CIO Special
May 26, 2021

Author:
Markus Müller
Global Head Chief Investment Office

Asia and ESG: experts explore

Please use the QR code to access a selection of other Deutsche Bank CIO reports.

Key take aways

- Economic growth needs will underpin a desire for stronger environmental performance and better governance, as will the further internationalisation of many Asian enterprises.
- Asian enterprises want to improve their ESG credentials to ensure their positioning against international competitors, and to address the need for increasing ESG compliance in international supply chains.
- ESG approaches will still include supervision, taxonomy and disclosure requirements – but the focus may be moving to measuring, monitoring and reporting the actual impact of ESG transactions.
- Obvious sectors with ESG potential include energy development, food security and infrastructure. But consider too health and other services, and also the importance of transition and consumer finance.

01 Introduction

Environmental, social and governance (ESG) issues and investment are clearly of great importance to Asia. In many of its economies, rapid economic growth coexists with major environmental and social challenges. For some economies, climate change is an existential threat. We have recently examined some of the issues here in another CIO Special – Asian growth needs ESG, published in February 2021.

This separate report aims to do something rather different. We have asked three regional specialists, all with rather different perspectives of the situation, to explore some broad questions around ESG in Asia.

Our specialists are:

Bert Hofman, the director of the East Asian Institute at National University of Singapore (NUS) and Professor of Practice at the Lee Kuan Yew School. He previously worked for the World Bank in many senior roles for 27 years, including being its Country Director for China from 2014-2019.

Anders Nordheim, who works for the WWF (World Wildlife Fund) as their senior vice president for Asia sustainable finance. He was a programme leader on the UN Environment Programme Finance Initiative and head of policy and research at Eurosif.

Kamran Khan, Head of ESG for Asia Pacific at Deutsche Bank. Previously, Mr. Khan established and managed Infra-Tech Capital. He was head of global investments and operations at the U.S. Millennium Challenge Corporation and has also held senior executive positions at the World Bank Group (WBG).

Their responses dig deep into some of the major topics around ESG in Asia and I think it will challenge some perceptions about the subject. We look both at the historical reasons for Asia's current position in terms of ESG investment, and also at what is likely to happen in future.

To me, Asia's size and the divergence of its economies and cultures means that any generalisations must be qualified – and I know that this is a view shared by the contributors. But I think that it is fair to say that Asia faces rather different challenges in implementing ESG than do Europe or the U.S. and the reasons for some of these challenges are historic or institutional. Asia is also adopting ESG measures at a time when most of its economies are still growing strongly, rather than (as in Europe) at a time of relative economic stagnation. (While the Covid-19 pandemic has pulled down growth in the region, Asia is likely to stage the most rapid regional recovery.) While Asia may aim to leverage best practice from Europe and the U.S. (and, rightly or wrongly, may be judged on its willingness to do this), its circumstances are very different. What I think is also a danger to focus too much on individual domestic economies: individual Asian economies have very different external links, both inside and outside of the region and this may affect their ESG choices in future.

Looking forward, Asian economies may still have individual ESG needs and objectives. But, as I think comes across strongly from the discussion in this report, Asian ESG now needs primarily to be seen in a global context. This is for several reasons. Most obviously, Asian firms need to be ESG-compliant to participate in many global supply chains and obtain funding. As my colleague (and contributor here), Kamran Khan, has pointed out: ESG implementation is by nature local, but ESG decision-making is made by many firms at a global. And, over time, the increasing relative size of the Asian economies – and their technological dominance – may mean that Asian views on ESG will increasingly drive global ESG, not vice-versa.

Markus Müller

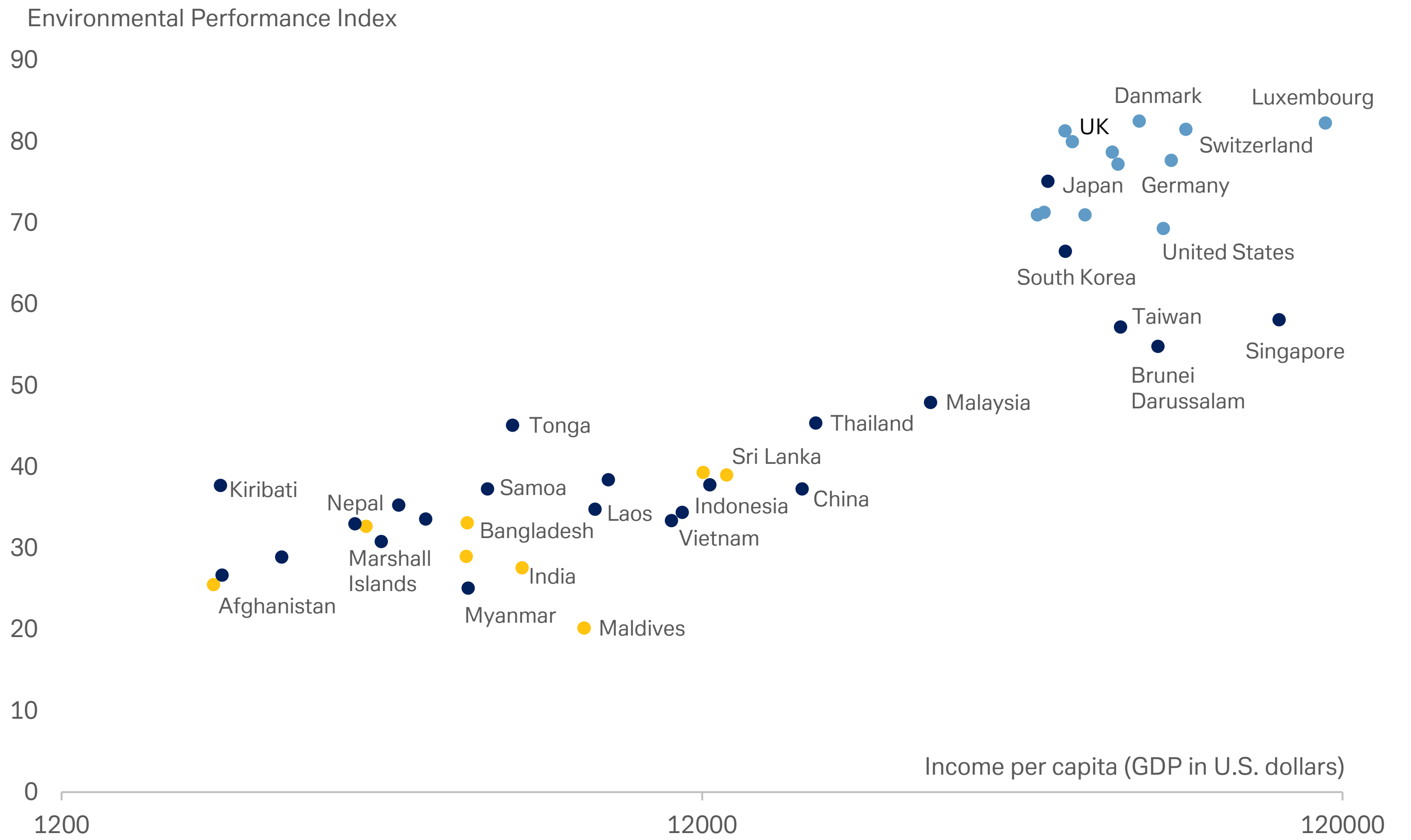
Global Head Chief Investment Office
Deutsche Bank International Private Bank

02 Discussion points

a. Why has Asian interest in ESG lagged Europe/U.S. so far?

Bert Hofman: The main reason Asia is still lagging behind Europe and the U.S. is that **most countries in the region are well behind in terms of income.** There is a strong positive correlation between per capita income levels and environmental performance as measured by the Yale Index of Environmental Performance, and Asia is no exception in this regard (Figure 1). This positive correlation is particularly strong beyond the threshold income of about USD10,000-USD15,000 in Purchasing Power Parity Terms. Equally, the *improvements* in environmental performance are particularly strong beyond that threshold, and although performance of Asian middle income countries such as China and Indonesia is still modest compared to high income countries, their improvement is among the highest in the world. In short, the driving force behind this rapidly growing interest in ESG is a rising middle class.

Figure 1: Development and environmental performance – Asia in an international perspective



Southern Asia Asia-Pacific Global West
Source: Bert Hofman from Yale Environmental Performance Index and World Bank data. Data as of 2020.

Anders Nordheim: There is a perception that Asian interest in ESG is lower than in Europe, and by some measures, such as AuM invested in ESG funds, that may be true. But **Asian investors do have a history of incorporating ESG issues** into their assessments, for instance in Islamic finance and with respect to corporate governance. Among environmental issues, there is definitely growing awareness around climate, and attention is being paid to other issues like air pollution, deforestation and water risk, although perhaps in a more fragmented manner and with less holistic understanding of their interlinkages. However, the **misconception remains that incorporating ESG into the investment process means sacrificing performance,** due to a perception that addressing ESG issues necessitates the adoption of negative screening. This may also be linked more broadly to **perceived clashes between sustainability and national development agendas** in the region. For instance, when discussing the need to phase out coal finance, financial institutions often reference the importance of providing affordable energy, despite an increasing amount of research that highlights the growing competitiveness of renewable energy. All this translates into less demand from Asia-based asset owners for ESG-integrated investment mandates. Consequently, there is little incentive for their asset managers to invest in ESG-related capabilities, which then flows down the investment chain in the form of low expectations from corporates on ESG performance and disclosure.

Kamran Khan: Unlike the sustainability movement which had started in development finance institutions, the ESG market started off as a "not in my name, not with my money" stance established mostly by investors in Europe. It was translated into various kinds of negative or exclusionary lists which the investors mandated in making their capital available. The ESG market of today, however, represents an active investment strategy which has moved beyond "do no harm" to "do more good".

The question is not really where the ESG capital is raised, but rather where and how the ESG capital is deployed. When our global clients raise capital in Europe or North America (e.g. through a Green bond or an ESG loan), the overwhelming proportion of the capital raised is actually deployed in Asia. Why? Because Asia is continuing to lead the globe on new investments in manufacturing, infrastructure and technology. The material question is how diligently companies are executing their globally announced ESG policies and commitments.

Income levels do explain the speed of ESG uptake in an economy, as Bert noted. However, there are two additional drivers of change. The first is regulatory action and compliance. The disclosure requirements are also very relevant in this respect. The regulatory driver as a tool for expansion of ESG-compliant behaviour is just starting to get utilized in Asia. The second important, yet subtle, point relates to scepticism that the ESG movement is largely a public relations (PR) strategy of investors in the West. Asian countries – even the developed Asia economies - have recently experienced significant economic growth and people here have first-hand understanding of what the E, S and G problems look like in real life. But this scepticism is being addressed very effectively with a focus on ESG impact, including the use of data to substantiate on-the-ground impact of ESG instruments.

b. What will be the main factors driving Asian interest in ESG over the next decade?

Bert Hofman: Noting first that there is a large diversity among Asian countries, there are strong forces on the demand side and the supply side at work. On demand, there is a widespread **desire for stronger environmental performance and better governance**, particularly anti-corruption. This demand derives in part from the commitments which Asian countries have made in international fora such as the Paris Agreement on Climate Change. Given the enormity of the task at hand, ESG will have to play a part in aligning corporate objectives with national objectives.

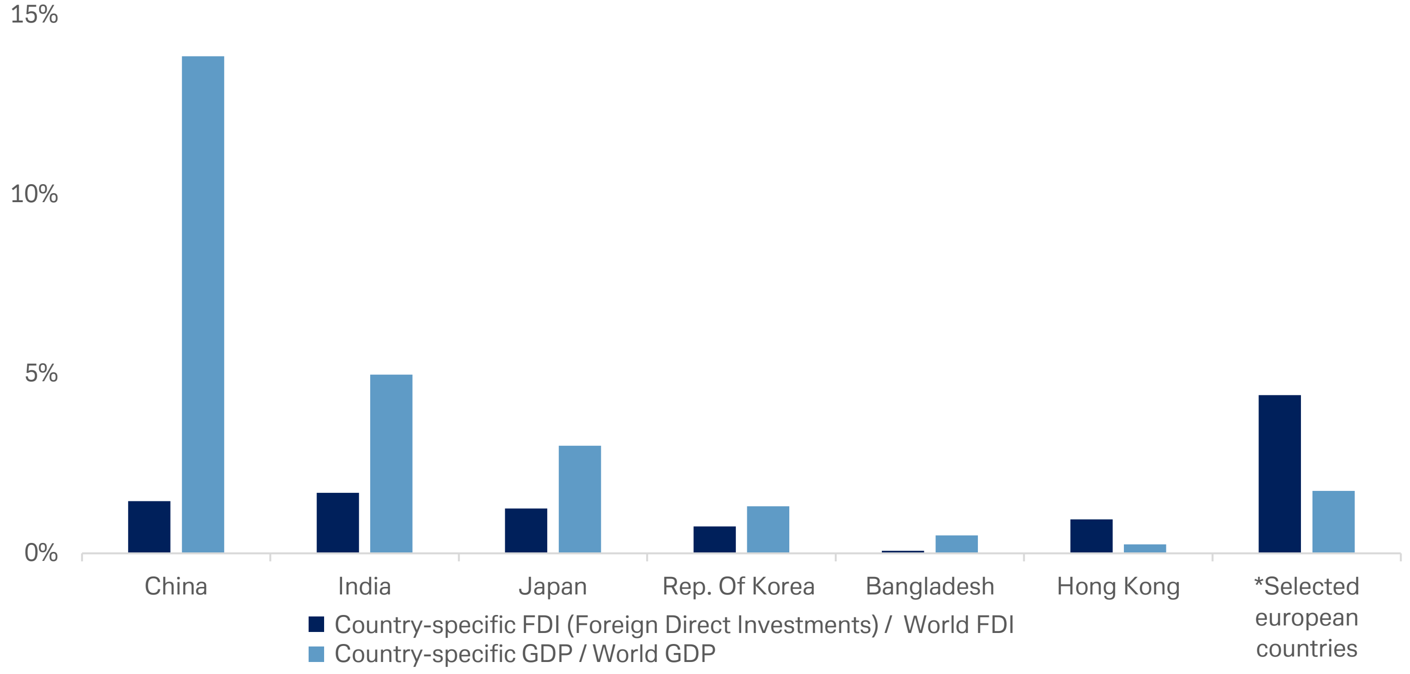
The desire for further growth will lead to continuous improvements in governance. Growth in countries at higher middle income levels depend increasingly on intra-industry productivity increases, and less on structural transformation and resource mobilization. Governance is an important factor here but progress may be idiosyncratic, i.e. not necessarily a converging with western systems. Since the global financial crisis, there has been scepticism that "western" governance is superior in terms of economic performance (a belief that played a prominent part in the region's response to the 1997-98 Asian financial crisis). So, while desire for better governance will likely increase, there may not be a convergence of governance systems at the national level as well as the corporate level. China is one example: the country now sees a dominant role of State Owned Enterprises as critical for progress, whereas before the GFC creating the institutions for market and private initiative was a main driver of reforms.

Another factor that is likely to drive corporate governance is the **internationalization of Asian enterprises.** Already, more Chinese than American enterprises are in the Fortune Global 500 today but most Asian companies are still lagging in their overseas presence: China and India's overseas FDI stocks are only a small share of the global total, and are far below these countries' shares in world GDP (Figure 2). Note also that by mid-century, the economies of China and India combined will be larger than that of the OECD. So, while the growing international presence of Asian firms will undoubtedly drive further adjustment in their local framework for corporate governance, the reality is also that the future of corporate governance globally will be more Asian.

Anders Nordheim: Actions by regulators will likely also be one of the most important drivers of ESG in Asia, judging by recent trends, and given the overall tendency of capital market participants in the region to wait for regulatory direction. Notable recent developments include consultations by regulators in Singapore and Malaysia, respectively, on new Environmental Risk Management (ERM) Guidelines and a sustainability taxonomy. In South Korea, the Financial Supervisory Service has recently announced plans for ESG disclosure guidelines, climate stress-testing, and a green financing taxonomy.

The **generational shift** will also be important in Asia, especially among family offices whose reins are being passed on to millennials. A growing amount of research suggests this age group cares about ESG issues and are prepared to put their money behind those considerations. As a result, we will likely see greater demand for both off-the-shelf ESG products and bespoke solutions from wealth managers moving forward.

Figure 2: Asian economies' overseas FDI stock compared to GDP shares



Source: Bloomberg Finance L.P., Deutsche Bank AG. Data as of March 9, 2021. *Average of Germany, Spain, France, United Kingdom

Last but not least, there is growing awareness around **nature risk**, i.e. that arising from the dependence of our economy and society on nature and the key ecosystem goods and services it provides. Asia is home to some of the greatest **biodiversity** hotspots globally, and to sectors highly exposed to nature loss. A recent World Economic Forum (WEF) report found that the three largest sectors most dependent on nature, generating nearly USD 8 trillion in gross value added, are construction, agriculture and food & beverage – all key sectors for the region (Figure 3). Adoption of robust ESG best practices by Asia's financial institutions will be critical for protecting and restoring the region's natural capital. It has been highly encouraging that most of the regulations or guidelines introduced by Southeast Asian regulators expect banks to address environmental degradation on top of climate change in their sustainability strategies and policies. Also, several Asia-based financial institutions are involved in the recently launched Task Force on Nature-related Financial Disclosures, and it would be great to see nature continue to rise on the agenda of Asia's financial sector.

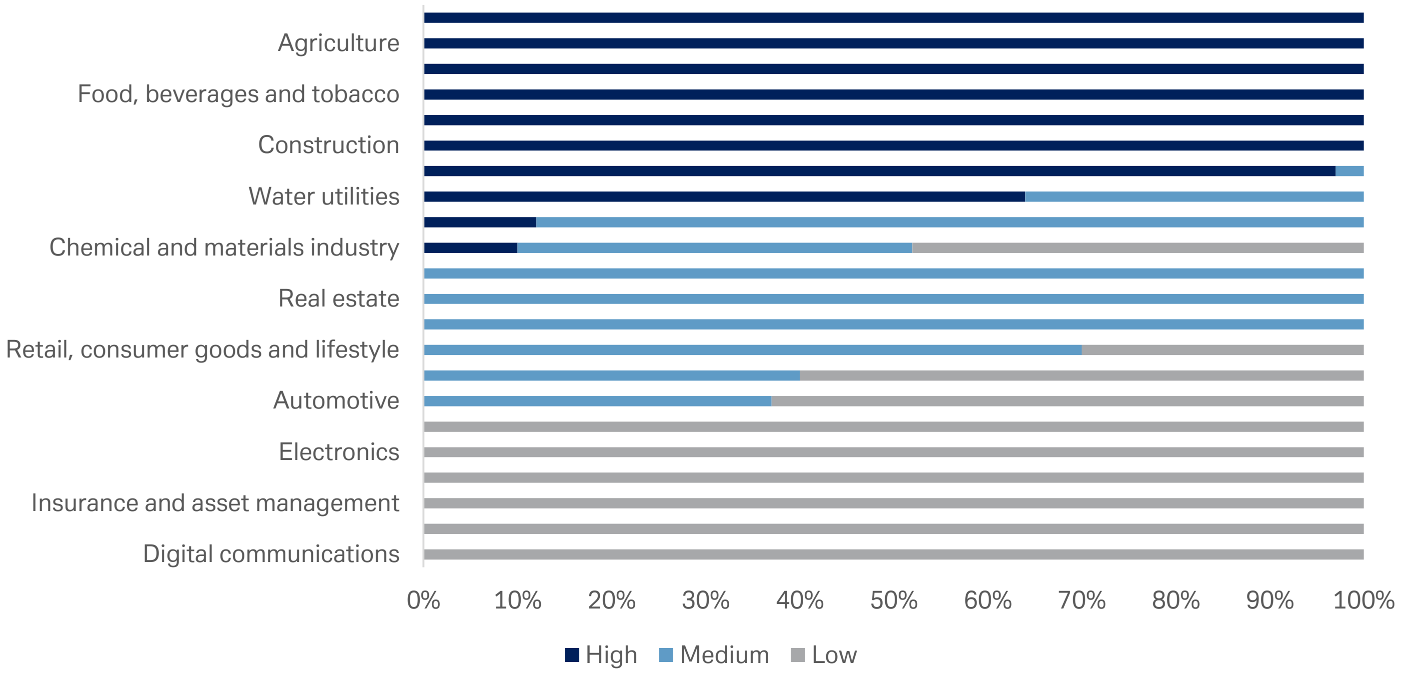
COVID-19 can and should be a catalyst for future ESG development in Asia. Studies have shown that 60% of infectious diseases are zoonotic and that agricultural drivers are associated with nearly 50% of all zoonotic diseases since 1940. More generally, COVID-19 serves as a portent for more frequent and severe disruptions that climate change will bring. This underscores the importance of addressing deforestation and other forms of land use change and investing in reforestation and other nature-based solutions. There is considerable scope for Asia-based investors to play a role by strengthening ESG safeguards, engaging with companies, and scaling up investments in businesses that contribute to achieving the Paris Agreement and the Sustainable Development Goals.

Kamran Khan: **Asian multinational corporations (MNCs) are improving their ESG credentials to equalize their positioning against their international competitors.** By first addressing negative stereotypes about goods sourced from Asia (e.g. environmental shortcomings, "sweat shops"), Asian firms can then hope to win business based on their superior pricing and quality. This is just as relevant for overseas fund raising: companies, for example involved in U.S. initial public offerings, understand they will be scrutinized closely vis-à-vis ESG risk and are therefore working aggressively to take "ESG issues off the table" before the process starts.

Another important driver of is the **increasing standards of ESG compliance in global supply chains.** Asian exporters are concerned that if they do not improve their ESG policies and procedures, their buyers may walk away from them. The expected non-financial disclosure requirements from European and U.S. regulators will also increase the uptake of ESG in Asia as they will make companies at least partially responsible for the ESG performance of their suppliers and customers. Companies that are required to report scope 3 emissions will have to carefully consider the business partners they source from and the companies they sell to.

Government investments will serve as an important driver of ESG interest in Asia as governments focus on economic recovery. The coronavirus crisis has underlined the need to ensure that recovery is environmentally and socially sustainable. Governments may need to be helped to prepare credible ESG transactions to raise low-cost capital from global markets.

Figure 3: Sectors most dependent on nature (% of industry gross value added)



Source: WWF, WEF, Deutsche Bank AG. Data as of March 2021.

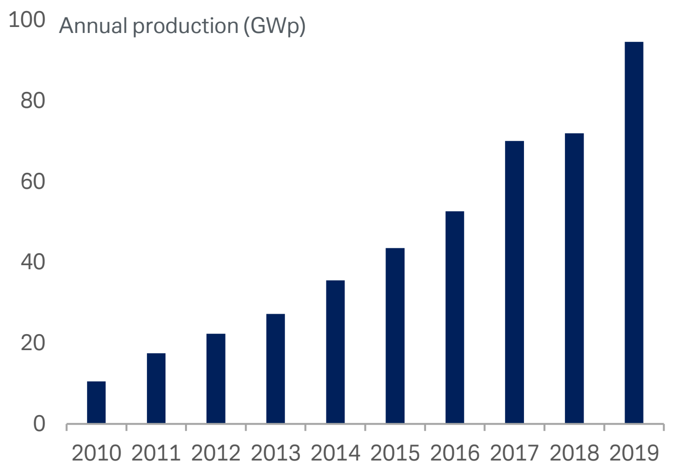
c. How will future Asian approaches to ESG diverge from current Europe/U.S. practice?

Bert Hofman: It is hard to generalize "Asian" ESG from any other, not least because of the diversity of countries within the vast continent of Asia. However, as regards corporate structure, **Asian countries rely more on the "stakeholder" system of corporate governance**, and within that the role of a controlling shareholders is prominent. The latter is often the State – directly as in the case of China and Vietnam, or indirectly through sovereign wealth funds and holding companies. Thus, while the State is often relatively small in Asia in terms of taxes and spending, enterprises have traditionally played a role in delivering societal functions. In addition, the **role of the family firm** is probably larger across Asia than it is in many OECD countries, and ties with communities and employees is stronger than in other parts of the world. These corporate governance structures may well change in the future, but for now they can influence how ESG plays out in the region.

Second, financial institutions, and banks in particular, play a larger role in the dominant corporate governance model in Asia, and are often instrumental in implementing government policies. As a result, **financial institutions are likely to play a larger role** in encouraging ESG in corporations as compared to Anglo-Saxon countries in which the capital market is a more prominent source of external financing. At the same time, institutional investors such as pension funds and insurance companies are starting to play a larger role in external financing, directly through equity investment or over the counter loans, or indirectly through stock markets and bond markets. Given the long term objectives of these institutions, this may further create a favourable environment for adoption of ESG.

Third, **the trade-off between development goals and ESG may be less steep.** Significant technological development, in particular in the realm of environmentally sound manufacturing and energy generation, means that while in the past environmentally damaging industries migrated to Asia, China is now the largest producer of renewable energy, and India is internationally taking the lead in solar development. China has already been decisive in making solar energy a competitive alternative to coal, and its progress in high voltage transmission, electric vehicles and hydrogen could bring these technologies up to scale. Thus, the relatively late development of most countries in the region may offer an opportunity for rapid gains in environmental objectives.

Figure 4: Chinese photovoltaics production



Source: Fraunhofer ISE, IHS Markit 2020, Deutsche Bank AG. Data as of March 9, 2021.

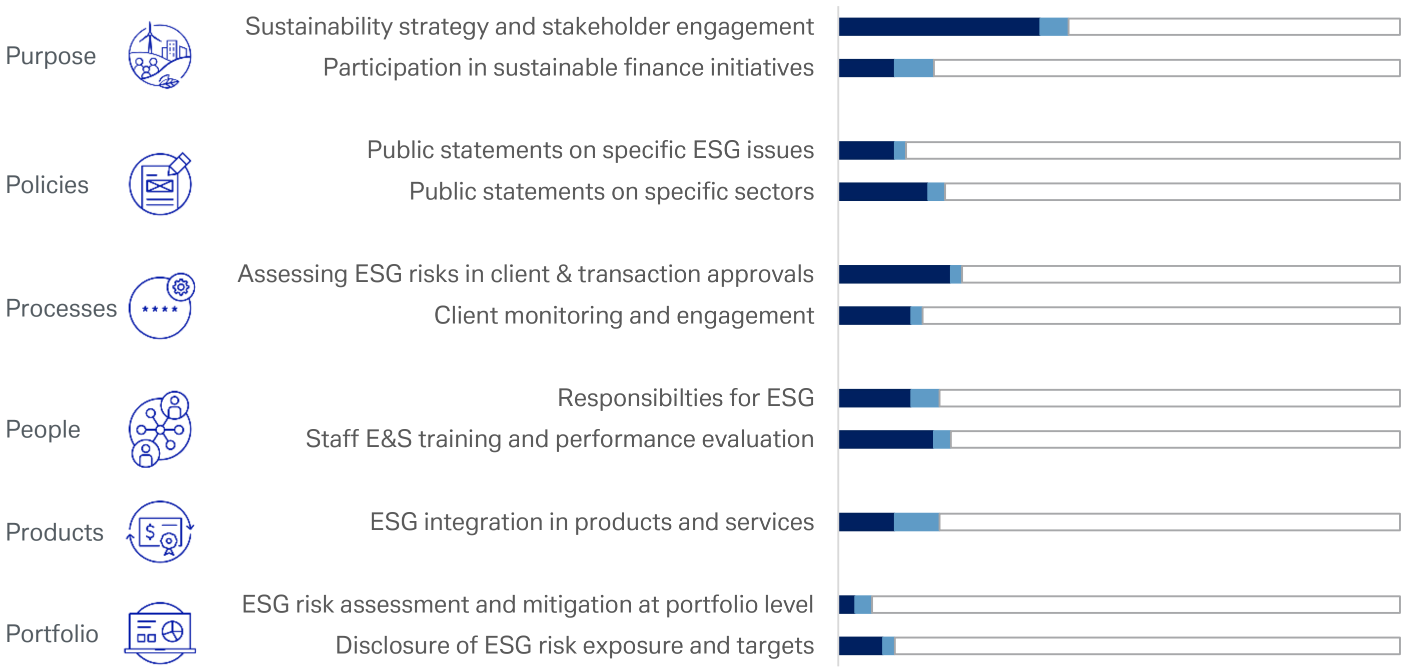
Anders Nordheim: When recently asked this same question, Satoshi Ikeda, the Japan FSA's Chief Sustainable Finance Officer, noted that he expects Japanese investors to adopt **engagement-based approaches to ESG over exclusionary approaches** due to their "relation-based view of their investment." I would tend to agree with this perspective, while adding that for emerging markets in Asia, the relative paucity of ESG data could also make it harder to apply screening-based approaches. Further, exclusionary approaches we've seen so far in Europe, notably on coal, are tougher to follow in Asia due to investors' current portfolio exposures.

Among Asian regulators, the approach to ESG seems likely to follow Europe rather than the U.S., at least in terms of the instruments used to promote ESG, e.g. supervisory expectations, taxonomies, disclosure requirements etc. **What will likely vary, however, is the strength and prescriptiveness of such approaches and most importantly, the extent to which they are science-based or not.** For example, the taxonomy of Bank Negara Malaysia (BNM) is an important development, though by remaining principles-based, it does not address the need for harmonized definitions of sustainable economic activity to the degree of the EU Taxonomy. China's recently unified taxonomy goes a step further with a granular list of green finance-eligible economic activities, but does not specify technical criteria to the same extent as the EU's. Similarly, a comparison of the Monetary Authority of Singapore (MAS) Environmental Risk Management (ERM) guidelines consultation draft against that of the European Central Bank's shows that the two share similar scopes, but the latter contains more granular and prescriptive recommendations for implementation.

One concern is the obvious divergence within Asia in terms of progress on ESG. An example is the ASEAN banking sector. When the WWF first released our annual assessment of ASEAN banks' sustainable banking practices in 2017 (Figure 5), Singapore's banks already led the pack in some respects. Three years later, they have made rapid progress and are now on par with some of their international peers in terms of integrating ESG into risk assessment and client engagement processes. Although several Thai and Malaysian banks have made encouraging progress, in general banks elsewhere in the region are not keeping up. It will be important for their regulators and shareholders to support progress on this front in order to halt the emergence of a two-tiered market within the region with respect to ESG standards, which would undermine progress by sector leaders.

Kamran Khan: The most significant contribution of Asia to the global ESG market will be in **raising the importance of measuring, monitoring and reporting of the impact of ESG transactions.** When an ESG transaction happens in Asia, or capital raised in an international transaction is deployed in Asia, the focus immediately shifts towards on-the-ground impact. This is because in Asia the ESG issues are not an inspirational or theoretical construct. ESG issues are a reality which most Asians have lived through in recent times. ESG transactions and/or deployment of ESG capital in Asia will increasingly be required to demonstrate impact. The push for specificity and granularity vis-à-vis ESG impact is already becoming a key theme in the ESG market and we are seeing a significant rise in KPI-linked bonds, loans and derivatives.

Figure 5: Banks' sustainable banking practices (average outcome of ASEAN countries)



Footnote: Fullfilled Improved No change Regressed Unfulfilled.
Source: WWF Sustainable Banking Assessment 2020, Deutsche Bank AG. Data as of March 2021.

The definition of financial perimeters for transition finance will also take place in Asia. For more than a decade Asian economies have successfully employed economic growth strategies of developed nations to achieve growth in their jurisdictions. They are now being asked to alter their economic growth programs to address ESG concerns. So there is a need to bridge, adjust and/or recalibrate the European and U.S. ESG standards to Asian realities. This will require practical and reasonable flexibility vis-à-vis sequencing and timing of ESG compliance in Asia. The most critical area is energy transition, which requires careful transition sequencing in Asia. Other concerns such as water usage and pollution, worker safety and consumer protection are also likely to become increasingly more relevant in the coming months.

Finally, **international banks and corporations operating in Asia will contribute by following their global ESG policies and procedures in Asia**. For example, Deutsche Bank has established its own Sustainable Finance Framework to ensure high, consistent, group-wide standards for all ESG transactions. The framework ensures that Deutsche Bank executes its ESG policy without exceptions, even in countries or situations where government requirements may not be very stringent. These then bind an Asian MNC to sustainable sectoral standards which are recognized by most international experts and organizations. These types of transactions will establish important models, benchmarks and standards for ESG transactions in Asia.

(Note: by European and U.S. standards we refer to standards and norms from the two regions which are broadly considered acceptable by global investors. There are currently no recognized international ESG standards.)

d. What will be the key Asian ESG investment opportunities over the next decade?

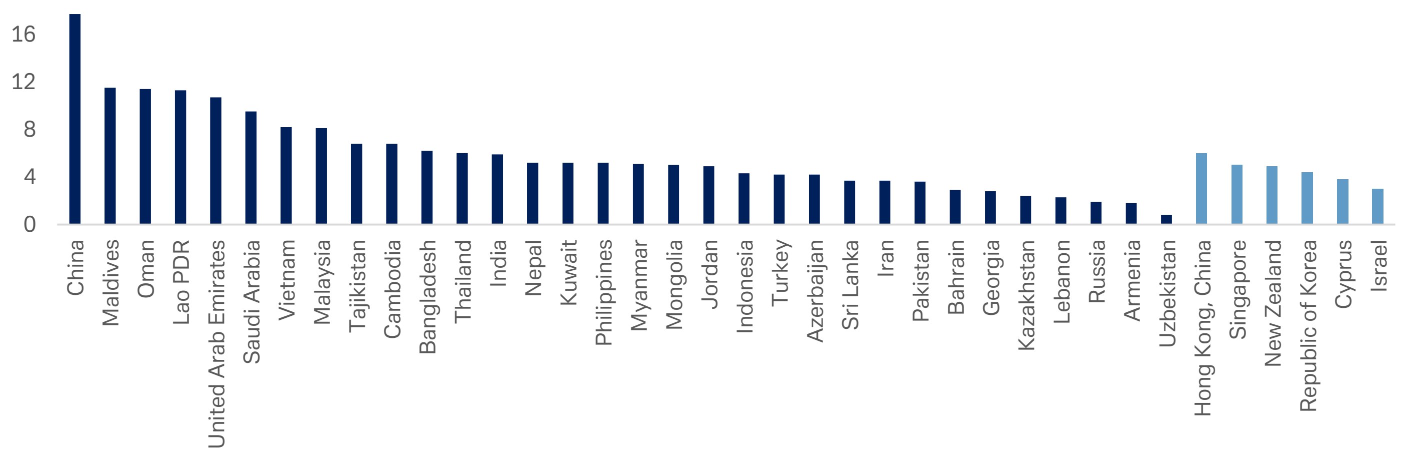
Bert Hofman: From my viewpoint, the dominant opportunity will continue to lie in **industry,** and specifically **energy development**. This is a sector with considerable potential, well developed methodology and standards, and abundant investment need. Investments in **new technologies**, including those for cleaner industrial processes, new materials, carbon capture and alternative energy infrastructure such as hydrogen could be promising as well in terms of impact. A second area of emerging needs is that of social services, particularly for the elderly. **Health care** systems in many countries are still relatively underdeveloped, and in some countries the policy environment encourages private investment. In light of a rapidly aging population, especially in East Asia, **elderly care and services** to the elderly is a promising sector with considerable potential and investment needs.

Anders Nordheim: It will be more important than ever to ensure that **Asia's food systems** are sustainable in order to feed the region's growing and increasingly wealthy population. WWF's most recent Living Planet Report highlights that agriculture drives 80% of global deforestation, accounts for 70% of freshwater use, and is linked with 70% and 50% of terrestrial and freshwater biodiversity loss, respectively. Yet investment in agricultural innovation in Asia lags other regions. One report (by PWC, Rabobank and Temasek) estimates that USD 800 billion will be needed over the next ten years to develop sustainable Asian food supplies.

Sustainable **infrastructure investment** will also be critical. With its long lifespan, infrastructure, especially energy and buildings, is a key contributor to climate change and **transportation infrastructure** drives land and sea-use change. Future infrastructure development not only needs to be low-carbon and climate resilient, but must explicitly consider the benefits that functioning natural capital provides in the form of ecosystem services. A recent AIIB report highlights how many Asian developing countries still invest very low percentages of GDP in infrastructure, and that increased investor allocations to ESG have not been matched by allocation to unlisted infrastructure, let alone sustainable infrastructure.

Kamran Khan: **Transition finance** represents the most significant challenge as well as opportunity as economies pivot towards ESG-compliant behaviour. The march towards clean energy through renewables requires capital, technology and increasingly, smart financial engineering (in part to deal with stranded assets as energy moves away from coal). This will require special work-out facilities and associated financial engineering. Technology will of course play a key role and timely financing will remain a constraint to rapid transition and growth.

Figure 6: Asian developing economies' investment in infrastructure (% of GDP, 2017)



Source: AIIB, IMF Investment and Capital Stock Database, 2019, Deutsche Bank AG. Data as of March 2021.

Another important ESG area of focus in Asia is **consumer finance**. This covers retail non-bank lending as well as SME lending. The availability of ESG capital provides important incentives for the improvement of operating standards vis-à-vis social impact, including protection of consumer data, market-based and fair pricing of loans and consistency in credit analysis procedures. Deutsche Bank is currently engaged with two key consumer finance companies which are establishing their ESG credentials in order to raise growth capital from ESG focused capital allocators.

Let's return to factors driving ESG demand in **manufacturing**. As noted above, there are increasing demands for ESG-compliance from the global supply chain and continuing investments in new technologies and new manufacturing facilities in Asia by Asian companies and MNCs. Governments are also likely to play a key role in increasing the uptake of ESG in Asia. This will come in the form of government investments in ESG-compliant projects (e.g., infrastructure projects) as well as new regulations. Regulation in Asia is slightly different from regulation in Europe or the U.S. Asian regulators have the additional responsibility of balancing their regulatory responsibilities with the mandates of their governments' regional competitive strategy. Competition among the Asian jurisdictions to attract global ESG capital will be helpful for the whole of Asia. But what I think is also important to remember is that of the three components of a typical ESG decision, the focus may be moving from the first two (the economics of the deal, and the framework or taxonomy surrounding it) to the third – measuring and monitoring the impact. This impact is local but financial firms providing finance or managing it will have to aggregate it at a global level. This suggests that an important contributor to future ESG success will be those financial institutions able to understand ESG and sustainability issues at a substantive and global level.

03 Conclusion

Markus Müller: I would like to take this opportunity to thank our three contributors, for their thorough and insightful responses to these questions around ESG in Asia. While challenges to ESG adoption in Asia may often relate to historic and institutional factors, it is encouraging that they believe that ESG in Asia should continue to provide exciting and fruitful opportunities that can lead the region to a new and promising path for ESG adoption.

Glossary

The Association of Southeast Asian Nations (ASEAN) comprises Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Cambodia, Laos, Myanmar and Vietnam.

Bank Negara Malaysia is the central bank of Malaysia.

ESG investing pursues environmental, social and corporate governance goals.

The Financial Services Agency (FSA) is a Japanese government entity responsible for overseeing banking, insurance, and securities and exchange.

The Financial Supervisory Service is Korea's integrated supervisory authority.

The Fortune Global 500 is an annual ranking of the top 500 corporations worldwide as measured by revenue.

The Global Financial Crisis (GFC) refers to the crisis of 2007-2008.

A green bond is a type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

The Monetary Authority of Singapore (MAS) is the central bank of Singapore.

A multinational company generally has offices and/or factories in different countries and a centralized head office where they coordinate global management. These companies, also known as international, stateless, or transnational corporate organizations tend to have budgets that exceed those of many small countries.

The Organisation for Economic Co-operation and Development (OECD) has 35 member countries and has the objective of encouraging economic progress and world trade.

The Paris Agreement refers to a 2015 agreement under the framework of the United Nations Framework Convention on Climate Change.

Purchasing power parity refers to the theoretical exchange rate at which you can buy identical baskets of goods in two countries at the same cost.

USD is the currency code for the U.S. Dollar.

The World Bank lends to countries for capital investments.

The World Economic Forum is the International Organization for Public-Private Cooperation.

The Yale Environmental Performance Index ranks 180 countries on 32 performance indicators across 11 issue categories covering environmental health and ecosystem vitality.

Important information

General
This document may not be distributed in Canada or Japan. This document is intended for retail or professional clients only. This document is being circulated in good faith by Deutsche Bank AG, its branches (as permitted in any relevant jurisdiction), affiliated companies and its officers and employees (collectively, "Deutsche Bank").
This material is for your information only and is not intended as an offer, or recommendation or solicitation of an offer to buy or sell any investment, security, financial instrument or other specific product, to conclude a transaction, or to provide any investment service or investment advice, or to provide any research, investment research or investment recommendation, in any jurisdiction. All materials in this communication are meant to be reviewed in their entirety.
If a court of competent jurisdiction deems any provision of this disclaimer unenforceable, the remaining provisions will remain in full force and effect. This document has been prepared as a general market commentary without consideration of the investment needs, objectives or financial circumstances of any investor. Investments are subject to generic market risks which derive from the instrument or are specific to the instrument or attached to the particular issuer. Should such risks materialise, investors may incur losses, including (without limitation) a total loss of the invested capital. The value of investments can fall as well as rise and you may not recover the amount originally invested at any point in time. This document does not identify all the risks (direct or indirect) or other considerations which may be material to an investor when making an investment decision. This document and all information included herein are provided "as is", "as available" and no representation or warranty of any kind, express, implied or statutory, is made by Deutsche Bank regarding any statement or information contained herein or in conjunction with this document. All opinions, market prices, estimates, forward looking statements, hypothetical statements, forecast returns or other opinions leading to financial conclusions contained herein reflect Deutsche Bank's subjective judgment on the date of this report. Without limitation, Deutsche Bank does not warrant the accuracy, adequacy, completeness, reliability, timeliness or availability of this communication or any information in this document and expressly disclaims liability for errors or omissions herein. Forward looking statements involve significant elements of subjective judgments and analyses and changes thereto and/or consideration of different or additional factors could have a material impact on the results indicated. Therefore, actual results may vary, perhaps materially, from the results contained herein.
Deutsche Bank does not assume any obligation to either update the information contained in this document or inform investors about available updated information. The information contained in this document is subject to change without notice and based on a number of assumptions which may not prove valid, and may be different from conclusions expressed by other departments within Deutsche Bank. Although the information contained in this document has been diligently compiled by Deutsche Bank and derived from sources that Deutsche Bank considers trustworthy and reliable, Deutsche Bank does not guarantee or cannot make any guarantee about the completeness, fairness, or accuracy of the information and it should not be relied upon as such. This document may provide, for your convenience, references to websites and other external sources. Deutsche Bank takes no responsibility for their content and their content does not form any part of this document. Accessing such external sources is at your own risk. Before making an investment decision, investors need to consider, with or without the assistance of an investment adviser, whether any investments and strategies described or provided by Deutsche Bank, are appropriate, in light of their particular investment needs, objectives, financial circumstances and instrument specifics. When making an investment decision, potential investors should not rely on this document but only on what is contained in the final offering documents relating to the investment. As a global financial services provider, Deutsche Bank from time to time faces actual and potential conflicts of interest. Deutsche Bank's policy is to take all appropriate steps to maintain and operate effective organisational and administrative arrangements to identify and manage such conflicts. Senior management within Deutsche Bank are responsible for ensuring that Deutsche Bank's systems, controls and procedures are adequate to identify and manage conflicts of interest. Deutsche Bank does not give tax or legal advice, including in this document and nothing in this document should be interpreted as Deutsche Bank providing any person with any investment advice. Investors should seek advice from their own tax experts, lawyers and investment advisers in considering investments and strategies described by Deutsche Bank. Unless notified to the contrary in a particular case, investment instruments are not insured by any governmental entity, not subject to deposit protection schemes and not guaranteed, including by Deutsche Bank. This document may not be reproduced or circulated without Deutsche Bank's express written authorisation. Deutsche Bank expressly prohibits the distribution and transfer of this material to third parties. Deutsche Bank accepts no liability whatsoever arising from the use or distribution of this material or for any action taken or decision made in respect of investments mentioned in this document the investor may have entered into or may enter in future.
The manner of circulation and distribution of this document may be restricted by law or regulation in certain countries, including, without limitation, the United States. This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction, where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Deutsche Bank to any registration or licensing requirement within such jurisdiction not currently met. Persons into whose possession this document may come are required to inform themselves of, and to observe, such restrictions. Past performance is no guarantee of future results; nothing contained herein shall constitute any representation, warranty or prediction as to future performance. Further information is available upon investor's request.

Kingdom of Bahrain
For Residents of the Kingdom of Bahrain: This document does not constitute an offer for sale of, or participation in, securities, derivatives or funds marketed in Bahrain within the meaning of Bahrain Monetary Agency Regulations. All applications for investment should be received and any allotments should be made, in each case from outside of Bahrain. This document has been prepared for private information purposes of intended investors only who will be institutions. No invitation shall be made to the public in the Kingdom of Bahrain and this document will not be issued, passed to, or made available to the public generally. The Central Bank (CBB) has not reviewed, nor has it approved, this document or the marketing of such securities, derivatives or funds in the Kingdom of Bahrain. Accordingly, the securities, derivatives or funds may not be offered or sold in Bahrain or to residents thereof except as permitted by Bahrain law. The CBB is not responsible for performance of the securities, derivatives or funds.

State of Kuwait
This document has been sent to you at your own request. This presentation is not for general circulation to the public in Kuwait. The Interests have not been licensed for offering in Kuwait by the Kuwait Capital Markets Authority or any other relevant Kuwaiti government agency. The offering of

Important information

the Interests in Kuwait on the basis a private placement or public offering is, therefore, restricted in accordance with Decree Law No. 31 of 1990 and the implementing regulations thereto (as amended) and Law No. 7 of 2010 and the bylaws thereto (as amended). No private or public offering of the Interests is being made in Kuwait, and no agreement relating to the sale of the Interests will be concluded in Kuwait. No marketing or solicitation or inducement activities are being used to offer or market the Interests in Kuwait.

United Arab Emirates
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.

State of Qatar
Deutsche Bank AG in the Qatar Financial Centre (registered no. 00032) is regulated by the Qatar Financial Centre Regulatory Authority. Deutsche Bank AG -QFC Branch may only undertake the financial services activities that fall within the scope of its existing QFCRA license. Principal place of business in the QFC: Qatar Financial Centre, Tower, West Bay, Level 5, PO Box 14928, Doha, Qatar. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Kingdom of Belgium
This document has been distributed in Belgium by Deutsche Bank AG acting though its Brussels Branch. Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany and licensed to carry on banking business and to provide financial services subject to the supervision and control of the European Central Bank ("ECB") and the German Federal Financial Supervisory Authority ("Bundesanstalt für Finanzdienstleistungsaufsicht" or "BaFin").Deutsche Bank AG, Brussels Branch has its registered address at Marnixlaan 13-15, B-1000 Brussels, registered at the RPM Brussels, under the number VAT BE 0418.371.094. Further details are available on request or can be found at www.deutschebank.be.

Kingdom of Saudi Arabia
Deutsche Securities Saudi Arabia 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.

United Kingdom
In the United Kingdom ("UK"), this publication is considered a financial promotion and is approved by DB UK Bank Limited on behalf of all entities trading as Deutsche Bank Wealth Management in the UK. Deutsche Bank Wealth Management is a trading name of DB UK Bank Limited. Registered in England & Wales (No. 00315841). Registered Office: 23 Great Winchester Street, London EC2P 2AX. DB UK Bank Limited is authorised and regulated by the Financial Conduct Authority and its Financial Services Registration Number is 140848. Deutsche Bank reserves the right to distribute this publication through any of its UK subsidiaries, and in any such case, this publication is considered a financial promotion and is approved by such subsidiary where it is authorised by the appropriate UK regulator (if such subsidiary is not so authorised, then this publication is approved by another UK member of the Deutsche Bank Wealth Management group that has the requisite authorisation to provide such approval).

Hong Kong
This document and its contents are provided for information only. Nothing in this document is intended to be an offer of any investment or a solicitation or recommendation to buy or to sell an investment and should not be interpreted or construed as an offer, solicitation or recommendation. To the extent that this document makes reference to any specific investment opportunity, its contents have not been reviewed. The contents of this document have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the investments contained herein. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice. This document has not been approved by the Securities and Futures Commission in Hong Kong nor has a copy of this document been registered by the Registrar of Companies in Hong Kong and, accordingly, (a) the investments (except for investments which are a "structured product", as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) (the "SFO")) may not be offered or sold in Hong Kong by means of this document or any other document other than to "professional investors" within the meaning of the SFO and any rules made thereunder, or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) ("CO") or which do not constitute an offer to the public within the meaning of the CO and (b) no person shall issue or possess for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the investments which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the investments which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the SFO and any rules made thereunder.

Singapore
The contents of this document have not been reviewed by the Monetary Authority of Singapore ("MAS"). The investments mentioned herein are not allowed to be made to the public or any members of the public in Singapore other than (i) to an institutional investor under Section 274 or 304 of the Securities and Futures Act (Cap 289) ("SFA"), as the case may be (as any such Section of the SFA may be amended, supplemented and/or replaced from time to time), (ii) to a relevant person (which includes an Accredited Investor) pursuant to Section 275 or 305 and in accordance with other

Important information

conditions specified in Section 275 or 305 respectively of the SFA, as the case may be (as any such Section of the SFA may be amended, supplemented and/or replaced from time to time), (iii) to an institutional investor, an accredited investor, expert investor or overseas investor (each as defined under the Financial Advisers Regulations) ("FAR") (as any such definition may be amended, supplemented and/or replaced from time to time) or (iv) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA or the FAR (as the same may be amended, supplemented and/or replaced from time to time).

United States
In the United States, brokerage services are offered through Deutsche Bank Securities Inc., a broker-dealer and registered investment adviser, which conducts securities activities in the United States. Deutsche Bank Securities Inc. is a member of FINRA, NYSE and SIPC. Banking and lending services are offered through Deutsche Bank Trust Company Americas, member FDIC, and other members of the Deutsche Bank Group. In respect of the United States, see earlier statements made in this document. Deutsche Bank makes no representations or warranties that the information contained herein is appropriate or available for use in countries outside of the United States, or that services discussed in this document are available or appropriate for sale or use in all jurisdictions, or by all counterparties. Unless registered, licensed as otherwise may be permissible in accordance with applicable law, none of Deutsche Bank or its affiliates is offering any services in the United States or that are designed to attract US persons (as such term is defined under Regulation S of the United States Securities Act of 1933, as amended).This United States-specific disclaimer will be governed by and construed in accordance with the laws of the State of Delaware, without regard to any conflicts of law provisions that would mandate the application of the law of another jurisdiction.

Germany
This document has been created by Deutsche Bank Wealth Management, acting through Deutsche Bank AG and has neither been presented to nor approved by the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht). For certain of the investments referred to in this document, prospectuses have been approved by competent authorities and published. Investors are required to base their investment decision on such approved prospectuses including possible supplements. Further, this document does not constitute financial analysis within the meaning of the German Securities Trading Act (Wertpapierhandelsgesetz) and, thus, does not have to comply with the statutory requirements for financial analysis. Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany with principal office in Frankfurt am Main. It is registered with the district court ("Amtsgericht") in Frankfurt am Main under No HRB 30 000 and licensed to carry on banking business and to provide financial services. Supervisory authorities: The European Central Bank ("ECB"), Sonnemannstrasse 22, 60314 Frankfurt am Main, Germany and the German Federal Financial Supervisory Authority ("Bundesanstalt für Finanzdienstleistungsaufsicht" or "BaFin"), Graurheindorfer Strasse 108, 53117 Bonn and Marie-Curie-Strasse 24-28, 60439 Frankfurt am Main, Germany.

India
The investments mentioned in this document are not being offered to the Indian public for sale or subscription. This document is not registered and/or approved by the Securities and Exchange Board of India, the Reserve Bank of India or any other governmental/ regulatory authority in India. This document is not and should not be deemed to be a "prospectus" as defined under the provisions of the Companies Act, 2013 (18 of 2013) and the same shall not be filed with any regulatory authority in India. Pursuant to the Foreign Exchange Management Act, 1999 and the regulations issued there under, any investor resident in India may be required to obtain prior special permission of the Reserve Bank of India before making investments outside of India including any investments mentioned in this document.

Italy
This report is distributed in Italy by Deutsche Bank S.p.A., a bank incorporated and registered under Italian law subject to the supervision and control of Banca d'Italia and CONSOB.

Luxembourg
This report is distributed in Luxembourg by Deutsche Bank Luxembourg S.A., a bank incorporated and registered under Luxembourg law subject to the supervision and control of the Commission de Surveillance du Secteur Financier.

Spain
Deutsche Bank, Sociedad Anónima Española is a credit institution regulated by the Bank of Spain and the CNMV, and registered in their respective Official Registries under the Code 019. Deutsche Bank, Sociedad Anónima Española may only undertake the financial services and banking activities that fall within the scope of its existing license. The principal place of business in Spain is located in Paseo de la Castellana number 18, 28046 - Madrid. This information has been distributed by Deutsche Bank, Sociedad Anónima Española.

Portugal
Deutsche Bank AG, Portugal Branch is a credit institution regulated by the Bank of Portugal and the Portuguese Securities Commission ("CMVM"), registered with numbers 43 and 349, respectively and with commercial registry number 980459079. Deutsche Bank AG, Portugal Branch may only undertake the financial services and banking activities that fall within the scope of its existing license. The registered address is Rua Castilho, 20, 1250-069 Lisbon, Portugal. This information has been distributed by Deutsche Bank AG, Portugal Branch.

Important information

Austria
This document is distributed by Deutsche Bank AG Vienna Branch, registered in the commercial register of the Vienna Commercial Court under number FN 140266z. Deutsche Bank AG is a public company incorporated under German law and authorized to conduct banking business and provide financial services. It is supervised by the European Central Bank (ECB), Sonnemannstraße 22, 60314 Frankfurt am Main, Germany and by the Federal Financial Supervisory Authority (BaFin), Graurheindorfer Straße 108, 53117 Bonn, Germany and Marie-Curie-Strasse 24-28, 60439 Frankfurt am Main, Germany. The Vienna branch is also supervised by the Austrian Financial Market Authority (FMA), Otto-Wagner Platz 5, 1090 Vienna. This document has neither been submitted to nor approved by the aforementioned supervisory authorities. Prospectuses may have been published for certain of the investments mentioned in this document. In such a case, investment decisions should be made solely on the basis of the published prospectuses, including any annexes. Only these documents are binding. This document constitutes marketing material for informational and promotional purposes only and is not the result of any financial analysis or research.

The Netherlands
This document is distributed by Deutsche Bank AG, Amsterdam Branch, with registered address at De entree 195 (1101 HE) in Amsterdam, the Netherlands, and registered in the Netherlands trade register under number 33304583 and in the register within the meaning of Section 1:107 of the Netherlands Financial Supervision Act (Wet op het financieel toezicht). This register can be consulted through www.dnb.nl.

030818 052621