

Robeco Fundamental Equities

Green is the new color, also for emerging markets

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- Emerging markets are also gradually joining the net-zero race
- The energy transition is doable but will require colossal investments
- Some emerging countries need to reconsider their economic model

The world has clearly committed itself to a greener economic development, with a growing number of countries joining the net-zero race. Emerging markets are increasing their investments in green energy generation, as they try to reduce pollution, create jobs, and develop value-added products for export. A green recovery that attracts investment in clean energy, and promotes energy efficiency, offers opportunity potential for emerging markets to stimulate growth, innovation, and jobs, while tackling the looming challenge of climate change.

To achieve the global energy transition goal, emerging markets will play a crucial role, given their ever-growing importance globally. Countries such as China and India are still in the phase of strong economic expansion and thus still heavily reliant on fossil fuel to power their economies. As net importers of oil, they are keen on renewable energy, and want to go from relying on energy imports to becoming exporters of green energy components. However, the energy transition will require significant economic restructuring and more effective policy changes in countries that are heavily reliant on oil and gas. Businesses that are part of the global supply chain now have stronger motivation than ever to decarbonize by adopting renewable energies. This is having real impact on the power sector across many markets.

In this article, we will look at the decarbonization trend in emerging markets from several angles. The purpose is not to identify a specific champion, but to illustrate what is happening and what lies ahead.

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Jan de Bruijn and Yanxin Liu



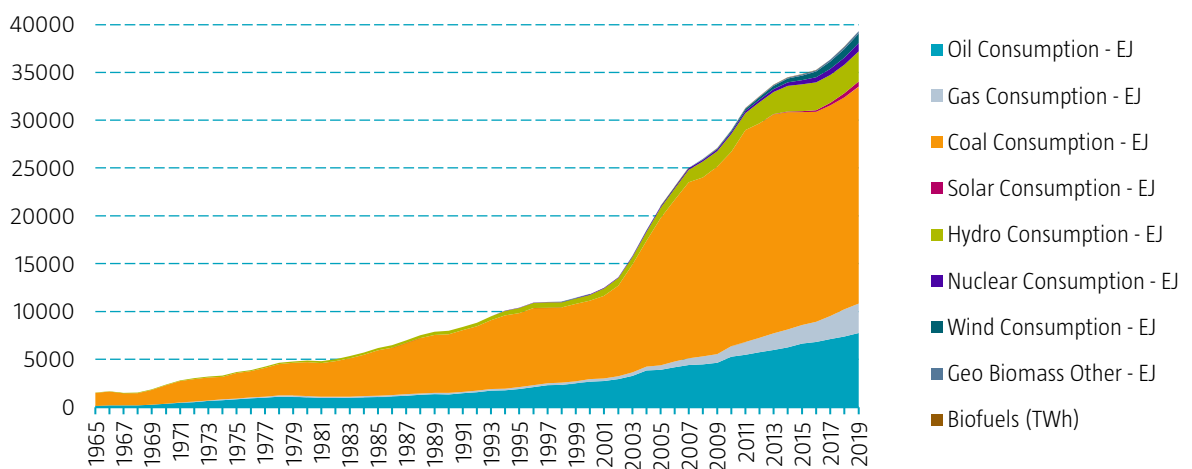
Can clean energy feed power-hungry China and India?

The answer is yes, but it will take multiple steps. Economic development and decarbonization can co-exist as we shift towards renewables. Driven by the continued industrialization and urbanization, emerging markets are expected to account for the majority of electricity demand, and all the net growth in greenhouse gas emissions over the coming two decades. Compared to many developed markets, where electricity demand already peaked around 2007, emerging markets will take longer to reach carbon neutrality by changing their energy mix gradually away from fossil fuels.

China and India are the two largest energy users in the world, and therefore the most important markets in determining the success of the global decarbonization push. In 2020, China pledged to cap its carbon emissions before 2030, and achieve carbon neutrality by 2060. More recently, India announced its commitment to net-zero by 2070 at the UN Climate Change Conference (COP 26) in Glasgow. The country had previously pledged to reduce its emissions intensity by over 30% by 2030.

Considering coal still makes up between 60% and 70% of the primary energy consumption today, in both countries, combining economic growth and lower emissions will require significant investments in renewable energies, such as solar, wind, and other low-carbon technologies. On that front, China is already leading the world in renewables. It has managed to increase the share of non-fossil fuels in its primary energy consumption from just 6.8% in 2015 to 15% in 2020. The country now targets to grow that percentage further to 25% by 2030.

Figure 1 | China energy consumption by source

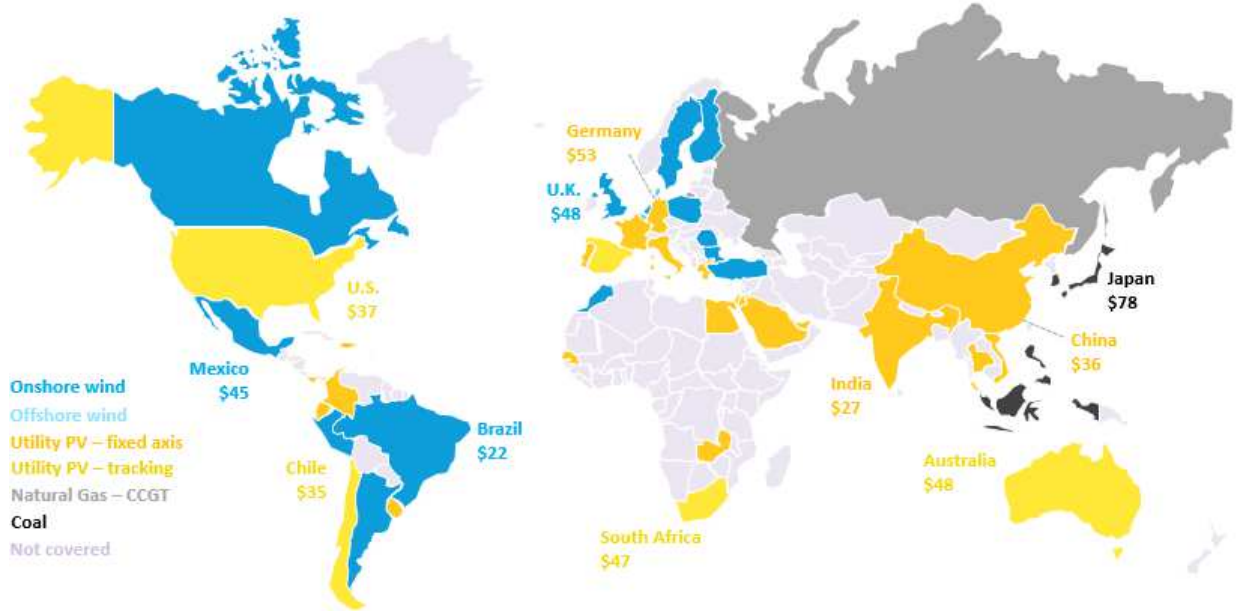


Source: BP Statistical Review of World Energy, June 2021.

The transition to more green energy is also financially feasible. The levelized cost of energy (LCOE) of both wind and solar energy has decreased significantly over the last decade. These energy sources are already cheaper than new coal or gas-fired powerplants in most countries.¹ Moreover, some new wind and solar power generation built in India and China is already cheaper than existing coal fired powerplants. With innovation on efficiency and economies of scale further driving down the cost of renewables, their adoption should continue to grow.

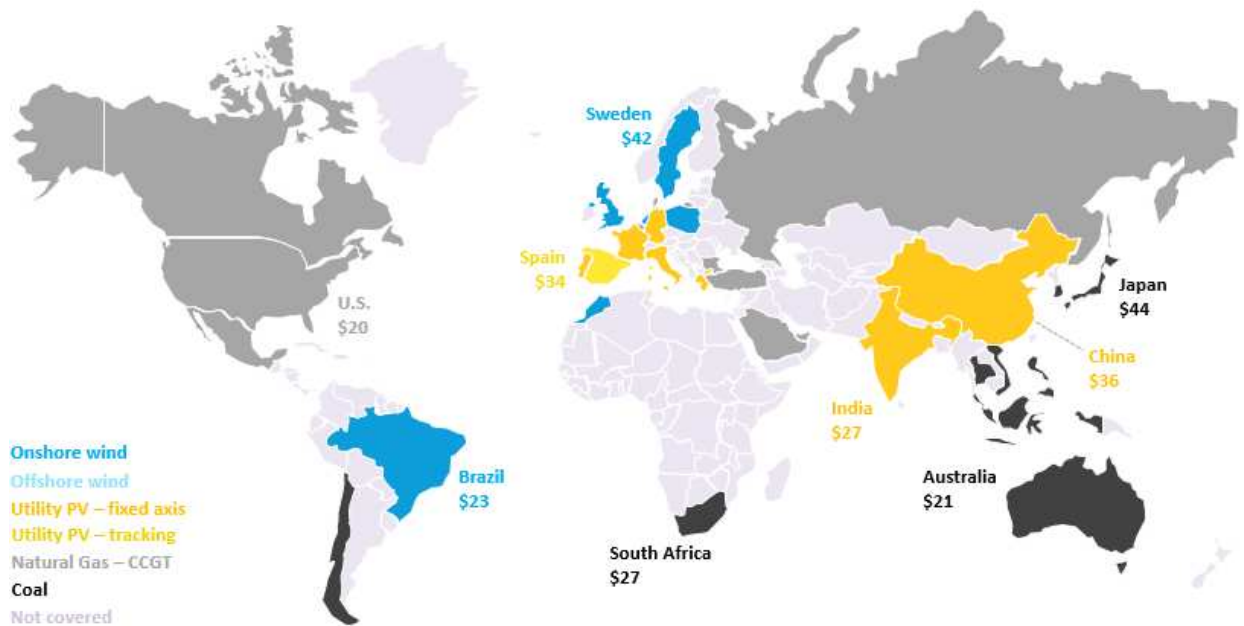
¹ Source: BloombergNEF, June 2021, "1H 2021 LCOE Update", report.

Figure 2 | Cheapest source of bulk generation 1H21 – new-build solar, wind, coal, and gas



Source: BloombergNEF. Note: The map shows the technology with the lowest LCOE for new-build plants in each country where BNEF has data. The dollar numbers denote the per-MWh benchmark levelized cost of the cheapest technology. All LCOEs are in nominal terms. Calculations exclude subsidies, tax-credit, or grid connection costs. CCGT is combined-cycle gas turbine.

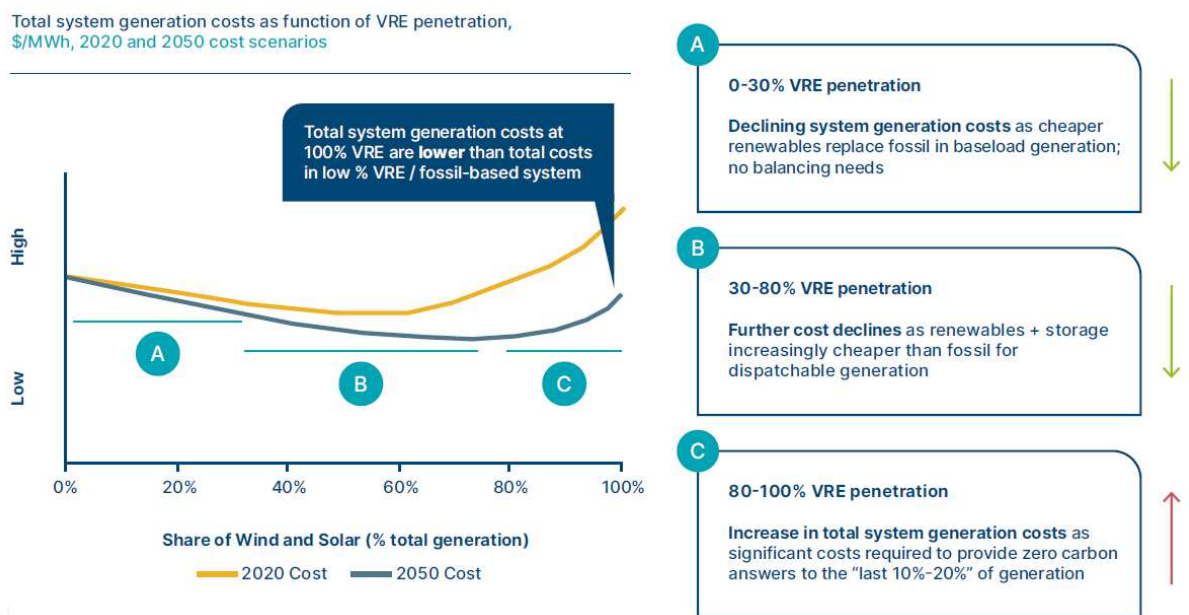
Figure 3 | Cheapest source of bulk generation 1H21 – new-build solar and wind versus existing coal and gas



Source: BloombergNEF. Note: The map shows the technology with the lowest LCOE for new-build plants in each country where BNEF has data. The dollar numbers denote the per-MWh benchmark levelized cost of the cheapest technology. All LCOEs are in nominal terms. Calculations exclude subsidies, tax-credit, or grid connection costs. CCGT is combined-cycle gas turbine.

The rising share of renewables in the energy mix will increase the complexity of managing the entire power generation system. For example, real-time frequency re-balancing will be required to better match electricity demand and supply. However, even taking into account the additional total system costs associated with power backup and storage, renewables are still economically attractive. According to estimates by the Energy Transitions Commission (ETC),² for countries such as India and China, the variable renewable energy (VRE) share of power generation could easily go up from 10% today to 30%, without greatly adding to the system costs by using the existing coal or hydro resources more efficiently. Additionally, evolving battery technologies will drive down energy storage costs, which should allow for a further ramp-up of renewables beyond 30% in the long run.

Figure 4 | Total system generation costs in zero-carbon power systems could be lower than fossil-based



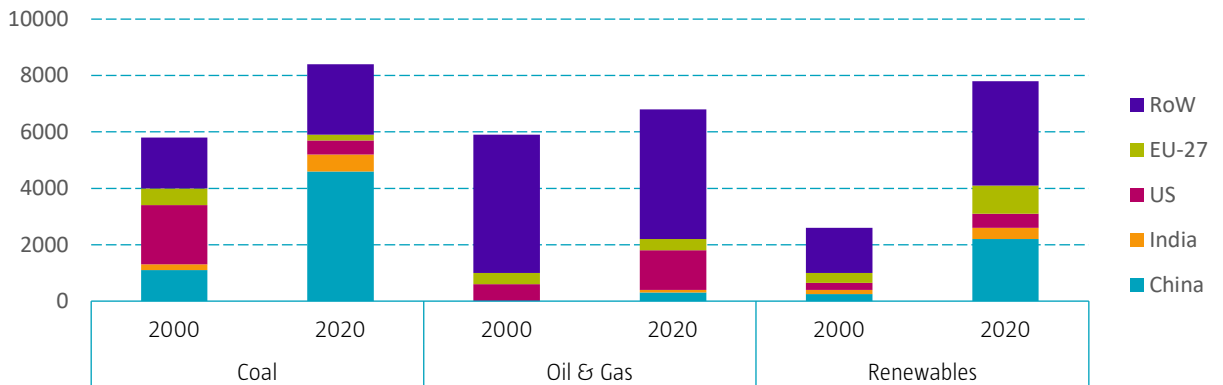
Source: Adapted from TERI/ETC India, 2020, "The potential role of hydrogen in India".

Despite the cost-effectiveness of renewables, fossil fuels are expected to remain the dominant energy sources for some time. In fact, coal-fired powerplants are still being built today. According to Carbon Tracker,³ more than 600 new coal-fired powerplants with a combined capacity of more than 300 gigawatts are currently planned in China, India, Indonesia, Japan and Vietnam, accounting for 80% of new coal powerplants planned around the world. Phasing out coal will be challenging in countries like India and China, as the majority of existing plants were built over the past 15 years with a typical lifespan of a coal-fired powerplant being of 40 to 50 years. Intermittency of solar and wind energy also remains an issue. Before sufficient energy storage capacity becomes available, coal-generated power will be needed to ensure energy security in many developing countries.

² Source: Energy Transitions Commission, April 2021, "Making clean electrification possible", Making Mission Possible series report.

³ Source: Carbon Tracker, June 2021, "Do not revive coal", Powering Down Coal series report.

Figure 5 | Electricity generation by source and country/region in 2000 and 2020 (in terrawatt hours)

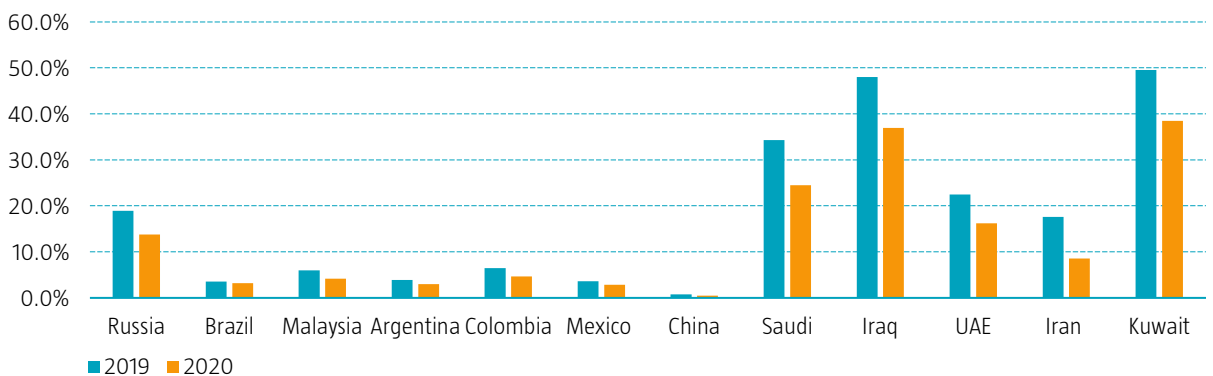


Source: Ember Global Electricity Review, 2021.

From oil to green?

The energy transition will also require significant economic restructuring from those countries that rely upon oil and gas for a significant part of their economy, such as Russia and the Gulf Corporation Countries (GCC). Saudi Arabia and Russia are the two biggest oil and gas producing countries within the emerging markets universe, each representing 12% to 13% of global oil production. Both countries are highly reliant on oil exports, especially in the case of Saudi Arabia, with 63% of its fiscal revenues generated from oil and gas production and 28% of its GDP coming from energy exports. These energy producing countries enjoy high oil prices currently, and also a high market share in the global energy market given their existing cost advantage. However, a decline in oil and gas consumption, as the global economy decarbonizes, will pose significant challenges to their economies in the long run. The recent Global Roadmap to Net Zero by 2050 report by the International Energy Agency (IEA) shows the world's demand for oil will need to decline from more than 90 million barrels a day to less than 25 million barrels per day by 2050. This would result in a 75% plunge in net revenues for oil-producing economies.⁴

Figure 6 | Oil and gas production as percentage of GDP per country



Source: BP, National Data Sources, EIA, OPEC, Morgan Stanley Research. Note: in order to compute the dollar value of the oil production, the average of Brent and WTI price series is used. For natural gas, Henry Hub LA price series is used.

⁴ Source: IEA, May 2021, "Global roadmap to net zero by 2050", report.

Countries such as Saudi Arabia, Qatar, and the United Arab Emirates (UAE) have set out agendas and drafted social and economic restructuring plans to diversify their economy to reduce their reliance on oil and gas. In terms of adding renewables to the grid, the UAE have been the most aggressive. Solar power generation capacity is expected to increase fourfold from 2.1 gigawatts currently to 8.5 gigawatts by 2025. This will represent around 94% of the country's renewables capacity. By 2050, 44% of electricity is targeted to be generated from renewables. Most of the solar projects are funded by state-owned enterprises (SOEs) at a cost generally close to the sovereign interest rates. Land and grid connections are offered for free to energy companies, which further enhances the economic rationale for renewables.

In Saudi Arabia, the situation is more mixed. The country has become more accepting of the energy transition needed, but funding is likely to be a constraint. Its National Transformation Program 2020 and Vision 2030 aims to grow the government's non-oil revenue sixfold, and increase the share of natural gas and renewables to 50% of the total energy mix by 2030. These ambitious targets will require massive investments, given that solar – for example – only accounts for less than half a percent of Saudi Arabia's electricity generation capacity currently. It remains to be seen whether Saudi Arabia will be able to execute its plans.

Nevertheless, both the UAE and Saudi Arabia will benefit from the world's decarbonization push. With abundant hydrocarbon resources, existing infrastructure and production capacities, the Middle East, and particularly the UAE given their low-cost solar power, has great opportunities to become a major global exporter of clean hydrogen and ammonia.

Is the supply chain able to move along?

The importance of emerging markets in the global supply chain has grown significantly over the past two decades. Companies in the more developed economies have historically focused on emissions related to their own operations. However, driven by tougher regulations on carbon disclosure, including scope 3 emissions, more companies have started to look into their supply chain, and to request that their suppliers reduce the total environmental impact of their products. As such, the imperatives of decarbonization have become almost non-negotiable for many businesses operating in emerging markets.

According to a recent survey by Standard Chartered,⁵ supply chain emissions account for an average of 73% of multinational corporates' (MNCs) total emissions. As MNCs start to implement on their decarbonization plans, their supply chain partners will need to join them in this trend. Nike, for example, has set targets for their key suppliers to keep their total greenhouse gas emissions at or below 2020 levels by 2025. This will be possible thanks to improvements in energy efficiency and the use of renewable energy and alternative fuels. Apple also announced last year its aim to become carbon neutral across its manufacturing supply chain and product life cycle by 2030. Various programs have been designed accordingly, including setting up a clean energy investment fund in China, in order to support its suppliers to manage the energy transition.

The growing demand for clean and renewable energy by the business sector will have a real impact on the power sector across many emerging markets. In September this year, China introduced a pilot program for green power trading, which marks a potentially big move towards a more business-driven green power market. In Vietnam, a pilot program for direct power purchase agreements was introduced in April 2021 and is expected to be finalized later this year. This pilot program will allow large industrial energy users to negotiate directly with renewable energy project developers to buy off-site wind and solar energy carried through the grid. In Latin America, corporate power purchase agreements (PPAs), whereby energy users – typically miners – negotiate and purchase electricity directly from independent generators instead of from regulated utilities, have been surging in the renewable space, especially in Chile and Brazil.

Unfortunately, however, not everyone is able to commit and comply. Many suppliers, especially small and medium-sized enterprises, cannot keep pace, due to their insufficient knowledge and limited support from local governments. Public policies need to adapt to new challenges and capital investments need to follow suit, especially to build robust and smart transmission networks that are able to handle a diverse mix of energies.

⁵ Source: Standard Chartered, 2021, "Carbon Dated – The net-zero supply chain revolution", report.

To green or not to green

As technology improves and prices of renewable energy sources fall, more countries in emerging markets will aim to go green. Terrible as the damage from the Covid-19 pandemic may have been, it has also provided governments with the opportunity to decide the type of economies they want to rebuild. We expect many to choose to prioritize decarbonization and low-carbon pathways. The International Finance Corporation (IFC) recently published a major report⁶ seeking to quantify the potential investment opportunities, job creation, and greenhouse gas (GHG) emissions reduction associated with green recovery measures across emerging market economies. These countries represent 62% of the world's population and 48% of global GHG emissions. The IFC's analysis across these markets shows that focusing on green investments could be very beneficial for both global investors and local populations, as Table 1 shows.

Table 1 | Investment opportunities, job creation, and GHG emissions reductions between 2020 & 2030 in 21 emerging markets across key sectors for a green recovery

Green recovery across key sectors	Europe (Russia, Serbia, Turkey, Ukraine)	East Asia & Pacific (China, Indonesia, Philippines, Vietnam)	South Asia (India, Bangladesh)	Latam (Argentina, Brazil, Colombia, Mexico)	Middle East & North Africa (Egypt, Jordan, Morocco)	Sub-Sahara (Cote D'Ivoire, Kenya, Nigeria, South Africa)	Total
Investment opportunity	USD 0.6 trillion	USD 5.1 trillion	USD 2.8 trillion	USD 1.3 trillion	USD 0.2 trillion	USD 0.3 trillion	USD 10.2 trillion
New direct jobs	16.8 million	98.8 million	52.2 million	27.1 million	4.2 million	13.3 million	213.4 million
GHG emissions reductions	325 million metric tons	2,102 million metric tons	862 million metric tons	352 million metric tons	112 million metric tons	154 million metric tons	4 billion metric tons

Source: Guidehouse Insights, 2021.

Though many emerging markets have not officially joined the net-zero race yet, they are moving fast with their decarbonization/renewable plans. Renewable energy sources, such as solar and wind energy, are now the cheapest sources of power generation in 90% of the world's markets. This means that developing countries can avoid oil and natural gas, and go straight to green power generation. It is, however, easy to miscalculate what will be needed to achieve this transition.

Emerging markets and developing countries are facing a dual challenge. On the one hand, they are particularly vulnerable to climate change, lacking the financial power to prevent or adequately respond to the impacts of climate change. On the other hand, a dependable and affordable energy supply is crucial to continue socio-economic development. In many countries, for instance, the current energy infrastructure is still unable to cope with demand, let alone with the increased demand expected for the future.

That said, emerging markets are becoming an increasingly important part of the global energy market. And technological innovation and cost reductions are expected to contribute to a faster growth in renewables, alongside innovative business and financing models that should boost clean, scalable energy solutions.

⁶ Source: IFC, January 2021, "CTRL ALT DEL – A Green Reboot For Emerging Markets", report.

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