impacts of climate change more acutely

Cities are the lifeline of the global economy, but consume 78% of the world’s energy, produce more than 60% of greenhouse gas emissions and are a major contributor to climate change – but cities may equally be where we see the impact most clearly.

City energy consumption

- 13% Residential and commercial buildings
- 4% Waste and wastewater
- 28% Industry
- 32% Energy supply
- 23% Transport

Top 10 cities exposed to coastal flooding on the basis of assets exposed in future (exposed assets USDtrn)

<table>
<thead>
<tr>
<th>City</th>
<th>Exposed Assets USDtrn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miami, US</td>
<td>3.51trn</td>
</tr>
<tr>
<td>Guangzhou, Mainland China</td>
<td>3.35trn</td>
</tr>
<tr>
<td>New York, Newark, US</td>
<td>2.14trn</td>
</tr>
<tr>
<td>Kolkata, India</td>
<td>1.96trn</td>
</tr>
<tr>
<td>Shanghai, Mainland China</td>
<td>1.77trn</td>
</tr>
<tr>
<td>Mumbai, India</td>
<td>1.59trn</td>
</tr>
<tr>
<td>Tianjin, Mainland China</td>
<td>1.23trn</td>
</tr>
<tr>
<td>Tokyo, Japan</td>
<td>1.20trn</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>1.16trn</td>
</tr>
<tr>
<td>Bangkok, Thailand</td>
<td>1.12trn</td>
</tr>
</tbody>
</table>

Yet obstacles remain for sustainability adoption

- 83% Cost
- 53% Lack of infrastructure
- 15% Reliability
- 11% Other
- 28% Coal
- 17% Nuclear
- 13% Renewables
- 43% Other fossil fuels
- 22% 1-20%
- 17% 51-60%
- 7% Don’t know
- 38% 21-50%
- 16% >80%

What can cities do?

USD208bn
Annual investment in public transport needed to meet emissions targets across 100 cities, globally

100%
In 2020, 834 cities had a 100% renewable energy target and more than 10,500 have emission-reducing targets

COP26
With GBP27.5m of funding, the UK Urban Climate Action Programme will help cities across developing markets with decarbonisation of new buildings

Source: UN-Habitat, Global report on human settlements 2011; ONS, OECD, Sustainable Buildings Market Study 2019; Ramboll Buildings (Note: Survey conducted in Finland, Sweden, Denmark, Iceland and the UK), HSBC
Climate change and cities

- Cities are likely to feel the impacts of climate change more acutely
- But as they are responsible for the bulk of global emissions…
- …the need to act rests on their shoulders too

How does climate change affect urban areas?

Rising temperatures

Today, nearly one-third of the world’s population is exposed to life-threatening levels of extreme heat for 20 days a year or more. The UN estimates that c.1.6 billion people living in cities will be regularly exposed to “extremely high temperatures” – effectively living in urban heat islands – by 2050.

This will likely create higher demand for air-conditioning and refrigeration, an industry that consumes up to 30% of global electricity and generates 8% of GHG emissions worldwide. The number of air conditioners projected to increase by two-thirds by 2030, and electricity demand for cooling buildings expected to rise by as much as 50% globally.

Extreme heat can also have direct economic impact if governments have to restrict working hours as a result. Extreme heat can lead to productivity loss due to heat stress, especially in manufacturing and in services, such as tourism, transportation and trade.

Higher temperatures also carry health risks, and these are particularly acute in cities. Risks can include heat-related illnesses, some vector-borne diseases, and air pollution. Governments will need to work with health departments for early warning alerts for some events, such as heatwaves and elevated air pollution levels, to mitigate these effects.

1. South Asia and lower-middle-income countries are the most polluted…

Water: too much or too little?

Higher sea levels due to climate change increase the risks of flooding and tsunamis for coastal cities. But equally, if climate change makes weather more erratic, some regions may face extreme droughts and water shortages while others may see heavy precipitation.

---

1 The future we don’t want, C40 cities, February 2018
2 IEA (2020), Cooling, IEA, Paris
2. Rising sea levels pose risks

This greater risk of flooding could have a range of health, social and economic costs. Property damage, loss of life, water-borne diseases, higher insurance premiums, loss of tourism and land erosion are some of the consequences. Additionally, supply chain disruptions could have a severe impact on businesses and frequent extreme events may hinder trade and transportation.

Droughts and water scarcity

On top of rising sea levels, some cities across the world could be at risk from water scarcity and droughts. Droughts can have long-term impacts such as malnutrition, starvation and famine which could all impact potential growth.

Water scarcity is often worse in rural areas than urban ones. But rapid rates of urbanisation in the emerging world are leading to cities that are not being matched by the required infrastructure to meet water demand. But this is not confined to the emerging markets. Cities including the likes of London, Miami and Tokyo have been flagged in various reports too.

4. Declining water availability for all of the 10 most water stressed countries

Water scarcity and droughts have significant economic consequences as they impact the manufacturing and power generation sectors to a great extent. This is particularly the case given the increasing reliance on water in the power sector under the energy transition as hydro power and green hydrogen are now some of the replacement fuels to. We think cities and local regions will need to factor this into future climate change mitigation and adaptation planning.

As with rising temperatures and flood risks, droughts and water scarcity also have significant implications for society. Droughts and water scarcity can both contribute to water pollution and the associated health risks. Water-related conflicts in times of scarcity are another major risk, with evidence of this occurring throughout history. Even in the present day, issues with water scarcity have caused social unrest in some cities and regions around the world.
What can cities do?

- Cities will also have to act to limit climate change…
- …both by mitigating to cut emissions…
- …and adapting to be more resilient

What should cities do?

Cities need to react to the threat of climate change. The solutions are two-fold – mitigation and adaptation. Broadly speaking, mitigation involves actions that lead to a reduction of GHG emissions to combat climate change and adaptation involves preparing societies and businesses for a more volatile climate.

Mitigation: the essential big steps

Transport: Public, green and healthy
Transportation holds the key in the fight against climate change as more than 20% of CO₂ emissions by cities can be attributed to transport³.

The COVID-19 pandemic has accelerated many pre-existing trends when it comes to urban areas. But not all changes have been a positive for climate - due to high fears of contracting COVID-19 people might deem public transport unsafe and switch to private vehicles, which in turn creates a funding issue for public transport departments. The authorities first need to draw people again to use public transport. Public transportation is not only cost effective or a tool to deal with congestion and pollution, but there is evidence from Europe that a well-connected public transport network can have huge positive upside on productivity and can have huge positives for the economy⁴.

5. Transport and buildings consume a lot of energy

6. Public transport is efficient and productive

---

³ UN-Habitat data
⁴ OECD Regions and Cities at a glance 2020, OECD
On your bike
When the pandemic struck, bike sales shot up dramatically as people deemed walking and cycling as safer transport options, but longer term, cities need to invest in policies to encourage the use of self-powered transport - but with a neutral impact on climate due to new road and pavement construction.

7. Amsterdam is cycling towards net zero
8. China leads the way on EVs

Electrification
Private vehicles will have to play a role in the transportation mix as not everyone is able or willing to walk and cycle so electrifying existing forms of transport will be key. Challenges remain, however, with concerns over the cost, charging infrastructure and reliability proving to be headwinds.

On top of this, autonomous vehicles look set, one day, to play a big part in cutting emissions – with shorter journeys (without the need to find parking), better use of space in cities (without the need for as many parking spaces) and allowing a rapid shift towards electric vehicle fleets.

Public transport is key
But while electric and autonomous vehicles will play a big part in cutting urban emissions, there is still a big role for public transportation. During COP26, the C40 organisation announced that public transport usage needs to double by 2030 if the world is to reach 1.5°C alignment.

Infrastructure-heavy transportation options can be extremely expensive. Buses, however, can be implemented quickly, cheaply and easily. Though, in the aftermath of the pandemic, with fewer people using public transport, funding could be a challenge.

Clean energy
Energy production is responsible for over 70% of total CO₂ emissions (IEA). A shift from polluting energy-producing methods to more renewable energy can reduce CO₂ emissions significantly.

Citizens can also act as a catalyst for this switch to renewables. This can be in a number of ways: giving preference to energy suppliers that use renewables, or becoming prosumers of energy (through rooftop solar PV or micro wind turbines).

The full note contains sections on Smarter and Greener buildings, how the World Green Building Council is a force for change, a discussion on why nudging Behavioural Change can be a powerful method to combat climate change, and a look at how Circular Cities are pulling it all together.

Please contact your HSBC representative or email AskResearch@hsbc.com for more information.
Adaptation

An estimated 95% of global funding on climate action goes on mitigation according to IPCC, and more is generally known about how to decarbonise global energy and industrial sectors. Adaptation action looks different, and is more varied; it can focus on infrastructure resilience, water and food security, prevention of weather-related economic losses, or protecting lives. The need to adapt to climate change is also uneven by geography and skewed towards EM/FM countries.

The goals for COP26 in terms of adaptation were focused on financing resilience, habitat protection and restoration and adaptation communication. During the conference, it was agreed that adaptation finance flows will be “at least double” 2019 levels by 2025 – so to USD40bn – in an effort to help meet some of the needs of heightened adaptation spend. The recently agreed structure of a new carbon market for use by countries also includes a levy of 5% that will direct money towards an Adaptation Fund, which is designed to build resilience in developing economies. COP26 also saw new requirements for any countries that have not yet provided information on climate adaptation in their Paris Agreement pledges to do so by COP27, in 2022.

What’s next?

Urban investment to step up

To tackle the enormous environmental and social challenges created by climate change we expect cities to step up their investment in the coming years. Some of this is simply because it makes sense economically.

But on top of the direct economic impact, making cities appealing places to live is now more paramount than at any time in recent history, with a much more geographically mobile labour force being able to choose where they live in the coming years. As a result, making cities work better or cleaner will be key priorities. We could see cities reform the way they work, with the growth of 15-minute cities, something that we expect to gain even more prominence in the future.

COP26 accelerates the moves

One of the initiatives announced during COP26 is the declaration on accelerating the transition to 100% zero emission cars and vans. A number of cities (and states) are aiming to have all owned or leased car and van fleets be zero emissions by 2035. We are hopeful that these pledges will pave the way for more ambition and progress on this in future.

On buildings, the UK Urban Climate Action Programme was launched during COP26. The programme is designed to help cities to transition to lower carbon, primarily via decarbonisation of building in urban areas. The programme, with GBP27.5m of funding will focus on support for cities across Africa, Asia, and Latin America regions.

Who pays?

All this investment needs to be funded somewhere. The estimated more than USD200bn spending needed on public transport every year for the next decade amounts to 0.2% of global GDP per year. That’s 2% of global GDP – just on that infrastructure in 100 cities. clearly a huge funding cost.

The green bond market potentially has a big role to play in this financing. Three green bond project types stand out as being particularly suited to funding cities: clean transportation, climate change adaptation and green buildings. Social bonds could also be aimed at providing affordable housing, and are well suited to funding cities.

Green, social and sustainability bonds offer two advantages: they bring visibility to the underlying projects and they typically provide cheaper funding – the “greenium” or spread at which green bonds trade to non-green bonds is on average slightly negative due to the demand from ESG investors.

Getting funding, no matter where it comes from, is going to be crucial to how well cities are able to fight climate change – and given their importance in that battle this will be a key part of the global fight against rising temperatures in the coming years.
Disclosure appendix

Analyst Certification
The following analyst(s), economist(s), or strategist(s) who is(are) primarily responsible for this report, including any analyst(s) whose name(s) appear(s) as author of an individual section or sections of the report and any analyst(s) named as the covering analyst(s) of a subsidiary company in a sum-of-the-parts valuation certifies(y) that the opinion(s) on the subject security(ies) or issuer(s), any views or forecasts expressed in the section(s) of which such individual(s) is(are) named as author(s), and any other views or forecasts expressed herein, including any views expressed on the back page of the research report, accurately reflect their personal view(s) and that no part of their compensation was, is or will be directly or indirectly related to the specific recommendation(s) or views contained in this research report: James Pomeroy, Lucy Acton, CFA and Stephen Bramley-Jackson

Important disclosures

Equities: Stock ratings and basis for financial analysis
HSBC and its affiliates, including the issuer of this report ("HSBC") believes an investor's decision to buy or sell a stock should depend on individual circumstances such as the investor's existing holdings, risk tolerance and other considerations and that investors utilise various disciplines and investment horizons when making investment decisions. Ratings should not be used or relied on in isolation as investment advice. Different securities firms use a variety of ratings terms as well as different rating systems to describe their recommendations and therefore investors should carefully read the definitions of the ratings used in each research report. Further, investors should carefully read the entire research report and not infer its contents from the rating because research reports contain more complete information concerning the analysts' views and the basis for the rating.

From 23rd March 2015 HSBC has assigned ratings on the following basis:
The target price is based on the analyst's assessment of the stock's actual current value, although we expect it to take six to 12 months for the market price to reflect this. When the target price is more than 20% above the current share price, the stock will be classified as a Buy; when it is between 5% and 20% above the current share price, the stock may be classified as a Buy or a Hold; when it is between 5% below and 5% above the current share price, the stock will be classified as a Hold; when it is between 5% and 20% below the current share price, the stock may be classified as a Hold or a Reduce; and when it is more than 20% below the current share price, the stock will be classified as a Reduce.

Our ratings are re-calibrated against these bands at the time of any ‘material change’ (initiation or resumption of coverage, change in target price or estimates).

Upside/Downside is the percentage difference between the target price and the share price.

Prior to this date, HSBC’s rating structure was applied on the following basis:
For each stock we set a required rate of return calculated from the cost of equity for that stock’s domestic or, as appropriate, regional market established by our strategy team. The target price for a stock represented the value the analyst expected the stock to reach over our performance horizon. The performance horizon was 12 months. For a stock to be classified as overweight, the potential return, which equals the percentage difference between the current share price and the target price, including the forecast dividend yield when indicated, had to exceed the required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile*). For a stock to be classified as Underweight, the stock was expected to underperform its required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile*). Stocks between these bands were classified as Neutral.

*A stock was classified as Volatile if its historical volatility had exceeded 40%, if the stock had been listed for less than 12 months (unless it was in an industry or sector where volatility is low) or if the analyst expected significant volatility. However, stocks which we did not consider volatile may in fact also have behaved in such a way. Historical volatility was defined as the past month’s average of the daily 365-day moving average volatilities. In order to avoid misleadingly frequent changes in rating, however, volatility had to move 2.5 percentage points past the 40% benchmark in either direction for a stock's status to change.

Rating distribution for long-term investment opportunities
As of 30 September 2021, the distribution of all independent ratings published by HSBC is as follows:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy</td>
<td>60%</td>
</tr>
<tr>
<td>Hold</td>
<td>33%</td>
</tr>
<tr>
<td>Sell</td>
<td>7%</td>
</tr>
</tbody>
</table>

For the purposes of the distribution above the following mapping structure is used during the transition from the previous to current rating models: under our previous model, Overweight = Buy, Neutral = Hold and Underweight = Sell; under our current model Buy = Buy, Hold = Hold and Reduce = Sell. For rating definitions under both models, please see “Stock ratings and basis for financial analysis” above.

To view a list of all the independent fundamental ratings disseminated by HSBC during the preceding 12-month period, please use the following links to access the disclosure page:

Clients of Global Research and Global Banking and Markets: www.research.hsbc.com/A/Disclosures

Clients of HSBC Private Banking: www.research.privatebank.hsbc.com/Disclosures

HSBC and its affiliates will from time to time sell to and buy from customers the securities/instruments, both equity and debt (including derivatives) of companies covered in HSBC Research on a principal or agency basis or act as a market maker or liquidity provider in the securities/instruments mentioned in this report.

Analysts, economists, and strategists are paid in part by reference to the profitability of HSBC which includes investment banking, sales & trading, and principal trading revenues.

Whether, or in what time frame, an update of this analysis will be published is not determined in advance.

Non-U.S. analysts may not be associated persons of HSBC Securities (USA) Inc, and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with the subject company, public appearances and trading securities held by the analysts.

Economic sanctions imposed by the EU, the UK, the USA and certain other jurisdictions generally prohibit transacting or dealing in any debt or equity issued by Russian SSI entities on or after 16 July 2014 (Restricted SSI Securities). Economic sanctions imposed by the USA also generally prohibit US persons from purchasing or selling publicly traded securities issued by companies designated by the US Government as “Chinese Military-Industrial Complex Companies” (CMICs) or any publicly traded securities that are derivative of, or designed to provide investment exposure to, the targeted CMIC securities (collectively, Restricted CMIC Securities).

This report does not constitute advice in relation to any Restricted SSI Securities or Restricted CMIC Securities, and as such, this report should not be construed as an inducement to transact in any Restricted SSI Securities or Restricted CMIC Securities.

For disclosures in respect of any company mentioned in this report, please see the most recently published report on that company available at www.hsbcnet.com/research. HSBC Private Banking clients should contact their Relationship Manager for queries regarding other research reports. In order to find out more about the proprietary models used to produce this report, please contact the authoring analyst.

**Additional disclosures**

1. This report is dated as at 01 December 2021.
2. All market data included in this report are dated as at close 29 November 2021, unless a different date and/or a specific time of day is indicated in the report.
3. HSBC has procedures in place to identify and manage any potential conflicts of interest that arise in connection with its Research business. HSBC's analysts and its other staff who are involved in the preparation and dissemination of Research operate and have a management reporting line independent of HSBC's Investment Banking business.
4. Information Barrier procedures are in place between the Investment Banking, Principal Trading, and Research businesses to ensure that any confidential and/or price sensitive information is handled in an appropriate manner.
5. You are not permitted to use, for reference, any data in this document for the purpose of (i) determining the interest payable, or other sums due, under loan agreements or under other financial contracts or instruments, (ii) determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument, and/or (iii) measuring the performance of a financial instrument or of an investment fund.
Disclaimer

Legal entities as of 1 December 2020

'TW': HSBC Securities (Taiwan) Corporation Limited; ‘CA’ HSBC Securities (Canada) Inc.; ‘France’ HSBC Continental Europe; ‘Spain’ HSBC Continental Europe, Sucursal en España; ‘Italy’ HSBC Continental Europe, Italy; ‘Sweden’ HSBC Continental Europe Bank, Sweden Filial; ‘DE’ HSBC Trinkaus & Burkhardt AG, Düsseldorf; 000 HSBC Bank (RR), Moscow; ‘IN’ HSBC Securities and Capital Markets (India) Private Limited, Mumbai; ‘JP’ HSBC Securities (Japan) Limited, Tokyo; ‘EG’ HSBC Securities Egypt SAE, Cairo; ‘CN’ HSBC Investment Bank Asia Limited, Beijing Representative Office; The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch; The Hongkong and Shanghai Banking Corporation Limited, Seoul Branch; HSBC Securities (South Africa) (Pty) Ltd, Johannesburg; HSBC bank plc, London, Tel Aviv; ‘US’ HSBC Securities (USA) Inc, New York; HSBC Yatirim Menkul Degerler AS, Istanbul; HSBC México, S.A., Institución de Banca Multiple, Grupo Financiero HSBC; HSBC Bank Australia Limited; HSBC Bank Argentina SA; HSBC Saudi Arabia Limited; The Hongkong and Shanghai Banking Corporation Limited, New Zealand Branch incorporated in Hong Kong SAR; The Hongkong and Shanghai Banking Corporation Limited, Bangkok Branch; PT Bank HSBC Indonesia; HSBC Qianlan Securities Limited; Banco HSBC S.A.

In the UK, this publication is distributed by HSBC Bank plc for the information of its Clients (as defined in the Rules of FCA) and those of its affiliates only. Nothing herein excludes or restricts any duty or liability to a customer which HSBC Bank plc has under the Financial Services and Markets Act 2000 or under the Rules of FCA and PRA. A recipient who chooses to deal with any person who is not a representative of HSBC Bank plc in the UK will not enjoy the protections afforded by the UK regulatory regime. HSBC Bank plc is regulated by the Financial Conduct Authority and the Prudential Regulation Authority. If this research is received by a customer of an affiliate of HSBC, its provision to the recipient is subject to the terms of business in place between the recipient and such affiliate. In Australia, this publication has been distributed by The Hongkong and Shanghai Banking Corporation Limited (ABN 65 117 925 970, AFSL 301737) for the general information of its “wholesale” customers (as defined in the Corporations Act 2001). Where distributed to retail customers, this research is distributed by HSBC Bank Australia Limited (ABN 48 006 434 162, AFSL No. 232595). These respective entities make no representations that the products or services mentioned in this document are available to persons in Australia or are necessarily suitable for any particular person or appropriate in accordance with local law. No consideration has been given to the particular investment objectives, financial situation or particular needs of any recipient. In the European Economic Area, this publication has been distributed by HSBC Continental Europe by or such other HSBC affiliate from which the recipient receives relevant services. The document is distributed in Singapore by The Hongkong and Shanghai Banking Corporation Limited and in Japan by HSBC Securities (Japan) Limited. Each of the companies listed above (the “Participating Companies”) is a member of the HSBC Group of Companies, any member of which may trade for its own account. The views contained in this document may reflect the views of these other entities. The Participating Companies or persons associated with them in respect of any business transacted by them in all or any of the securities or instruments referred to in this document. In Korea, this publication is distributed by either The Hongkong and Shanghai Banking Corporation Limited, Seoul Branch or the Hongkong and Shanghai Banking Corporation Limited, Seoul Branch ("HBAP SLS") or The Hongkong and Shanghai Banking Corporation Limited, Seoul Branch is authorised and regulated by the Financial Services and Capital Markets Act ("FSCMA"). This publication is not a prospectus as defined in the FSCMA. It may not be further distributed in whole or in part for any purpose. Both HBAP SLS and HBAP SEL are regulated by the Financial Services Commission and the Financial Supervisory Service of Korea. This publication is distributed in New Zealand by The Hongkong and Shanghai Banking Corporation Limited, New Zealand Branch incorporated in Hong Kong SAR.

The information in this document is derived from sources the Participating Companies believe to be reliable but which have not been independently verified. The Participating Companies make no guarantee of its accuracy and completeness and are not responsible for errors of transmission of factual or analytical data, nor shall the Participating Companies be liable for damages arising out of any person’s reliance upon this information. All charts and graphs are from publicly available sources or proprietary data. The opinions in this document constitute the present judgement of the Participating Companies, which is subject to change without notice. From time to time research analysts conduct site visits of covered issuers. HSBC policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits. This document is neither an offer to sell, purchase or subscribe for any investment nor a solicitation of such an offer. HSBC Securities (USA) Inc. accepts responsibility for the content of this research report prepared by its non-US foreign affiliate. The information contained herein is under no circumstances to be construed as investment advice and is not tailored to the needs of the recipient. All US persons receiving and/or accessing this report and intending to effect transactions in any security discussed herein should do so with HSBC Securities (USA) Inc. in the United States and not with its non-US foreign affiliate, the issuer of this report. In Singapore, this publication is distributed by HSBC and the Hongkong and Shanghai Banking Corporation Limited, Singapore Branch for the general information of institutional investors or other persons specified in Sections 274 and 304 of the Securities and Futures Act (Chapter 289) (“SFA”) and accredited investors and other persons in accordance with the conditions specified in Sections 275 and 305 of the SFA. Only Economics or Currencies reports are intended for distribution to a person who is not an Accredited Investor, Expert Investor or Institutional Investor as defined in SFA. The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch accepts legal responsibility for the contents of reports pursuant to Regulation 32C(1)(d) of the Financial Advisers Regulations. This publication is not a prospectus as defined in the SFA. This publication is not a prospectus as defined in the SFA. It may not be further distributed in whole or in part for any purpose. The Hongkong and Shanghai Banking Corporation Limited Singapore Branch is regulated by the Monetary Authority of Singapore. Recipients in Singapore should contact a “Hongkong and Shanghai Banking Corporation Limited, Singapore Branch” representative in respect of any matters arising from, or in connection with this report. Please refer to The Hongkong and Shanghai Banking Corporation Limited Singapore Branch’s website at www.business.hsbc.com.sg for contact details. HSBC México, S.A., Institución de Banca Múltiple, Grupo Financiero HSBC is authorized and regulated by Secretaría de Hacienda y Crédito Público and Comisión Nacional Bancaria y de Valores (CNBV).

In Canada, this document has been distributed by HSBC Securities (Canada) Inc. (member IIROC) and, if/and its affiliates. The information contained herein is under no circumstances to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed judgment upon these materials, the information contained herein, the merits of the securities described herein, and any representation to the contrary is an offense. In Brazil, this document has been distributed by Banco HSBC S.A. (“HSBC Brazil”), and, if/and its affiliates. As required by Instruction No. 598/18 of the Securities and Exchange Commission of Brazil (Comissão de Valores Mobiliários), potential conflicts of interest concerning (i) HSBC Brazil and/or its affiliates; and (ii) the analyst(s) responsible for authoring this report are stated on the chart above labelled “Issuer of report” and “Issuer of research

This document is intended to be distributed in its entirety. Unless governing law permits otherwise, you must contact a HSBC Group member in your home jurisdiction if you wish to use HSBC Securities in effecting a transaction in any investment mentioned in this document. HSBC Bank plc is registered in England No 145299, is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange. (070906)

Disclaimer

If you are an HSBC Private Banking (“PB”) customer with approval for receipt of relevant research publications by an applicable HSBC legal entity, you are eligible to receive this publication. To be eligible to receive such publications, you must have agreed to the applicable HSBC entity’s terms and conditions for accessing research and the terms and conditions of any other internet banking service offered by that HSBC entity through which you will access research publications ("the Terms"). Distribution of this publication is the sole responsibility of the HSBC entity with whom you have agreed the Terms. If you do not meet the aforementioned eligibility requirements please disregard this publication and, if you are a customer of PB, please notify your Relationship Manager. Receipt of research publications is strictly subject to the Terms and any other conditions or disclaimers applicable to the provision of the publications that may be advised by PB.

© 2021 Copyright HSBC Bank plc. ALL RIGHTS RESERVED. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form by or any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of HSBC Bank plc. MCI (P) 028/02/2021, MCI (P) 017/10/2021