

## Key Messages

# EMnet Working Group on Green Economy in Emerging Markets Green Economy and Energy Transition in Emerging Markets 2021

### Setting the Climate Ambition for Emerging Markets

*The path towards net zero emissions by 2050 is [narrow but brings huge benefits](#). Emerging markets are set to be amongst the worst affected by climate change and have most to gain from collective climate ambition. However, [only 17% of the total sums allocated to COVID-19 economic recovery consider environmental dimensions](#) and developing and emerging economies currently account for [only 20% of global investment in clean energy](#).*

*Climate ambition will require emerging markets to transform their energy systems, yet shoring up support for the green transition during an economic crisis is set to face challenges. It will require supportive policies and business commitment to drive transformation, ensure that high-emission sectors are not left behind and employees are ready for future labour markets.*

*Emerging markets face a number of challenges caused by rapid urbanisation, including growing pollution levels and rising energy demand. Meeting the challenge of urbanisation will require innovative collaboration models across public and private sectors, in order to build and modernise sustainable infrastructure and circular cities.*

*Annual clean energy investment must increase from USD 150 billion in 2020 to over USD 1 trillion by 2030, to meet net-zero emissions targets by 2050. Given the current context of public budget constraints, the private sector will play a critical role to achieve this goal. However, more efforts must be done to channel additional finance towards the clean energy transition.*

*These Key Messages address the challenges and opportunities of setting the climate ambition for emerging markets by examining each of these aspects in turn in dedicated sections on:*

- **Supporting the energy transition in emerging markets**
- **Sustainable urbanisation challenges; and**
- **Mobilising finance for the green economy**

## Supporting the energy transition across emerging markets

- *The path to net zero requires that **emerging markets transform their energy systems**, yet reliance on hydrocarbons alongside existing policy barriers pose challenges to the green transition.*
- *Recent momentum for increased climate ambition is encouraging, bolstered by **post-COVID recovery efforts and falling costs of clean energy technology**.*
- *An **inclusive energy transition** requires a **holistic framework** and **well-designed supportive policies** leveraging regional collaboration to ensure national plans/strategies promote full decarbonisation and policy packages support: (i) renewable energy, digitalised power grids and electrification of end uses; (ii) energy security and access to clean and affordable energy; (iii) carbon pricing schemes eliminate distortions while considering vulnerable communities; (iv) high-emissions sectors are not left behind; and (v) employees are skilled for future.*
- *The **private sector can play a critical role** committing to net zero targets, adopting emission-reducing strategies across industry while developing cleaner technologies. They should also **ensure local communities benefit** from their greener operations and projects.*
- ***Electrification and renewable energies** are key to the energy transition in emerging markets. **Greater public-private and cross-sectoral collaboration is required** for innovation, and to upgrade and promote digitalisation of infrastructure, indispensable to unlocking renewable potential. Public policies that promote access to technology and investment in R&D will be also critical to support these efforts.*

**Current emission trends, driven by human activity, will lead to an increase of global average temperatures with irreversible consequences on ecosystems and economic activity.** Despite energy-related emissions decreasing by 7% in 2020,<sup>1</sup> these are rebounding sharply as economies recover from the pandemic-induced shock, increasing pressure on collective climate goals. Today, OECD and G20 countries collectively account for more than 75% of global carbon emissions.<sup>2</sup> These are projected to drop by 2 gigatonnes in advanced economies and plateau in China over the next two decades.<sup>3</sup> Yet even if climate pledges by governments to date were to be met, projections show the current scale and speed of efforts would still fall short of what is required to reach net zero by 2050.<sup>4</sup> In **emerging and developing economies**, with population growth, urbanisation and industrial activity on rise, emissions are set to grow by 5 billion tonnes over the next two decades without urgent action.<sup>5</sup>

An **unprecedented transformation of the global energy system** – responsible for around three-quarters of greenhouse gas emissions worldwide – holds the key to averting the worst effects of climate change,<sup>6</sup> which could force over 100 million people into extreme poverty by 2030.<sup>7</sup> The **wave of investment and spending to support the COVID-19 recovery alongside lower costs for clean energy technologies**<sup>8</sup> present a **unique opportunity** for emerging markets to embark on a low-carbon path to a clean energy system, able to meet future energy demands and ambitious climate targets.

<sup>1</sup> [OECD \(2021\), \*The long-term environmental implications of COVID-19\*, OECD Publishing, Paris.](#)

<sup>2</sup> [IEA \(2021\), \*Financing clean energy transitions in emerging and developing economies\*, IEA, Paris.](#)

<sup>3</sup> [Ibid.](#)

<sup>4</sup> [IEA \(2021\), \*Net Zero by 2050: A Roadmap for the Global Energy Sector\*, IEA, Paris.](#)

<sup>5</sup> [IEA \(2021\), \*Financing clean energy transitions in emerging and developing economies\*, IEA, Paris.](#)

<sup>6</sup> [IEA \(2021\), \*Net Zero by 2050: A Roadmap for the Global Energy Sector\*, IEA, Paris.](#)

<sup>7</sup> [OECD \(2019\), \*Aligning Development Co-operation and Climate Action: The Only Way Forward\*, The Development Dimension, OECD Publishing, Paris.](#)

<sup>8</sup> [IEA \(2021\), \*Net Zero by 2050: A Roadmap for the Global Energy Sector\*, IEA, Paris.](#)

This transformation calls for supportive policies and increased private sector commitment for an inclusive transition.

**National governments need to implement clear and transparent policy frameworks, which provide the rights signals to all public and private stakeholders** to define strategies, targets, investments and operations aligned with the maximisation in the contribution to the SDGs and to achieve the full decarbonisation.

**Accelerating the investment in the energy transition**, through the deployment of renewable energies, the digitalisation of grids and the electrification of end uses (transport, buildings, industry), is one of the significant levers to support short-term recovery and longer term sustainable and inclusive economic development.

### The challenge of energy transitions in emerging markets

The **shift to a clean energy economy will require trade-offs, posing existential challenges for development models dependent on hydrocarbon revenues**. In most member countries of the Organization of the Petroleum-Exporting Countries (OPEC) and fossil-resource-rich regions, royalties on the extraction of oil, natural gas and coal account for over two-thirds of government revenues.<sup>9</sup> In emerging and developing regions, aggregate net income from exports and domestic sales of fossil fuels average around USD 1 trillion each year. Across Asia, coal continues to play a significant role in the energy mix.<sup>10</sup> Yet announcements in Japan, Korea and China to cease export-finance coal present a significant milestone. Similarly, South Africa's ground-breaking renewable procurement process over a decade ago has hampered investments in new coal power. Other solutions include: (i) repurposing or retrofitting coal plants to provide flexibility to the grid; (ii) co-producing with other clean energy sources or (iii) early retirement of plants, accounting inherent local conditions.<sup>11</sup>

As of 2019, Indonesia had utilised less than 2% of its total renewable energy potential.<sup>12</sup> Across the Middle East and Africa, only around 10 GW of solar PV has been installed as of 2020, less than in Viet Nam. Many of these oil and gas producers are facing acute fiscal pressures,<sup>13</sup> amplified by the COVID-19 induced downturn. Rising dependence on critical minerals (e.g. copper and cobalt) needed for clean energy technologies and infrastructure can lead to price volatility and supply disruptions hindering the overall transition.<sup>14</sup> Despite dropping costs in clean energy technologies, questions arise for economies reliant on **revenues from oil and gas, which provide one of the main channels to finance a shift towards a more diversified economic structure and sustainable energy mix**. With some estimates pointing to a steep fall in annual per capita income from oil and natural gas in producer economies by about 75%, from USD 1 800 in recent years to USD 450 by the 2030s,<sup>15</sup> governments face the challenge of building on existing revenues, to undertake the required structural changes to transform high-emission sectors and diversify and reform their economies. Potential synergies between traditional high-emission sectors and clean energy solutions could support the transition, including diversifying into other parts of the energy supply chains where skill sets overlap and those which may provide a good fit for emerging lower-carbon fuels and technologies (e.g. hydrogen). Large project management, like off-shore wind projects, could also be suitable for the oil and gas industry.<sup>16</sup>

The post-COVID recovery provides a chance to re-set the energy agenda and accelerate efforts towards clean, low-carbon energy systems. **A growing number of countries are committing to net**

---

<sup>9</sup> OECD (2017), "Towards an inclusive transition", in *Investing in Climate, Investing in Growth*, OECD Publishing, Paris.

<sup>10</sup> IEA (2021), *Financing clean energy transitions in emerging and developing economies*, IEA, Paris.

<sup>11</sup> IEA (2021), *Net Zero by 2050: A Roadmap for the Global Energy Sector*, IEA, Paris.

<sup>12</sup> OECD (2021), *Clean Energy Finance and Investment Policy Review of Indonesia*, Green Finance and Investment, OECD Publishing, Paris.

<sup>13</sup> IEA (2020), *World Energy Outlook 2020*, IEA, Paris.

<sup>14</sup> IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, IEA, Paris.

<sup>15</sup> IEA (2021), *Net Zero by 2050: A Roadmap for the Global Energy Sector*, IEA, Paris.

<sup>16</sup> IEA (2021), *Financing clean energy transitions in emerging and developing economies*, IEA, Paris.

**zero carbon emissions by 2050.** At regional level, the African Union Commission’s recovery strategy in the energy sector focuses on using the continent’s abundant renewable energy sources to develop modern and sustainable energy systems. Joint African Union initiatives to accelerate and scale up these efforts include the [Programme for Infrastructure Development \(PIDA\)](#), the [African Renewable Energy Initiative \(AREI\)](#) and the [Geothermal Risk Mitigation Facility \(GRMF\)](#), a catalyst for geothermal development in Eastern Africa. Countries like Argentina, Brazil, Chile, Colombia, India and Mexico have also embraced renewables, electric network and mini-grid investments **but efforts should be accelerated to mitigate the risk of destabilisation for national productions.** For most countries, there remains the task of actually developing strategies for implementing their net zero objectives.<sup>17</sup>

## Private sector insights

### The greening of traditional business models

**Reaching net zero targets will require greater international collaboration via public-private and cross-sectoral partnerships.** Business commitment will be critical to drive transformation across the private sector and beyond, shifting traditional business models to more sustainable and green operations. There is significant pressure to adapt operating models to build carbon management capabilities including quantifying carbon generation, reducing carbon intensity, and effectively communicating to stakeholders.<sup>18</sup> As the world braces for climate change disruption and aims to mitigate its impact, the private sector will have to seek new ways of doing business. Additionally, participants point to the need to ensure the depth and breadth across the global supply chain is available to deliver the level of infrastructure and installations required for the clean energy transition. Many multinationals in the oil and gas sector are leading the way expanding to renewable energy and committing to net zero emissions by 2050 (such as [Eni](#), [Equinor](#), [TotalEnergies](#)). Eni has adopted a new organisation design with two general business groups (i.e. natural resources and energy evolution) both working in close co-ordination to support the transition. Given access to capital and expertise in large projects among others, these traditional businesses can play an important role in transforming the oil and gas sector. Other companies like Amazon, partnering with Global Optimism to fund the [Climate Pledge](#), has set its net zero carbon target by 2040 inviting other companies to join them on this effort. The finance sector will need to aid the transitions of fossil fuel companies and energy-intensive businesses by facilitating a dramatic scale up of clean technologies and bringing low-cost capital to countries that need it most.<sup>19</sup>

Companies pointed to **electricity and renewables as key to the success of the energy transition in emerging markets**, emphasising the lower-cost of clean energy technologies, particularly solar and wind. Over 90% of the solutions to shift to a clean energy system involve renewable energy, electrification, energy efficiency, green hydrogen and sustainable bioenergy combined with carbon capture, utilisation and storage (CCUS).<sup>20</sup> Clean technology targets should go beyond the power sector to include systems such as heating and cooling, and sectors such as transport, and promote innovative solutions including advanced battery systems, demand response, and different hydrogen applications. Participants underlined the importance of batteries and the need to step up international collaboration to fully harness the potential of solar and wind energy. Companies, such as IEnova in Mexico, are currently developing projects that involve large-scale battery systems. Participants also pointed to appropriate transmission networks required to move renewables resources from the production site to the demand centre, where they call for increased investment in transmission width

<sup>17</sup> [OECD \(2021\), Paper for the G20: Aligning short-term recovery measures with longer-term climate and environmental objectives.](#)

<sup>18</sup> [McKinsey \(10 March, 2021\), The big choices for energy and gas in navigating the energy transition.](#)

<sup>19</sup> [IEA \(2020\), World Energy Outlook 2020, IEA, Paris.](#)

<sup>20</sup> [IRENA \(2021\), World Energy Transitions Outlook: 1.5°C Pathway, International Renewable Energy Agency, Abu Dhabi.](#)

backed up by adequate state intervention and central planning. As way of example, Peru has been [one of the first LAC countries to bring private capital to the transmission sector](#). Further, spurring **innovation is salient to pushing clean energy solutions**.<sup>21</sup> Accelerated penetration of **such technologies will need to be supported by the upgrade and digitalisation of infrastructure** in order to maximise their contribution, particularly relevant to unlock innovation for mini-grids in remote and rural areas. This is true for the electricity sector but also, for instance, in ICT and transport.<sup>22</sup> In the case of CCUS, an [IEA report](#) notes its key role in supporting the shift to clean energy in South-East Asia, addressing emissions while underpinning new economic opportunities from low-carbon hydrogen and ammonia. Yet in many emerging and developing countries, hydrogen and carbon capture still lack viable business models.<sup>23</sup>

**Appropriate regulatory frameworks are needed to support these technological advances**, making new technologies commercially viable, bankable, and attractive to private capital. Companies stressed the need for governments to ensure access to new technologies and promote access to existing ones, supporting R&D. The structure of energy markets plays a critical role, yet in some contexts, participants point to inadequacy of market design. Fine-tuning electricity market design could be an option for markets where renewable energy will increase adoption. Corporate renewable buyers require a structure that enables them to purchase renewable energy either through Power Purchase Agreements (PPAs) or other mechanisms. The private sector points to intra-sectoral collaboration as an essential lever to unlocking these markets. [Amazon](#), for instance, is part of the [Renewable Energy Buyers Alliance](#) (REBA) in the US and the [RE-Source Platform](#) in Europe and extended these successful models of co-operation joining similar platforms across emerging markets, such as [Renewable Energy Demand Enhancement Initiative](#) (REDE) in India and [Clean Energy Investment Accelerator](#) (CEIA) in Indonesia.

### Placing people at the heart of clean energy transitions

**A people-centred energy transition, involving the labour force and affected communities, will require a holistic global framework** supported by inclusive policies and ambitious targets. A guiding principle of the [IEA's Net Zero Roadmap](#) is an inclusive and fair clean energy transition that leaves no one behind. This is particularly relevant in emerging and developing economies where COVID-19 has already dramatically worsened the conditions of vulnerable groups. Misalignments stemming from the clean energy transformation may risk inequitable outcomes and resistance of affected social groups<sup>24</sup>, which may halt its pace. The private sector echoes the need to ensure the benefits of the energy transition and particularly energy infrastructure projects are shared with local communities. In order to enhance local development, companies stress the need to: (i) prefer the cheapest source of electricity, absent subsidies; (ii) use local resources including employees, suppliers, and sub-contractors; (iii) develop projects hand-by-hand with the local or regional administration and governments; (iv) stay close to the communities by developing social and environmental actions (e.g. [Voltalia's social and environmental projects in Brazil](#) and [X-ELIO's Community Plan](#)); and (v) exert an ethical way of doing business.

Exploring recovery measures would give, on the one hand, to established oil and gas producer countries a chance to break their cycle of rent dependence and, on the other hand, to emerging producers the option to avoid it altogether. To provide the rights signals in the design of their strategies, investments and operations, **national governments will need to implement clear, transparent, and ambitious policy frameworks aligned with full decarbonisation and the Sustainable Development Goals (SDGs)**. Climate action plans will need to be environmentally effective,

---

<sup>21</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>22</sup> Ibid.

<sup>23</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>24</sup> [IRENA \(2021\), World Energy Transitions Outlook: 1.5°C Pathway, International Renewable Energy Agency, Abu Dhabi.](#)

economically responsible and publicly supported, while making sure not to leave behind those at risk from the transition. Having intermediate targets can help support progress. Peru, for instance, has recently developed an ambitious update of its Nationally Determined Contribution, harnessing its renewables potential (e.g. biomass, wind, solar and geothermal), mostly unexploited, to drive competitiveness. Its long-term National Strategy on Climate Change encompasses both adaptation and mitigation with a strong focus on the electrification of the economy, and was developed in close consultation with crucial stakeholders including the private sector, which contributed with an [Energy Transition Roadmap](#). Further investments in a transition that supports fossil-fuel dependent countries can be encouraged through **transition financing**, which targets high-carbon, economically relevant sectors to enable a whole of economy approach.<sup>25</sup> Participants also see opportunities in adopting an **integrated vision of the energy system with a regional focus** to optimise energy flows, particularly in Latin America.

Many policies and market practices still encourage emissions-intensive investment, production and consumption. Governments will need to **eliminate distortions, incentivise energy transition solutions and introduce new policies**, including well-designed carbon pricing and Emissions Trading Schemes (ETS) and adequate finance measures, which can enhance competitiveness of renewable-based solutions against fossil fuels and level the playing field.<sup>26</sup> Yet careful consideration of social and equity issues is critical, particularly for low-income populations to ensure that they do not worsen energy poverty or have other socially regressive effects. Allaying these concerns by exempting certain household groups or energy intensive industries can compromise the viability of schemes. Instead, it may be more in line with long-term de-carbonisation objectives to provide dedicated support for low-income consumers or other highly affected parties to help them shift towards low-carbon solutions.<sup>27</sup> In this regard, place-based policies will be necessary to ease the structural adjustment of local economies.<sup>28</sup> Taking the example of the recently proposed 'Fit for 55' package by the European Commission, key to making these efforts a reality will be compensation through financial support to households suffering from energy poverty.<sup>29</sup> For this, the Commission plans to put 25% of the revenues from the new ETS into a Social Climate Fund to be launched in 2025. As such, carbon pricing not only gives a stable price signal but serves as financial resource for incentivising schemes. Examples could include a mix of carbon pricing along with energy efficiency and schemes for the circular economy based on carbon neutrality principles, avoiding retroactive cuts.

Companies stressed more efforts are required to fulfil the global energy demand, particularly in emerging markets, and combat energy poverty. An inclusive energy transition will imply **ensuring stable and affordable energy supplies and providing access to energy for all**, which nowadays is far from a reality with around 785 million people with no access to electricity and 2.6 billion people lacking clean cooking solutions.<sup>30</sup> **Ensuring a proper mix of market-based instruments**, including providing **access to climate finance**, will play an important role in this transition.<sup>31</sup> As emerging and developing economies invest more in clean energy and enabling infrastructure, the energy system becomes more capital-intensive. This can be particularly challenging in geographies where access to capital is traditionally more constrained due to persistent macroeconomic risks. Rising debt burdens following the pandemic mean nominal financing costs in emerging and developing economies are now up to seven times higher than in the United States and Europe.<sup>32</sup> Participants also noted the **need to focus**

---

<sup>25</sup> [Tandon, A. \(2021\), "Transition finance: Investigating the state of play: A stocktake of emerging approaches and financial instruments", OECD Environment Working Papers, No. 179, OECD Publishing, Paris.](#)

<sup>26</sup> [IRENA \(2021\), World Energy Transitions Outlook: 1.5°C Pathway, International Renewable Energy Agency, Abu Dhabi.](#)

<sup>27</sup> Ibid.

<sup>28</sup> [The green recovery: an opportunity to address inequalities?](#)

<sup>29</sup> [Centre for European Reform \(27 July, 2021\), The 'Fit for 55' climate proposal explained.](#)

<sup>30</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>31</sup> [OECD \(2020\), Environment at a Glance 2020, OECD Publishing, Paris.](#)

<sup>32</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

**on energy security** beyond access. This requires a change of mindset, redefining energy security in the context of a shift towards green, reliable and affordable energy.

The **energy transition offers significant opportunities** with renewable energy, notably solar PV, employing more people per unit of investment and energy than fossil-fuel generation.<sup>33</sup> Should the international community unlock full renewable energy potential, estimates point renewables could employ more than 40 million people by 2050, amounting to 100 million by 2050 in total energy sector employment from around 58 million today.<sup>34</sup> Energy efficiency also offers distinct opportunities for rapid job creation. **Employment evolution is a substantial part of the wider energy transition.** Skills gaps in this process become particularly noticeable in developing countries. In particular, regional and socioeconomic disparities in job creation in the energy sector persist notably in ethnic minorities and women.<sup>35</sup> As countries seek to advance this shift, the success of these efforts will rest on enabling citizens to benefit from the opportunities and navigate the disruptions critical for increasing public acceptance of energy transitions.

The net zero transition includes a **focus on skills**, for both newly emerging and traditional jobs. In the wake of the COVID-19 crisis and its ensuing severe jobs crisis, it is not enough to solely mitigate the effects of climate change on the workforce. As recognised in the Paris Agreement, a “just transition” creates new jobs in low-emission sectors, anticipates shifts in employment patterns and assists workers in jobs and opportunities search, requiring an often overlooked factor: proper data gathering and analysis for informed decision-making.<sup>36</sup> Means for ensuring people benefit through the creation of good quality jobs in clean energy and protecting workers and communities negatively affected by employment shifts and job losses include: (i) deploying skills and active labour market policies, and (ii) designing appropriate long-term planning and income support measures.<sup>37</sup> Skilling approaches need to be adaptable and best practices should be shared with the international community.<sup>38</sup> The private sector has a critical role in reskilling and upskilling the local workforce (e.g. [Siemens](#), [Eni](#)). High-emission companies will have to consider human capital as significant levers for successful shift in business models and technology where partnerships between governments and industry can support finance in reskilling and ensure training content aligns with the evolving sector needs.<sup>39</sup> Examples of international efforts include [The Global Commission on People-Centred Clean Energy Transitions](#) focusing on creating jobs and protecting workers and communities negatively affected by employment shifts. The IEA is also analysing energy employment in partnership with Enel Foundation through the [Glass House Project](#), building on the ILO’s [Green Jobs programme](#).

---

<sup>33</sup> [IEA \(2020\), Sustainable Recovery, IEA, Paris.](#)

<sup>34</sup> [IRENA \(2020\), Measuring the socio-economics of transition: Focus on jobs, International Renewable Energy Agency, Abu Dhabi.](#)

<sup>35</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

<sup>36</sup> [IEA \(2021\), The importance of focusing on jobs and fairness in clean energy transitions, IEA, Paris.](#)

<sup>37</sup> [The green recovery: an opportunity to address inequalities?](#)

<sup>38</sup> [The Adecco Group \(2020\), Skills for the Green Economy.](#)

<sup>39</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

## Sustainable urbanisation challenges

- **There is an urgent need to focus on the importance of promoting a sustainable urbanisation.** Cities are critical to the green transition. Municipalities are responsible for local public services including energy, transport, solid waste and water, all of which affect not only citizen well-being, but also economic growth and environmental quality.
- Recent urbanisation trends across emerging markets entail **high-energy demand and unprecedented material consumption.** By 2050, the global population is estimated to reach 9 billion people, 55% of which will be living in cities<sup>40</sup> With 37% of the projected urban growth in the world's urban population in India, China and Nigeria.<sup>41</sup> Cities host almost two-thirds of global energy demand, produce up to 50% of solid waste and account for 70% of greenhouse gas emissions (GHG).<sup>42</sup>
- **New and digital technologies are critical to promote smart city models,** focused on boosting energy efficiency, promoting more sustainable mobility solutions and contributing to reduce urban pollution.
- **Circular city models offer a more integrated approach** of all the sectors and levers involved in the transition to a sustainable urbanisation. In this context, **circular business models** can also create new job opportunities, if supported by suitable reskilling efforts.
- As cities are complex environments, circular models require a **holistic, long-term and open governance approach supported by multi-stakeholder dialogue.** Successful examples of public-private partnerships from across emerging markets can help to promote this approach such as in Santiago and Bogotá where joint ventures have been key to promote public electric transportation.<sup>43</sup>
- **Access to finance and a lack of critical scale for investment** create gaps in accelerating the green transition. A lack of policy co-ordination, for example at different levels of government, still hinders advancements in sustainable strategy deployment, including in sectors where businesses could provide additional investments (e.g. electric vehicles).
- **Robust, reliable and quality data** will be essential to the adequate long-term planning and efficient allocation of resources.
- The role of **intermediary cities** will be critical to enhancing connectivity across emerging markets. Yet more often than not, intermediary cities lack targeted support from national and regional governments and are left out of the national urban development strategies.

Cities are critical to the green transition. In a recent [report](#), the IEA maps a **pathway to achieving net zero emissions by 2050** and support a green post COVID-19 recovery, creating resilience in the face of future crises. This pathway will require an **unprecedented transformation of the global energy system**, where climate action in cities becomes paramount to ensure affordable and sustainable energy is accessible to all.<sup>44</sup> Municipalities are responsible for local public services including energy, transport, solid waste, and water, all of which affect citizen well-being, economic growth, and

<sup>40</sup> [OECD/SWAC \(2020\), Africa's Urbanisation Dynamics 2020: Africapolis, Mapping a New Urban Geography, West African Studies, OECD Publishing, Paris.](#)

<sup>41</sup> [United Nations, Department of Economic and Social Affairs, Population Division \(2019\), World Urbanization Prospects: The 2018 Revision, United Nations, New York.](#)

<sup>42</sup> [OECD \(2020\), The Circular Economy in Cities and Regions: Synthesis Report, OECD Urban Studies, OECD Publishing, Paris.](#)

<sup>43</sup> [Enel \(2020\), Circular Cities for Tomorrow.](#)

<sup>44</sup> [IEA \(2021\), Empowering Cities for a Net Zero Future, IEA, Paris.](#)

environmental quality. The OECD report [The Circular Economy in Cities and Regions](#) notes **cities are transformative hubs which can simultaneously act as promoters, facilitators and enablers of the circular economy**. Circular models can therefore be a vital lever to redesign and guide cities on a sustainable path, while spurring innovation, creating job opportunities, and widening citizen access to services. Understanding how to build the cities of tomorrow and which stakeholders to involve in the process is crucial, to tackle urbanisation challenges and achieve a circular transition. Participants point to the unique opportunity offered by the post-COVID-19 recovery for redesigning the urban space, taking into account lessons learned throughout the pandemic.

### The challenge of rapid urbanisation

**By 2050, the global population is estimated to reach 9 billion people, 55% of which will be living in cities.** In Africa, the population is set to double by 2050 and two-thirds of this growth will be absorbed by urban areas meaning African cities will be home to an additional 950 million people.<sup>45</sup> Particularly, 37% of the projected urban growth in the world's urban population will be in India, China and Nigeria.<sup>46</sup> Globally, [approximately 2.5 billion new city dwellers are expected by 2050](#). Cities host almost two-thirds of global energy demand, produce up to 50% of solid waste and account for 70% of greenhouse gas emissions (GHG).<sup>47</sup> The significant urban population estimated to live in slums and informal settlements, often without access to proper housing and basic services, alongside predominantly informal economies points to the **social dimension** that this transition will inevitably have.

Across emerging and developing economies, rapid population growth and urbanisation coupled with rising energy demand, up to 85% of growth in global electricity demand,<sup>48</sup> contribute to growing levels of air pollution and pose a challenge to the availability and quality of natural resources. Material consumption is expected to grow faster than the urban population. Quantitative analysis by the International Resource Panel shows that material consumption by the world's cities will grow from 40 billion tonnes in 2010 to 90 billion tonnes in 2050. Moreover, projections show the environmental consequences related to materials management activities, responsible for more than half of all GHG emissions, rise to approximately 50 Gt CO<sub>2</sub>-equivalents by 2060. Fossil fuel use and production of iron and steel lead to large energy-related emissions of GHG and air pollutants.<sup>49</sup> To avoid this large increase in material use from happening, current economic systems must shift from linear to circular.

**The impact of the COVID-19 crisis has led to a shift in societal behaviours.** Urban transport has been transformed, notably due to confinement measures and decentralisation caused by teleworking.<sup>50</sup> Yet public transport will likely continue to play an important role in reducing carbon emissions.<sup>51</sup> Urban expansion and decentralisation have huge implications for both the type and location of transport cities will need, as well as the scale of investment required to accompany the evolution.<sup>52</sup> The pandemic has further amplified and exacerbated underlying structural inequities across cities, with diminished transport access affecting vulnerable populations, and highlighted capacity and financing gaps faced by local governments. Holistic and structurally sound solutions are needed to ensure alignment between urbanisation, changing trends and green transition.

---

<sup>45</sup> [OECD/SWAC \(2020\), Africa's Urbanisation Dynamics 2020: Africapolis, Mapping a New Urban Geography, West African Studies, OECD Publishing, Paris.](#)

<sup>46</sup> [United Nations, Department of Economic and Social Affairs, Population Division \(2019\), World Urbanization Prospects: The 2018 Revision, United Nations, New York.](#)

<sup>47</sup> [OECD \(2020\), The Circular Economy in Cities and Regions: Synthesis Report, OECD Urban Studies, OECD Publishing, Paris.](#)

<sup>48</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>49</sup> [OECD \(2019\), Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences, OECD Publishing, Paris.](#)

<sup>50</sup> [ITF \(2021\), ITF Transport Outlook 2021, OECD Publishing, Paris.](#)

<sup>51</sup> [OECD \(2020\), COVID-19 and the low-carbon transition. Impacts and possible policy responses, OECD Publishing, Paris.](#)

<sup>52</sup> [ITF \(2021\), ITF Transport Outlook 2021, OECD Publishing, Paris.](#)

**Building and modernising sustainable infrastructure, services and housing** is required to meet future population needs, particularly in emerging and developing countries where the cities are more vulnerable to external shocks triggered by the climate change (e.g. extreme weather events). There is a need to work on integrating both **mitigation and adaptation efforts**, the latter particularly important in many emerging markets, which rank among the top positions in the Global Climate Risk Index. It is estimated that around USD 6.3 trillion of annual investment in energy, transport, water and telecommunications infrastructure is needed until 2030 to sustain growth and increase well-being.<sup>53</sup> This transformative investment should avoid undermining long-term climate objectives with new infrastructure and assets that lock in carbon-intensive systems.<sup>54</sup> There is an urgent need to focus on the opportunities of urbanisation, and the more efficient resource use offered by the circular economy. New approaches to manage the movement of resources through the city, both in term stocks (e.g. building materials) and flows (i.e. those that service the cities) will be required.

## Private sector insights

### Beyond 'smart': creating resilient, inclusive cities with circular economy at the core

**Decarbonisation is the overarching goal critical to achieving net zero emissions by 2050**, which requires **ambitious targets** and a **broad perspective**. A salient challenge for cities is to maintain their role as an 'innovation and opportunity hub', while providing quality of life to its inhabitants in several dimensions (economic, environmental and social). Around the world, governments are already making cities "smarter", by leveraging the digital transformation, to build more efficient urban environments and enhance well-being. Smart cities, based on available technology, can tackle enduring environmental issues and promote sustainable and resilient urban development.<sup>55</sup> Participants point to the particular role of utility companies, involved in several pivotal sectors, including renewable energy, smart grids, electric mobility, energy efficiency and smart buildings among others. Participants note the importance of energy efficiency as the cheapest, safest and most impactful way to reduce emissions and fight climate change. Further, they stress the combined role of digitalisation and electrification pointing to **Industry 4.0 as the convergence of both digital and electrical**, which companies agreed is the fastest route for cleaner, smarter and more efficient cities. Successful [examples of smart cities concept](#) can be seen in Asia and are rapidly taking off in Latin America, as is the case of São Paulo.<sup>56</sup> Electrification of sectors such as transportation is essential for sustainable mobility, with transport-related CO<sub>2</sub> emissions increasing by 16% in 2050 even if today's pledges were to be fully implemented. Ambitious policies can significantly reduce emissions by almost 70% in 2050 compared to 2015 by improving energy efficiency, shifting to sustainable transport modes and scaling up use of electric vehicles, low-carbon fuels and biofuels<sup>57</sup> (e.g. Joint Ventures to promote public electric transportation with nearly 1,000 electric buses in Santiago and Bogotá).<sup>58</sup>

**Circular business models will be key to scale up a sustainable urbanisation process and create further opportunities for the private sector.** Circular economy models are based on three principles: i) design out waste and pollution; ii) keep products and materials in use; and iii) regenerate natural systems. The circular economy model is expected to generate positive impacts on the environment by reducing emissions, increasing the share of renewable energy and recyclable resources, and reducing the use of raw materials, water, land and energy, where extraction and use of primary (raw) materials

<sup>53</sup> [OECD \(2020\), \*Making the green recovery work for jobs, income and growth\*, OECD Publishing, Paris.](#)

<sup>54</sup> [OECD \(2020\), \*An inclusive green recovery is possible: The time to act is now\*, OECD Publishing, Paris.](#)

<sup>55</sup> [OECD \(2019\), \*Enhancing the contribution of digitalisation to the smart cities of the future\*, OECD Publishing, Paris.](#)

<sup>56</sup> [Enel \(2019\), \*Vila Olímpia, the future of cities is in São Paulo\*.](#)

<sup>57</sup> [ITF \(2021\), \*ITF Transport Outlook 2021\*, OECD Publishing, Paris.](#)

<sup>58</sup> [Enel \(2020\), \*Circular Cities for Tomorrow\*.](#)

is far more polluting than secondary (recycled) materials.<sup>59</sup> In cities, this implies a **systemic shift** beyond waste management and recycling, including and changes in production and consumption models, eco-design and integrated planning.<sup>60</sup> In order for these models to contribute to a sustainable urban transition, they have to be supported and scaled with the contribution of the private sector, which can provide additional investments and innovative technologies.

**OECD projections estimate that shifting to a circular system could hold as much as USD 4.5 trillion potential for economic growth by 2030**, up to USD 700 billion in global consumer good material savings. It can also create vast employment opportunities, though more attention needs to be focused on changes in the labour market. Countries or regions where the local economy is dominated by material-intensive sectors may experience larger negative effects in the labour market, brought by a shift to circular economic models.<sup>61</sup> Participants point to design and procurement stages in creating the circular economy of cities, which could potentially become more locally based and increase job opportunities. They also see a strong growth in crucial areas of circular economies, such as services, sharing, maintenance and product lifetime extension. There is also strong growth in jobs for closing the circular loop (e.g. reverse logistics, remanufacturing, and reassembly), while manufacturing in general terms is set to decrease at global level.<sup>62</sup> Reskilling the workforce will be crucial, as **it is estimated that the global economy could lose as many as 71 million jobs in its move towards becoming circular**. Smart policies and investment in reskilling could reverse this prospect, so much so that the energy sector alone could produce a net growth of 18 million jobs.<sup>63</sup> Yet, disparate results in literature co-exist, as analyses of skills shifts and future demands in a more circular economy are still scarce.

### Unleashing the potential of circular cities in emerging markets

Companies pointed to the **need to escalate circularity**. In emerging markets, particularly in the context of greenfield urban development, the application of sustainable and circular models are easier to implement, given infrastructure and city planning will not require the expensive retrofitting needed in traditional cities in many advanced economies.<sup>64</sup> **The success of these efforts will depend on the private sector's capacity to accompany the shift to more sustainable models**. The private sector is a critical player in the transition to a circular economy and will play a critical role in both **accelerating progress in systematic innovation and decarbonisation efforts** and supporting national and local governments to overcome urban challenges. **New business models** are drivers of the circular economy including product-life extension models (e.g. circular lighting), product as a service models, platform and sharing models (e.g. urban mobility), resource recovery models (e.g. waste recovery including industrial symbiosis where waste of one plant or facility provides inputs to another) and circular supply chains.<sup>65</sup> Yet, the market share of these business models is still limited. As of 2019, recycling, remanufacturing and repair, together with the sharing of spare capacity and the provision of services accounted for up to 15% of production in any given sector.<sup>66</sup> A circular economy system requires the improvement of product design to extend the useful life of product.<sup>67</sup> While many companies narrow down their focus to waste management to devoting less R&D efforts on product design<sup>68</sup>, making a

---

<sup>59</sup> [OECD \(2019\), \*Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences\*, OECD Publishing, Paris.](#)

<sup>60</sup> [OECD \(2019\), \*OECD Roundtable on the Circular Economy in Cities and Regions\*, OECD, Paris.](#)

<sup>61</sup> [Laubinger, F., E. Lanzi and J. Chateau \(2020\), "Labour market consequences of a transition to a circular economy: A review paper", \*OECD Environment Working Papers, No. 162\*, OECD Publishing, Paris.](#)

<sup>62</sup> *Ibid.*

<sup>63</sup> [The Adecco Group \(2020\), \*Skills for the Green Economy\*.](#)

<sup>64</sup> [IRP \(2018\), \*The Weight of Cities: Resource Requirements of Future Urbanization\*. United Nations Environment Programme, Nairobi, Kenya.](#)

<sup>65</sup> [OECD \(2020\), \*The Circular Economy in Cities and Regions: Synthesis Report\*, OECD Urban Studies, OECD Publishing, Paris.](#)

<sup>66</sup> [OECD \(2019\), \*Business Models for the Circular Economy: Opportunities and Challenges for Policy\*, OECD Publishing, Paris.](#)

<sup>67</sup> [OECD \(2020\), \*The Circular Economy in Cities and Regions: Synthesis Report\*, OECD Urban Studies, OECD Publishing, Paris.](#)

<sup>68</sup> [EEA \(2019\), \*Paving the Way for a Circular Economy: Insights on Status and Potentials\*, European Environment Agency.](#)

sector “circular” implies rethinking value chains, production and consumption processes. In the digitalisation process of circular systems, data play a critical role, particularly for material exchange platforms and knowledge-sharing networks.<sup>69</sup>

In this context, **access to financing becomes imperative**.<sup>70</sup> Lack of critical scale for investment is a significant gap in accelerating the transition to circular economic models. To overcome this, cities can facilitate access to finance and broaden the range of financial instruments for the private sector, including schemes to offer subsidised loans or credit guarantees to companies following circular economy principles.<sup>71</sup> Efficiently allocating resources (e.g. financial, land), reducing financial risk, and ensuring regulatory frameworks are conducive, smart and flexible will be also critical for companies to plan the necessary investment to support the green urban transition.

**Participants highlight the importance of public governance** for an effective and efficient urban planning. For the majority of cities, the circular economy is a matter of environmental or waste-related departments, with very few embedding this strategy across departments. Differing guidelines and regulations across countries and even between cities make it challenging to grow solutions at scale. Inadequate regulatory framework and incoherent regulation across levels of government represent a major obstacle for many cities and regions. As such, **policy co-ordination across different governments becomes a critical challenge** for companies with large global footprint. For example, policies that allow for making procurement decisions across a number of different markets at the same time could help avoid protectionist attitudes and help generate economy of scales in the deployment of electric vehicles. At the municipal level, only in the European Union, 70 municipalities have different regulations for vehicle use and size. In the case of micro, small and medium-sized companies (MSMEs), mixed regulations become a noticeable barrier to deployment of innovation and circular economy solutions. Substantial differences in regulations in cities, metropolitan and urban areas and inconsistent definitions across countries hinder global comparisons and monitoring of progress.<sup>72</sup> Companies also highlight the **importance of robust, high-quality data**. Efforts towards standardisation and use of test cases can help overcome some of these challenges. Best practice and success stories can be an effective tool to share progress and encourage others to follow.<sup>73</sup>

**Greater and more effective collaboration is needed.** Unleashing the potential of the circular economy in cities requires the right enabling environment via the 3Ps framework (“people”, “policies” and “places”).<sup>74</sup> Cities are the centre of innovation efforts but the overall ecosystem (from business to citizens) is needed to ensure the transition. A **holistic, long-term vision** that brings all systems involved in cities together, from legal and regulatory systems, to telecoms and energy systems, transport system, etc.) is needed to create value for all stakeholders, ensuring an [inclusive people-centred transition](#) where no one is left behind. In doing so, the green recovery can serve the dual purpose of addressing environmental degradation and existing inequalities, making societies not only greener but also fairer.<sup>75</sup> For all players to engage on a roadmap for implementation and ensure enduring support, it will require an open and inclusive approach. Utilities can play a critical role, for instance as a virtual platform to accelerate collaboration and integration among all stakeholders, including co-operation between different sectors. The [Toolbox of Solutions for urban transformation: 200+decarbonization solutions for cities](#) initiative launched by Enel Group and Schneider Electric represents an innovative example on joint private sector efforts in advancing analysis for this integrated approach. **Public-**

---

<sup>69</sup> OECD, 2021 *forthcoming*, Digitalisation for the Transition to a Resource Efficient and Circular Economy.

<sup>70</sup> EEA (2019), [Paving the Way for a Circular Economy: Insights on Status and Potentials](#), European Environment Agency.

<sup>71</sup> OECD (2020), [The Circular Economy in Cities and Regions: Synthesis Report](#), OECD Urban Studies, OECD Publishing, Paris.

<sup>72</sup> OECD/European Commission (2020), [Cities in the World: A New Perspective on Urbanisation](#), OECD Urban Studies, OECD Publishing, Paris.

<sup>73</sup> C40 Cities (2018), [Municipality-led Circular Economy Case Studies](#).

<sup>74</sup> OECD (2020), [The Circular Economy in Cities and Regions: Synthesis Report](#), OECD Urban Studies, OECD Publishing, Paris.

<sup>75</sup> OECD (2021), [The inequalities-environment nexus: Towards a people-centred green transition](#), OECD Green Growth Papers, No. 2021/01, OECD Publishing, Paris.

**private partnerships are fundamental for this transition.** In this vein, [EMnet](#) offers an opportunity for policy dialogue between firms and governments. In addition, the [Coalition on Circular Economy](#) in LAC is a successful example of a regional platform to enhance inter-ministerial, multi-sectoral, and multi-stakeholder co-operation and knowledge sharing. Similarly, the [Platform for Accelerating the Circular Economy \(PACE\)](#) seeks to catalyse global leadership from business, government and civil society to accelerate the transition to a circular economy.

### Counting in intermediary cities

Cities come in all dimensions – from small-sized to megacities. Urban climate efforts focusing solely on large cities may not be an adequate pathway to a green and inclusive recovery, as most of the world’s urban population lives in intermediary or secondary cities, with a population of between 50,000 and one million people.<sup>76</sup> Cities with less than 1 million inhabitants will account for 32% of total urban population growth in Latin America, 38% in Asia and 47% in sub-Saharan Africa, over the period from 2010 to 2030.<sup>77</sup> Yet, often intermediary cities lack targeted support from national and regional governments and are left out of the national urban development strategies.<sup>78</sup> The role of intermediary cities will be vital in reducing distances, restructuring urban networks, and connecting local to regional, acting as [hubs for the provision of goods and services and the promotion of rural-urban linkages](#) and ensuring an inclusive recovery, a conducive environment for job creation and an opportunity for income diversification.<sup>79</sup> As they grow to become large cities, restructuring small and medium-sized cities in emerging and developing economies will become critical, to breaking dependency on high-carbon development and relieve infrastructure pressures that are endemic to megacities. Participants agree that scaling up efforts in support of intermediary cities and promoting greater synergies between local, national and international efforts, by building innovative partnerships, can play a critical role in achieving net zero emissions by 2050.

---

<sup>76</sup> Gorelick, J. and Moktar, J. (10 September 2021), "Raising capital for intermediary cities", OECD Development Matters blog, <https://oecd-development-matters.org/2018/09/10/raising-capital-for-intermediary-cities/>.

<sup>77</sup> [Intermediate cities: a green and transformative post-COVID-19 recovery?](#)

<sup>78</sup> [Why local? Why now? Strengthening intermediary cities to achieve the SDGs.](#)

<sup>79</sup> OECD and UN-Habitat, 2021 *forthcoming*.

## Mobilising private finance for the green economy

- **A net zero transition will require a substantial ramp up of investments** and a historic surge in clean energy investment in developing and emerging economies.
- **Availability and access to affordable finance remains a critical obstacle across emerging markets** and together with a **lack of “investment grade” infrastructure projects**, poses a further challenge to mobilising private investment as part of the green recovery where the pipeline of eligible projects is quite weak, that is, projects satisfying both key “green” criteria and investor liquidity requirements. In addition, **lack of information and data** are significant hurdles for investors and developers.
- **Long-term planning and visibility is fundamental: legal certainty, transparent policy frameworks and rule of law** can reduce risks and enable further private investment in clean energy and green economy more widely.
- **Standardisation and streamline of procedures**, including PPAs, can solve for complexity hurdles in scaling up green projects across emerging economies.
- **Further progress on Environmental, Social and Governance (ESG) criteria and green taxonomies** has the potential of reducing risk perception of investments. National definitions need harmonisation at international level.
- **Sustainability-linked bond** issuance has taken off across emerging markets, including **green, sustainable and social bonds**, which are becoming **increasingly attractive**.
- **Development Finance Institutions (DFIs)** can play a catalytic role in mobilising additional private capital yet creativity for de-risk mechanisms is required (e.g. blended finance).
- There is a **potential for innovation**, to support clean energy finance in emerging markets (i.e. new business models, cryptocurrency, big data). **Particularly in Financial Technology (Fintech)** which has the potential to allow greater access for smaller projects to raise capital at lower costs and provide real time performance data that makes it easier for investors to evaluate and price risks and also leads to more confidence in project returns.<sup>80</sup>

**A net zero transition will require a substantial ramp up of investments.** Annual investment in clean energy infrastructure is expected to rise from around USD 290 billion to about USD 880 billion in 2030. Over the next decade, the largest increase lies in electricity generation with annual investment going from around USD 0.5 trillion to USD 1.6 trillion in 2030. For low-carbon technologies in end-use sectors, annual investment rises from USD 530 billion to USD 1.7 trillion.<sup>81</sup> This implies a historic surge in clean energy investment in developing and emerging economies, by more than seven times – to over USD 1 trillion by the end of this decade and particular focus on increasing spending in sub-Saharan Africa and Southeast Asia – to put the world on track to for net zero emissions by 2050.<sup>82</sup> Projections indicate around 30% of clean energy investment will take place in Brazil, Mexico and India by 2030.<sup>83</sup> Further investment is needed to sustain growth and increase well-being. Around USD 6.3 trillion of

<sup>80</sup> OECD, (2020) "Digitalisation Webinar - Opportunities for Fintech to Scale up Finance for Clean Energy" (Summary), OECD Paris, [www.oecd.org/environment/cc/cefim/digitalisationwebinar-opportunitiesforfintechtoscaleupfinanceforcleanenergy.htm](http://www.oecd.org/environment/cc/cefim/digitalisationwebinar-opportunitiesforfintechtoscaleupfinanceforcleanenergy.htm).

<sup>81</sup> IEA (2021), *Net Zero by 2050: A Roadmap for the Global Energy Sector*, IEA, Paris.

<sup>82</sup> IEA (2021), *Financing clean energy transitions in emerging and developing economies*, IEA, Paris.

<sup>83</sup> IEA (2021), *Financing clean energy transitions in emerging and developing economies*, IEA, Paris.

annual investments needed in transport, water and telecommunications infrastructure until 2030, in addition to energy infrastructure.<sup>84</sup> Much of this investment need is in emerging economies.

Yet despite hosting two-thirds of the global population, **emerging and developing economies, excluding China, currently account for only one-third of global energy investment** and an even smaller 20% share of clean energy investment<sup>85</sup>. The COVID-19 crisis has widened the gap between investment needs and current flows. In 2020, clean energy investment declined by 8% to less than USD 150 billion in these economies,<sup>86</sup> and the IEA [Sustainable Recovery Tracker](#) shows lower government spending in clean energy relative to advanced economies. Public finance institutions are instrumental to the bankability of projects, de-risking financial mechanisms and guarantees for projects and loans, yet around 60% of total energy investment and over 70% of clean energy investments in emerging and developing economies are set to be privately financed, notably in renewable power and efficiency.<sup>87</sup> Attracting private investment will depend on adequate public policies to ensure companies and private investors can support the energy transition while realising the opportunity presented by the green economy, its boost in GDP and economy-wide employment.<sup>88</sup>

## Private sector insights

### Challenges to financing the green economy in emerging markets

Although many investors recognise the opportunity offered by emerging markets, particularly in wind and solar power which has become cheaper and more attractive, **barriers impede the flow of investment towards more capital-intensive and lower-carbon assets**. Participants note willingness to make sustainable investments, but underline that these investments must be profitable for investors and business.

#### **Availability and access to affordable finance remains a critical obstacle across emerging markets.**

The COVID-19 pandemic has exacerbated near-term fiscal and economic pressures in many emerging and developing economies leaving less fiscal space to mobilise resources for a sustainable recovery and constraining access to finance countries need for the energy transition.<sup>89</sup> Mobilising capital in support of clean energy transitions hinges on addressing cross-cutting factors that affect both risks and returns faced when making investment decisions. Private sector participants point to **capital as the main cost of renewables**, as opposed to relatively low variable costs of running a solar plant or wind farm. The **cost of capital**, generally higher in emerging markets than advanced economies, creates barriers to affordable finance particularly for MSMEs.<sup>90</sup> Despite being [key drivers of green and inclusive growth](#) contributing to global economic activity, the cost of finance for these enterprises can far exceed that for larger companies. In many emerging and developing economies, small-scale finance involves a premium higher than that in advanced economies. Economy-wide nominal financing costs range up to 1 500 basis points above values for the United States and Europe, with higher levels for riskier markets and segments.<sup>91</sup> Managing financing costs and diversifying the sources of finance is critical to unlock the potential of the green economy. As pointed out by participants, the

<sup>84</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

<sup>85</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>86</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>87</sup> Ibid.

<sup>88</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

<sup>89</sup> [IEA \(2021\), World Energy Investment 2021, IEA, Paris.](#)

<sup>90</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>91</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

cheaper the cost of capital from investors, the cheaper the debt financing acquired, the cheaper the electricity will be for customers and ultimately society, raising competitiveness in these economies.

The **lack of sufficient “investment-grade” infrastructure projects** poses a further challenge to mobilising private investment as part of the green recovery where the pipeline of eligible projects is quite weak, that is, projects satisfying both key “green” criteria and investor liquidity requirements. Overall, there is a shortage of clean energy investment opportunities with adequate risk and return characteristics, particularly in emerging and developing economies, as well as appropriate channels for allocating finance to suitable projects. Companies stressed **lack of information and data**, including on anticipated project performance, as a major hindrance in mobilising further private investment. Similarly, they pointed to building **established track records of projects** as essential levers for adequately assessing performance and providing certainty for projects including examples in middle-income emerging markets, such as Chile and Peru, where US insurance companies have invested in local currency for long-dated infrastructure. South Africa’s renewable procurement process also serves as a successful example in creating a track record, enabling a significant private investment inflow. Another relevant issue is the capacity of smaller local developers to structure and prepare these projects. On the efficiency side, challenges include a mix of unique project characteristics and scale, where lack of scalable project pipelines becomes a hurdle.<sup>92</sup> Due to their small-scale, measures to improve energy efficiency can be difficult to finance, despite often being the most cost-effective method of emission reduction.<sup>93</sup> **Standardisation of PPAs** and Energy Performance Contracts would help address the financing side of projects while facilitating project evaluation.

**Macroeconomic stability and evolving financial system rules**, including issues such as **currency risks and weaknesses in local banking and capital markets**, affect financing in emerging countries. Risk perceptions over exchange rate volatility, where transactions can create mismatches between obligations priced in dollars and revenues in local currency, remain an impediment to attracting more foreign capital. Issuance of specific financial instruments also face significant challenges, including institutional and legal capacity and cost of issuance. High volatility, illiquidity and risk levels of bonds in these economies has limited international investments. Absence of a dedicated green bond index also raises challenges in benchmarking financial performance.<sup>94</sup>

### Creating an enabling domestic environment for private investment

**Visibility** is critically important to increase appetite for investments in renewable markets. Emerging and developing economies relying mainly on public funding for new energy projects and industrial facilities, will need to **reform, strengthen and streamline their policy and regulatory frameworks to attract more private investment**,<sup>95</sup> including assessment of financial instruments to maximise use of limited public and development funds.<sup>96</sup> Most of the investments have to balance risk and return over an extremely extended period of time, often in situations of very poor liquidity. Participants strongly agreed an enabling domestic environment with a **sound, transparent and predictable regulation, long-term legal certainty and stability, and rule of law with strong and reliable laws and institutions** will be decisive. Regulatory frameworks that ensure a level playing field, get price signals right and incentivise an all-of-industry approach to responsible business conduct can encourage sustainable investments. Participants also call on governments to create more visibility on the policy targets as well as volumes required. In this regard, system-level planning plays a critical role. An interesting tool in Europe, which could be replicated across emerging markets is the [Regulation on Governance of the Energy Union](#), integrating energy and climate plans that provide visibility for

---

<sup>92</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

<sup>93</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>94</sup> Ibid.

<sup>95</sup> [IEA \(2021\), Net Zero by 2050: A Roadmap for the Global Energy Sector, IEA, Paris.](#)

<sup>96</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

investments. Reforms to create a clear, coherent and consistent regulatory environment for renewables, using **public, competitive tenders to foster competition and reduce costs**, can address the investment shortfall.<sup>97</sup> Participants pointed to the need to establish market-based models that promote competition and reduce costs and benefit consumers. A successful case can be found in Chile with **open, technology neutral, unsubsidised auctions** significantly lowering electricity costs to consumers. Independent, resourced regulatory agencies can speed up procedures (e.g. permits).

**Complexity can raise barriers to financing and scaling up green projects in emerging economies.** In early-stage energy project development, complex, opaque and lengthy procedures involved in contract negotiations, land access and acquisitions as well as licensing, permits and navigation of legal frameworks may pose hurdles to attracting investments to these regions.<sup>98</sup> Lack of standardisation places obstacles for simplification and scalable contractual frameworks. Standardisation of PPAs (e.g. project terms) can prepare projects to be pooled as securitised assets for trading in capital markets and ensure transparent negotiations. There is a need to develop and expand local capital markets to attract the required investment and support long-term sustainability. Viet Nam and The Philippines provide successful country examples that could be replicated across other emerging-markets, adapted to local context. In the case of Viet Nam, it is worth mentioning its increase in Feed-in Tariffs (FiT) for renewables.<sup>99</sup> Greater certainty over a pipeline of potential projects would also enable investors to invest in capacity building while taking calculated risks. Within efficiency measures, evidence-based data plays a critical role in building investor confidence, standards and protocols also help build familiarity and confidence in projects amongst financial actors.<sup>100</sup> A successful effort to tackle standards on climate disclosure is the [Task Force on Climate-related Financial Disclosure](#). An Africa-led solution, the [Quality Label](#), could improve the bankability and implementation of infrastructure projects.<sup>101</sup> Strengthening capacity across smaller project developers, government and local financial institutions can structure and develop pipelines of bankable projects at scale.<sup>102</sup>

For finance to be environmentally sustainable, financial markets need globally comparable, quality data and standardised methodologies. **Progress on ESG criteria** can reduce the risk perception of investments and is increasingly seen as a competitive factor yet more work is needed to ensure that ESG ratings are fit for purpose.<sup>103</sup> Sustainable finance frameworks can encourage shifts to clean energy, and to emerging and developing economies more broadly. Harmonising and improving reporting on climate risks can create an enabling environment for investments. Progress on sustainable finance taxonomies to guide financial decisions can support efforts, promoting sustainable capital allocation. The definition of sustainable finance is yet to be refined. The [OECD report on Developing Sustainable Finance Definitions and Taxonomies](#) seeks to map how different economies are setting official definitions of sustainable finance. These include China<sup>104</sup> with its updated [Green Bond Endorsed Project Catalogue](#), removing coal production and the utilisation of fossil energy. Measures to develop green or carbon-intensive taxonomies are underway in emerging and developing economies including Bangladesh, Brazil, Chile, Colombia, Indonesia, Kenya, Malaysia, Mexico, Mongolia, Peru, Singapore, South Africa, and Thailand and regionally via the ASEAN Sustainable

---

<sup>96</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>97</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

<sup>99</sup> [OECD \(2020\), Multi-dimensional Review of Viet Nam: Towards an Integrated, Transparent and Sustainable Economy, OECD Development Pathways, OECD Publishing, Paris.](#)

<sup>100</sup> [OECD, \(2021\) "Energy Efficiency Finance Platforms and Protocols Webinar", OECD Paris,   
www.oecd.org/environment/cc/cefim/india/energyefficiencyfinanceplatformsandprotocolswebinar.htm](#)

<sup>101</sup> [OECD/ACET \(2020\), Quality Infrastructure in 21st Century Africa: Prioritising, Accelerating and Scaling up in the Context of Pida \(2021-30\).](#)

<sup>102</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

<sup>103</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

<sup>104</sup> [OECD \(2020\), Developing Sustainable Finance Definitions and Taxonomies, Green Finance and Investment, OECD Publishing, Paris.](#)

Finance Taxonomy. Sustainable finance taxonomies developed for local capital markets require a pathway to align across sectors and economic plans as well as with international taxonomies.<sup>105</sup>

### **Bolstering efforts to mobilise additional private sector finance**

Mobilising finance from private sources requires **enhancing availability of capital from local sources** and **higher levels of investment from international providers**.<sup>106</sup> A climate safe future will require higher volumes of financing and different funding structures. **Bond issuances**, as a means to mobilise private finance for low-emission infrastructure projects, total approximately USD 1 trillion.<sup>107</sup> Despite the COVID-19 crisis, demand for responsible investment has driven **green bond** issuance in 2020 amounting to USD 77.7 billion (13% lower than a year earlier).<sup>108</sup> Emerging and developing markets, excluding China, have contributed only around 10% of the global issuance of clean energy related sustainable debt. In the last 20 years, most issuance has come from Latin America, Southeast Asia and India, a rapidly booming market.<sup>109</sup> During 2021, LAC countries have experienced an exceptional increase in **sustainable bond issuance**, nearly doubling the figure in 2020 which could be partly attributed to the evolving regulatory landscape and update of the International Capital Market Association (ICMA) principles. In Chile, there has been an important presence of **social bonds** in the market, especially from governments, aimed at tackling pandemic-induced shocks.<sup>110</sup> Despite uncertain regulation, Mexico also issued its [first social gender bond](#) through FIRA, the Agricultural Trust Funds. Indonesia innovated in its **green sukuk** market, issuing one of the first global digitised sukuk targeted at retail investors. Beyond sovereign green bonds, there is a need to further support corporate and sub-regional green bond issuance for scaling financing.<sup>111</sup> Green debt issuers in emerging and developing economies mostly use proceeds for renewables projects (e.g. 80% in India) yet companies point to the attractive offering from **sustainability-linked bonds** compared to green, social and sustainable bonds. These can flexibly fund clean energy transitions, providing borrowers with more flexibility in the use of proceeds particularly in hard-to-abate industries. With the right Key Performance Indicators (KPIs), sustainability-linked bonds can raise climate ambition. In the case of Mexico, the mentioned gender bond exemplifies how the country is paving the way for certain methodologies to set the right KPIs that go not only to green but also to linking women empowerment, essential element to the green transition.

The private sector is also a leading issuer of sustainable debt, with an important rise in sustainability-linked bonds mainly in corporates in Brazil and Mexico. Examples of utilities and energy companies include Enel with its [General Purpose SDG Linked Corporate Bond](#); and Snam with energy-related transition bonds. There is significant interest in sustainable finance across emerging economies, with IEnova being the first Mexican private company to obtain a [green loan from the IFC](#), and companies like Moody's supporting progress by issuing Second Party Opinion (SPOs) on the sustainability credentials of a green, social, sustainability-linked or sustainable bonds or loans. Some examples of international efforts/initiatives supporting sustainable finance solutions includes the [FAST-Infra](#); [Climate Investment Coalition \(CIC\)](#); and the [Climate Bond Initiative](#), through a Climate Bonds Standard and Certification Scheme. In addition, OECD efforts include the [OECD Clean Energy Finance and Investment Mobilisation](#) (CEFIM) programme. The initiative takes a multi-stakeholder approach to develop innovative and effective solutions to increase private sector participation in the low-carbon energy transition.

---

<sup>105</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

<sup>106</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>107</sup> [CBI \(2020\), \\$1 Trillion Mark Reached in Global Cumulative Green Issuance: Climate Bonds Data Intelligence Reports: Latest Figures.](#)

<sup>108</sup> [OECD \(2020\), Making the green recovery work for jobs, income and growth, OECD Publishing, Paris.](#)

<sup>109</sup> [IEA \(2021\), Financing clean energy transitions in emerging and developing economies, IEA, Paris.](#)

<sup>110</sup> Moody's ESG Solutions Group (2021), Environmental Finance Bond Database.

<sup>111</sup> [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)

**Participants emphasised the role National and International Development Finance Institutions (DFIs) can play** in decreasing cost of capital while improving company's sustainability matrix. DFIs are **relevant partners** as debt providers reducing risks for private investors, and in some cases, as shareholders or advisors to help penetrate certain markets given their solid research departments as well as political support, particularly relevant for the long-term projects. Examples include Voltalia working with the Brazilian Development Bank (BNDES), and other DFIs such as the European Bank for Reconstruction and Development (EBRD). Yet participants pointed to the **potential mismatches between the development phase and DFIs procedure phase** and stressed the need for collaboration to overcome this. Participants noted the recommendations of the [G20 Report on Eminent Persons Group on Global Financial Governance](#) focusing not only on financing but on strengthening the financial architecture upstream. Examples provided included working on PPPs, procurements, definition of concessional agreements and arbitration courts among others, all necessary for projects to work. Some emerging and developing countries' barriers can be best addressed by international development finance including grants and **technical assistance for project preparation and financial structuring**. Development banks can resolve major bottlenecks and develop more robust project pipelines, aggregating smaller investments and standardising conditions related to low-carbon projects<sup>112</sup> (e.g. the World Bank's [Sustainable Renewables Risk Mitigation Initiative](#)).

There is the need for DFIs to further work on **risk-transfer mechanisms**, to facilitate clarity about outcomes at project level and promote stronger **partnerships**. Participants also underline the need for DFIs to be more innovative. Innovative examples include foreign exchange risks for projects to be financed with local currency as well as improved PPAs. A dedicated green finance concessional facility could address access to long-term debt, transaction costs, and perceived risks, particularly for least developing countries with significant debt distress. Such facilities play a pivotal role in providing local currency debt for projects which are not able to access affordable finance. Efforts to support local currency finance, strengthen local capital markets and incentives for financing include DFI guarantee programmes (e.g. GuarantCo). **Better use of blended finance** can mobilise additional private capital and foster a pipeline of "bankable" projects. The catalytic role of DFIs, through blended finance, will be critical to attract capital to emerging markets and maximise innovative energy technologies, leveraging blended finance mechanisms such as the SDG Indonesia One Fund. Bridging financing gaps will require boosting blended finance solutions as well as better collaboration between public and private financiers. By working with local partners, developing capacity and improving access to resources, blended finance can help to de-risk clean energy projects and make them attractive for lower-cost private capital. An example of this includes BlackRock's [Climate Finance Partnership](#) (CFP), a unique blended finance fund provider of catalytic capital to promote climate-related investment in emerging markets.

**Innovation can act as a pivotal lever** in tackling financing challenges. **Innovative financing structures and facilities can help project developers' access long-term capital and de-risk projects**. This area is particular critical to mobilising retail investors in many emerging and developing economies. Service models and digital payments can address hurdles, especially in energy efficiency and electrification. As Internet penetration rates continue to increase, particularly in densely populated urban areas across emerging markets, **companies see an opportunity for more data to be created through aggregation of big data analytics** hence closing the information gap experienced by investors. They point to such innovation potentially enabling innovative credit assessments not only to increase financial inclusion of traditionally excluded population, but also support to retail customers buying renewable energy. To create the required financing scale, **structuring innovative platforms** may be a viable solution that could be achieved by consolidating existing operational assets based in emerging markets. Innovation may also align development processes and systems supportive of fair and

---

<sup>112</sup> [OECD/The World Bank/UN Environment \(2018\), Financing Climate Futures: Rethinking Infrastructure, OECD Publishing, Paris.](#)

transparent procedures for tender selection and procurement processes. **Cryptocurrency** holds potential when it comes to issues of currency risk. Participants also mentioned the need to unlock Fintech solutions to empower women. The above solutions require advancement in **technological innovation**, where bankability of projects ultimately rely on end-users affordability. Lastly, **new business models** (e.g. the Build-Own-Operate-Transfer (BOOT model)<sup>113</sup>) have helped raise debt and equity on a project finance basis in Latin America and India. Expanding this model to other markets tailored to local needs could help boost investments.

**For further information, please contact:**  
**Melanie Vilarasau Slade**, EMnet Co-ordinator,  
Tel: +33 1 45 24 68 54, [melanie.vilarasauslade@oecd.org](mailto:melanie.vilarasauslade@oecd.org)

---

<sup>113</sup> The Build-Own-Operate-Transfer (BOOT model) are schemes for PPAs that has concession periods no longer than 30 years (E.g. 30 years would not be an issue for typical renewable electricity discounted cash flow analysis). The regulation also required all PPAs (including renewable electricity) to apply the BOOT scheme, effectively transferring Independent power producer (IPP) facilities to State-Owned Electricity Company at the end of the agreement and implying that PPA renewals will not be possible. [OECD \(2021\), Clean Energy Finance and Investment Policy Review of Indonesia, Green Finance and Investment, OECD Publishing, Paris.](#)