



HIGH-LEVEL DIALOGUE ON
ENERGY
UNITED NATIONS, NEW YORK, SEPTEMBER 2021

THEME REPORT ON **FINANCE AND INVESTMENT**

**TOWARDS THE ACHIEVEMENT OF
SDG 7 AND NET-ZERO EMISSIONS**

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For further information, please contact:
Secretariat of the High-level Dialogue on Energy 2021
Division for Sustainable Development Goals
Department of Economic and Social Affairs
United Nations
<https://www.un.org/en/conferences/energy2021/about>
Email: salame1@un.org

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THE TWG ON FINANCE AND INVESTMENT CONSISTED OF:

Co-Lead organizations



European Investment Bank (EIB)



International Energy Agency (IEA)



International Finance Corporation (IFC)



UN Economic Commission for Africa (UN ECA)

TWG Members

Stephanie Akinyelure

HSBC Group Management Services Limited

Anunya Bahanda

Savo Project Developers

Antonella Baldino

CDP International Development Finance

Filippo Berardi	Global Environment Facility
Wiebe Boer	All On/Shell
Héla Cheikhrouhou	Nithio
Chris Chijiutomi	CDC Group
Anton Eberhard	University of Cape Town
Tariye Gbadegesin	ARM Harith Infrastructure Investment Limited
Andrew Herscowitz	U.S. International Development Finance Corporation
Heidi Huusko	UN Global Compact and Science Based Targets initiative
Abyd Karmali	Bank of America
Filip Koprčina	Energy Shift
Najada Kumbuli	Visa Foundation
Yali Jiang	BloombergNEF
Leslie Labruto	Acumen
Hussain Mogaibel	Islamic Development Bank
Teddy Mpinganzima Mugabo	FONERWA
Joseph Nganga	Smart Power Africa
Hong Paterson	Green Climate Fund
Adriana Reais Pinto	Cabinet of Deputy Minister and Secretary of State for Energy, Republica Portuguesa
Miguel Ángel Muñoz Rodríguez	IBERDROLA
Josefina Stubbs	Res4Africa Foundation
Wenhao Sun	Columbia University
Cecilia Tam	Organisation for Economic Co-operation and Development
Valeria Termini	Università degli Studi di Roma Tre, Centro di Eccellenza Rossi Doria
Surabhi Visser	SunFunder
Rigoberto Ariel Yepez-Garcia	Inter-American Development Bank



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For further information, please contact:

Secretariat of the High-level Dialogue on Energy 2021

Division for Sustainable Development Goals

Department of Economic and Social Affairs United Nations

<https://www.un.org/en/conferences/energy2021/about>

Email: salame1@un.org



PREFACE

Energy can create transformational opportunities. For the 759 million people in the world who lack access to electricity, the introduction of clean energy solutions can bring vital services such as improved healthcare, better education and affordable broadband, creating new jobs, livelihoods and sustainable economic value to reduce poverty. In regions such as sub-Saharan Africa where half of secondary schools and a quarter of health facilities have no power, clean energy access will help save lives, and offer opportunities for prosperity at a transformative scale.

An energy revolution based on renewables and energy efficiency is urgently needed not just to accelerate economic progress and development, but also to slash emissions that are rapidly warming our planet. The energy sector today, dominated by fossil fuels, accounts for 73 per cent of human-caused greenhouse gas emissions. Global CO₂e emissions must be halved by 2030 to avoid an increasing frequency and severity of dangerous and unprecedented weather extremes, including heatwaves, devastating floods and droughts, risks to food and water security, population displacement, and loss of lives and livelihoods.

As governments start to define a pathway out of the COVID-19 crisis, we must now ensure that all countries have the chance to be part of an energy transition that seizes the opportunity to significantly improve the wellbeing of people, and planet.

This will not be an easy task. To ensure a just transition, we must support countries and communities to adapt to a green economy through social protection and new skills, ensuring all who need to be are equipped to take advantage of the 30 million new green jobs expected by 2030.

To generate the vital momentum needed for this transition, the UN Secretary-General is convening the High-Level Dialogue on Energy in September 2021, the first such meeting in 40 years. The landmark event will offer a global stage for countries to attract new investments and forge new impact focused partnerships to drive forward this energy revolution.

As a foundation for informed deliberations, five Technical Working Groups were established on the five key themes of the High-level Dialogue: (1) Energy Access, (2) Energy Transitions, (3) Enabling SDGs through Inclusive, Just Energy Transitions, (4) Innovation, Technology and Data, and (5) Finance and Investment. These Technical Working Groups brought together leading experts on these subjects from across the world to identify key recommendations for a global roadmap towards the achievement of SDG7 and the climate objectives of the Paris Agreement.

This proposed roadmap illuminates a way forward for how the world can achieve a sustainable energy future that leaves no one behind. We hope that it will help to inspire the actions needed to get there.



Mr. Liu Zhenmin
*Under-Secretary-General for
Economic and Social Affairs and
Dialogue Secretary-General*



Mr. Achim Steiner
*UNDP Administrator and Co-chair
of the Dialogue and UN-Energy*



Ms. Damilola Ogunbiyi
*Special Representative of the
UN Secretary-General for Sustainable
Sustainable Energy for All and
Co-Chair of Dialogue and UN-Energy*

FOREWORD

The European Investment Bank, the International Energy Agency, the International Finance Corporation, and the UN Economic Commission for Africa are pleased to have collectively co-led the theme report on finance and investment for the High-level Dialogue on Energy, with the support of the members of the technical working group and global champions of this theme.

The COVID-19 pandemic, coming on top of the climate crisis, has exposed serious vulnerabilities in our societies, economies and development models.

Recovering from the pandemic and building forward better towards a more climate-resilient global economy requires dramatically stepping up green finance and clean energy investments. Some three-quarters of the greenhouse gas emissions caused by human activity are related to energy production, supply and use. These emissions continue to rise and the largest share remains the use of coal in the power sector, even as the cost of renewable energy has fallen to the point that traditional claims of coal being cheaper than sustainable solutions are increasingly untenable. Lack of access to clean cooking facilities is linked to 3.8 million deaths a year and pushes populations in developing economies to damage nature in search of biomass for their energy needs. Many health facilities in developing economies lack access to reliable and affordable energy to keep critical equipment and services running – an issue laid bare by the COVID-19 crisis. Lack of energy access also constrains learning opportunities for most children in low income developing economies. These are just a few examples of the damage being done by the dearth of clean and modern energy supplies in many countries.

We have the technologies and solutions needed to tackle these challenges, and the financial resources are available, in principle. Yet we still find it difficult to mobilise annual investments of \$35 billion for electricity access and \$6 billion for clean cooking. These are insignificant amounts compared with the trillions of stimulus funding committed in response to the COVID-19 pandemic. This will only change with resolve and concrete actions taken in a coordinated manner.

This report on finance and investment spells out the challenges of financing energy access and a global energy transition – and sets out what we can do to overcome them. It offers nine recommendations that are ambitious, innovative, high-impact and scalable. The report identifies four priority result areas: (1) ensuring an inclusive and sustainable recovery by mobilising financial resources for developed and developing markets, with the priority on green investments; (2) aligning financial flows with the Paris Agreement, Sustainable Development Goal 7 and net-zero emissions objectives;

(3) fostering public-private sector collaboration and supporting local financial markets and intermediaries in developing economies; and (4) promoting a robust pipeline of de-risked clean energy projects that can attract private capital.

We collectively invite the public and private sectors, philanthropists, civil society, international organisations and all relevant stakeholders to implement the recommendations of this report. Working together, we can mobilise the massive surge of clean energy investment that is needed to drive inclusive and resilient development – and bring shared prosperity for all.

The urgency of this call cannot be overstated. We must act now so that everybody wins: the people, the environment, and the economy.



Werner Hoyer
President
European Investment Bank



Fatih Birol
Executive Director
International Energy Agency



Makhtar Diop
Managing Director
International Finance Corporation



Vera Songwe
Executive Secretary
UN Economic Commission for Africa

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1

PRIORITY RECOMMENDATIONS

Reaching SDG 7 and net-zero emissions requires an urgent and steep rise in clean energy investment and finance. Worldwide investment in clean energy and energy-efficiency will need to triple over the next ten years to put the world on track for net-zero emissions by 2050, with a priority focus on the needs of the world's least-developed countries and universal access to electricity and clean cooking by 2030.

This is a massive opportunity and one that requires concerted policy interventions, public finance, and private initiatives to be realized at the required scale. The key recommendations set out below offer a way to scale up these financial flows. They correspond to four priority areas:

- Progress towards an inclusive and sustainable recovery and financial resource mobilization for developed and developing markets
- The alignment of finance flows with the Paris Agreement, SDG 7, and net-zero objectives
- Support of local financial markets and intermediaries in many countries, and public- and private-sector collaboration
- Ensuring a robust pipeline of de-risked clean energy projects that can attract private capital

RECOMMENDATION 1

Accelerate delivery of public finance in support of sustainable energy goals.

Countries are urged to use COVID-19 recovery strategies to boost investment in sustainable energy worldwide, including provision of increased support to developing countries where resources are too limited to achieve SDG 7 by 2030. Countries with the means to mobilize stimulus packages should ensure that the packages are aligned with the needs of the energy transition in each country and respect the 'do-no-significant-harm' principle.

RECOMMENDATION 2

Regain the momentum lost on energy-access investments during the COVID-19 pandemic.

The COVID-19 crisis has sapped the ability of households and consumers to pay for energy services and has worsened the financial situation of utility companies, rural electrification companies, and other businesses working to improve access to electricity and clean cooking. As well as measures

to help viable energy-access companies that are facing near-term liquidity problems, all stakeholders—public and private—should focus on closing the affordability gap, promoting comprehensive and system-level energy-access policies, ensuring the financial viability of electricity access and clean cooking initiatives, and incentivizing service provision in remote areas.

RECOMMENDATION 3

Align energy financing with all dimensions of the Paris Agreement.

All financial sector institutions need to redefine their eligibility criteria for supporting the energy sector to align the financial sector with the objectives of the Paris Agreement, including adaptation as well as mitigation and recognition of the right to sustainable development and eradication of poverty. Reaching net-zero targets implies phasing out the financing of new energy projects reliant on unabated fossil fuels as soon as possible, taking into account that there cannot be a 'one-size-fits-all' approach to the energy transition.

RECOMMENDATION 4

Governments should work with relevant stakeholders to ensure that the realisation of SDG 7 and the global energy transition leaves no one behind.

There is an urgent need to improve and increase the capacity and financing for investment to close the huge energy-access gap. This should particularly focus on the case of clean cooking and on mitigating the social and economic impacts of the lack of access to affordable and clean energy on vulnerable communities and regions. Doing so will ensure that the energy transition is inclusive and just and that no one is left behind. In this context, governments should work with the private sector, development finance institutions (DFIs), philanthropy, academia, and civil society to implement a portfolio of options that ensure energy access to the populations most at risk of being left behind, while promoting options that empower women and youth—including innovative productive uses of energy and prosumer models. For the energy transition, financing efforts should focus on supporting countries to advance their shift to clean-energy technologies and on helping citizens to benefit from the opportunities they provide, while at the same mitigating the social and economic impacts of the shift on disadvantaged communities and helping them to navigate the disruptions.

RECOMMENDATION 5

Enhance local currency funding and support for the deepening of domestic capital markets to achieve SDG 7.

Governments, DFIs, the private sector, and donors should work together to develop a coordinated framework to address market barriers, support the capacity-building of local financiers, and ensure an optimal finance and investment ecosystem that stimulates local currency lending, attracts local currency lenders and institutional investors, and mitigates the foreign exchange risk of clean-energy projects. Deeper local capital markets provide the opportunity to increase short- and long-term investment and financing options for on- and off-grid generation using customer financing, energy efficiency, and investment support to local small and medium-sized enterprises (SMEs). Financing options include bonds, shares, special purpose vehicles (SPVs), and the secondary market. These will increase investors' risk appetite for long-dated assets and can diversify and de-risk their green investment portfolios.

RECOMMENDATION 6

Make better use of blended finance schemes to mobilize and maximize private capital for clean energy investments and innovative energy technologies.

Blending commercial lending with grants, technical assistance, concessional loans, and guarantees is vital to the deployment of new energy technologies, for ramping up implementation of high-quality clean-energy projects and energy-efficiency programs, and for expanding energy access in rural areas and high-risk countries. The trillions of dollars in investments needed can be supported by scaling up the use of blended finance mechanisms and multilateral portfolio guarantees, coupled with results-based financing, de-risking instruments, and commercial financing.

RECOMMENDATION 7

Correct market-distorting subsidies and address the lack of carbon-pricing frameworks and inadequate accounting of environmental externalities that hold back sustainable investment.

Carefully designed financing schemes, including pro-poor end-user subsidies, play important roles in ensuring access to sustainable energy. However, broader non-targeted measures that encourage wasteful consumption of fossil fuels or that prioritise their production are a major roadblock to energy transitions and must be phased out. Regulatory mechanisms that directly or indirectly price in GHG emissions are required to further strengthen the case for the investments needed to reach net-zero.

RECOMMENDATION 8

De-risk projects and fix regulatory barriers to ensure market openness, attractiveness, and readiness for private-sector finance.

Engendering private-sector finance will require the following: an enabling investment environment; a clear risk-allocation framework; system-level planning to increase the adoption of energy-efficiency and renewable-energy technologies; renewable-energy zones; scaling up of project preparatory facilities; and appropriate credit enhancement and other innovative financing mechanisms and instruments. Collectively, such support mechanisms will help deepen the pipeline of bankable clean-energy projects and attract pools of capital for investment in the power, transport, and energy sectors as well as for clean cooking.

RECOMMENDATION 9

Develop new mechanisms to link sustainable finance with opportunities to support SDG 7 and reward ambitious energy-transition strategies.

Harmonized definitions of green assets (“taxonomy”) will help to improve the availability of data for financial decision-making. They will also contribute to developing sustainable finance by providing investors and issuers with a robust, transparent, and homogeneous decision framework. Scaling up financial market solutions such as green/sustainable bonds and sustainability-linked finance, green banks, and other sustainable funds could, if appropriately designed, support and reward ambitious energy-transition targets and investment strategies. To enable such investment, there is a need to support and encourage, and, where feasible, mandate energy companies to disclose their transition strategies and the climate risks posed by their activities.

The results and action matrix below identifies follow-up actions for different stakeholder groups in order to implement these nine recommendations. Governments can identify the institutions best suited to implementing these actions across various geographies.

2 RESULTS AND ACTIONS MATRIX

PRIORITY RESULTS	PRIORITY ACTION AREAS	STAKEHOLDER ACTIONS				MILESTONES		
		Public/government	Private financiers and companies	Civil Society	International organizations/DFIs	2025	2030	Towards 2050
1. Inclusive and sustainable recovery and financial-resource mobilization for developed and developing markets (turn billions of public money into trillions in energy investment)	<ul style="list-style-type: none"> Accelerate delivery of international public finance in support of sustainable energy goals. (Rec. 1) 	<ul style="list-style-type: none"> Implement sustainable recovery plans, taking into account the goals of the Paris Agreement 	<ul style="list-style-type: none"> Gather, initiate, and propose investment projects contributing to SDG 7 and net-zero emissions targets 	<ul style="list-style-type: none"> Support initiatives to increase energy access; leave no one behind 	<ul style="list-style-type: none"> Increase support to developing countries in their financial recovery plans and more broadly on cross-sectoral planning (including capacity-building) 	<ul style="list-style-type: none"> Support a collective goal to surpass the USD100 billion/year climate finance commitment 	<ul style="list-style-type: none"> Define level of funding to blend and public interventions by country and international flows) 	<ul style="list-style-type: none"> Define level of funding to blend and public interventions by country and international flowsm
	<ul style="list-style-type: none"> Focus stimulus plans on green recovery while increasing support to developing countries, with an especial focus on delivery of energy provisions for those with least economic resources. (Rec. 1) Provide financial resources and capacity-building to support access to electricity and clean cooking (Rec.1, Rec.2, and Rec. 8) Leave no one behind (Rec. 4) 	<ul style="list-style-type: none"> Provide financing for energy access, including concessional debt and guarantees; in certain cases provide as upfront capex, results-based grants, or other de-risking instruments, to ensure affordability Mitigate social and economic consequences on vulnerable regions heavily reliant on fossil fuels for employment 	<ul style="list-style-type: none"> Develop financial products and technologies in line with SDG 7 and net-zero goals Include working capital facilities to support temporary liquidity needs; refinance existing debt to enhance resilience 	<ul style="list-style-type: none"> Monitor progress made by governments and private sector Contribute to the dialogue between public and private parties to align interests and enhance synergies 	<ul style="list-style-type: none"> Scale up philanthropy funding commitments in the energy-access space Make better use of blended finance scheme to mobilize and maximize private capital (including credit lines and adequate credit enhancement mechanisms, equity financing and concessional capital) 	<ul style="list-style-type: none"> Size of sustainable recovery plans 		

PRIORITY RESULTS	PRIORITY ACTION AREAS	STAKEHOLDER ACTIONS				MILESTONES		
		Public/government	Private financiers and companies	Civil Society	International organizations/DFIs	2025	2030	Towards 2050
	<ul style="list-style-type: none"> Prioritize incentives to make access to energy and clean cooking bankable. (Rec. 2) 	<ul style="list-style-type: none"> Promote mechanisms (e.g., issuance of new Special Drawing Rights of the International Monetary Fund [IMF]) to support developing countries with liquidity for clean-energy investment and renewed growth 						
2. Finance flows congruent with global energy goals associated with the Paris Agreement, SDG 7 and net-zero	<ul style="list-style-type: none"> The financial sector institutions are encouraged to redefine their eligibility criteria for supporting the energy sector to align with the objectives of the Paris Agreement and close the global energy access gap (Rec.3) Reforms to phase out inefficient fossil fuels subsidy and support market-based energy transition (Rec.7) Efforts to set up meaningful and credible carbon pricing (Rec.7) Harmonize taxonomy of green assets (Rec. 9) Mandate financial disclosure of transition strategies and climate (Rec. 9) 	<ul style="list-style-type: none"> Reforms to end inefficient fossil fuel subsidies Increase efforts to set up ambitious carbon-pricing frameworks Consistent intergovernmental financial regulators guide and encourage disclosure Enhance credit transparency and de-risking instruments Define ambitious energy compacts to support private-sector investments in developing countries 	<ul style="list-style-type: none"> Companies to develop decarbonization plans/transition -strategies with (science-based) targets compatible with Paris/net-zero targets and green procurement Harmonize the definition of sustainable assets (equity and debt) Disclosure in relation to taxonomies, as well as disclosure of sustainability risks, notably climate-related risk investment in Environmental, Social, and Governance (ESG) to focus on impact along all the said dimensions 	<ul style="list-style-type: none"> Support the development of domestic green capital markets Raise awareness of non-green products Citizens' 'Role as Prosumers' to shift towards green products 	<ul style="list-style-type: none"> Promote energy-access financial instruments Align lending policies with the SDGs. Support more counter-cyclical investments in support of SDG7 	<ul style="list-style-type: none"> Alignment of new financing operations with the Paris Agreement Size of green financing and level of the green premium ('premium') in basis points Raising energy-access investment to USD 40 billion per year, in line with the objective of universal access by 2030 Remaining level of fossil fuel subsidies 	<ul style="list-style-type: none"> By 2030, annual investment in renewables in the electricity sector is around USD 1.3 trillion, and in clean energy infrastructure to about USD 880 billion in 2030 	<ul style="list-style-type: none"> Over the 2021-50 period in the nearly-zero-energy (NZE) annual average total energy- sector investment as a share of gross domestic product (GDP) is around 1% higher than over the past five years

PRIORITY RESULTS	PRIORITY ACTION AREAS	STAKEHOLDER ACTIONS				MILESTONES		
		Public/government	Private financiers and companies	Civil Society	International organizations/DFIs	2025	2030	Towards 2050
	<ul style="list-style-type: none"> Strengthen green financial market: increase financing capacity of sustainable investment with higher risk profile (Rec.9) Encourage NDCs to increase bankable clean-energy actions and energy-technology solutions (Rec. 8) 	<ul style="list-style-type: none"> Promote mechanisms (e.g., issuance of new Special Drawing Rights of the International Monetary Fund [IMF]) to support developing countries with liquidity for clean-energy investment and renewed growth 	<ul style="list-style-type: none"> Support SDG-linked bonds Debt-for-climate swaps Comply with UN-backed principles for responsible investments 					
3. Local financial markets and intermediaries with augmented public- and private-sector collaboration	<ul style="list-style-type: none"> Coordinated framework for local currency funding, support for the deepening of domestic capital markets, and financing of SMEs in developing countries (Rec. 5) Increase sustainable finance in local capital markets (Recs. 5 and 9) Develop intermediaries and capacity of local banks to finance local sustainable investment (Recs.5 and 6) 	<ul style="list-style-type: none"> Government to develop liquidity of local market by issuing sovereign green bonds Create local/regional green banks Development of secondary market for large emitters, repackaging and securitization of operational clean energy asset with appropriate credit enhancement to release liquidity for new, clean green-field investments Greater government support for female and youth entrepreneurs, associations and savings groups for energy services 	<ul style="list-style-type: none"> Leverage local currency financing, capital markets Leverage technology, digitalization to provide customized service to end user Engage through domestic financial instruments from commercial sources, as well as from funding pools including social security and insurance investment funds 	<ul style="list-style-type: none"> Encourage the public to invest in sustainable savings/investment products Greater support for women's associations and savings groups, encourage microcredits to rural women and entrepreneurs 	<ul style="list-style-type: none"> Provide capacity-building services to local financing actors DFIs to create local demand on local capital markets for green financing DFIs to provide credit lines and adequate credit enhancement instruments to improve the terms and conditions of local financing and to unlock refinancing post commissioning of RE plants 	<ul style="list-style-type: none"> Size and liquidity of local green capital markets and local financing Development of secondary market and adequate credit enhancement instruments to support local financing 	<ul style="list-style-type: none"> Local investment gap towards SDG7 Rollout of secondary market 	<ul style="list-style-type: none"> Local investment gap towards net-zero

PRIORITY RESULTS	PRIORITY ACTION AREAS	STAKEHOLDER ACTIONS				MILESTONES		
		Public/government	Private financiers and companies	Civil Society	International organizations/DFIs	2025	2030	Towards 2050
4. Robust pipeline of de-risked projects to attract private capital	<ul style="list-style-type: none"> • Deploy de-risking approaches to renewable energy development and expand them beyond the power sector to energy-efficiency investments (Rec. 8) • Make better use of an increase in blended finance: blending public money and finance to bridge the investment gap (Rec. 6) • Increase local capacity, technical assistance, project preparation, and project development funds (Recs. 6 and 8) • Address regulatory barriers to ensure market openness, attractiveness, and readiness for private-sector investment (Rec. 8) 	<ul style="list-style-type: none"> • Define national targets, regulatory measures, and system planning, including for transmission and distribution (T&D) financing, off-grid, mini-grid, and clean cooking • Ensure electricity-cost reflective tariffs • Establish renewable development zones and streamline permissions process • Establish subsidy incentives and tax policies as well as implementation of grid investments needed to support private investments in renewables 	<ul style="list-style-type: none"> • Increase energy-efficiency investment and aggregation of projects (green mortgage) • Initiate/contribute to renewable development zones and streamline permissions process as well as implementation of grid investments • Enhance the role of private capital in transmission and distribution (T&D), off-grid and mini-grid financing • Philanthropy to take early project risks to support increased private-sector investments, especially for projects aimed at low-income, less bankable customers • Provide the option for end-consumers to buy power from renewable energy sources and corporate power-purchasing agreements 	<ul style="list-style-type: none"> • Compliance on energy services payments and taxes • Foster community engagement on project design and development • Advocate for policy and regulatory reforms and transparency. Contribute to the dialogue between public and private parties to align interest and enhance synergies 	<ul style="list-style-type: none"> • Provide advisory services to help governments and local project proponents develop sustainable and bankable renewable energy (RE) programs • Promote instruments like grants, reimbursable grants, loans, guarantees on a project-by-project basis and increase risk-taking capacity (equity) • Set up facilities and funds for early project preparation, local capacity development, and support for financial project matchmaking • Set up partial portfolio guarantees (PPGs) from multilateral funds to increase capacity to finance energy projects with more risks and crowd-in private capital 	<ul style="list-style-type: none"> • Clear RE targets provided by governments to give visibility to the market (capacity, technology, timeframe) • Collation of projects under development (GW or mtoe) at different stages of maturity • Establish database of climate financiers that can bring in sustainable finance to the clean energy transition, especially in developing markets 	<ul style="list-style-type: none"> • Database of renewable development zones 	

3 GOAL

The goal of this Report is to present action-oriented, ambitious, and innovative recommendations able to help rapidly mobilize public and private investment in energy access, energy efficiency, and the energy transition, while enabling the other SDGs. These investments should be impactful across a wide range of countries and sectors and collaborative across a range of stakeholders. Sustainable, resilient, and inclusive recovery in the near term and sustainable development in the longer term will not happen without well-directed finance and investment.

There is an urgent need to shift gear in terms of energy investment and finance to meet these objectives. This report thus focuses on actions that must be taken to make the 2020s a decade of delivery on energy access and energy transitions. Current annual clean energy investment needs to more than triple by 2030 to reach net-zero emissions by 2050.

The move to sustainable energy should leave no one behind, thus placing a strong emphasis on countries such as those in Africa where a high share of people are without access to electricity and clean cooking. The provision of clean, reliable, affordable energy, alongside major improvements in energy efficiency, are the common threads that can achieve the goals of SDG 7, while accelerating global energy transitions.

Achieving the SDG 7 targets on energy access will require annual investments of around USD 35 billion for electricity access, and USD 6 billion for clean cooking between now and 2030.¹ This represents a small fraction of total global spending on energy investment but an investment that would bring huge benefits to one third of the world's population.

The investments required to reach the SDG targets on energy access would be a step change compared with the amounts spent in this area in recent years. Between 2013 and 2017, around USD 8 billion was spent on average each year to improve electricity access in 20 countries representing around 70% of the world's population without access to electricity. In the same period, around USD 70 million went each year to provide clean cooking in the 20 countries with the highest number of people lacking energy access.²

The gap between current spending and the investment required to get the world on track for net-zero emissions by mid-century is similarly stark. Analysis by the International Renewable Energy Agency (IRENA) puts the annual investment required for net zero in 2050 at USD 4.4 trillion per year;³ the new roadmap to 2050 net zero of the International Energy Agency (IEA) sees total annual energy investment surging to USD 5 trillion by 2030, adding an extra 0.4 of a percentage point per year

to annual global GDP growth. This figure is based on a joint analysis with the International Monetary Fund (IMF).⁴ This compares with recent levels of energy investment below USD 2 trillion. The increase in capital flows is required across a wide range of technologies, including distributed and utility-scale renewables, efficiency projects, infrastructure and low-carbon, and sustainable fuels.

A large share of the increase in clean-energy investment is in emerging-market and developing countries; this is to avoid growing energy needs to support development in these countries translating into higher emissions. The COVID-19 pandemic has exacerbated imbalances in the cost and availability of capital across different economies, as some developing economies face increased borrowing costs due to increased debt and perceptions of risk.

There are no simple solutions. Closing the finance gap for SDG 7 and for net zero will require actions and innovation from a wide range of players, including governments, international donors, financial institutions, companies, service providers, and entrepreneurs. Investment will be required across a wide range of technologies and geographies, each with its own characteristics that affect the risks and returns of individual projects. At the same time, there are huge opportunities and benefits on offer from transitions in the energy sector, not only to reduce today's immense stresses on the environment, but also to create sustainable employment and other improvements in health and well-being.

This Report explores how to take advantage of these opportunities by moving to a world where investments in access, efficiency, clean-energy supply, and enabling infrastructure enjoy robust returns and lower risks, and the volumes of these investments expand to levels consistent with international development and climate goals.

As these opportunities expand, the transformation of the energy sector will reduce the money flowing into different types of new fossil-fuel projects. An increasing number of financial institutions are also limiting funding for unabated carbon-intensive activities, in particular, for coal projects. However, finding solutions to climate change is not just a question of building clean from now on. It is also a question of cleaning up what we have already done, given the long operating lifetimes of some coal-fired power plants and iron and steel or cement plants. Dealing with these emissions, financing the necessary abatement measures, and addressing the social implications of change, are vital.

4 CONTEXT

Total capital expenditure in the energy sector in 2020 was around USD 1.7 trillion, less than in 2019 due to the impacts of the COVID-19 pandemic. Of this sum, the amount spent on clean energy technologies, including renewable energy and energy efficiency, was around USD 600 billion—some 40% of the total. This amount has grown only slowly in recent years, partly because of falling costs for some key technologies such as wind and solar, but it remains far short of the amount of investment required to reach the shared global goals.

Clean energy projects have very different characteristics, but the essential elements that have allowed projects to get financial backing are: regulatory frameworks that provide good visibility on cashflows over the lifetime of the project; cost reductions and limited technology risk from maturing sectors, such as solar PV, onshore, and (increasingly) offshore wind; well-established and functioning supply chains, and a supportive system of lenders and financiers that understand these emerging sectors and are looking for sustainable projects.

Conversely, in geographies where risks are perceived to be higher, or in sectors where technologies are less mature or lenders are less familiar with the opportunities, energy investment to support SDG 7 and rapid transitions has yet to flow at scale. In many parts of the world, uncertainties have proliferated and multiplied as a result of the pandemic. Policy interventions and public finance are crucial to unblocking progress in these areas.

There is a gap in many parts of the world between the financial services community, which sees a deficit of energy investment projects ready for financing, and the perspective of some countries, project developers, and entrepreneurs, who feel that they lack access to low-cost finance for sustainable energy. Bridging this gap to meet the 2030 SDG targets and longer-term net-zero emissions will require the public and private sectors to work together to align incentives, build a much larger pipeline of de-risked projects, and increase the speed and scale of investments, particularly in developing countries.

Over the last year, many of the planet's largest economies and companies have announced that they aim to bring their emissions down to net zero by the middle of this century or soon after. The terms on which financing is available are crucial to the speed and affordability of these transitions. Over time, the energy system will become more reliant on technologies that, while frequently fuel-saving, are capital-intensive, and also on a massive build-out of new energy infrastructure led

by the needs of the electricity sector. Keeping upfront costs low, including financing costs, will be critical to the affordability of this process. Digitalization will likewise play an important role in shaping the opportunities for investment and innovation.

This section briefly explores six elements that provide a context for the more detailed discussion that follows:

- Sustainable recoveries
- Investment in clean energy access
- Deployment of mature low-carbon technologies and related infrastructure
- The specificities of energy efficiency
- Investment in innovation and in the hard-to-abate sectors
- The rise of sustainable finance

4.1 Sustainable recoveries

As economies recover from the shock of the COVID-15 pandemic, a focus on SDG 7 and clean energy investment offers a huge opportunity to stimulate economic activity, provide reliable clean energy, create employment, and put global emissions into structural decline. This is an urgent task, given that there are already signs of a rebound in global emissions as economic activity picks up; the latest data from the IEA show that global emissions were 2% higher in December 2020 than in the same month a year earlier.

Aligning recovery plans with energy transitions allows governments to hit multiple objectives in parallel: to stimulate economies, create jobs, and accelerate structural changes in the energy sector. According to IRENA analysis, investment in energy transition technologies of USD 2 trillion per year in the recovery phase (2021–2023), further ramping up to an annual USD 4.5 trillion during 2024–2030, can create an additional 5.5 million jobs in renewables and other energy-transition-related technologies.⁵ Analysis by the IEA, in cooperation with the IMF, shows that a set of sustainable recovery actions and targeted investments over the 2021–2023 period can boost global economic growth by an average of 1.1 percentage points a year.⁶

Some of the main recovery plans announced thus far have included major support for clean energy projects and infrastructure. For example, 30% of the European Union's €1.8 trillion stimulus package will be dedicated specifically to climate action, with safeguards on the allocation of the remaining funds to ensure that spending is consistent with long-term energy and climate goals. Canada, China, India, New Zealand, South Korea, and the United States, amongst others, have also announced energy and climate initiatives as part of their national recovery strategies. Ensuring the rapid absorption of the public money available and the compatibility of the support with a green recovery will be a key challenge.

The fiscal space for additional energy and climate measures as part of broader recovery strategies is much more constrained in many developing economies. Indebtedness and a shrinking fiscal space also undercut abilities to manage a much broader range of economic and social issues. International support will be essential: developed countries need to honour their commitment to raising USD 100 billion a year in international climate finance, and utilise this funding to catalyse even greater amounts of private finance.

4.2 Investments in clean energy access

As highlighted in the report of Technical Working Group 1, there has been significant progress in recent years in increasing the number of people with access to clean and affordable energy. Nearly half a billion people gained their first connection to electricity between 2014 and 2017, with the largest gains in South Asia and East Africa. Accordingly, the number of people without access to electricity fell from 1.2 billion in 2010 to 789 million in 2018.⁷

Despite the critical role of energy in catalysing economic development and supporting people's health and livelihoods, the world remains severely off-track to achieving universal access to affordable, reliable, sustainable, and modern energy for all by 2030, especially in Africa. The pandemic has exposed the severe vulnerabilities and structural inequalities resulting from chronic underinvestment in energy access in some developing countries.

Improving the quality of electricity services to many of those who have connections is a major priority for social and economic development. Action in this area, as with electricity access, puts the spotlight on the strained financial condition of utilities in many developing economies, where weak balance sheets undermine the ability to make new investments. The situation has been exacerbated in many cases by revenue losses due to the pandemic. The COVID-19 crisis has also weakened the financial situation of many of the other entities that are promoting access, notably rural electrification companies. However, financial investment is not enough to cover the energy access gap. There is a need for public expenditure in the form of subsidies wherever the still-to-be-served population is isolated, low-income, and/or vulnerable.

Affordability and ability to pay are critical issues for investments in energy access, both in terms of electricity supply and clean cooking. More than 40% of energy access customers surveyed reported a 'worse' or 'much worse' financial situation as a result of the pandemic.⁸ In the absence of additional public support, this will diminish the financial case for investments in energy access, undermine the ability to afford basic electricity services, and push vulnerable segments of the population into continued reliance on more polluting and inefficient fuels for cooking.

In the face of constrained public finance, it will be essential to increase private-sector investment in the electricity market to close the access gap, including through public-private partnerships, particularly in network development and expansion. Electricity market regulation often hampers the openness, attractiveness, and readiness of electricity markets for crowding-in of private-sector investment in developing countries. Though progress is being made related to the generation segment of the electricity market, there are endemic barriers to investment participation in network development not only outside the public sector, but also in off-grid markets where a sizable share of access expansion is expected.

4.3 Deployment of mature low-carbon energy technologies and related infrastructure

Investment in mature low-carbon energy technologies, led by solar PV and wind for power generation, have shown the greatest resilience during the global pandemic. Deployment in these areas is reaping the benefits of a decade of dramatic cost-reductions for some key technologies. In well-established

markets, the combination of proven technologies, supportive regulatory frameworks, and substantial operating experience is able to attract large volumes of private capital. This is also the area where policy targets and standards are most prevalent and credible, reinforcing investor confidence.

Demand from the corporate sector for clean electricity to meet sustainability targets, has been important for underpinning investments in renewables, spurred also by actions like the global RE100 initiative that brings together businesses committed to 100% renewable electricity. In addition to high corporate demand, other new sources of capital for renewable generation projects include oil and gas companies (especially for offshore wind), institutional investors, and global infrastructure funds.

Deployment of low-carbon power needs to accelerate in all markets, but a particularly important challenge is to broaden the deployment of these mature technologies in markets where, up until now, they have had less traction. This applies in particular to developing economies with significant solar potential, such as those in Africa, where perceptions of risk associated with investing in renewables remain high among investors and financiers, regulatory barriers limit investment and certain business models for rapid scaling, and capacities to provide adequate risk mitigation and management strategies are weak.

The rest of the system cannot stand still as shares of wind and solar PV rise. Ensuring that these technologies can be absorbed into power systems is a massive challenge, and most scenarios for energy transitions see a faster increase in electricity infrastructure investment (grids plus storage) than in new low-emission sources of generation (renewables plus nuclear).

Electricity networks are the backbone of today's power systems and they are even more important in clean energy transitions. However, other sources of flexibility are set to play crucial roles as well: these include dispatchable sources of power, demand-side responses (typically enabled by digitalisation), as well as a rising role for energy storage. Battery storage technologies have enormous potential as a source of short-run flexibility for electricity systems. As with all sources of flexibility, the case for investment rests on whether market and regulatory designs adequately remunerate the services that they provide to the system.

4.4 The specificities of energy efficiency

Realising the full potential of improvements in energy efficiency is essential for reducing the consumption needed to meet rising demand for energy-related services. This, while enabling a faster penetration of low-carbon technologies in the overall energy mix, also makes energy efficiency a key component of energy access. The reduced costs of energy-efficient appliances is one of the key factors that has enabled increased use of off-grid solutions such as solar home systems and off-grid fans for cooling.

Global energy efficiency, as measured by the energy intensity of the global economy, has to improve at a rate of at least 3% per year in order to hit global climate and sustainability goals. The COVID-19 pandemic added an extra level of stress in 2020, pushing down this metric to only 0.8% (corrected for weather) compared with 1.6% in 2019. But even prior to today's crisis, the rate of progress was well short of the pace required.

Opportunities to improve efficiency are ever-present across all parts of the energy system. This points to the importance of this vector in energy-transition strategies and pathways, and it also highlights a key problem for their financing. These opportunities are typically relatively small and bespoke, and can therefore be resistant to standardisation and aggregation. This area is ripe for innovation in terms of finding ways of speeding up the entry of more efficient technologies into the system, but it also relies heavily upon local financing solutions.

However, uncertainty about economic conditions, strains on household and corporate budgets, and continued low fuel prices could further delay spending on energy-efficiency improvements across the global economy: in buildings, appliances, industrial equipment, and vehicles. In all sectors, the design of government stimulus packages implemented as part of recovery policies will heavily influence the outlook for technical efficiency, by accelerating structural changes to the capital stock.

4.5 Investment in innovation and in the hard-to-abate sectors

Low-carbon sources of electricity will play a vital role in bringing down emissions across many parts of the energy sector, as electricity expands its role in transport and industry. But reaching net-zero will require a large scaling up of investment across a wide range of clean and efficient technologies and infrastructure. This will be vital to reducing emissions in areas where direct electrification is not feasible or cost-effective, as well as to tackling emissions from existing facilities that might otherwise have long operating lifetimes.

Some of the technologies required in hard-to-abate sectors are at demonstration or prototype stages, and their risk profile is high; public support for clean energy innovation and early-stage deployment thus remains essential. This is notable in sectors like steel, cement, chemicals, shipping, and aviation, where emissions are the hardest to reduce and cost-effective solutions are lagging behind.

Addressing these sectors will require strong innovation efforts to bring forward technologies that can enhance electrification of end uses, like advanced battery chemistries and technologies for the production and use of low-carbon hydrogen—a very versatile energy carrier—as well as other sustainable fuels. Carbon capture utilisation and storage (CCUS) technology can play a critical role in some areas, with its deployment for industrial clusters and hubs being a way of providing economies of scale and shared use of transportation and storage.

4.6 The rise of sustainable finance

The sustainable finance momentum is growing, but although there is a shortage of supply of sustainable assets, demand for them is increasing. Development of tools for evaluating the credentials of sustainable investments has gained pace, with several significant initiatives under way to address key challenges that have constrained progress, notably in terms of taxonomy and disclosure, as well as ESG risk management. The financial sector and its supervisors increasingly recognise the materiality of climate-related risks and opportunities, as well as the need for more harmonised approaches to taxonomy and disclosure to guide financial flows.

Evidence of the value of ESG strategies in finance is accumulating, and some of the most successful and credible areas have been those where the market has efficiently self-regulated. The market for sustainable debt, including green bonds, is growing rapidly. Governments and companies are expected to issue green bonds amounting to USD 500 billion in 2021 alone, an increase of 50% in the stock of green bonds.⁹ The EU sustainable finance action plan is defining a taxonomy to increase transparency of climate action and environmental sustainability, contributing to the setting of global standards for this asset class. Other countries are also developing approaches to classifying investments in line with sustainability goals.¹⁰

Financial markets are getting greener and increasingly reward ambitious transition policies. Financing is expected to become progressively more available for clean-energy projects, a trend which is accelerating across the financial sector. Alongside action to lower risks or perceived risks, this can drive financing costs lower.

New rules on corporate disclosure and emerging sustainability commitments by companies have the potential to significantly bolster capital allocation towards clean energy. The recommendations of the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD) will mainstream the need to provide transparent market information on the financial impacts of physical climate-related risks and from low-carbon transitions.

Investment funds and equity investors are taking climate risk increasingly seriously. Transition risks are starting to be priced in for carbon-intensive projects and companies. Many asset managers are in the process of reducing their exposure to, or divesting entirely from, energy activities and companies involved in coal, oil, and gas. In addition, many asset owners are laying the foundation for achieving substantial emissions reductions by setting science-based targets.

An increasing number of investment banks are setting lending targets for climate action and excluding investments that are not in line with the Paris Agreement. Many banks and other financial institutions, including those in developing economies, have announced restrictions or bans on financing some or all projects.¹¹

Central banks, too, are increasingly seeing climate change as a source of financial risk. The Network for Greening the Financial System is a network of 83 central banks and financial supervisors advocating for a more sustainable financial system. Banks are being placed under supervisory pressure to better understand and provide disclosure of climate-related risks.

5 CHALLENGES

Although there are many positive signals, there are also challenges, given the scale of the task ahead to achieve SDG7 and rapid energy transitions. These are grouped into four categories below:

- Slow progress towards an inclusive and sustainable recovery and financial resource mobilisation for developed and developing markets
- The misalignment of finance flows with the Paris Agreement, SDG 7, and net-zero objectives
- Weakness of local financial markets and intermediaries in many countries, and in public- and private-sector collaboration
- A narrow pipeline of de-risked clean energy projects that can attract private capital

Inequality is an underlying cause of many global challenges and a major risk factor to progress towards energy-related sustainable development goals. In 2018, 14 of the 20 energy access High Impact Countries (HICs) - i.e. those countries with 80% of the people globally without access to sustainable energy - received less than 20 percent of the total energy finance commitments to the HICs.¹² Over the 2010–2018 period, least-developed countries (LDCs) received only 20% of international public financial flows in support of renewable energy in developing countries. It is thus essential to increase financial flows to the least-developed countries, and to find ways in which public funding can leverage the private sector to invest in clean energy, for example, through relevant regulatory improvements that enhance private sector participation and greater openness, attractiveness, and readiness of electricity markets, so that millions can benefit from new electricity access.

5.1 Challenges with inclusive and sustainable recovery

COVID-19 recovery stimulus plans are increasing the public money available to finance the economy, and this creates an opportunity to accelerate sustainable investment, including in the energy sector. Many governments, primarily in developed economies, have included 'green' recovery measures in their recovery packages, and it is important that other government funding available does not detract from the net-zero goal. However, while there are exceptions, overall assessments suggest that the **amounts allocated to 'greening' the recovery remain well short of what is required** to put the world on a sustainable pathway.

Fiscal and liquidity challenges in many developing countries have been worsened by the pandemic, and the scope for broad recovery packages is much more limited. Developing economies tend to have smaller and less sustainability-oriented stimulus packages compared to developed countries.¹³ In addition, illicit financial flows (IFF) deprive some key regions of critical resources that are necessary to finance clean-energy transitions. For example, Africa lost at least USD 50 billion to illicit financial flows in 2015. This represents 30% of the USD 170 billion needed per year to close Africa's infrastructure gap. It can be noted that while trillions are being spent in developed economies, the climate finance commitment of USD 100 billion per year promised since COP15 in Copenhagen has not been forthcoming. The challenge is thus how to leverage public spending from developed countries to support developing countries in mobilising the investments they need to recover and build forward better from the pandemic, while responding to climate change with green investments.

There is a **deficit of robust, inclusive energy strategies** in many countries, especially in the least-developed countries, and this hampers transitions and investment planning for energy transitions. Moreover, under the Paris Agreement, all countries need to define their Nationally Determined Contributions (NDCs), but the level of ambition needs to be increased, and there is a lack of clarity on how countries are planning to fulfil those long-term commitments.¹⁴

There is a **risk that the transition to sustainable energy leaves vulnerable populations behind**, especially if there is inadequate focus on delivering universal access to clean cooking and electricity. The issue is not only to scale up clean-energy investments, but also to ensure that they are reaching low-income countries, island states (with decentralized requirements), and the most vulnerable communities as well as addressing the social, employment, and distributive effects of the transformation of energy systems.

Institutional and human capacity remain a major constraint on sustainable recovery and resource mobilisation in many countries: many governments and utilities, particularly in developing economies, have limited experience and capacity to develop regulations, manage, structure, and negotiate the contracts that underpin clean energy investments, and address climate risks. The costs associated with professional and legal services can be substantial. There is a need to enhance the capacities of local developers and financiers in terms of the development of de-risked bankable projects, including projects on climate risk, and also to improve understanding of the benefits of renewable energy projects.

At local level, banks and other intermediaries may be underdeveloped in some countries. Capacity-building of local financing institutions in emerging and developing markets needs to increase in order to integrate climate risk and sustainable investment within financial evaluation frameworks. Efforts to support institutional capacity development are also crucial in relation to energy access: for example, on mini-grids, information about risks, returns, and impacts are limited. It is essential to strengthen institutional capacities to gather and share pertinent data to support investment.

5.2 Misalignment of finance flows with SDG 7, the Paris Agreement, and net zero

Financing challenges for electricity access include end-user credit risk, the ability to pay for electricity and the method of payment, a scarcity of domestic investor capital for mini-grid projects, as well as broader issues such as currency risk, among others. Some nascent companies promoting rural electrification

by operating mini-grids in rural locations and providing unsubsidised off-grid solar services are also impacted and face additional financial difficulty as a result of the pandemic. Lack of economies of scale is also an issue, driving up costs and slowing down project execution. The COVID-19 pandemic has also increased the importance of affordability as a barrier to accessing clean energy. Innovations are needed for financing energy access, including credible business models for off-grid and mini-grid renewable systems, such as pay-as-you go and third-party ownership for solar home systems, which offer energy-as-a-service.

Finance for clean cooking is being left behind. The uptake of clean cooking solutions continues to face many barriers, especially in areas where firewood does not have a direct financial cost. This hinders investment in cook stoves and the development of viable business models for clean cooking services, although pay-as-you-go schemes can help by allowing customers to buy smaller amounts of fuel so that they can adapt payments to changes in income. The challenge is how to ensure alignment of clean cooking solutions and fuels to user categories and to promote the enabling environment for higher uptake of bankable options. Business models that attract the required investment to accelerate transition towards clean cooking remain essential, as billions of people continue to lack access to it.

Development Finance Institutions need to emphasise the 'D' of their mandate. Development Finance Institutions (DFI) play an important role in addressing market failures, addressing investment gaps, and providing risk mitigation instruments, but their financial firepower is inherently limited by their balance sheets. It is therefore important to have well-capitalized public development finance institutions. Furthermore, increasing the efficiency and effectiveness with which DFIs disburse funds committed to energy access will accelerate progress towards universal access. The DFIs should be encouraged to emphasize the 'D', including through project evaluation or internal metrics to increase accountability and project bankability.

Public banks and financiers need to step up their role as catalysts for investment, for example, through blended finance¹⁵ (a mix of grants, loans, and concessional finance) supporting project additionality in riskier markets and sectors. Blended finance instruments are provided by a variety of institutions, including development banks (multilateral development banks [MDBs], bilateral or national), national governments (ministries of finance), agencies (export credit agencies), private insurance companies and banks, as well as funds such as the Global Climate Fund. Instruments can take many forms, such as guarantees for political, credit, and liquidity risks, currency and interest-rate hedging instruments (swaps, forward contracts), and other products. The challenge is how to make public development finance institutions more catalytic in mobilising private-sector investments for clean energy.

The credit risk appetite of market participants is limited. Risk capital needs to be increased and to be deployed more flexibly, in order to scale up demand for the riskier investments: these are needed to achieve the large increase required in energy investment, most notably in developing countries. Risk-absorbing capital is needed among others for early-stage project development (e.g., by developers, utilities) for enterprise development (SMEs, start-ups) and to absorb some of the higher risks in public capital market that go beyond the mandate or capacity of private institutional capital (e.g., first-loss structures to cushion risk in investment funds).

Participation by institutional investors remains low. Despite recent progress, some sources of funding available in developed countries remain currently under-utilised, including institutional investors (i.e., pension funds, insurance companies, sovereign wealth funds, and endowments/foundations), venture capital, and private equity. Institutional capital brings the promise of immense scale and can

be mobilised under the right circumstances. The secondary market for clean energy assets may be particularly suitable for sizable participation by this type of market participant, such as, for example, through the purchase of a portfolio of performing operational assets. In turn, this frees up capital in the primary market (project developers, banks) towards new operations.

Clearer taxonomies for environmentally sustainable energy and associated reporting are needed.

Taxonomies can help to guide capital flows towards investments aligned with credible environmental criteria and help to indicate and manage financial risks and opportunities arising from climate change, environmental degradation, and social issues. They can also encourage long-termism in financial and economic activity, as they encourage transition thinking that extends beyond the traditional shorter-term boundaries of much financial and risk management.¹⁶

Financial institutions and supervisors have a long way to go to align their business and the financial sector with net zero. While the rise of ESG-linked financial instruments, such as green bonds (and other sustainable finance instruments, including sustainability-linked debt) are creating more capital for clean energy investments in an already liquid environment, this trend is just the beginning.

Financing of investment in natural gas remains a complex issue. Particularly in countries with low energy-access rates, natural gas will continue to play a role as a transition fuel for clean cooking, electricity access, some industrial uses, and as a power-generation fuel to switch away from coal and provide flexibility for the integration of even higher shares of variable renewables. The challenge is how to ensure carefully designed investments for gas as a transition fuel while avoiding the risk of stranded assets in net-zero energy systems.

5.3 The weakness of many local capital markets for sustainable finance

A triple mismatch complicates the task of mobilizing adequate financing for clean-energy investments in many markets. First, a risk mismatch between the sources of funding available and the risk profile of sustainable energy investment. Second, a mismatch in the location and scale of available sustainable finance (supply) in countries with well-developed financial markets and countries with high clean-investment needs with a relatively small unit size. Third, a mismatch of time horizons between available financing and the long-term nature of energy investment.

Deployment of sustainable financial solutions has not been even globally. Many countries do not have well-developed domestic capital markets. The domestic private sector could engage more fully in the development of domestic financial instruments from commercial sources and from funding pools, including ones established by social-security and insurance investment funds. Developing countries therefore need support with the development of domestic capital markets. The challenge is to enhance local capital market development, by developing the depth and liquidity of domestic financial sectors, with the aim of getting a balanced mix of domestic and international finance flowing to low-carbon energy.

Weak capital markets also create currency risks for many developing countries. One of the overarching difficulties in financing sustainable energy projects is accessing long-term, competitive financing at acceptable risk. This is the case where clean energy project contracts are signed in hard currency while

project revenue receipts are in local currency. Local currency funding allows a natural hedge of revenues against the investments, but local capital markets are often insufficient; large-scale foreign investors typically require hedging into major currencies, and such hedging may be prohibitively costly. There is an urgent need to provide investors with effective forms of support for hedging, to facilitate local currency funding on local capital markets.

The small scale of some investments also needs to be matched with the right financing products. The scale of unit investments in many energy projects can be very small—for instance, improvements in the energy-efficiency of buildings. Meanwhile, small and medium-sized enterprises (SMEs) generally face greater financing constraints, which have been exacerbated by the pandemic.

One-stop investment-support facilities and standardised documentation are often missing. Lessons learned from the large-scale rollout of renewables in some geographies provide many insights into identifying best practices for accelerating energy investment. Renewables auctions have been effective in attracting competition in many countries, and the auction design can influence financing conditions. Initiatives like 'Scaling Solar' and 'Open Solar Contracts' can help to deploy renewables rapidly and cost-efficiently by using a standardised approach. Lessons should also be drawn from successful national tender programs with standardized approaches to electrification.

Another challenge is how to get philanthropy involved in taking on more of the early project-development risks. Philanthropic funds can fill part of the clean-energy funding gap—particularly for technical assistance in project preparation—by assuming project development risks to take projects through to the production stage.

5.4 Challenges building a robust pipeline of de-risked projects that can attract private capital

In some geographies, **energy investment opportunities remain scarce compared with investment needs**, essentially as a result of high perceived risks (resulting in very high premiums on the cost of capital), limited local capacity for project preparation (where support is often needed for early-stage project preparations), currency and regulatory risks, and lack of access to domestic capital. To meet the sustainable energy goals and targets, there needs to be a rapid increase in the number of projects being brought to market.

Higher risks—real or perceived—increase costs and contribute to curbing investment appetite. Low-carbon energy investments tend to have high upfront capital intensity, making financing costs important. Providers of debt and equity capital price project risks, including market and regulatory uncertainty, into their cost of financing, following a risk/reward dynamic.

The large gap in project financing is related to the **lack of capacities to identify and develop investor-ready bankable projects**, especially in developing countries, where project developers may not have the necessary skills to attract investors. This often calls for the development of detailed studies and assessments: however, this increases project preparation costs and may not be easily borne by developers.

The energy sector is increasingly affected by climate and transition-related risks. 'Transition risk' relates to the effect of mitigation policies. There is also 'physical risk' associated with the impact of extreme weather events. The long-term climate risks are often not well understood or priced in by financial institutions and energy companies.

There is wide uncertainty over policy frameworks and whether pledges will be turned into actions. Governments need to ensure commitment, for example, through meaningful policy frameworks and energy compacts, to improve the credibility of these targets and convince investors that they will be met. The track record of achieving ambitious policies is not always encouraging: it can lead to investments on the basis of scenarios for fossil fuel, CO₂ price, and renewable deployment that assume policy targets are not met. NDCs can also be seen by some governments as a formal reporting exercise, that is somehow disconnected from day-to-day policy implementation. While a number of countries have well-designed investment frameworks, many countries still have gaps in their frameworks and can benefit from further improved instruments deployed in a more integrated manner. Furthermore, many developing countries still have challenges with regulatory capacity, resulting in poor targeting of incentives and tariffs.

The cost and availability of finance is closely related to the enabling environment for new clean energy projects. Attractiveness of electricity markets for private financing depends on the energy policy frameworks, market framework, infrastructure and investment planning, fiscal incentives, economic regulation, and other regulatory issues. When market, policy, and regulatory frameworks successfully mitigate real and perceived risks associated with investment, finance often becomes available and financiers compete for projects. The challenge is to ensure countries put in place sound enabling energy and environmental policies that support a regulatory framework with regulatory stability, rule of law, and non-discriminatory investment policies, all of which contribute to market openness, attractiveness, and readiness for private-sector finance. This, in turn, boosts investor confidence and influences the cost and availability of finance for new clean-energy projects.

The playing field is often tilted against sustainable investments, due to inadequate pricing of externalities and inefficient fossil fuel subsidies. Many governments lose billions of dollars every year because of inefficient and untargeted fossil fuel subsidies that contribute to increasing environmental, social, and economic harm. The challenge is to ensure that subsidy reforms and environmental externalities are reflected in pricing (e.g., via carbon prices). Some new carbon-pricing initiatives are coming online, such as the new Emissions Trading Scheme in China and the carbon tax in South Africa. Revenues from carbon pricing can be used to fund recovery and adjustment costs elsewhere in the system.

Securing investments can be even more difficult for smaller projects—which are often relevant in terms of being targeted at reaching the last-mile users of energy services, and also involve SMEs. Lengthy decision-making throughout the clean-energy development cycle increases project costs. Red tape, lack of coordination, and slow decision-making processes are harmful, not only with respect to the speed of project development but also to their development and financing costs.

The financial sustainability of many utilities remains weak. Utilities in many countries are challenged by inadequate planning, weak financial positions, cumbersome and constraining market regulation, and the struggle to take up new investments while, at the same time, servicing existing debt obligations and meeting operating costs. This situation is worsened by inefficient and poorly targeted social subsidies applied to keep energy prices low, often below full cost-recovery. Furthermore, many utilities are experiencing increasing revenue losses due to the COVID-19 pandemic, thus limiting their ability to invest. Utilities are critical in a large part of the world and their lack of bankability are a major bottleneck

to increased investments (and thus higher costs of finance). In sub-Saharan Africa alone, the tariff gap has been estimated as being equivalent to USD 21 billion (of which USD 11 billion is in South Africa alone) or 1.5% of the region's gross domestic product (GDP). Improving billing and collection efficiency and reducing technical and commercial losses are key to reforming this sector. The challenge is how to ensure that utilities remain efficient and bankable via credible business plans and necessary reforms which, in turn, enhance investor confidence to mobilise clean-energy investments.

The poor state of electricity transmission and distribution grids can be a major barrier. In many developing countries, transmission and distribution investments have not kept up with investments in generation, resulting in high losses on the most fragile networks (in some cases as high as 40%) and an unreliable and poor quality of service, even though there are successful models in some markets in developing countries. This is partly due to regulatory barriers to effective private-sector investment participation in network assets and system operation. As a result, some developing countries with very low energy-access rates have more capacity than can be consumed, as there is lack of infrastructure to take the power to where the demand is. Furthermore, bankable distribution models need to be developed if access to electricity has to be addressed. Mini-grid systems also face the challenge of regulatory gaps and uncertainty, unclarified risks in the event of grid arrival, tariff regimes, and gaps in establishing clear security and quality standards. In some countries, weak grid infrastructure and lack of flexibility sources, like storage, limit project size and push up costs and risks of renewable generation, as projects age. The challenge is how to prioritise and mobilise investments in transmission and distribution, to make distribution bankable.

6

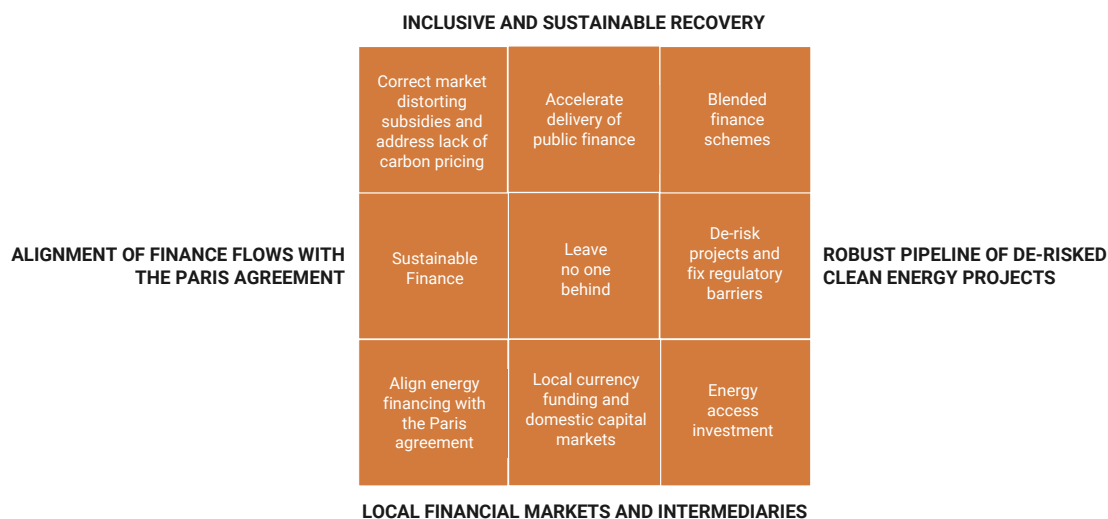
RECOMMENDATIONS/ PLAN OF ACTION

Reaching SDG 7 and net-zero emissions requires an urgent and steep rise in clean-energy investment and finance. Worldwide investment in clean energy and energy efficiency will need to triple over the next ten years to put the world on track for net-zero emissions by 2050, with a priority focus on the needs of the world's least-developed countries and on universal access to electricity and clean cooking by 2030.

This is a massive opportunity and one that requires concerted policy interventions, public financing, and private initiatives to be realised at the required scale. The key recommendations below offer a way to scale up these financial flows, starting with a sustainable, resilient, and inclusive recovery from the COVID-19 crisis.

Recommendations are organised around the same four priority areas as identified in the previous section:

- Progress towards an inclusive and sustainable recovery and financial resource mobilisation for developed and developing markets
- The alignment of finance flows with the Paris Agreement, SDG 7 and net-zero objectives
- Supporting local financial markets and intermediaries in many countries, and public- and private-sector collaboration
- Ensuring a robust pipeline of de-risked clean-energy projects that can attract private capital



The results and action matrix identify follow-up actions for different stakeholder groups to implement these nine recommendations. Governments can identify the institutions best suited to implementing these actions across various geographies.

RECOMMENDATION 1

Accelerate delivery of public finance in support of sustainable energy goals.

Countries are urged to use COVID-19 recovery strategies to boost investment in sustainable energy worldwide, including provision of increased support to developing countries where resources are too limited to achieve SDG 7 by 2030. Countries with the means to mobilise stimulus packages should ensure that the packages are aligned with the needs of the energy transition in each country and respect the 'do-no-significant-harm' principle.

The recovery and stimulus package that governments are putting in place need to be directed at a recovery that hits the multiple imperatives of economic growth, employment, and emissions reductions.¹⁷ Although many governments have included 'green' recovery measures in their recovery plans, these are not yet sufficient in aggregate to put the world on a more sustainable pathway: USD 4.6 trillion of the total USD 14.9 trillion stimulus announced to date have supported environmentally relevant sectors such as agriculture, industry, waste, energy and transport, but only USD 1.8 trillion of it has been green.¹⁸

Governments need to step up the proportion of spending on green investments in their economic plans, in order to mobilise much larger amounts of private capital in support of sustainable development and climate goals.¹⁹ Public spending needs to focus on policies with high potential on both economic-multiplier and climate-impact metrics.²⁰ In addition, all recovery measures should attach the 'do-no-significant-harm' environmental safeguard to the recovery programmes to ensure that they are aligned with climate and other environmental objectives. In particular, corporate bailouts for high-emissions sectors need to have green strings attached. Short-term recovery spending should not be conducive to direct or indirect subsidies to fossil fuels.

International Climate Finance needs to increase support to developing countries in greening their recovery plans. Developing economies tend to have smaller and less sustainability-oriented stimulus packages compared to developed countries²¹. It is crucial to take advantage of the large amounts mobilised for the stimulus packages to increase financial support to those countries most affected by COVID-19 and climate change that have limited financial resources.²² Developing economies have limited fiscal space and competing social needs and are the most suitable for green recovery funding. Public financial support can be used to ensure a healthier utility sector (mostly state-owned), which is key to a green recovery, given that it is a fundamental driver of mobilizing the large amounts of private capital needed to support the clean-energy transition.

The COVID-19 stimulus could also contribute to delivering on the USD 100 billion climate finance commitment²³ made at COP 16 to address the needs of developing countries and make up the lost ground towards achieving SDG 7.

RECOMMENDATION 2

Regain the momentum lost on energy-access investments during the pandemic.

The COVID-19 crisis has sapped the ability of households and consumers to pay for energy services and worsened the financial situation of utilities, rural electrification companies, and other businesses working to improve access to electricity and clean cooking. As well as taking measures to help viable energy-access companies that are facing near-term liquidity problems, all stakeholders—public and private—should focus on closing the affordability gap, promoting comprehensive and system-level access policies, ensuring the financial viability of electricity access and clean cooking initiatives, and incentivising service provision in remote areas.

The pandemic has been a setback for energy-access investments because it has weakened the ability to pay among consumers and worsened the financial situation of many of the entities looking to improve access—to both electricity and clean cooking. Near-term measures to cushion these effects should focus on getting support to those most in need. They include: short-term concessional support to help viable companies working on energy access to manage challenges related to reduced sales and collections; disrupted supply chains; limited cash reserves²⁴ and tightening funding resources.

Beyond the immediate impact of the crisis, it will be imperative for MDBs, DFIs, and philanthropy funding to address the continuing financing gaps related to electricity access, given that energy-access projects often still do not meet the requirements needed to attract private investors. Viability gap financing (potentially as upfront capex or results-based grants) is also important to ensure affordability; the cost of access to clean energy needed to meet basic needs—either grid-connected, mini-grids, or off-grid electrification, or clean cooking—is still much higher than the poor can afford.²⁴ Well-targeted end-user subsidies or equipment subsidies can also play a role in closing the affordability gap. Support from public financing and donors can help leverage debt capital into the energy access space, which has generally been dominated by equity and grant capital (which can be expensive, time-consuming, or both).

Providing access to electricity and to clean cooking in rural areas remains relatively expensive, logistically challenging, and geographically dispersed; it often involves small-scale diverse transactions, while international institutions tend to prioritize larger projects. Off-grid companies at all stages of growth are still undercapitalized. Financial aggregation through national intermediaries can help finance small-scale Decentralized Renewable Energy (DRE) projects. Aggregation brings together projects and companies into portfolios, reducing transaction costs and mitigating risks. Mixing highly bankable and less bankable projects could mobilize capital for low-income household installations that might deliver greater social impact.

Technical assistance facilities to support small and medium-sized renewable-energy entrepreneurs can further help countries develop capacity that can be integrated into national policies and processes. This includes advice related to technical issues (system sizing, installation guidelines, etc.), business management and operations, and refinement of project proposals; it can also support entrepreneurs to bring their innovative ideas to fruition. All interventions also need to incorporate linkages to other SDGs, including poverty eradication (SDG 1) gender equity and female empowerment (SDG 5), decent work opportunities and sustainable economic growth (SDG 8 and SDG 11), and innovation (SDG 9).

RECOMMENDATION 3

Align energy financing with all dimensions of the Paris Agreement.

All financial institutions need to redefine their eligibility criteria for supporting the energy sector to align the financial sector with the objectives of the Paris Agreement, including adaptation as well as mitigation and recognition of the right to sustainable development and eradication of poverty. Reaching net-zero targets implies phasing out the financing of new energy projects reliant on unabated fossil fuels as soon as possible, taking into account that there cannot be a 'one-size-fits-all' approach to the energy transition.

Align with Paris Agreement climate goals in the energy sector: all financial institutions are shifting their financing to renewable energy in line with market trends and energy-efficiency goals. Partly in response to supervisory guidance, banks are increasingly developing systems to measure and monitor climate-change-related risks: both transition and physical climate change-related risks (cf. Recommendation 9). Nonetheless, many banks, including DFIs, have been criticized for continuing to support fossil fuel investments even after the 2015 Paris Agreement.

Several banks and IFIs have already committed to aligning financing flows with the Paris Agreement objectives. Likewise, the MDBs have worked closely on a common approach to this. In the energy sector, several MDBs and DFIs have announced they will stop financing some energy projects that are reliant on coal, upstream oil, and gas. The European Investment Bank (EIB) has also decided to phase out lending to all (unabated) natural gas infrastructure projects.

All financial institutions, and the financial sector in general, need to align energy financing with the goals and principles of the Paris Agreement as soon as possible. In particular, all financial institutions should be encouraged to commit to a date to stop financing new, incompatible, unabated fossil-fuel projects that will no longer be compatible with the Paris Agreement. This alignment needs to be done on the basis of equity and recognising that countries have very different starting points for the energy transition and different development needs. The principle of common but differentiated responsibilities and respective capacities in the light of different national circumstances applies here.

The alignment with the Paris Agreement climate goals involves alignment with mitigation goals at the project, portfolio, and counterparty levels, as well as engagement and policy development support. At the moment, international support to recovery programs for electric utilities in developing countries focus mainly on tariff reforms. Many poor countries or companies have no decarbonization plan and MDBs need to help such countries develop a low-carbon and climate-resilient pathway.

From that perspective, the recommendation is that public and international financing to the energy sector could be linked to countries' energy transition strategies and corporate decarbonisation plans. At a minimum, this would involve immediately ending international financing for coal. The support needed is expected to increase as a result of COVID-19. International support should be increasingly tailored to the development and implementation of long-term decarbonisation plans including a highly expeditious phase-out of oil- and coal-fired generation in alignment with SDG 7, the Paris Agreement, and net-zero targets.²⁵

RECOMMENDATION 4

Governments should work with relevant stakeholders to ensure that the realisation of SDG 7 and global energy transition leaves no one behind.

There is an urgent need to improve and increase the capacity and financing for investment to close the huge energy-access gap. This should particularly focus on the case of clean cooking and on mitigating the social and economic impacts of the lack of access to affordable and clean energy on vulnerable communities and regions. Doing so will ensure that the energy transition is inclusive and just and that no one is left behind. In this context, governments should work with the private sector, development finance institutions (DFIs), philanthropy, academia, and civil society to implement a portfolio of options that ensure energy access to those populations most at risk of being left behind, while promoting options that empower women and youth—including innovative productive uses of energy and prosumer models. For the energy transition, financing efforts should focus on supporting countries to advance their shifts to clean-energy technologies and on helping citizens to benefit from the opportunities they provide, while at the same time as mitigating the social and economic impacts of the shift on disadvantaged communities and helping them navigate the disruptions.

Access to energy can be leveraged to increase the socio-economic gains of investing in SDG 7. Successfully reaching SDG 7 targets entails providing financial resources and capacity-building to support energy access and an inclusive, just energy transition, that leaves no one behind, while at the same time ensuring that the socio-economic implications of lack of access to affordable and clean energy for other SDGs are well understood and managed. Improving and increasing finance to fill the clean-energy access gap should be based on improved complementarity and coordination, as well as aggregation of projects with different stakeholders—governments, private sector, DFIs, philanthropy, academia, and civil society. This will ensure that risks are better managed and shared. Furthermore, such an approach will support countries in planning energy access and the transition and in ensuring that public resources are targeted to reaching last-mile populations in isolated, low-income, and/or vulnerable communities.

Prioritising investment with a particular focus on populations most at risk from being left behind can unlock huge spill over opportunities across the economy that benefit all population groups and thus enhance attainment of other SDGs. Cohesion and alignment between global frameworks and national development policies are required to ensure stepped-up ambition through innovative business models and supportive frameworks that leverage investment capital appropriately to scale up and accelerate energy access and a just transition.

Diversification is a vital watchword for regions heavily reliant on fossil-fuel industry and employment. Net-zero has huge economic implications for coal-producing regions or oil-exporting countries. Under the principle of 'leaving no one behind' (SDG 10), several governments have started to announce or develop new initiatives to anticipate these changes. For instance, in March 2021 Saudi Arabia announced the Saudi and Middle East Green initiatives.²⁶ The World Bank developed the Coal Sector Transition Assessment Framework, which guides the discussion and operations regarding coal transition with governments around the world. With the support of the European Commission, the framework was applied in lignite coal plants in western Macedonia. This initiative also has generated in-country engagement through Trust Funds in Poland, South Africa, and Ukraine; Reimbursable Advisory Services in Bulgaria and Romania; and Investment Project Financing projects in China and Serbia.²⁷ In the European Union (EU), the European Green Deal Investment Plan comes with a Just Transition Mechanism that has provided targeted support to mobilise at least EUR 150 billion over seven years for coal- and carbon-intensive regions. Reconversion of coal and oil regions is broader than the energy

sector and touches upon territorial development. Practical experience suggests that this often involves energy-efficiency programmes and deployment of renewable capacity to boost employment and replace existing industries. As illustrated in former or declining coal regions in the United States and Western Europe, ensuring reconversion and a just transition is a long-term endeavour.

Conversely, some countries may not be able to use their fossil fuel resources to meet the energy needs of their population, or even increase access to electricity. This may create a perception of foregone benefits from the energy transition, if green investment is costlier, and may have a lower impact on domestic development. This must be recognized in regional development policies.

More generally, the complete transformation of the energy system within only one generation can have important consequences for employment, social structures, behavioural changes, asset prices, and associated inequalities. As these impacts become better understood and start to kick in, there is a risk of social backlash.²⁸ Governments need to properly assess the distributional effects of their energy policies and set up adequate measures to address them to ensure that the achievement of net-zero is socially sustainable.

RECOMMENDATION 5

Enhance local currency funding and support for the deepening of domestic capital markets to achieve SDG 7.

Governments, DFIs, the private sector, and donors should work together to develop a coordinated framework to address market barriers, support the capacity-building of local financiers, and ensure an optimal finance and investment ecosystem that stimulates local currency lending, attracts local currency lenders and institutional investors, and mitigates the foreign exchange risk of clean-energy projects. Deeper local capital markets provide the opportunity to increase short- and long-term investment and financing options for on- and off-grid generation using customer financing, energy efficiency, and investment support to local small and medium-sized enterprises (SMEs). Financing options include bonds, shares, special purpose vehicles (SPVs), and the secondary market. These will increase investors' risk appetite for long-dated assets, and diversify and de-risk their green investment portfolios.

Strong local capital markets and hedging instruments that can leverage local currency investments are of paramount importance when it comes to the long-term affordability of energy transition investments. Ambitious moves are required to achieve lasting results through progressive modernization of local capital markets.

Hedging local currency risk and improved funding in local currency can help overcome the financial risks that can hold back project promoters.²⁹ This would address one of the overarching difficulties in financing sustainable energy projects—the access to long-term, competitive financing at an acceptable level of risk.

The network of local financial institutions, funds, and operational intermediaries needs to be strengthened or developed, if need be, to finance smaller, decentralized projects and SMEs. Financing energy access, small-scale renewables, and energy-efficiency projects requires a multitude of individual loans to equipment suppliers, service providers, and end users. Financing at local level can mobilize domestic resources and local currency financing as well as intermediated financing from DFIs.³⁰ Consumer financing is particularly important for financing energy-efficiency projects and decentralized renewable or off-grid solutions.

Fintech and digital solutions such as blockchain solutions and digital matchmaking platforms can lower financing costs, facilitate aggregation, and increase participation of retail investors, in particular millennial investors. Financial supervisory functions should be established to oversee the availability of financing products and the readiness to lend of commercial banks.

The capacity of local banks should be developed to increase knowledge about clean energy projects aided by simple risk evaluation tools that facilitate project due diligence and increased lending for small-scale projects.

In addition, dedicated funds or dedicated 'green' banks can focus on financing energy projects. There are many examples³¹ of such funds with a focus on energy, often supported by MDBs. Funds can be useful to roll out innovative solutions tailored to the specific circumstances of countries. Setting up new funds has the potential to mobilize capital primarily from pension funds, sovereign wealth funds, and DFIs.

A wide range of initiatives and financial innovations exist in the energy-access space. Energy distributors themselves can provide financing solutions, particularly for off-grid electrification equipment. When associated with digital payment solutions, energy distributors can support integration of mobile money payments into business models to ensure scale up of pay-as-you-go (PAYG) energy-access products.³² New credit risk data are needed to implement these payment solutions. Increased access to 'family and friends' seed stage grant capital can help entrepreneurial ecosystems emerge in more fragile economies. Standardization of loan processes can reduce transaction costs, facilitate aggregation, and help scale up financing. Standardization and aggregation of household loans (such as green mortgage loans) can also help securitisation into bonds (asset-backed securitisation (check) or synthetic securitization) on the secondary market. In common with other segments of the industry (e.g., green bonds), the financial sector could develop standards for energy-financing products in developing countries.

RECOMMENDATION 6

Make better use of blended finance schemes to mobilize and maximize private capital for clean energy investments and innovative energy technologies.

Blending commercial lending with grants, technical assistance, concessional loans, and guarantees is vital to the deployment of new energy technologies, for ramping up implementation of high-quality clean-energy projects and energy-efficiency programs, and for expanding energy access in rural areas and high-risk countries. The trillions of dollars in investments needed can be supported by scaling up the use of blended finance mechanisms and multilateral portfolio guarantees coupled with results-based financing, de-risking instruments, and commercial financing.

Scaling up blended finance can be particularly important for supporting new technologies, hard-to-abate sectors like steel, cement, chemicals, shipping, and aviation, energy-efficiency programs, and energy access in rural areas and high-risk countries. The use of blended finance, which blends commercial lending with grants, loans, concessional finance, project-level and portfolio guarantees, first-loss protection, project preparatory and development funds, and technical assistance can help leverage private investment and finance projects in riskier markets and sectors. Blended finance instruments are provided by a variety of institutions, including multilateral development banks, bilateral or national development banks, national governments, export credit agencies, private insurance companies and banks, and funds such as the Global Climate Fund. These public development finance institutions can use blended finance to ensure financial and development additionality; they play a catalytic role in

mobilising private-sector investments which otherwise would not have materialized.³³ The goal should also be to use blended finance with the clear objective of achieving commercial sustainability and phasing out concessional financing.

DFI/MDBs are providing blended concessional finance based on the Enhanced Principles and definitions outlined in the reports from the DFI Working Group on Blended Concessional Finance for Private Sector Projects.³⁴ The DFI Enhanced Principles are focused on private sector project implementation and are complementary to the OECD DAC Blended Finance Principles. Blended finance mechanisms coupled with results-based financing, de-risking instruments, and commercial financing can enable the trillions of dollars in investments needed for clean energy.³⁵

Multilateral portfolio guarantees (see Annex I) are another instrument that can complement project-level guarantees and support DFIs in financing risky projects without adversely impacting their credit rating. Multilateral portfolio guarantees could also provide a collective first-loss guarantee facility to several DFIs leveraging funds from the Green Climate Fund and other multilateral channels, and thus enable DFIs to build a pipeline of projects.

Increased technical assistance and project-preparation and -development funds are equally crucial to mobilising investment and will need to be substantially increased. Technical assistance for preparation of detailed project studies and assessments³⁶ can help fill the gap in capacity to identify and develop a pipeline of investor-ready bankable projects,³⁷ especially in developing countries, where project developers may not have the necessary skills to attract investors. Capacity-building of governments and institutions could also be provided as part of technical assistance to help them develop an enabling environment to mobilize investment.

RECOMMENDATION 7

Correct market-distorting subsidies and address the lack of carbon-pricing frameworks and inadequate accounting of environmental externalities that hold back sustainable investment.

Carefully designed financing schemes, including pro-poor end-user subsidies, play important roles in ensuring access to sustainable energy. However, broader non-targeted measures that encourage wasteful consumption of fossil fuels or prioritise their production are a major roadblock to energy transitions and must be phased out. Regulatory mechanisms that directly or indirectly price in GHG emissions are required to further strengthen the case for the investments needed to reach net-zero.

Investments to achieve SDG 7 and in the technologies supporting rapid energy transitions are often hampered by price distortions arising from subsidies to fossil fuels or inadequate accounting for environmental externalities. To send the right investment signals to consumers and producers, governments should develop reforms to phase out inefficient fossil fuel subsidies: according to the Organisation for Economic Co-operation and Development (OECD)/IEA, direct subsidies amounted to USD 478 billion in 2019.³⁸

Lower fuel prices during and after the pandemic opened up an opportunity for reform, as the narrower gap to market-based prices reduces the scope for a political or social backlash or for a jolt to inflation. In addition, for fossil fuel-producing countries, lower revenues from hydrocarbons created severe fiscal strains, increasing the pressure to eliminate implicit fuel subsidies.

While fossil-fuel subsidies tend to be perceived as a way of providing financial support to populations, they tend to be regressive fiscal measures as the wealthier segment of the population in developing countries consumes more energy. To improve social acceptability and manage the sharp increase in energy prices, governments should develop a package of measures, including predictable reforms, spreading price increases over time to allow energy consumers to adapt, increasing the availability of energy-efficient goods, and introducing measures to support vulnerable groups. Targeted programmes to support the poor have to be in place to help poorer parts of the population cope with the effect of price increases on their household budgets.

Putting a meaningful and predictable price on carbon emissions is another critical element of the policy response, providing incentives for energy consumers to switch away from higher-emitting sources; and incentivising producers to invest in low-carbon technologies and the finance sector to assess the transition risks and to value assets. Energy is at the forefront of the efforts to price carbon, either with a quota system or carbon tax. In addition, fiscal revenues from carbon pricing can be used to support low-carbon investment and address the inequalities created by high carbon pricing, as a meaningful carbon price will have wide-ranging distributive consequences.

There is a wide range of carbon price values used by different institutions compatible with net-zero pathways. Stern and Stiglitz (2021)³⁹ discuss "the prices of carbon that lead over time, with markets as they exist, modified by government climate intervention" [*italics original*] to a net-zero neutrality", concluding that the numbers likely to emerge would be more in the region of USD 100 per ton of CO₂ by 2030. Despite the urgent action needed, however, this carbon price level remains a long-term target. In practice, the carbon externality is only partially priced and many countries pursue decarbonisation with other measures, depending on their national circumstances.

RECOMMENDATION 8

De-risk projects and fix regulatory barriers to ensure market openness, attractiveness, and readiness for private-sector finance.

Engendering private sector finance will require the following: an enabling investment environment; clear risk-allocation framework; system-level planning to increase the adoption of energy-efficiency and renewable-energy technologies; renewable-energy zones; scaling up of project preparatory facilities; and appropriate credit enhancement and other innovative financing mechanisms and instruments. Collectively, such supportive mechanisms will help deepen the pipeline of bankable clean-energy projects and attract pools of capital for investment in the power, transport, and energy sectors and for clean cooking.

De-risking projects and addressing policy and regulatory barriers is critical to market openness, attractiveness, and readiness for private-sector finance. De-risking projects and engendering private-sector finance requires an enabling investment environment to be developed which includes several interventions, actions, and instruments. Governments need to provide clarity to investors by setting up ambitious policies that are predictable, credible and effective. Targets need to be set on long-term decarbonisation pathways consistent with net zero. In return, the private sector should also take on more risks and reduce the reliance of risk mitigation on the already constrained fiscal space of governments.

An enabling national investment framework is a long endeavour and includes a streamlining of the policy and regulatory framework and the project-permissions process to ease doing business; it also requires comprehensive electricity-sector planning, consistent with net-zero targets, including transmission distribution and distributed generation solutions (mini-grid and off-grid), with clear regulations and

policies that enable market openness, attractiveness, and readiness to allow efficient private-sector participation. Governance can be strengthened by developing a clear framework with well-defined roles, responsibilities, and authorities, and decision-making processes, and by establishing dedicated agencies with specific mandates. Realistic timelines with clear communication, and “champions” to shepherd the process are equally critical for good governance.

Efficient electricity market design and prudent regulatory frameworks are especially essential to address the endemic barriers to private participation in the transmission and distribution network, which is a critical enabling infrastructure to integrate renewables, and in off-grid networks critical to expanding electricity access. In a post-COVID environment, working to make electric utilities and their distribution systems more efficient and resilient is also a high priority.

Governments could go faster and further towards de-risking investment in specific locations by setting up transparent investment programs and mechanisms for standardization, bundling, and scaling, as, for example, with the development of renewable development zones⁴⁰ and transmission corridors. Renewable development zones can accelerate project development by streamlining the licensing and permissions process and land acquisition, and it can reduce costs by taking some of the development risk away from the private sector.

Clear and transparent risk allocation is equally crucial to de-risk projects and attract private investment. Allocating risks appropriately between the public and private sectors (to the party best able to manage and mitigate the risk) not only de-risks projects but also reduces the risk premium, lowers the cost of capital, and lowers the tariff in the case of clean-power and electricity-access projects. DFIs providing project-preparation support and credit-enhancement instruments also help de-risk projects. *For example*, a tailored risk mitigation instrument has been designed under the Sustainable Renewables Risk Mitigation Initiative (SRMI), led by the World Bank Group with financial support from the Green Climate Fund to unlock large mini-grids in the Democratic Republic of Congo and facilitate their commercial financing. This instrument will help mitigate demand and payment risks for privately-owned large-scale mini-grids and enhance financial sustainability. From a private investor's perspective, DFIs could also deploy blended finance in the form of subordinated capital (at concessional interest rates), to make the risk/return profile more attractive to private investors. The objective should be to develop an investment framework that provides a predictable investment environment for private investors by de-risking projects.

RECOMMENDATION 9

Develop new mechanisms to link sustainable finance with opportunities to support SDG 7 and reward ambitious energy-transition strategies.

Harmonized definitions of green assets (“taxonomy”) will help to improve the availability of data for financial decision-making. They also contribute to developing sustainable finance by providing investors and issuers with a robust, transparent, and homogeneous framework. Scaling up financial market solutions such as green/sustainable bonds and sustainability-linked finance, green banks and other sustainable funds could, if appropriately designed, support and reward ambitious energy-transition targets and investment strategies. To enable such investment, there is a need to support and encourage, and, where feasible, mandate energy companies to disclose their transition strategies and the climate risks posed by their activities.

There are multiple elements that can reinforce the linkages between sustainable finance and opportunities to support SDG 7 and reward energy-transition strategies:

Harmonized definitions of green assets. Clearer definitions are needed of green financial instruments consistent with SDG 7 and net-zero targets. Harmonized definitions are needed for green, sustainable, transition, and clean-energy assets (“taxonomy”) including nature-based solutions. Taxonomies are designed to help reorient capital flows towards sustainable development. Coupled with adequate disclosure, this can help to guide capital flows towards investments aligned with credible environmental criteria.

Standardized instruments, following the same principles (International Capital Market Association [ICMA], EU Green Bond Standards, etc.) to contribute to developing sustainable finance and join and support initiatives to develop and harmonise approaches to taxonomy, ideally including the International Platform on Sustainable Finance (IPSF), where such work is already under way. Among the many initiatives under way, the work under the EU Sustainable Finance Action Plan, offers some of the most advanced and comprehensive solutions, led by the EU Sustainable Finance Taxonomy (see Annex II). There is evidence of growing official action globally⁴¹ to develop and align these instruments.

Improved Disclosure. Governments and financial supervisors are encouraged to commit to measures to guide and encourage disclosure in relation to taxonomies.

Enhanced risk management and disclosure in the energy sector. It is recommended to support and encourage, and, where feasible, mandate energy companies to provide disclosure of sustainability risks, notably climate-related risk and transition strategies, entailed in their operations.

Governments and supervisors are encouraged to work in close cooperation with sustainable finance coalitions and relevant trade associations involving the private sector.⁴² Disclosure of transition plans and risks by energy companies would improve the accountability of firms and also help them to manage climate transition risks and opportunities. This would lead financiers of energy firms to a better understanding and management of the resulting financial risks and opportunities. Central banks and supervisors should continue to lead on encouraging or mandating such disclosures, including in the energy sector. Different scenarios can be used, but net-zero scenarios developed by the IEA or IRENA offer global references for assessing transition risk in the energy sector.

Scaling up green financial market solutions. Building on success in climate finance, and addressing market gaps, governments and supervisors should convene, endorse, and cooperate closely with market-based sustainable-finance coalitions offering credible and effective market solutions, to support innovation for sustainable financial market solutions such as green/sustainable bonds.

Given the costs of adopting sustainable solutions, scaled up technical assistance is likely to be essential (cf. Recommendation 6). This would aim to ensure an effective mixing of financial/risk support with capital market and issuer capacity to deliver.

Unleashing adequate risk capital requires a coordinated effort, spanning private and public finance. In the energy sector, there is still a need for risk-absorbing finance from the official sector. The official sector should ramp up support for solutions to absorb more of the inevitably higher risks of accelerated transition of the energy sector. This may entail support for hedging, local currency funding, and capital market development.

7

IMPACTS

Investment and finance are enablers for all of the actions covered by the other Technical Working Groups. As such, the impacts of implementing these recommendations are aligned with, and supportive of, the outcomes described by the other TWGs. By enabling the provision of affordable, reliable, and sustainable energy services, investment and finance are prerequisites and catalysts for many aspects of sustainable development. As such, the impacts can be considered across a wide range of energy-related areas:

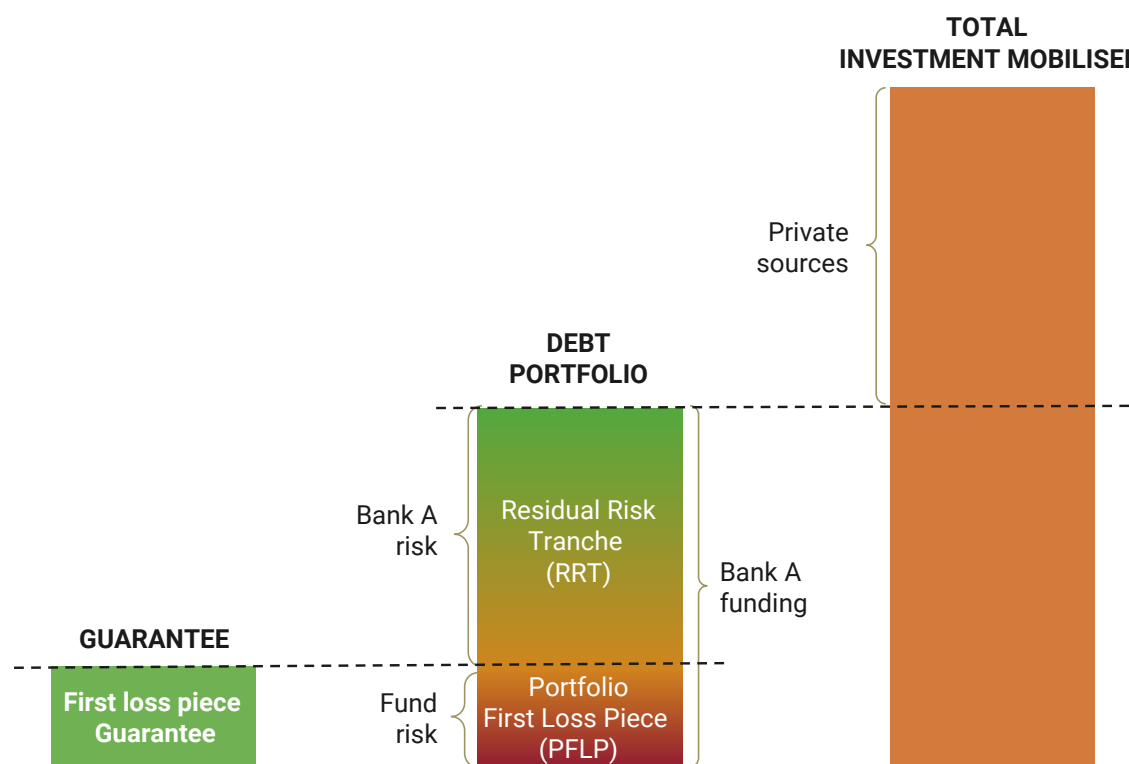
- reduced poverty and improved well-being via access to clean cooking and electricity
- reduced vulnerability to a wide range of hazards arising from a changing climate
- economic growth from affordable and reliable electricity supply and sustainable fuels
- improved health outcome via reduced risks from energy-related air pollution
- empowerment of women due to the improvements in access to modern and sustainable energy
- employment opportunities in a broad range of clean-energy areas and energy-efficiency.

In addition, many of the issues described in this report involve addressing economy-wide risks in ways that would bring gains far beyond the energy sector and environmental protection.

8 ANNEXES

ANNEX I. PORTFOLIO FIRST-LOSS PIECE GUARANTEES (PFLP)

Portfolio guarantees represent a strategic use of limited public funds to enable banks—usually public banks—to scale up financing of projects and companies presenting a higher level of risk. This risk financing crowds-in other financiers. The guarantee is provided ex ante for a portfolio of projects, rather than on a project-by-project basis, so as to better leverage limited public resources. The guarantee is capped: it covers potential losses in the portfolio, but only up to a maximum level, typically up to 25%–30%. Losses incurred above this level of first loss are not covered by the guarantee.



In the EU for instance, the European Fund for Strategic Investments (EFSI) provided a portfolio guarantee of EUR 26 billion, complemented by a EUR 7.5 billion allocation of the EIB's own resources. Thanks to the guarantee, the EIB group approved EUR 102 billion of operations over the period 2015-2020, which are expected to mobilise EUR 540 billion in investments, mainly from private sources. In the course of 2021, InvestEU will take over as the new long-term financing programme from the EU, building on the success of EFSI.

Portfolio guarantees represent a form of risk-sharing mandate that can mobilise private investments at scale with relatively limited public resources (compared to grants or project-by-project guarantees). Providers of guarantees define eligibility criteria and can set sustainability targets in order to ensure that the financing addresses investment gaps and brings additionality in terms of investment. Implementation of such programmes needs to take into account the specificities of each national context.

ANNEX II. LESSONS FROM THE DEVELOPMENT OF THE EU SUSTAINABLE FINANCE TAXONOMY

While the focus of Annex II is on the EU taxonomy, other countries including China, Japan, Malaysia, and many more have developed national taxonomies to help support the transition of their finance sectors. The EU taxonomy requirements are generally more developed than the criteria of other frameworks because of the level of detail requested by the European Commission (EC) from the Technical Expert Group (TEG), notably in terms of recommendations for technical screening criteria. A comparison and summary of the taxonomies for China, France, Japan, the Netherlands, and the EU can be found in the OECD's Developing Sustainable Finance Definitions and Taxonomies 2020 report (OECD, 2020). Another paper summarising taxonomies and nomenclatures in relation to bond markets has been published by the GBP Excom/ICMA.

The EU taxonomy is designed to help reorient capital flows towards sustainable development, manage financial risks from climate change, environmental degradation, and social issues, and to foster transparency and long-termism in financial and economic activity. It aims to provide a classification system and common language for defining what a sustainable activity is. This can help to address the risks of green washing and can improve investor confidence when investing in sustainable finance products.

To assist in the development of the EU taxonomy, the EC nominated a Technical Expert Group (TEG) made up of 35 members mainly from the financial services industry as well as development banks, trade associations, and NGOs. The OECD is an observer to the TEG together with the European Bank for Reconstruction and Development, the Central Bank Network for Greening the Financial System, and the United Nations Environment Programme Finance Initiative. Over a period of about 12 months, the TEG met regularly (on average two days per month) in four sub-groups (taxonomy, benchmarks for the asset-management industry, climate-related disclosures, and the future Standard for EU-labelled Green Bonds) to assist the EC in preparing the Delegated Acts which will contain the details for implementing the regulation.

The EU sustainable finance definitions move beyond green definitions to consider also social and governance aspects in addition to climate. The EU taxonomy covers the following six environmental objectives: 1) climate change mitigation; 2) climate change adaptation; 3) sustainable use and protection of water and marine resources; 4) transition to a circular economy; 5) pollution prevention

and control; and 6) protection and restoration of biodiversity and ecosystems. Detailed criteria have been developed for the first two objectives, and are expected to enter into force by the end of 2021. Criteria are under development for the other four objectives by the EU Platform on Sustainable Finance, with initial proposals due later in 2021.

An activity must meet the following three criteria to be considered compliant with the EU taxonomy: 1) contribute substantially to one or more of the environmental objectives; 2) do no significant harm to any of the other environmental objectives; and 3) comply with minimum social and governance safeguards. The do-no-significant-harm criterion ensures a comprehensive application of broader environmental considerations, largely based on existing legislation and rules, and is a particularly unique feature of the EU taxonomy compared to those of other countries. The Technical Screening Criteria or performance level required to meet the environmental objectives as well as the do-no-significant-harm criterion are intended to be aligned with a net-zero-by-2050 goal, and are guided by science-based targets.

Economic sectors are defined based on the Nomenclature of Economic Activities (NACE) industrial classification system, which can be mapped to other similar systems. The energy sector is among those treated under the taxonomy as a high-emitting sector. This approach has some limitations, as certain technologies (e.g., carbon capture and storage) and economic activities may fall outside of the NACE codes. NACE codes do not exist for certain areas, such as natural capital preservation, restoration, and creation. To overcome this, the (European) classification of environmental protection activities (CEPA) and the Classification of Resource Management Activities (CREMA) are also used. In addition, the EU taxonomy applies a systems approach to economic activities to better integrate aspects of production, impact of use, and end-of-life considerations. For example, the mitigation impacts of an electric vehicle will depend on a number of other consideration such as the carbon intensity of electricity, prevalent traffic congestion, and whether there is reuse or recycling of the battery at the end of its useful life. Metrics defining substantial contribution to mitigation and to the do-no-significant-harm criterion are a key component of the EU taxonomy.

Four principles have guided the development of the EU taxonomy. It is designed to be technology-neutral; dynamic and evolving; easy to understand and use; and should enable transition activities. Transition is explicitly integrated in the taxonomy. 'Transitional activities' focus on those that are not yet operating at the level compatible with the net-zero point, but are on the right pathway: such activities contribute to a net-zero economy in 2050 (e.g., electricity generation up to 100g CO₂/kWh), and generally involve the use of the best available economically viable technology; 'enabling activities' also qualify (e.g., production of technology for such transitional energy generation).

The EU platform has also reported that it is considering ways of addressing broader concepts of transition, such as recognising the role of activities where current performance is insufficient to meet existing taxonomy criteria (notably for substantial contribution), but where serious efforts are being made to converge with the taxonomy's performance thresholds and net zero. This is a material question for the energy sector, where legacy emission footprints mean large swathes of the sector being uncompliant with the taxonomy; nevertheless, action is under way to exit or taper exposure to high-emitting activities in way that is, and aims for, net zero.

The EU taxonomy covers 72 economic activities, which make up over 93% of EU-28 GHG emissions, and additional activities may be included in the future. A review of the taxonomy regulation will take place two years after its entry into force and every three years after the first review.

The Taxonomy Regulation is linked to regulations on financial disclosure. Financial products that are to be marketed as sustainable must—where a taxonomy is available for the activity in question—disclose the degree of alignment with the sustainable finance taxonomy, and otherwise must apply the taxonomy principles, such as substantial contribution. Large corporates that are subject to the EU Non-Financial Reporting Directive (NFRD) will need to disclose the taxonomy-compliant share of revenues, capital expenditure, and operating expenses. The increase in disclosure requirements linked to the EU sustainable finance taxonomy is expected to facilitate improved data quality and comparability, and to thereby enable a faster transition towards sustainable finance and investment practices across the economy.

Sources: EIB, OECD, 2020

ENDNOTES

- ¹ IEA (2020), World Energy Outlook 2020
- ² Sustainable Energy for All (2019), Energizing Finance: Understanding the Landscape
- ³ IRENA (2021), World Energy Transitions Outlook
- ⁴ IEA (2021), Net Zero by 2050. A Roadmap for the Global Energy Sector
- ⁵ IRENA (2020) The Post-COVID Recovery: An Agenda for Resilience, Development and Equality
- ⁶ IEA (2020) WEO Special Report: Sustainable Recovery
- ⁷ IEA, IRENA, UNSD, World Bank, WHO. 2020. Tracking SDG 7: The Energy Progress Report. World Bank, Washington DC.
- ⁸ https://www.gogla.org/sites/default/files/consumer_insights_covid19_webinar1_10.06.20.pdf
- ⁹ A product framework that has gained much official support, and transcended public and private issuers alike, is the Green Bond Principles (GBP), developed by a broad and balanced coalition of market participants under the aegis of the International Capital Market Association (ICMA). This has grown into a USD 1trn market, and is directed at bonds, with specific use of proceeds serving environmental purposes. The Loan Market Association (LMA) and GBP ExCom/ICMA have both subsequently issued Principles for 'Sustainability-Linked' products, which entail KPIs and disclosure at entity level (with funds used for general corporate purposes), and have gained in popularity. Disclosure and impact reporting is also ramping up through such market-based initiatives, such as the Climate Transition Finance Handbook (ICMA/GBP). Service Providers— or trading, indices and data —have also made vital contributions.
- ¹⁰ OECD (2020) Developing Sustainable Finance Definitions and Taxonomies
- ¹¹ The EIB has phased out financing to all energy projects relying on unabated fossil fuels, including natural gas.
- ¹² https://www.seforall.org/system/files/2020-11/EF-2020-UL-SEforALL_0.pdf
- ¹³ https://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.805256.de/snapfi_report_synthesis_deploying_icf_5.pdf
- ¹⁴ "Climate Commitments Not On Track to Meet Paris Agreement Goals" as NDC Synthesis Report is Published | UNFCCC
- ¹⁵ For example, the September 2020 TCFD Report status shows that over 110 regulators and governmental entities from around the world support the TCFD. In addition, central banks and supervisors from across the globe—through the Network for Greening the Financial System (NGFS)—have encouraged companies issuing public debt or equity to disclose in line with TCFD.
- ¹⁶ For instance, decarbonisation and associated oil price scenarios have led some major energy companies to write down fossil-fuel asset values, such as BP's [USD]17.5bn write-down of value of assets including oil sands and ultra-deepwater wells.
- ¹⁷ https://read.oecd-ilibrary.org/view/?ref=136_136201-ctwt8p7qs5&title=Making-the-Green-Recovery-Work-for-Jobs-Income-and-Growth_
- ¹⁸ Greenness of Stimulus Index - Vivid Economics
- ¹⁹ A joint study by the United Nations Economic Commission for Africa and Oxford University shows that prioritizing green stimulus investments in green sectors including renewable energy, climate smart agriculture, sustainable public transport options and nature-based solutions enable inclusive growth and create significantly more jobs and more value addition in the economy than similar investments using fossil fuel-based technologies. In the case of the Republic of South Africa green investments for renewable energy, sustainable transport solutions, and nature-based rehabilitation deliver 250% more jobs and 420% more value added in the economy compared to traditional fossil-fuel investments, while for the Democratic Republic of the Congo investment in renewable energy, nature-based solutions and improved urban transport solutions bring 130% more jobs and 280% more value added in the economy (<https://repository.uneca.org/handle/10855/43948>)

- ²⁰ Hepburn, C., O’Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020), ‘Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?’, Smith School Working Paper 20-02.
- ²¹ https://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.805256.de/snapfi_report_synthesis_deploying_icf_5.pdf
- ²² For example, the United Nations Economic Commission for Africa and PIMCO have proposed a novel impactful mechanism – the Liquidity and Sustainability Facility (LSF) – aimed at lowering the borrowing costs of African countries by increasing the demand for their sovereign bonds. This will be achieved by making it possible for existing sovereign bondholders to post such instruments as collateral for low-interest loans financed in part by a new issuance of Special Drawing Rights (SDRs). The resources mobilized through such repurchase agreements will then be used to finance investments in those countries, thus paving the way for the global community to assist African policymakers in restarting and reimagining sustainable growth, for example, by introducing innovative financing tools such as bonds linked to the pursuit of the sustainable development goals. (<https://www.uneca.org/stories/eca-launches-lsf%2C-a-vehicle-for-debt-management-and-fiscal-sustainability>)
- ²³ [100_billion_climate_finance_report.pdf \(un.org\)](#)
- ²⁴ Catherine Wolfram on the Impact of Electricity on Poor Lives | Berkeley Haas
- ²⁵ In the case of Africa, the United Nations Economic Commission for Africa has developed the SDG7 Initiative – based on three pillars of sustainability, governance and finance - to align the interests of countries, financiers and project developers to fast-track and scale up private sector finance for clean energy investments in Africa in support of access and climate ambition. This way countries can increase the ambition of their NDCs through bankable clean energy actions. (<https://repository.uneca.org/handle/10855/43684>)
- ²⁶ <https://saudigreeninitiative.org/>
- ²⁷ <https://www.worldbank.org/en/results/2020/11/10/coal-mine-closure-and-a-just-transition-for-all>
- ²⁸ <https://www.bruegel.org/2018/11/what-the-gilets-jaunes-movement-tells-us-about-environment-and-climate-policies/>
- ²⁹ The TCX Fund developed with DFI support is an example of a pioneering platform that contributes to better functioning financial markets in developing countries, primarily by developing and making available risk management products like derivatives, for countries and markets where these risk management products are not sufficiently developed.
- ³⁰ In the case of Africa, the United Nations Economic Commission for Africa’s 2020 Economic Report on Africa shows clearly the impactful role that domestic finance and capital markets can play. The use of domestic resources in local currencies is critical for increasing long-term private finance and investment in infrastructure, including energy. This would deepen capital markets and increase the scale of development banks (ERA_2020_mobile_20201213.pdf (uneca.org))
- ³¹ Examples of funds with an energy focus include NIDF in Nigeria—an infrastructure debt fund, denominated in local currency, designed to provide smaller loans to mini-grids (most recently, Havenhill) and similar projects. Examples of energy-access funds include SIMA-Angaza Distribution Finance Fund[2], Spark+ Fund
- ³² Examples of such initiatives include Engie Africa Energy Access, and BBOX
- ³³ For further guidance, see the OECD document DAC Blended Finance Principle 2: Design blended finance to increase the mobilisation of commercial finance. Accessible: https://www.oecd.org/dac/financing-sustainable-development/blended-finance-principles/documents/Principle_2_Guidance_Note_and_Background.pdf.
- ³⁴ DFI Working Group on Blended Concessional Finance for Private Sector Projects, December 2020. <https://documents1.worldbank.org/curated/en/221851613400323474/pdf/Joint-Report-2020.pdf>
- ³⁵ Many blending initiatives on a project basis already exist in the field of energy access and renewable energy. Examples include the COVID-19 Energy Access Relief Fund which leverages guarantees from SIDA, commercial risk capital from DFIs and investors, grant capital as first-loss, and Green Climate Fund financing as junior debt capital. FMO’s Access to Energy Fund (AEF) is a revolving fund that deploys risk capital to trigger investments in

renewable energy. IFC's Managed Co-Lending Portfolio Program (MCP) is a syndications platform that creates diversified portfolios of emerging market private sector loans, allowing investors to increase exposure. IRENA has developed the Risk Assessment and Mitigation Platform (RAMP) to facilitating access to risk mitigation solutions for renewable energy projects in developing and emerging markets.

³⁶ Project development funds are generally small and have the potential to be scaled up. Examples of PDFs include IFC InfraVentures, Afric50, InfraCo Africa and InfraCo Asia. SIMA-Angaza Distributors Finance Fund, IRENA/ADFD Facility

³⁷ Examples of Project Preparation Funds include PPIAF, GIF, IFC's Upstream initiative, IFC upstream, TAF, AECF—African Enterprise Challenge Fund driving high risk capital to entrepreneurs.

³⁸ <https://www.oecd.org/environment/governments-should-use-covid-19-recovery-efforts-as-an-opportunity-to-phase-out-support-for-fossil-fuels-say-oecd-and-iea.htm>

³⁹ The Social Cost of Carbon, Risk, Distribution, Market Failures: An Alternative Approach | NBER

⁴⁰ For instance, in the Benban solar park, the Egyptian government ensured that all land was acquired and provided to developers; availability of transmission lines, construction equipment and manpower were also ensured. Thanks to auctioning to private-sector developers under transparent bidding guidelines, Egypt was able to attract a tariff of less than 3 USD cents for the Kom Ombo Solar Park, as opposed to 8 USD cents for FIT projects contracted in 2017. These examples were supported under different programmes developed by EBRD and GCF.

⁴¹ China, which also has a long history of work on green taxonomy and disclosure, recently announced (PBoC statement April 2021) its intention to harmonise its taxonomy approach with that of the EU this year, in the context of the International Platform on Sustainable Finance (IPSF), where governments representing over 50% of global emissions are participants. The implications are likely to be evaluated by the G20 Sustainable Finance Study Group.

⁴² These include the EU Platform on Sustainable Finance (EU PSF hosted by the European Commission), the Principles for Responsible Investment (PRI), the Climate Action 100+ ("CA 100+") investor grouping, the International Capital Market Association for the debt market and notably its committees for Sustainable Finance and the Green and Social Bond Principles ("ICMA/GBP"), as well as the World Economic Forum (WEF) Global Futures Council on Net Zero.

For further information, please contact:

Secretariat of the High-level Dialogue on Energy 2021

Division for Sustainable Development Goals

Department of Economic and Social Affairs

United Nations

<https://www.un.org/en/conferences/energy2021/about>

Email: salame1@un.org



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