Sustainable Energy Hub

UNDP

Innovative Governance for Private Sector in Just Energy Transition

June 2024

Table of Contents

EXECUTIVE SUMMARY 2

THE CONTEXT AND INTRODUCTION 5

PILLAR 1: DIRECT PUBLIC POLICY ACTIONS 12

1.1. National net-zero targets and roadmaps 12

1.2. Regulatory frameworks and enforcement 15

1.3. Subsidies and other fiscal incentives 20

1.4. Optimizing and rationalizing procedures 24

PILLAR 2: STRATEGIES FOR STRENGTHENING PARTNERSHIPS 31

2.1 Innovative project and portfolio financing 31

2.2 Start-up and innovation accelerators 34

2.3 Scaling university-industry partnerships for innovation 37

2.4 Facilitating business connections 38

2.5 Building a green jobs workforce 39

2.6 Just Energy Transition Partnerships 41

2.7 Joint Ventures and other alliances 42

CONCLUSION 44

* Note: This Action Brief is written to assist member countries in advancing just energy transition. It serves as a companion document for UNDP's Energy Governance framework, specifically aligning with Focus Area 2: Policy and Regulatory Framework.

EXECUTIVE SUMMARY

In the face of accelerating climate change, our generation stands at a crucial crossroads. The responsibility to advance global progress has never been more urgent, with the imperative to achieve net-zero emissions by 2050 at the forefront of this challenge. This monumental task begs the guiding question: *How can governments catalyze the private sector's role in ensuring a sustainable and just energy transition that fosters development?*

As we endeavor to mitigate the adverse effects of climate change, it becomes clear that this is not merely an environmental issue but a governance one. Effective, inclusive, and accountable governance is essential for strengthening private sector participation and facilitating a just energy transition. Public policy, as a cornerstone of energy governance, is pivotal in reducing greenhouse gas emissions and enabling a transition that is equitable for all.

The International Labour Organization (ILO) defines a just transition as a fair and inclusive approach to greening the economy, emphasizing the creation of decent work opportunities, and ensuring no one is left behind. It says, "A Just Transition involves maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labour principles and rights". While ambitious climate action could deliver up to 18 million net jobs by 2030,[1] disparities in job creation

[1] Invest in climate education to build a better workforce for a greener future, International Labour Organiation,22 April 2021, Access at: https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_781859/lang--en/index.htm

and losses across different regions underscore the necessity of effective governance mechanisms to shape policies that attract private sector involvement while aligning with decarbonization goals.

This also emphasizes the critical role of policy frameworks that not only incentivize private sector engagement but also ensure transparency, accountability, and a commitment to decarbonization. By fostering an innovative and investment-friendly environment, governance structures can propel economic growth, technological advancement, and the creation of decent work – job opportunities which provide adequate earnings, safe work environments, and social security in the affected regions, all while advancing towards our net-zero objective.

Moreover, governments must navigate the delicate balance of pushing for economic development within the constraints of the earth's planetary boundaries, ensuring a sustainable future where humanity can thrive. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes.[2] This also involves the private sector aligning profit motives with environmental stewardship and human rights, guided by principles such as those outlined in UNDP's Business and Human Rights initiatives,[3] fostering a harmonious balance between economic prosperity and societal well-being.

In response to the guiding question, this action brief delivers policy insights and examples aimed at empowering the private sector to significantly contribute to a just energy transition. It articulates a two-pronged strategy tailored for global application, allowing policymakers to customize these strategies to their unique national contexts.

The initial approach emphasizes proactive governmental interventions, including the establishment of nationwide objectives and strategic plans, the implementation and oversight of regulatory structures, the provision of direct financial support and incentives, along with initiatives aimed at drawing investments and technological progress. The subsequent approach underscores the importance of enhancing collaborative efforts, spotlighting forward-thinking financial arrangements, backing for

[2] Planetary boundaries, Stockholm Resilience Centre, November 10, 2022, Access at: https://www.stockholmresilience.org/research/planetary-boundaries.html

[3] United Nations Guiding Principles on Business and Human Rights, UNDP, April 30, 2011, Access at: https://www.undp.org/asia-pacific/bizhumanrights/publications/guiding-principles-business-and-human-rights

entrepreneurial ventures and innovation hubs, frameworks to amplify and facilitate market readiness of technologies, the encouragement of industry linkages, the cultivation of a workforce equipped for the green economy, the advancement of Just Energy Transition Partnerships (JETPs), and the support for cooperative ventures and alliances.

This action brief aligns with the objectives of Sustainable Development Goal (SDG) 7: Affordable and Clean Energy, which seeks to guarantee universal access to affordable, reliable, and sustainable energy services, while also advancing other critical SDGs, including SDG 13 on climate action and SDG 16 on promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable, and inclusive institutions at all levels. This initiative further supports SDG 17 (especially Target 17.17) to encourage and promote effective public, public-private and civil society partnerships, building on partnership experience and resourcing strategies.

Through effective governance and strategic policy implementation, this action brief presents a path forward for governments to engage the private sector as a key partner in achieving a just and sustainable energy transition. It not only addresses the immediate question but also sets a blueprint for global action, aligning with Sustainable Development Goals and paving the way for a resilient, sustainable, and equitable future.

THE CONTEXT AND INTRODUCTION

The United Nations' SDGs, along with the targets set by the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), are pivotal in addressing the dual imperatives of mitigating and adapting to climate change while fostering sustainable development. Within this framework, ensuring universal access to energy and alleviating poverty are integral components. Clean energy access not only empowers communities and drives economic growth but also plays a critical role in climate change mitigation and resilience-building efforts, particularly in vulnerable regions. By advancing both climate action and energy for development goals in tandem, we can create a more sustainable and equitable future for all.

However, despite efforts, progress has been sporadic. If emissions stay in line with current pledges under the Paris Agreement (known as Nationally Determined Contributions, or NDCs), the IPCC states that we are on track to surpass the 1.5°C warming limit, which was established to keep the overall impacts of climate change on humanity to an achievable minimum.[4] Without transformational changes now in our approach to tackling climate change and harnessing the potential of clean energy for broader development, there will be catastrophic consequences for people around the world. The

[4] Special Report: Global Warming of 1.5°C, Intergovernmental Panel on Climate Change, (n.d.). Access at: https://www.ipcc.ch/sr15/

economic and social vulnerabilities already present in developing countries will be significantly amplified due to the negative effects of climate change.[5]

With this urgency, the private sector has already shown its ability to contribute to – and even lead, in some cases – global decarbonization goals, given suitable incentives and regulations. In a 2022 article by McKinsey, a consultancy firm, it was estimated that approximately 400 large US-based companies had committed to net-zero targets, aligned with the United States national pledge to achieve net-zero by 2050.[6] Commitments have been encouraged and incentivized by strong action from the Biden Administration with their respective Inflation Reduction Act[7], as well as in Europe with The European Green Deal[8] which aims to reduce carbon emissions and accelerate research and development and the commercialization of leading-edge green technologies. Although many of these pledges are yet to fully demonstrate the ambition required to meet the Paris Agreement's target of a below 1.5-degree warming, green technological innovation and advancements, which have been led by the private sector and accelerated by government incentives, are starting to make the transition from fossil fuels possible.

Strong commitments to renewable energy development from Governments, coupled with robust policies, regulations, subsidies, and long-term planning that has provided the right incentives to private companies, has been instrumental in driving growth in the sector. China has seen prolific growth in renewable energy. In the country's Five-Year Plan, China aimed to achieve 33% of its electricity consumption from renewables by 2025, which it is set to meet, and possibly, exceed. China's thermal power supply grew by less than 1% to 5,853 TWh, while solar, wind and hydro combined grew

[5] Renewing global climate change action for fragile and developing countries, Brookings, November 14, 2022, Access at: https://www.brookings.edu/research/renewing-global-climate-change-action-for-fragile-and-developing-countries/

[6] Navigating America's net-zero frontier: A guide for business leaders, McKinsey & Company, May 5, 2022, Access at: https://www.mckinsey.com/capabilities/sustainability/our-insights/navigating-americas-net-zero-frontier-a-guide-for-business-leaders

[7] The Inflation Reduction Act Will Lower Costs, Reduce Inflation, Create Jobs, And Make Historic Investments In Fighting Climate Change, Senate Democratic Leadership, August 12, 2022, Access at: https://www.democrats.senate.gov/newsroom/press-releases/the-inflation-reduction-act-will-lower-costs-reduce-inflation-create-jobs-and-make-historic-investments-in-fighting-climate-change

[8] The European Green Deal, Access at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

by around 6% in 2022, despite the impact of the drought, as reported by S&P Global.[9] In 2022, China's renewables capacity (mainly solar, wind and hydro) accounted for roughly 46% of China's total power generation capacity. China also added a substantial amount of wind capacity ahead of the phase-out of subsidies for onshore and offshore wind projects. Both of these subsidies resulted in companies rushing to accelerate their projects, states S&P Global. Offshore wind capacity was increased by 4 GW in 2020 and by 17 GW in 2021. China's wind capacity is expected to reach around 430 GW in 2023, a growth of around 61 GW from 2022.[10]

Developing countries like India, with an enabling ecosystem supported by both public policies and private sector participation, have witnessed a steep rise in their renewable capacity addition. India's installed solar capacity increased 17 times in a span of 7 years from 2015 and the country's cumulative solar installations stand at 63 GW at the end of 2022 along with 42 GW of installed capacity of wind power plants. The Indian government aims to meet as much of the new and growing energy demand as possible through non-fossil-fuel sources and has committed to an ambitious target of achieving 500 GW of non-fossil-fuel energy capacity by 2030. As on October 31, 2023, the share of non-fossil fuel sources in India's total installed electricity generation capacity reached 43.82%.[11]

In Sub-Saharan African countries, the demand for renewable energy is growing rapidly, driven by abundant renewable resources and decreasing technology costs. There has been a significant increase in the use and implementation of utility-scale and distributed solar photovoltaics (PV) and other renewable energy sources throughout the continent, with growth rates reaching double digits. Tanzania exemplifies this trend, with significant progress in solar energy development. Initiatives like the Rural Energy Agency (REA) have expanded access to electricity in remote areas, while policies and regulations promote solar use in sectors like agriculture and health. Investment in large-scale solar projects is increasing, aided by declining technology costs. For example, in Zanzibar there is an

[9] China to maintain renewables growth pace in 2023 despite uncertainty, S&P Global Commodity Insights, February 1, 2023, Access at: *https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/020123-china-to-maintain-renewables-growth-pace-in-2023-despite-uncertainty*

[10] Ibid

[11] Non-fossil fuel sources account for nearly 44 percent of India's total installed electricity generation capacity, Ministry of New and Renewable Energy, Dec 6, 2023, Access at: *https://pib.gov.in/PressReleasePage.aspx?PRID=1983201#:~:text=Non%2Dfossil%20fuel%20sources%20account,total%20installed%20electricity%20generation%20capacity*

agreement with Mauritius-based Generation Capital Ltd and Tanzania's Taifa Energy to build its first large-scale solar power plant with an estimated cost of $140 million.[12] Nigeria, Ghana, Zambia, Uganda, Ethiopia, Kenya, and South Africa are some of the other examples of African countries implementing ambitious renewable energy development policies.

Although these experiences serve as sources of inspiration, it is crucial to recognize that policies have been implemented within diverse physical, social and macroeconomic contexts, each presenting unique challenges and opportunities when trying to accelerate the energy transition while ensuring security of supply and affordability. These contextual variations among countries globally may include the following (Fig.1), among others:

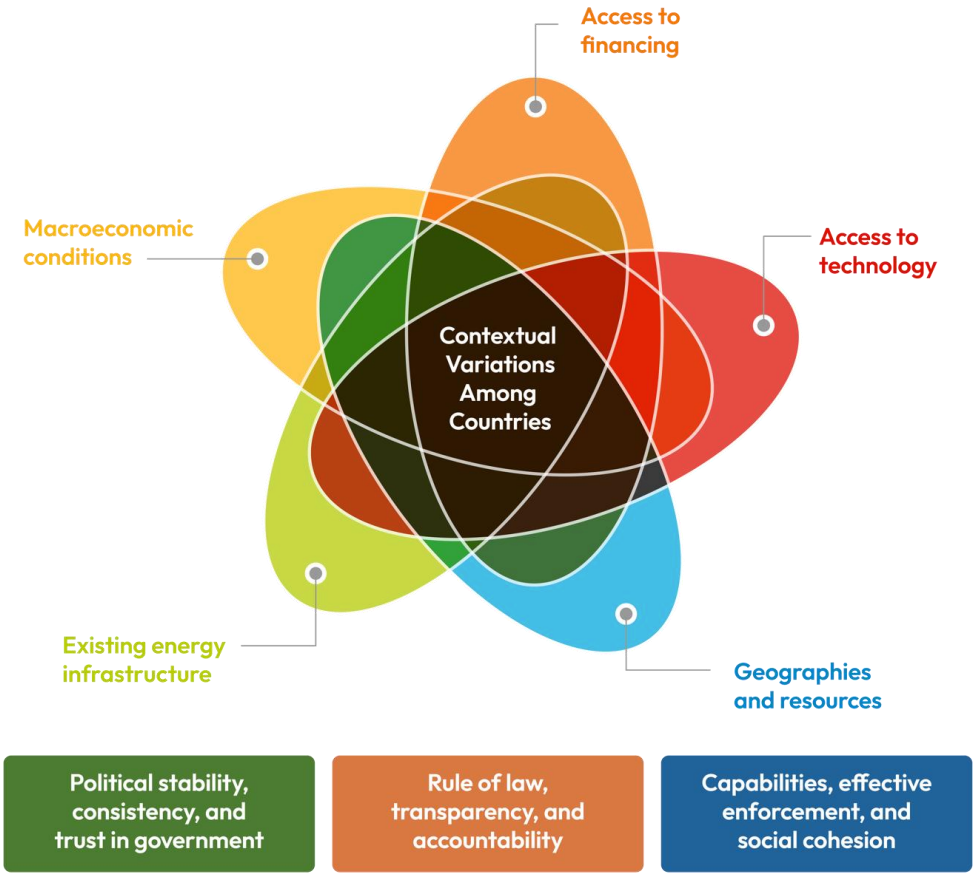

Fig.1: Key contextual variations among countries

[12] Zanzibar signs agreements for historic solar power plant, Energy Connects, May 22, 2023, Access at: https://www.energyconnects.com/news/renewables/2023/may/zanzibar-signs-agreement-for-historic-solar-power-plant/

- **Access to financing:** Access to financing is a critical factor, especially in developing economies where the cost of capital tends to be higher due to a variety of reasons. This poses challenges for both public and private entities in raising sufficient funds for the necessary infrastructure investments to transition to cleaner technologies. Moreover, countries with large informal economies (where the tax base is low and/or the ability to pay is low) may find it particularly difficult to access upfront financing to adopt these technologies, despite their long-term cost-effectiveness compared to fossil fuel alternatives.

- **Access to technology:** While some countries benefit from homegrown technology or have access to it due to the size of their domestic economies and markets, many developing nations, least developed countries, and Small Island Developing States (SIDS) may face challenges in either developing the necessary technological innovations domestically or accessing them in global markets at an affordable rate.

- **Geographies and resources:** Countries exhibit varying degrees of renewable energy potential, with some boasting abundant solar or wind resources, while others may lack such natural advantages. Similarly, disparities exist in access to natural gas reserves, with certain regions endowed with significant reserves, while others rely heavily on global markets and supply chains. The recent conflict in Ukraine has underscored the vulnerability of such dependencies.[13] Furthermore, countries vary in geographic size and population density, with implications for energy infrastructure planning and spatial utilization.

- **Existing energy infrastructure:** The quality of existing energy infrastructure, including the electricity grid, significantly influences the feasibility and effectiveness of energy transition initiatives. Countries with reliable grids and established utility companies may find it easier to implement transition policies compared to those starting from scratch, requiring tailored approaches to address diverse energy infrastructure needs.

[13] Gas Market Report Q4 2022, IEA, October 2022, access at: https://www.iea.org/reports/gas-market-report-q4-2022

- **Macroeconomic conditions:** Some low-income and emerging markets suffer from elevated debt levels, which, for many, have been on the rise due to the need for additional and unexpected spending to fight the COVID-19 virus.[14] Excessive debt loads heighten the tension between meeting important and longer-term development goals and addressing more immediate fiscal vulnerabilities. Alongside this, food and commodity prices remain high, with continued food security challenges. Elevated inflation in economies across the world is leading to tightening global financial conditions. These macro-economic conditions are likely to remain into the near future, creating additional challenges for many developing countries to finance the energy transition.[15]

In addition to the variations mentioned above, governance-related factors also play a crucial role in shaping countries' ability to navigate the energy transition. Political stability, social cohesion, trust in government and the private sector, currency volatility, and the rule of law, including the effective enforcement of contracts in the judicial system, are key determinants of a country's investment climate and policy-making capabilities. Governments' analytical, operational, and political capacities also influence their ability to design and implement effective energy policies.

It is also essential to acknowledge and address the risks of corruption (in its different forms) in accessing financing for energy transition measures, particularly when funds are allocated from the government. Beneficial ownership transparency emerges as a crucial tool to ensure wider governance accountability, especially for companies operating in energy and extractive industries. Variations in these governance factors can significantly impact countries' resilience and adaptability to energy transition challenges, underscoring the importance of tailored and context-specific policy approaches.

Accordingly, this action brief aims to provide a suite of public policy measures and options, with the goal of enabling policy makers to select appropriate solutions to spur the private sector's leadership and investment in the energy transition and adapt them to local contexts. This exercise of looking at

[14] Caught by a cresting debt wave, IMF, June 2020, Access at: https://www.imf.org/en/Publications/fandd/issues/2020/06/COVID19-and-debt-in-developing-economies-kose

[15] Low-income countries, International Monetary Fund, January 24, 2022, Access at: https://www.imf.org/en/Topics/low-income-countries

the issue of private sector effective participation involved a global review of existing documentation on effective governance structures and frameworks to engage the private sector to enable the energy transition, including reference documents from the United Nations, World Bank, and other multilateral organizations, alongside global consultation with selected experts and practitioners working in the UNDP and including practitioners within UNDP's External Advisory Group on Energy Governance.

Resulting from this research, two broad policy approaches emerged:

- **Direct public policy actions:** Effective public sector policies, regulations, incentives, and subsidies to create an ecosystem and environment for private sector innovation and investment; and,

- **Policies for strengthening partnerships:** Governance structures and frameworks for strengthening partnership with the private sector to advance a just energy transition.

This action brief has been divided into these two sections accordingly, followed by a conclusion section.

PILLAR 1: DIRECT PUBLIC POLICY ACTIONS

Governments[16] – sometimes supported by multilateral financing institutions and other agencies – have substantial power to direct and influence the development of the private sector, while also taking care to avoid over-regulation or over-subsidization. This section includes the key areas of direct public policy actions, with illustrative examples of successful efforts globally.

1.1. National net-zero targets and roadmaps

The first step of a country's energy transition journey is typically to commit to emissions reduction targets and eventually a Net Zero target that is enshrined in legislation. Approximately 90% of global GDP is covered by countries that have committed to Net Zero carbon emissions by certain dates. This has led to a significant focus on transitioning the energy sector away from fossil fuels, towards renewable energy.

[16] The term 'government' in this document refers to the overarching system of governance within a country, encompassing various state-owned entities and exercises. State-owned entities are specific assets or organizations owned or controlled by the government to serve public interests across different sectors of the economy. Therefore, when 'government' is mentioned, it inherently includes state-owned entities and exercises.

Following the commitment to a Net Zero target, a government must develop roadmaps – comprehensive and integrated energy plans to achieve these targets through energy transition and decarbonization of different parts of its economy – while also keeping in mind constraints posed by the 'energy trilemma'. I.e., a government must ensure progress towards Net Zero by managing the country's growth model, in order to also ensure sufficient economic growth, job creation, and affordable energy for its inhabitants and industries, while maintaining or increasing energy security. Roadmaps must be designed keeping in mind these complexities and tradeoffs and must also include interim targets and steps along the journey toward the ultimate goal.

All this requires strong collaboration – with transparency and inclusiveness at the core – between lead government agencies responsible for long-term planning, civil society and other critical stakeholders, and the private sector itself. A strong governance dimension with robust institutional framework and effective regulatory mechanism(s) while also ensuring accountability and oversight is essential for improving the business case of clean energy access and transition and to attract investment.

There are inspiring examples of Net Zero targets and roadmaps from across the world, including:

Table 1: National Net-Zero Targets from selected countries

Country	Net Zero Goals
South Africa	South Africa has expressed its commitment to achieving a net zero carbon emissions target by 2050, as outlined in its Long-Term Strategy (LTS) document. The National Planning Commission is currently working on establishing a shared vision for South Africa in 2050 and plans to revise its Low-Emission Development Strategy accordingly. Additionally, the Just Transition Framework, introduced by the Presidential Climate Commission in June 2022, also supporting towards net-zero greenhouse gas emissions by 2050.[17]

[17] Climate Action Tracker – South Africa, November 23, 2023, Access at: https://climateactiontracker.org/countries/south-africa/net-zero-targets/

India	India committed at COP-26 to achieving Net Zero by 2070, with a number of key interim milestones to be achieved by 2030: 500 GW of non-fossil fuel capacity, 50% of energy requirements met by renewable energy sources, emissions reduction of 1 billion tons, and reduction in the economy's carbon intensity by 45%.[18]
UAE	In 2021, the UAE announced its intention to achieve net zero emissions by 2050, marking a significant milestone as the first Middle Eastern and Gulf country to commit to this ambitious goal under the UAE Net Zero 2050 strategic initiative. Following up on this commitment, in November 2022 during COP27, the UAE unveiled its detailed "National Net Zero by 2050 Pathway," outlining its plan to achieve carbon neutrality by the middle of the century. Building upon these efforts, in March 2023, the UAE reinforced its dedication to achieving net zero emissions by signing the "UAE Government's Net Zero 2050 Charter." [19]
Indonesia	Indonesia committed to a target of Net Zero carbon emissions by 2060, with the Indonesian Ministry of Energy and Mineral Resources (MEMR) collaborating with the IEA on the roadmap titled Energy Sector Roadmap to Net Zero Emissions in Indonesia. The roadmap was launched at the G20 Energy Transitions Ministerial Meeting in Bali under Indonesia's first G20 Presidency.[20] Additionally, the Just Energy Transition Partnership Indonesia was also launched to aid the initial phase of this transition.[21]
UK	The UK Government enshrined in law an economy-wide Net Zero by 2050. It also has a Net Zero Strategy for all sectors of the economy to support this target. Part of the UK Net Zero legislation included the establishment of the Climate Change Committee, an independent, statutory body to advise the UK government on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change. The government has also set interim targets, backed by carbon budgets, and monitors progress against them.[22]

[18] COP-26: CEEW Unpacks India's 2070 Net-Zero Target and other Climate Mitigation Measures, Council On Energy, Environment, and Water, October 2021, Access at: https://www.ceew.in/news/cop-26-ceew-unpacks-indias-2070-net-zero-target-and-other-climate-mitigation-measures

[19] Climate Action Tracker – UAE, December 2, 2023, Access at: https://climateactiontracker.org/countries/uae/net-zero-targets/

[20] Indonesia's push to reach net zero emissions can help power a new phase in its economic development - News – IEA, September 1, 2022, Access at: https://www.iea.org/news/indonesia-s-push-to-reach-net-zero-emissions-can-help-power-a-new-phase-in-its-economic-development

[21] Just Energy Transition Partnership Indonesia, Access at: https://jetp-id.org/

[22] Policy Paper - Net Zero Strategy: Build Back Greener, Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy, UK Government, April 5, 2022, Access at: https://www.gov.uk/government/publications/net-zero-strategy

1.2. Regulatory frameworks and enforcement

With roadmaps in place, a government must institute regulatory frameworks to set up appropriate incentives and penalties as well as checks and balances – implemented in a transparent manner – for the private sector and consumers. Incentives can help to motivate the private sector by increasing the commercial appeal of projects that might involve lengthy timelines or high risks of achieving sufficient return on investment. Checks and balances can include mandates, standards and quality assurance, consumer protection forums, and other means to safeguard public goods.

The UK's Ofgem – mentioned later in this section – is often cited as a successful example of an effective regulator, particularly in overseeing electricity markets and large-scale grid-connected renewable energy projects. Ofgem ensures public good by enabling competition and innovation, protecting consumers, and holding the private sector accountable to commitments. For instance, Ofgem regularly imposes fines on companies that fail to meet its minimum standards, thereby incentivizing compliance and ensuring accountability. Additionally, Ofgem fosters competition by requiring companies to compete in various areas, such as minimizing customer minutes lost, thus driving efficiency and service quality improvements in the market. Regulatory frameworks can also be used to ensure certainty and stability in energy market rules, as well as ensuring financial health of various actors in the system including, buyers and sellers of energy.

In least developed or conflict-affected countries, despite limited capacity and resources, the implementation of regulatory frameworks can be achieved by prioritizing impactful measures, seeking international assistance for technical support, and exploring flexible regulatory approaches, such as regulatory sandboxes or pilot projects, to test and refine regulatory approaches before full-scale implementation. Through proactive measures and strategic resource utilization, these countries can foster environments conducive to energy transition and inclusive growth, overcoming limitations.

While this section refers mainly to energy regulation, it should be noted that financial regulators also have a role to play in terms of how they allow financial institutions to treat risk-weight assets in

different regions – for example, reducing risk-weights on sustainable assets held by financial institutions could help financial institutions deploy more capital.[23]

Regulatory frameworks can involve the following components:

- **Placing required governance and institutions:** Regulating institutions, both the energy (the electricity regulators, the gas regulators etc.) and broader climate regulatory bodies need to be suitably resourced – including budgets, staff, and authority – to execute this substantial mandate. The agencies could be supported by a National Taskforce, an Oversight Board, and other bodies, but these bodies alone would be insufficient for the mandate at hand. Once in place, this framework of regulatory institutions can help to assign roles and responsibilities to different participants in the energy sector, including asset owners and operators, energy suppliers, standards bodies, market operators, consumers, etc. A good governance system would also need careful planning and investment in oversight institutions such as anti-corruption agencies to strengthen transparency, accountability, and integrity and achieve a cost-effective energy transition. Further, ensuring transparency in private company ownership, through comprehensive disclosures of beneficial ownership, assets, and income, is paramount in mitigating conflicts of interest and combating corruption within the energy sector.

  Brazil serves as a notable example of a comprehensive regulatory framework governing the energy sector. The country's regulatory landscape includes independent agencies such as the National Electric Energy Agency (ANEEL) and the National Petroleum Agency (ANP), which are instrumental in rulemaking and enforcement. Moreover, specialized bodies like the Brazilian Electricity Regulatory Agency (EPE) address specific energy challenges and ensure regulatory compliance. Brazil also features dedicated agencies like the Brazilian Development Bank (BNDES), offering financial support for renewable energy projects, and the Brazilian Electricity Trading Chamber (CCEE), responsible for managing energy transactions and market development. Additionally, Brazil's decentralized approach involves State Energy Agencies

[23] Why green assets and bank capital don't always mix ICAEW Insights, March 23, 2023, access at: https://www.icaew.com/insights/viewpoints-on-the-news/2023/mar-2023/why-green-assets-and-bank-capital-dont-always-mix

(SEAs) coordinating renewable energy initiatives regionally, ensuring effective implementation and integration of renewable energy solutions nationwide.

Tanzania has established a network of key institutions to oversee its energy sector. The Tanzania Electric Supply Company (TANESCO) manages power generation, transmission, and distribution across the country. The Rural Energy Agency (REA) promotes rural electrification through renewable energy projects like solar and mini-hydropower plants. The Energy and Water Utilities Regulatory Authority (EWURA) regulates energy and water services, ensuring compliance with quality and safety standards. Additionally, the Tanzania Petroleum Development Corporation (TPDC) oversees the exploration, production, and distribution of petroleum resources.

- **Monitoring performance and ensuring proper functioning of the system:** Once in place, the network of regulatory agencies will then be in charge of tracking progress and making sure that the assigned roles and responsibilities are undertaken by the relevant parties. The agencies may need to intervene at times to address bottlenecks, enforce regulations, etc. This also includes ensuring the quality, stability and financial health of various actors in the system including buyers and sellers of energy.

  Performance- or output- based regulation is generally seen as best in class in liberalized (or privatized) markets, as it incentivizes private firms in particular to deliver sustained and successful outputs for customers, as opposed to regulations that focus only on inputs. For example, in Australia, the Australian Energy Regulator (AER) plays a crucial role in monitoring and regulating the performance of the energy sector by employing a performance-based regulation approach, emphasizing outcomes and customer benefits rather than simply focusing on inputs. This approach encourages private firms to deliver sustained and successful outcomes for consumers, also allowing them to earn profits when they perform better, aligning with the principles of output-based regulation.

- **Instituting transparent channels for insights and feedback from industry and consumers:** The institution mandated to lead implementation of the roadmap could put in place structures for regular and effective consultations with industry and with consumers, in order to inform

development or course corrections of policies and regulations. These consultations could lead to measures to improve 'Ease of Doing Business' and better safeguarding of consumer rights.

For instance, in India, ministries form consultative committees for new policies during their discussion stages. Industry associations/representatives are often part of such committees. When it comes to regulations, it is mandatory for a regulatory body to issue draft regulations. Once issued, the draft will receive comments from industry stakeholders after which a public hearing is held to hear all the submissions and discuss their inputs. The regulation can only be finalized and officially issued after these consultations. Moreover, NGOs such as the Prayas Energy Group in India have been actively involved in empowering and engaging consumers by providing essential information and resources, supporting inclusive governance initiatives.[24]

Similarly, in countries like Brazil and South Africa, mechanisms are in place to ensure inclusive and participatory governance. In Brazil, regulatory bodies often release draft proposals, inviting input from industry stakeholders and the public, fostering a collaborative approach in shaping policies. Likewise, South Africa follows a consultative process where draft regulations undergo thorough scrutiny, involving industry representatives and the public, before being officially implemented. These examples underscore the significance of engaging stakeholders in decision-making processes for robust and inclusive energy governance in developing nations.

- **Establishing and harmonizing effective standards and labels:** Ensuring consistent global standards for defining and labelling sustainable assets and projects could help to de-risk and support investment. An example of this is the FAST-Infra Sustainable Infrastructure (FISI) Label.[25] This is a globally applicable label for projects demonstrating significant positive sustainability performance. It is designed to enable developers and operators to show the positive impact of an infrastructure asset and attract investors seeking assets, which positively contribute to sustainable outcomes. The purpose of the FISI Label is not to create duplication, but rather to harmonize existing standards, frameworks, and taxonomies and enable the

[24] Capacity Building – Consumer Information, Praya Energy Group India, Access at: https://energy.prayaspune.org/our-work/capacity-buildings/consumer-information
[25] FAST-Infra Sustainable Infrastructure Label, Climate Policy Initiative, November 2, 2021, Access at: https://www.climatepolicyinitiative.org/fast-infra-sustainable-infrastructure-label/

transformation of sustainable infrastructure into a mainstream, liquid asset class. The label was launched at COP26 receiving endorsements from several global sustainability bodies, such as the Glasgow Financial Alliance for Net Zero (GFANZ). The FISI label is managed by a secretariat, a consortium consisting of Bloomberg and Global Infrastructure Basel with global expertise in sustainability standards as well as financial, software, and data platforms.

- **Setting up independent oversight and audit mechanisms:** The governing agencies could set up independent audit mechanisms to verify progress and compliance to ensure that energy transition initiatives adhere to relevant laws and regulations and further to ensure social justice, environmental protection, and human rights. For example, the Energy and Petroleum Regulatory Authority oversees electric utilities, the petroleum industry, and coal development in Kenya under the Energy Act of 2019. Its responsibilities include licensing, economic regulation, enforcement, and compliance, and managing complaints and dispute resolution.

  Mexico's Energy Commission's responsibilities include promoting healthy competition, encouraging market development, and penalizing the abuse of market power. In the UK, Ofgem plays an important independent role in protecting energy consumers, especially vulnerable people, by ensuring that they are treated fairly and benefit from a cleaner, greener environment while holding the private sector accountable to delivering on commitments, failing which companies can be required to return financial support received from the government.

  Meanwhile, Supreme Audit Institutions (SAIs)[26] also have pivotal role as key public auditors in assessing governmental approaches to energy challenges.[27] Their responsibility extends beyond prudent expenditure to ensuring that government actions are transparent and accountable in managing energy-related matters. SAIs can play a crucial role in not only overseeing fiscal responsibility but also in promoting government accountability and efficiency in addressing just energy transition concerns.

[26] Supreme Audit Institutions (SAIs) are public oversight institutions that audit a government's use of public funds and are a critical link in a country's accountability chain, responsible for the audit of government revenue and expenditure. These institutions also have an important role to play in energy climate change.
[27] EU Action on Energy and Climate Change (The role of the EU Supreme Audit Institutions in energy and climate change), Access at: https://op.europa.eu/webpub/eca/lr-energy-and-climate/en/#chapter3

1.3. Subsidies and other fiscal incentives

Subsidies and other fiscal incentives can be aimed at either (or both) industry and consumers, as appropriate. Industry-focused incentives can, among other things, subsidize the costs of production and distribution of clean energy solutions, and provide long term price and/or demand certainty, amongst other things. While direct incentives to industry may not always result in lower prices for consumers, when implemented within a broader regulatory environment that promotes competition, they can contribute to price reductions. Additionally, targeted price controls in specific areas can ensure affordability for consumers. For instance, creating a competitive market environment alongside incentives can encourage companies to become more efficient and to pass on cost savings to consumers through lower prices or increased product offerings. Generation-based incentives can also reduce costs and spur production, while DCR (Domestic Content Requirement) policies promote local manufacturing and job growth, ensuring renewable energy policies yield tangible economic benefits locally. However, it is essential for countries to carefully consider and align such policies with international trade regulations, like those set by the World Trade Organization (WTO), to avoid potential disputes and ensure compliance with global trade rules.

On the other hand, consumer-focused incentives directly target end-users by lowering the effective cost of clean energy and associated technologies. These incentives aim to increase the affordability and accessibility of clean energy technologies for consumers, thereby stimulating demand and market uptake. By reducing the financial barriers to adoption, consumer incentives can accelerate the transition to cleaner energy sources and technologies.

Importantly, when designing incentives, governments must ensure sufficient space for innovation that could lead to new and improved technologies and/or lower costs that could further enhance the efficiency and accessibility of energy initiatives, while still protecting consumers. Governments must avoid narrowly defined incentives that result in certain technologies and choices to be locked in, thereby inhibiting improvement. In other words, governments must carefully balance the trade-off between agility and certainty. Technology-neutral subsidies, performance-based incentives, diversified support, or market-based mechanisms are some of the strategies discussed in this regard.

Table 2: Policy types, possible mechanisms, and key examples

Policy Types	Possible Mechanisms	Key Examples
Direct Industry-Facing Policies (mostly supply-side policies)	- Regulations targeting emissions reductions	- Carbon pricing mechanisms
	- Support for generation of renewable energy or renewable products	- Subsidies for manufacturing (e.g., solar panels, batteries) or for generation
	- Incentives for renewable energy adoption	- Feed-in tariffs
	- Support for research and development	- Grants for clean energy innovation
Direct Consumer-Facing Policies (mostly demand side policies)	- Financial incentives for energy efficiency	- Rebates for purchasing energy-efficient appliances
	- Public awareness campaigns promoting renewables and energy efficiency products and services	- Tax credits for residential solar installations
	- Energy efficiency standards for consumer goods	- Mandatory labeling for energy performance of buildings
Indirect Policies	- Investment in public transportation infrastructure	- Infrastructure development for electric vehicle charging
	- Support to equitable energy transition	- Subsidies for low-income or vulnerable households to access clean energy
	- Education and job training programs for renewable energy sectors	- grants covering tuition fees, training materials, and certification costs for courses related to renewable energy technologies,
	- Inclusive policymaking processes involving stakeholders	- Supporting community-led renewable energy projects

These incentives (or disincentives) can take a variety of forms, including the following:

- **Direct, industry-facing policies, mostly supply-side**, may include feed-in tariffs and premiums, quota obligations, renewable portfolio standards, grid access provisions, auction schemes, and production-linked incentives and tax breaks.

  India's Renewable Power Obligation and Production Linked Incentive (PLI) Scheme are two examples of industry-facing policies. The renewable power obligation mandates that all electricity distribution licensees should purchase or produce a minimum specified quantity of

their requirements from renewable energy sources, including solar, wind, hydro, and storage. This obligation has led to a significant increase in India's installed capacity to over 180 GW by end of December 2023.[28] The PLI Scheme provides incentives as bonuses that are linked to production output rather than as upfront subsidies for capital expenditures. PLI Schemes have been announced for a variety of industries including solar manufacturing, electric vehicles, advanced chemistry batteries and grid-scale batteries, and green hydrogen and green ammonia.[29] These initiatives are not only accelerating India's transition towards sustainable energy but are also attracting significant investments in the renewable energy sector.

In the UK, the Contracts for Difference (CfD) scheme is the government's main mechanism for supporting large scale renewables development. CfDs incentivize investment in renewable energy by providing developers of projects with high upfront costs and long lifetimes with direct protection from volatile wholesale prices by stabilizing revenue streams, while protecting consumers from increased costs when electricity prices are high.[30]

In the Philippines, a Feed-in Tariff ("FiT") system has been designed to incentivize the development of generation projects from renewable sources, a Renewable Energy Market for the trading of renewable energy certificates to facilitate meeting the minimum renewable generation targets set by the NREB, and the Green Energy Option program, which provides end-users with the option to choose renewable energy resources.[31]

- **Direct, consumer-facing policies, mostly on the demand side**, might encompass procurement subsidies, tax incentives, and measures such as prohibiting the sale of new internal combustion engine vehicles or fossil fuel combustion devices. Other examples could include rebate programs for energy-efficient appliances and equipment, as well as grants for home energy efficiency upgrades.

---

[28] India has installed more than 180 GW of renewable energy capacity as of Dec 31, pv Magazine, February 9, 2024, Access at: https://www.pv-magazine-india.com/2024/02/09/india-has-installed-more-than-180-gw-of-renewable-energy-capacity-as-of-dec-31/

[29] Production Linked Incentive (PLI) Schemes in India, June 7, 2021, Access at: https://www.investindia.gov.in/production-linked-incentives-schemes-india

[30] Contracts for Difference, Department of Energy Security and Net Zero, UK Government, November 16, 2023, Access at: https://www.gov.uk/government/publications/contracts-for-difference/contract-for-difference

[31] Public-Private-Partnership Legal Resource Center, February 11, 2022, Access at: https://ppp.worldbank.org/public-private-partnership/renewable-energy#feed%20in%20tariffs%20Philippines

India's direct benefit transfers and green open access rules are examples of consumer-facing policies. The direct benefit transfer involves subsidies for residential rooftop solar power systems, which can be availed by consumers directly through a national portal. The green open access rules permit any consumer to opt for green power supply.[32] [33] Similarly, California implements direct consumer-facing policies to promote solar energy adoption. The state provides tax credits and incentives for residential solar installations, making renewable energy solutions more accessible and appealing to consumers.

Other examples of consumer-facing policies are from the UK, which announced the end of the sale of new petrol and diesel cars by 2030[34] or the boiler upgrade program offers capital grants of up to £7,500 to incentivize property owners to switch from fossil fuel heating to low-carbon alternatives like heat pumps and biomass boilers.[35] Further, Germany's has advanced consumer-facing policies including substantial incentives in the form of financial support, tax benefits, and reduced registration fees to encourage embrace of eco-friendly transportation.

- **Indirect policies.** These could include investments in infrastructure expansion to facilitate the adoption of renewable energy technologies, supporting a just and equitable energy transition through targeted social programs, community engagement initiatives, and skilling programs to equip individuals with the expertise to participate in the growing clean energy workforce.

  In India, the green energy corridor provides dedicated infrastructure to transmit renewable energy across the country by laying exclusive transmission lines for solar and wind power projects.[36] The Union government and many state governments are also looking to upgrade

[32] Ministry of Power notifies "Green Energy Open Access" Rules to accelerate ambitious renewable energy programmes, July 19, 2022, Access at: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1842737
[33] National Portal for Rooftop Solar - Ministry of New and Renewable Energy. January 17, 2024, Access at: https://solarrooftop.gov.in
[34] Government takes historic step towards net-zero with end of sale of new petrol and diesel cars by 2030, UK Government, November 18 2020, Access at: https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030
[35] Boiler Upgrade Scheme, Gov.UK, Access at: https://www.find-government-grants.service.gov.uk/grants/boiler-upgrade-scheme-1
[36] Green Energy Corridor, Government of India, Ministry of Power, https://powermin.gov.in/en/content/green-energy-corridor

policies governing power generation, distribution, and electrification of residential and commercial areas to support the growth of charging infrastructure for electric vehicles.

The European Union Emissions Trading Scheme stands as a pioneering example of an indirect policy. As the world's first and largest carbon market, this scheme operates by establishing a market-driven mechanism for trading emission allowances to incentivize emission reductions and promote a more sustainable and low-carbon industrial landscape within the EU.[37] [38] The EU White Certificate Scheme [39] or India's Perform Achieve and Trade Mechanism [40] are another market-based mechanism that helps increase energy efficiency in different sectors.

The EU Carbon Border Adjustment Mechanism (CBAM) is also another example that serves as a significant instrument to establish an equitable cost for the carbon emissions generated during the production of carbon-intensive goods entering the EU. It aims to incentivize cleaner industrial practices in non-EU countries. [41] These examples are effective governance strategies that enhanced private sector engagement in accelerating energy transition.

1.4. Optimizing and rationalizing procedures

Many of the aforementioned direct public policy actions would contribute to attracting investments and technology by making a country or region more commercially viable for the private sector. Additional measures, including the following, could further improve the attractiveness of a geography for foreign direct investment (FDI), and enable a stronger pipeline of investment-ready projects:

[37] Green Energy Corridor, Ministry of New and Renewable Energy, Government of India, Jan 16, 2024, Access at: https://mnre.gov.in/green-energy-corridor
[38] Climate Action - EU Emissions Trading System (EU ETS), European Commission, (n.d.). Access at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en
[39] Energy Saving Obligation and Tradable White Certificates, European Commission, 2009, Access at: https://e3p.jrc.ec.europa.eu/publications/energy-saving-obligations-and-tradable-white-certificates
[40] Perform, Achieve, and Trade (PAT) Scheme, IEA, 2021, Access at: https://www.iea.org/policies/1780-perform-achieve-trade-pat-scheme
[41] Carbon Border Adjustment Mechanism, European Commission, (n.d.), Access at: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

- **Simplifying and streamlining regulations for FDI.** This could include increasing the ease of automatic FDI without approvals from the government, by putting in place single window clearances instead of requiring clearances from multiple departments.

  In India, the renewable energy industry is open to 100% FDI, i.e., full ownership of domestic entities by foreign entities.[42] The government is also moving towards a streamlined National Single Window System to simplify and accelerate all approvals.[43]

  In Tanzania the government has introduced Standardized Power Purchase Agreements for Small Power Projects with capacity up to 10MW. Furthermore, the Authority has developed Model Power Purchase Agreements for projects involving seven power generation energy resources – hydro, solar, wind, biomass, natural gas, coal, and fuel oil – with generation above 10MW in order to provide guidance to parties when negotiating for PPAs.[44]

  In Vietnam, the government has introduced the Law on Investment, which simplifies procedures for foreign investors in the renewable energy sector and offers various incentives. These include a corporate income tax (CIT) exemption for the first four years, followed by a 50% reduction for the next nine years. The CIT incentives encompass preferential tax rates and tax holidays. These may apply for a limited period or for the lifetime of the project, thus making the investment environment more attractive and predictable for foreign investors.[45]

  In South Africa, the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) provides a streamlined bidding process for renewable energy projects, ensuring a transparent and efficient way to attract foreign investment. The government runs competitive tender processes, allowing private developers to bid to build and operate renewable energy plants, selling generated electricity to the national utility Eskom under long-

[42] Renewable Energy- Make In India, (n.d.), Access at: https://www.makeinindia.com/sector/renewable-energy
[43] India's National Single Window System for Business Approvals | NSWS. (n.d.). India's National Single Window System for Business Approvals | NSWS. https://www.nsws.gov.in
[44] Power Purchase agreements, Energy and Water Utilities Regulatory Authority, Government of Tanzania, Access at: https://www.ewura.go.tz/
[45] Tax incentives for foreign enterprises in Vietnam, Vietnam Briefing – Doing Business in Vietnam, Access at: https://www.vietnam-briefing.com/doing-business-guide/vietnam/taxation-and-accounting/tax-incentives-for-businesses

term power purchase agreements. The program has attracted approximately $135.6 billion in investment across South Africa, with 25.8% coming from foreign financiers and investors.[46]

In addition to creating an enabling ecosystem for FDI, some initiatives also aim to accelerate clean energy deployment by fostering a comprehensive approach. For example, the REPowerEU[47] is the EU's effort to rapidly roll out renewable energy, boost energy efficiency, and diversify energy sources, while also supporting domestic manufacturing. Similarly, the Inflation Reduction Act of the United States is aimed at accelerating clean energy deployment nationwide, including through domestic manufacturing.[48]

- **Setting up agencies focused on attracting and facilitating investments.** Export Credit Agencies (ECAs) are an example of a government agency that can help de-risk projects and activities for private investors, by providing loans, loan guarantees and insurance to help eliminate the uncertainty of exporting to other countries. This support can also be extended internally between different sectors and parts of the supply chain.

  Other examples of government agencies to attract and facilitate investments include the UK's Department for Business and Trade[49] and India's Invest India,[50] both of which are mandated with addressing roadblocks of investors, among other priorities. The Tanzania Investment Centre (TIC), founded in 1997, serves as a one-stop shop for investors, offering information, assistance, and approvals to create an investor-friendly environment to foster economic development by attracting and retaining domestic and foreign investment.[51] Similarly, the Zanzibar Investment Promotion Authority promotes local and foreign investment in Zanzibar to drive economic growth, job creation, and sustainable development.[52]

---

[46] South Africa – Country Commercial Guide – Energy, Jan 26, 2024, Access at: https://www.trade.gov/country-commercial-guides/south-africa-energy
[47] REPwerEU at a Glance, European Commission, (n.d.), Access at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en
[48] The Inflation Reduction Act: Here's what's in it, McKinsey & Company, October 24, 2022, Access at: https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it
[49] Opportunities for businesses outside the UK, Department of Business and Trade, Government of UK, Access at: https://www.great.gov.uk/international/
[50] Investment Promotion and Facilitation Agency, Invest India, May 4, 2021, Access at: https://www.investindia.gov.in
[51] Tanzania Investment Centre, Access at: https://www.tic.go.tz/welcome
[52] Zanzibar Investment Promotion Authority, Access at: https://www.zipa.go.tz/

- **Streamlined Planning & Permitting**. As energy infrastructure is often large and asset-heavy, planning and permitting is a critical part of the development process. The planning process is often comprised of national-level planning activity and local-level planning, especially critical as decentralization trends mean more projects could be located near homes and businesses.

  Many energy projects globally face hurdles in obtaining planning permission due to public discontent and lengthy approval processes. Communities often voice concerns over potential environmental impacts, social justice issues, and possible disruptions in their way of life, while bureaucratic delays also exacerbate the issue, leading to extended project timelines exceeding a decade. Planning permission is critical for both renewable energy generation, such as solar and wind farms, and infrastructure upgrades like transmission or distribution lines. Delays in approvals can ripple through the energy sector, causing knock-on effects and hindering progress toward energy transition and overall sustainable development.

  Governments and regulators have a big role to play in unlocking the planning process and speeding up the roll out of energy infrastructure. This can include faster planning processes, removing complexity and red tape, streamlining national and local planning processes, and combining/aggregating planning decisions for multiple sites, amongst other approaches. Improving planning processes and removing uncertainties through transparent and consistent policies can significantly reduce risk to private industry and incentivize investment.

  Examples of improved planning and permitting include the UK's fast track approach for large-scale renewables projects[53] and the EU's efforts to accelerate permitting processes.

[53] UK launches fast-track approach for large-scale renewables planning, Mavrokefalidis, D, Energy Live News, February 24, 2023, Access at: https://www.energylivenews.com/2023/02/24/uk-launches-fast-track-approach-for-large-scale-renewables-planning/

China RE Planning and Permitting Reform

China's Renewable Energy Permitting Reforms, in accordance with the renewable energy law, entrust the State Council with the comprehensive implementation and management of renewable energy development at the national level. The State Council establishes medium- and long-term targets for renewable energy development and formulates national plans to achieve these targets. Collaboration with regional and local governments ensures that regional disparities are considered in the final plans. Under this framework, renewable power generation projects must secure an administrative permit to advance project development. In cases where multiple applications are received for the same project license, an open tendering process is conducted. Developers with an administrative permit are assured connection to the power and gas grid. The output can be sold at fixed prices to the grid company, determined by price authorities of the State Council. Grid operators can recover additional costs incurred through this system by adjusting selling prices.

- **Mitigating market volatility:** One of the biggest risks that private investors consider is exposure to market volatility, particularly in regions or commodities where markets exist. For instance, in many developing countries, especially in Africa, where incumbent utilities dominate, volatility may not stem from wholesale electricity markets but rather from international fossil fuel prices. Countries reliant on imported gas for power production are particularly exposed to fluctuations in international gas prices, which can impact electricity prices for consumers. To mitigate this risk, utilities often opt for long-term contracts, such as 20-year agreements for gas supply, enabling them to stabilize electricity prices for customers.

  In regions with functioning electricity markets, policy instruments like Feed-in Tariffs (FITs), Contracts for Difference (CfDs), and Power Purchase Agreements (PPAs) play a crucial role in reducing merchant wholesale risk. Additionally, ensuring transparent, stable, and long-term pricing structures and market rules can help mitigate volatility and de-risk projects and assets. Another strategy involves removing exclusivity from markets and contracts, allowing assets to diversify revenue streams across multiple markets, such as electricity wholesale and ancillary services markets. Assets which are flexible, i.e. those which can alter their output or

consumption of electricity, can then better optimize revenue streams and reduce costs, for example hybrid solar and storage sites. This diversification ensures projects are not solely reliant on wholesale market conditions, enhancing their resilience to market fluctuations.

- **Improving infrastructure pipeline visibility and procurement:** It is not always clear to private investors where infrastructure projects exist and what the pipeline is. Another barrier to private investment in infrastructure projects is complex, long, and unclear procurement processes. These can be addressed by developing a clear pipeline of infrastructure projects that are visible and publicly available – ideally in one place and online, for example the Australia-New Zealand Infrastructure Pipeline (ANZIP).[54]

  The Australia-New Zealand Infrastructure Pipeline (ANZIP), launched in 2016, is a collaborative initiative between the Australian and New Zealand governments, developed by Infrastructure Partnerships Australia (IPA). ANZIP aims to enhance the visibility of infrastructure investment opportunities across both countries, thereby attracting the necessary private sector investment to support their infrastructure needs. It provides a detailed and independent view of significant projects, from announcement through to completion, thus helping to reduce market entry barriers and improve the efficiency of infrastructure delivery. This initiative is part of the broader Australia New Zealand Closer Economic Relations Trade Agreement's Single Economic Market agenda, which seeks to harmonize policies and regulations between the two countries, facilitating easier cross-border business and investment.

  Streamlined, digital, transparent, and easy-to-understand procurement processes should also be developed and made clearly visible.

- **Robust contracting processes**: Energy and infrastructure contracting must also be strong – this should include clear terms and conditions, adequate allocation of risk, consistency, routes for recourse, and transparency. Contracts should be as consistent as possible across the

[54] Australia New Zealand Infrastructure Pipeline, Access at: https://infrastructurepipeline.org/

relevant country/region, and the enforceability of those contracts must be considered (e.g. whether it is under local and/or international law) and designed to suit the needs of both public and private participants. Power Purchase Agreements (PPAs), which provide corporates and other organizations with long-term price certainty of power prices over a 5-to-20-year period, are a good example of a contract that needs to be designed to be robust and bankable from a private industry perspective. PPA platforms and secondary trading options are making these types of mechanisms more transparent and consistent. BloombergNEF's 2023 report on clean energy procurement highlighted an 18 percent increase of PPAs in 2022 from 2021 levels, reaching a record 36.7 GW. This should be a key focus of public policy going forward.

PILLAR 2: STRATEGIES FOR STRENGTHENING PARTNERSHIPS

Governments play a critical role in fostering an innovative and attractive ecosystem in which the private sector is able to thrive. This includes: establishing partnerships with actors across the public, private, civil society, and academic spheres in order to bring green and climate technological solutions to scale, encouraging and enabling research and development with a market orientation, facilitating large scale capital-intensive energy infrastructure by de-risking private investment, and creating linkages to the business community for required resources (e.g. financing of all types, human capital, inputs, and markets both domestic and export). This section includes illustrative examples of policies and frameworks that have enabled partnerships with the private sector both the existing companies and the new entrants to be effective in driving solutions for the energy transition.

2.1 Innovative project and portfolio financing

Large-scale infrastructure projects and portfolios, particularly in the renewable energy sector, often encounter significant challenges in developing countries. These challenges include limited capital resources, the inability of customers to pay for electricity, off-taker risks, and political uncertainties. Innovative project and portfolio financing encompasses a range of strategies aimed at overcoming

these obstacles and mobilizing the necessary investment. One notable approach involves leveraging partnerships between public and private entities to pool resources and share risks. These partnerships can take various forms, and often involve a combination of debt and equity financing.

While blended project finance strategies are highly dependent on specific locations and regions, the collaboration between public and private institutions, coupled with the strategic use of blending tools,[55] can effectively catalyze private investment and facilitate the scaling up of large-scale, capital-intensive infrastructure projects. These blending tools encompass a range of financial and non-financial mechanisms aimed at mitigating risks and enhancing returns, thus reducing reliance on pure grant funding or concessional finance. Financial de-risking mechanisms, such as financial loss coverage (FLC) and guarantees, play a crucial role in attracting private sector investment by providing assurance against potential losses. Similarly, non-financial de-risking strategies, including policy measures such as tariff structures and long-term price contracts, create a conducive environment for private sector participation by stabilizing revenue streams and regulatory frameworks. Return enhancement mechanisms, such as pay-for-performance or impact incentives and subsidized funding, further incentivize private sector engagement by aligning financial returns with sustainable development objectives. Additionally, technical assistance (TA) and grants can facilitate capacity building and project development, particularly in challenging or emerging markets.

One innovative approach involves aggregating distributed renewable energy (DRE) projects to create scalable and bankable portfolios. By bundling multiple small-scale solar mini-grids or off-grid solar installations into larger investment packages, countries can attract financing from institutional investors and development finance institutions. This aggregation of projects not only increases their financial viability but also facilitates the mobilization of innovative financial solutions such as impact investment funds, green bonds, and blended finance mechanisms. Further, aggregating small-scale DRE projects allows for economies of scale, reducing costs and increasing efficiency in implementation, while also enhancing grid stability and reliability through pooled resources and coordinated management.

[55] Blended Finance and Leveraging Concessionally, Convergence, February 2023, Access at: https://www.convergence.finance/resource/blended-finance-and-leveraging-concessionality/view

Case Study- Lake Turkana Wind Farm, Kenya

An illustrative example of innovative project financing is the Lake Turkana Wind Farm in Kenya. This landmark project, completed in 2018 at a cost of USD$870 million, saw collaboration between public and private stakeholders to finance and develop a 310MW wind farm. A project company was established, bringing together a diverse group of investors from both the public and private sectors. Public sector entities, including the Kenyan Government and the African Development Bank, provided crucial financial support alongside commercial banks and wind turbine manufacturers from the private sector. A 20-year PPA for electricity generated from the Wind Farm was signed between the Wind Farm Company and the local Kenyan Utility. Key to attracting private investment was the provision of various guarantees to mitigate risks and provide certainty. These guarantees included off-take agreements backed by the Kenyan Government and the African Development Bank, as well as loan guarantees provided by entities such as the Danish Development Fund. While large-scale capital-intensive projects like the Lake Turkana Wind Farm play a crucial role in expanding renewable energy capacity, there is also a growing recognition of the importance of DRE solutions, particularly in remote areas far from traditional grid infrastructure. In addition to grid-scale projects, promoting DRE initiatives can help address energy access challenges more comprehensively and efficiently.

By deploying decentralized energy systems such as solar mini-grids and off-grid solar solutions, countries can extend electricity access to underserved communities and improve overall energy resilience. This dual approach, combining large-scale projects with decentralized solutions, allows for a more holistic and inclusive approach to energy development.

Beyond energy generation, energy efficiency represents a pivotal yet sometimes overlooked aspect of sustainable energy development. Particularly in certain country contexts, prioritizing energy efficiency initiatives can yield immediate cost savings and require lower upfront investments. As economies progress and financial resources become more accessible, the focus can gradually shift towards generation and solarization initiatives, complementing the foundational strides made in energy efficiency.

2.2 Start-up and innovation accelerators

Clean technology start-ups, much like their counterparts in other industries, require robust support systems to thrive. Incubators and accelerators provide essential resources such as mentorship, access to networks, and funding opportunities, nurturing the growth of innovative solutions. Moreover, fostering a conducive ecosystem with supportive policies is critical, as it encourages entrepreneurial ventures to flourish and contributes to the advancement of clean technology sectors.

UNDP's Accelerator Lab programme, currently creating value in more than 115 countries, is also serving as a platform for impact accelerators keen to diversify their mentoring and investments among early-stage informal entrepreneurs working on energy, climate adaptation and other development problems. Further, UNDP has launched the Impact Venture Accelerator (IVA) programme[56] that provides targeted support to micro, small and medium enterprises with the aim of adjusting business models, products, or services to accelerate sustainable innovation and business development delivering on SDG targets. Currently, UNDP IVAs are launched in Armenia, Denmark, Philippines, Thailand, Indonesia, Turkey, Vietnam, Singapore, Moldova, Serbia, Bosnia & Herzegovina, being developed in India, Malaysia, and planned for Bangladesh, Cambodia, and several countries in MENA region and Africa. Since 2017, UNDP's venture acceleration programs worked with over 600 enterprises from 50 countries.

Uganda's Makerere Innovation and Incubation Center

The UNDP Uganda Accelerator Lab is actively involved in Uganda's innovation ecosystem, developing impactful models to influence it positively. Through the UNDP's Timbuktoo initiative, the UniPod, aims to facilitate the transition of research and prototypes to the market, enabling the creation of enterprises from these innovations. This is located strategically within Makerere University to seamlessly integrate with existing research and knowledge resources, tapping into the expertise of the institution's technical faculty.

[56] Impact Venture Accelerator Programme, Access at: https://sdgfinance.undp.org/sdg-tools/set-and-operationalization-impact-venture-acceleration-programs-series-stage-companies

In Armenia, the IVA program targets the current challenges of energy efficiency and renewable sector.[57] In India, it has been launched to advance women-led innovations in the broader renewable energy space.[58] The programme targets women entrepreneurs working across themes such as energy generation, energy efficiency, energy storage and support them with business development needs. Additionally, UNDP is engaging with venture capital firms providing impact advisory services focused on incubating/venture building of systemic and transformative ventures in the field. For example, in 2022, UNDP signed MoU with Wavemaker Impact (WMI), a climate tech venture builder in Southeast Asia, to support the development of scalable and sustainable technology companies.[59]

In another example, infoDev,[60] a successful global program focused on providing similar support through local and international partnerships, was a World Bank Group multi-donor program that supported entrepreneurs in developing economies. Founded in 1995 as an ICT-for-development research leader, infoDev transformed into a global partnership that worked at the intersection of innovation, technology, and entrepreneurship to create opportunities for inclusive growth. The Climate Technology Program helped high-growth, clean-tech companies commercialize and scale the most innovative private sector solutions to climate change. Through its Climate Business Innovation Network, the program convened local and global institutions to promote the diffusion of innovative business models across borders, crowd public and private financing into climate innovation, and build and strengthen local clean-tech-supporting institutions such as the Climate Innovation Centers.

Cross public and private partnerships enabled on-the-ground impact created through these incubator and accelerator hubs. For example, in Kenya, local partners including consulting firms, such as PwC, came together to provide business advisory services, along with Strathmore University, Kenya Industrial Research and Development Institute, and Energy 4 Impact. The program also

[57] UNDP ImpactAim Climate Change Technology Accelerator, UNDP Armenia, July 2020, Access at: https://www.undp.org/armenia/press-releases/undp-impactaim-climate-change-technology-accelerator-ccta-looking-ventures-targeting-energy-efficiency-and-renewables
[58] Women Climate Champions, Access at: https://www.undp.org/india/women-climate-champions
[59] Climate tech venture builder Wavemaker Impacts partners with United Nations Development Programme, WaveMaker Impact, September 2022, Access at: https://wavemakerimpact.com/insights/int-pr-undp
[60] About infoDev: A World Bank Group Program to Promote Entrepreneurship and Innovation, World Bank, (n.d.), Access at: https://www.worldbank.org/en/programs/competitiveness-for-jobs-and-economic-transformation/brief/about-infodev

focused on working with the Government of Kenya on clean technology policies to create a conducive environment for technology transfer and collaborative research and development.

Another similar example is the Government of India's flagship initiative, the Atal Innovation Mission (AIM), [61] which aims to foster innovation across various sectors, facilitate collaboration among stakeholders, and oversee the country's innovation and entrepreneurship ecosystem under a unified structure. The AIM promotes the creation of Atal Incubation Centres (AICs), which foster innovative startups to grow into sustainable and scalable enterprises.[62] By the end of February 2022, AIM had created over 2,200 operational startups (of which 625 startups were women led) and more than 30,200 jobs in the ecosystem.[63]

In countries with limited financial resources, particularly in least developed countries, accessing soft capital becomes imperative for nurturing the growth of clean technology start-ups. Soft capital, which encompasses financial assistance, technical expertise, and administrative support, plays a pivotal role in enabling these start-ups to overcome initial barriers to entry and scale their operations effectively. Collaborative initiatives involving international organizations, governmental bodies, and private sector entities are essential in providing a holistic support ecosystem for such enterprises. By pooling resources and expertise, these collaborations can offer a range of benefits, including access to funding, mentorship programs, market intelligence, and regulatory guidance. Moreover, such partnerships can help bridge the gap between research and commercialization, fostering innovation and accelerating the deployment of clean energy technologies.

Recognizing the vital role of incubators and accelerators in fostering innovation for climate change, global bodies like the UNFCCC have endorsed and supported these efforts. UN agencies like UNDP, UNIDO, and UNEP regularly collaborate with various incubators and accelerators to enhance transformative solutions. Similarly, financial institutions like the IFC and USAID contribute to the development of a comprehensive ecosystem by supporting research, entrepreneurship, and providing blended financial tools to attract investment.

---

[61] Atal Innovation Mission, Government of India, Access at: https://aim.gov.in/

[62] Guidelines for setting up of Atal Incubation Centers, NITI Aayog – Atal Innovation Mission, November 2023, Access at: https://aim.gov.in/pdf/AIC-Guidelines-Final_24Nov-2023.pdf

[63] Factsheet - Press Information Bureau, February 2022, Access at: https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/feb/doc202222519701.pdf

2.3 Scaling university-industry partnerships for innovation

Being neither industry nor government, academia can play a unique role in forming partnerships to solve energy transition challenges. In most cases, the seeds of new ideas are sown at universities, which can through the course of research and development, germinate into tangible solutions to the problems that humanity faces. Universities and research institutions aiming to collaborate with industry or other entities require policies for efficient management of intellectual property (IP) and technology transfer. These policies establish a framework that ensures structure, predictability, and a favorable environment. This environment facilitates the exchange of knowledge, technology, and IP among commercialization partners (such as industrial sponsors, consultants, non-profit organizations, SMEs, and governments) and research stakeholders (including researchers, technicians, students, visiting researchers, etc.).

The IP that arises from this process is mostly owned by the university and is protected in the form of a patent. Third-party entities that wish to make use of IP protected in this manner obtain the necessary rights in the form of a license for which an agreement is negotiated with the university. Royalties earned by the university from licensing activities are shared between the university and its inventors.

Recent times have seen universities depart from this trend where the 'outsourcing' of IP is being complemented by vertical integration. Universities are establishing incubators where ideas that emerge from their labs can progress further towards commercialization. Inventors typically spin-off companies which can then use the IP held by the university. IP agreements in such cases tend to be different from third-party licensing as the university may agree to a lower financial return in the short-term with the view that it is compensated in the longer-term. This approach also favors startups that are spun off from the university allowing them to focus resources on more mission-critical needs. Through such a mechanism, universities can play a crucial role in enabling the private sector both in fostering new entities and supporting innovation in existing ones.

Some institutions have gone a step further in launching venture capital firms to accelerate the pace of commercialization. An example of this is The Engine, launched by the Massachusetts Institute of

Technology (MIT).[64] The Engine helps form an ecosystem that connects inventors with investors, legal entities, financial entities, consultants etc. with the ultimate aim of supporting the inventors' journey towards entrepreneurship. The Engine has several portfolio companies in the energy space among which Commonwealth Fusion Systems (CFS) is arguably the largest. CFS was spun out of MIT's Plasma Science and Fusion Center and has since raised more than $2 billion towards creating some of the world's first nuclear fusion reactors that can provide a breakthrough energy solution. The company relies on research done at MIT and there are IP agreements in place to cover joint IP that may be developed in future efforts.

Universities are thus uniquely positioned to support innovation in both existing industries and by creating new ones through various mechanisms that revolve around how the IP makes its way to commercial reality in countries.

2.4 Facilitating business connections

In addition to providing essential infrastructure and regulatory support, governments can play a pivotal role in facilitating business connections to drive investment and innovation in the clean energy sector. By fostering strategic partnerships and facilitating networking opportunities, governments can accelerate the deployment of sustainable energy solutions.

U.S-Africa Clean Tech Energy Network

The U.S.-Africa Clean Tech Energy Network (CTEN) operates as part of the Power Africa initiative, aiming to facilitate connections between U.S. and African cleantech energy companies. Through its network and resources, CTEN enables technology transfer, investment promotion, and business matchmaking, driving innovation and investment in the African energy sector. By promoting collaboration and partnership between businesses from both regions, CTEN contributes to the acceleration of clean energy deployment and the achievement of energy access goals in Africa.

[64] MIT Launches New Venture for World Changing Entrepreneurs, MIT News, October 26, 2016, Access at: https://news.mit.edu/2016/mit-announces-the-engine-for-entrepreneurs-1026

One approach involves establishing dedicated platforms or networks aimed at connecting local businesses, international investors, and technology providers. For instance, the African Development Bank (AfDB) operates the Africa Investment Forum (AIF), an annual event that brings together key stakeholders to catalyze investment opportunities in various sectors, including renewable energy. Through matchmaking sessions, deal rooms, and networking events, the AIF serves as a conduit for fostering partnerships and facilitating investment flows into clean energy projects.

Moreover, governments can leverage existing initiatives such as the Power Africa initiative to enhance business connections and investment in the energy sector. Power Africa's extensive network of partners, including government agencies, development organizations, and private sector entities, provides a platform for collaboration and deal-making in the clean energy space. By facilitating introductions between project developers, financiers, and technology providers, Power Africa fosters a conducive environment for investment and innovation in African clean energy projects.

Furthermore, governments can support the establishment of industry-specific clusters or innovation hubs focused on clean energy technologies. For example, Chile has an active hydrogen association that serves as a collaborative platform involving public, private, and academic entities interested in utilizing hydrogen as an energy vector.[65] These clusters serve as focal points for collaboration, knowledge sharing, and business development within the renewable energy ecosystem. By bringing together entrepreneurs, researchers, investors, and policymakers, these hubs stimulate innovation, attract investment, and accelerate the commercialization of clean energy technologies.

2.5 Building a green jobs workforce

Building a green jobs workforce is critical for several reasons and many countries are already considering this as one of their leading priorities. Firstly, it addresses the urgent need to transition to a more sustainable economy, reducing carbon emissions and mitigating the impacts of climate change. Secondly, investing in green jobs creates employment opportunities, particularly in sectors such as renewable energy, energy efficiency, sustainable transportation, and environmental conservation, thereby stimulating economic growth and promoting social equity. Third, a skilled green

[65] PtX Hub in Chile – International PtX Hub, Access at: https://ptx-hub.org/chile/

workforce fosters innovation and drives technological advancement, positioning countries at the forefront of the green transition and enhancing their competitiveness in the global market. And fourth, green jobs often offer higher wages, better working conditions, and long-term career prospects, contributing to improved livelihoods and overall societal well-being.

There are range of efforts and initiatives in different countries in preparing the workforce for the green economy. For instance, India's Skill Council for Green Jobs builds from the government's mandate to decarbonize its economy. Under this mandate, it is estimated that net employment (measured in full-time employees) will increase by an additional 30% by 2030. And the International Labour Organization (ILO) forecasts that India's shift to a green economy could add 3 million jobs in the renewables sector alone by 2030. In response to this opportunity, the government formed the Skill Council for Green Jobs (SCGJ)[66] in October 2015. The programme is backed by the Ministry of New and Renewable Energy and Confederation of Indian Industry. The SCGJ collaborates with vital initiatives such as the National Skill Development Corporation,[67] operating within both federal and state-level skills development entities. It offers comprehensive support throughout the entire training process, encompassing the planning, design, and implementation stages. This includes conducting thorough skills gap analyses, mapping out occupational roles, crafting qualification packs aligned with industry needs, delivering training and certification programs across various subsectors, establishing centers of excellence, enhancing industry connections across all subsectors, and engaging in pertinent consultancy assignments.

In another example of recent initiatives, the Green Skills & Jobs program, aligned with the Portuguese 2030 Energy and Climate Plan, offers short- and medium-term training in environment and energy fields.[68] It aims to mitigate unemployment risks, retain existing jobs, and foster new job creation amid Portugal's accelerating energy transition. Recognizing the global challenges of energy transition on employment, the program emphasizes professional upskilling and reskilling to harness opportunities,

[66] Skill Council for Green Jobs, Access at: https://sscgj.in/
[67] "NSDC aims to promote skill development by catalyzing creation of large, quality and for-profit vocational institutions. Further, the organization provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train the trainer academies either directly or through partnerships. NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organizations that provide skill training. It also develops appropriate models to enhance, support and coordinate private sector initiatives".
[68] Portugal Green Skills and Jobs Programme, European Centre for the Development of Vocational Training, May 22, 2023, Access at: https://www.cedefop.europa.eu/en/news/portugal-green-skills-jobs-programme

manage risks, and ensure an equitable transition. The 2030 Energy and Climate Plan includes measures for training technicians and specialists, along with initiatives promoting low carbon behaviors, sustainable production, and enhanced energy literacy for individuals and businesses.

2.6 Just Energy Transition Partnerships

Just Energy Transition Partnerships (JETPs) are a new financing cooperation mechanism, which has the aim of supporting economies that are overly reliant on fossil fuel energy sources (e.g. coal) to make a just transition to a more sustainable energy system. With a particular focus on emerging economies, the aim is to support these countries move away from fossil fuels and deliver their self-defined clean energy pathways in such a way that the social elements are also considered, e.g. by delivering training and alternative job creation for affected workers, and supporting local communities embrace the new opportunities presented by alternative and sustainable energy sources. It is underpinned by a commitment from the country to step up its climate ambitions, which is a key foundation for receiving the funding. However, to date, the implementation and scaling up have been difficult.[69]

The first JETP was announced at the 26th UN Climate Change Conference of the Parties (COP 26) in Glasgow in 2021. This is a USD$8.5 billion deal for South Africa, funded with the Governments of France, Germany, the United Kingdom, United States and European Union. This was a purely Government funded package.

The second and third JETPs are a USD$20 billion package for Indonesia and a USD$15.5 billion agreement for Vietnam in 2022. With recent developments, deals for India and Senegal are expected to follow. In the case of Indonesia and Vietnam, private industry is also contributing towards the deals. The financial sector is now represented by the Glasgow Financial Alliance for Net Zero (GFANZ).[70] Hence the new JETPs are effectively a form of blended finance with Governments and the Private sector financing equal parts of the packages. This sort of partnership between the public and private

[69] Scaling the JETP Model: Prospects and Pathways for Action, Rockefeller Foundation and Environmental Defense Fund, 2024, Access at: https://www.rockefellerfoundation.org/wp-content/uploads/2024/02/Scaling-the-JETP-Model-Prospects-and-Pathways-for-Action.pdf

[70] Accelerating the Transition to a Net Zero Global Economy, Glasgow Financial Alliance for Net Zero, (n.d.), Access at: https://www.gfanzero.com/

sector will significantly de-risk projects and assets and help to crowd in private sector funding for developing countries, to enable them to transition their energy systems.

The newer model of JETP is expected to drive a faster scale up of renewable and low carbon technologies due to the additional capital that private industry is bringing, along with the required skills and resources to deliver. The benefit of a program like this, as opposed to individual project financing, lies in its capacity to implement a comprehensive program of activities at scale.[71] This approach avoids the complexity of developing individual projects on a case-by-case basis.

2.7 Joint Ventures and other alliances

Joint Ventures (JVs) between the public and private sector can also be a key tool to mobilizing finance for infrastructure. These strategic collaborations leverage the complementary financial resources, technical expertise, and innovative capabilities of both the public and private sectors. By combining their strengths, JVs are uniquely positioned to develop and deploy the innovative solutions needed to address the growing global demand for sustainable infrastructure and creating flexible and resilient energy systems. Unlocking new sources of funding, sharing risks, and accelerating the implementation of low-carbon technologies, JVs can play a crucial role in driving the transition to a net-zero future.

An example of this in Asia is Pentagreen Capital.[72] Historically, infrastructure financing in Asia had been funded almost exclusively by the public sector. However, given the sheer scale of demand growth expected in the region, governments cannot fund this all themselves and are increasingly encouraging private participation in projects. Pentagreen Capital is a debt financing platform dedicated to accelerating the development of sustainable infrastructure in Asia; it was jointly established by HSBC and Temasek as shareholders, with Asian Development Bank and Clifford Capital Holdings as strategic partners. Pentagreen's distinctive value proposition lies in its ability to leverage the combined public and private capabilities and extensive network established through its founding and

[71] Just Energy Transition Partnerships: An Opportunity to Leapfrog from Coal to Clean Energy, Kramer, K., IISD, December 7, 2022, Access at: https://www.iisd.org/articles/insight/just-energy-transition-partnerships
[72] Catalyzing Sustainable Infrastructure Projects: Unlocking Solutions to Combat Climate Change, Pentagreen Capital, Access at: https://www.pentagreen.com/

strategic partners. This ecosystem empowers Pentagreen to address challenges and bottlenecks in targeted sectors and countries effectively.[73]

Another example is Breakthrough Energy Ventures (BEV) that is bringing partnerships and investments to accelerate energy transition across every sector of the economy and help achieve net-zero emissions. BEV has raised more than $2 billion in committed capital to support more than 100 cutting-edge companies. [74] Further, a novel platform, Breakthrough Energy Catalyst, has been developed to support cleaner alternatives that can displace carbon intensive technologies, such as, green hydrogen, long duration energy storage, sustainable aviation fuel, direct air capture, and smart manufacturing to decarbonize steel, cement and other sectors.[75]

[73] Ibid
[74] Breakthrough Energy Venture, Access at: https://breakthroughenergy.org/our-work/breakthrough-energy-ventures/
[75] Breakthrough Energy Catalyst, Access at: https://breakthroughenergy.org/our-work/catalyst/

CONCLUSION

Effective public policies play a crucial role in addressing global climate related challenges and facilitating a just energy transition. This paper highlights the importance of strategic public policies that empower, regulate, and transparently guide the private sector towards decarbonization goals. Beyond environmental benefits, such policies foster an economic ecosystem conducive to private sector investment, innovation, job creation, improved public health, and the development of local supply chains—a vital aspect of a holistic energy transition agenda.

This action brief outlines a diverse range of policy measures for global policymakers to consider, emphasizing the need for contextual adaptation. Recognizing that there is no one-size-fits-all solution, policymakers must select, modify, and implement policies aligned with specific national contexts. These policy measures fall into two overarching categories: 1) direct policies fostering private sector growth and 2) structures facilitating public-private partnerships. Each policy measure offers nuanced approaches to the multifaceted challenges of energy transition.

While implementing these measures, policymakers must remain vigilant against potential risks. Oversimplification or overcomplication of policy frameworks, failure to course-correct when necessary, and the influence of vested interests are among key risks that demand proactive strategies and actions. Transparency and vigilance are essential tools in the policymaker's arsenal to navigate and fine-tune these measures, ensuring an anticipatory, resilient, and adaptive approach to achieving the objectives of a just energy transition.

Acknowledgements:

The project was managed and its content was edited by Piyush Verma – Senior Governance Expert – Energy under the supervision of Riad Meddeb – Director Sustainable Energy Hub and Sarah Lister – Head of Governance at the UNDP. Further support and guidance on this work was provided by Kishan Khoday - Resident Representative, UNDP Multi-Country Office in Jamaica, Shigeki Komatsubara - Resident Representative, Tanzania, Anthony Ngororano - UNDP Resident Representative, Kenya, Andrea Cuzyova - Deputy Resident Representative, Moldova, Mamisoa Rangers - UNDP Deputy Resident Representative, Angola, and various officials from the UNDP India Country Office.

This Policy Action Paper has been written by **Members of the UNDP External Advisory Group on Energy Governance:** Gopal Nadadur, Katherine Arblaster, Randolph Brazier, Dhananjay Ravikumar, and Subramaniam Pulipaka. With additional contributions and reviews from Sanjay Jaiswal, Teresa Kramarz, Daniel Duma, Michael Paramathasan, Bharath Jairaj, Yacob Mulugetta, Eduarda Zoghbi, Fatoumata Diarrassouba, David Arinze, and Francis Sakato. See the full list of Members and their affiliation at: https://www.undp.org/energy/undp-advisory-group-energy-governance

UNDP Reviewers: Alexandra Wilde – Global Governance Team, Irakli Kotetishvili – Istanbul Regional Hub Governance Team, Artak Melkonyan, UNDP Sustainable Finance Hub, Louise Chamberlain, Istanbul Regional Hub, Muyiwa Odele – Nigeria Country Office, Hari Natarajan – India Country Office, Kiduo Mwamnyenyelwa – Tanzania Country Office, Stefanie Held and Geoffrey Omedo – Sustainable Energy Hub, Carlos Salgado – Sustainable Energy Hub/Latin America and Caribbean Region, Amal Aldababseh – Sustainable Energy Hub/Arab States Region, Fungai Matura – Sustainable Energy Hub/Africa Region. Design and layout were prepared by SiNae Song – Graphic Design Intern and Benjamin Keller – Programme and Data Analyst at the Sustainable Energy Hub.

About UNDP: UNDP is the leading United Nations organization fighting to end the injustice of poverty, inequality, and climate change. Working with our broad network of experts and partners in 170 countries, we help nations to build integrated, lasting solutions for people and planet. Learn more at undp.org or follow @UNDP.

About UNDP's Sustainable Energy Hub: The UNDP Sustainable Energy Hub is a network of partners that work alongside countries to transform energy systems through an integrated agenda focused on

the policy, technology, and financial shifts that shape sustainable economic development. We help countries build net-zero, people-centered societies driven by a just, sustainable energy transition. Our core principle is to support energy for development. This includes mobilizing partners to enable 500 million additional people to have access to sustainable, reliable, affordable energy by 2025, leaving no one behind. Our website: undp.org/energy | Follow us on Twitter: @UNDPClimate

Sustainable Energy Hub

Photo Credit

Cover. UNDP
P2. Nabin Baral / IWMI
P4. hbieser / Pixabay
P5. UNDP
P11. Sudarsan Thobias / Adobe Stock
P12. UNDP
P30. hu / Adobe Stock
P31. UNDP
P43. volodyar / Adobe Stock
P44. UNDP
P46. UNDP
P47. Jahid / Adobe Stock