

RENEWABLE ENERGY FINANCE

INSTITUTIONAL CAPITAL



Renewable Energy Finance Brief 02
January 2020

*Investment in renewables must accelerate rapidly,
with all available capital sources being activated
to finance the transformation of the
global energy system*

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INSTITUTIONAL CAPITAL

Representing one of the largest capital pools in the world, institutional investors can be an indispensable part of the ongoing transition to a sustainable, low-carbon economy. Yet this can only happen if policy makers, institutional investors and other stakeholders take action to funnel large volumes of capital into renewable energy without delay. A forthcoming report, *Mobilising institutional capital for renewable energy*, provides actionable recommendations to harness the financial might of this important group.

The current state of institutional investments in renewables reveals a large potential that so far remains mostly underutilised, as analysis by the International Renewable Energy Agency (IRENA) shows. A sample of over 5800 institutional investors and their renewable investments over the past two decades reveals that around 20% of institutional investors have made any investments in renewable energy via funds, while only 1% have invested directly in renewable energy projects. Such direct investments in renewable energy accounted for around 2% of total direct investment amounts in 2018.

Scaling up institutional capital will require combined efforts on multiple fronts. Policy makers can implement enabling policy frameworks for increased investments in renewables and lower the specific barriers faced by institutional investors. These include review of institutional investment restrictions and investment mandates, and inclusion of clear sustainability targets. Together with capital market participants, new financial instruments, such as green bonds and funds, can be fostered to help channel institutional capital into renewable assets.

Lowering barriers related to renewable projects via de-risking measures also remains crucial, and public capital sources can play a more active role in that regard. Finally, institutional investors themselves are responsible for creating the right internal conditions, through capacity building and co-operation initiatives, for example, to maximise the benefits offered by renewable assets.

RENEWABLE ENERGY INVESTMENT TRENDS

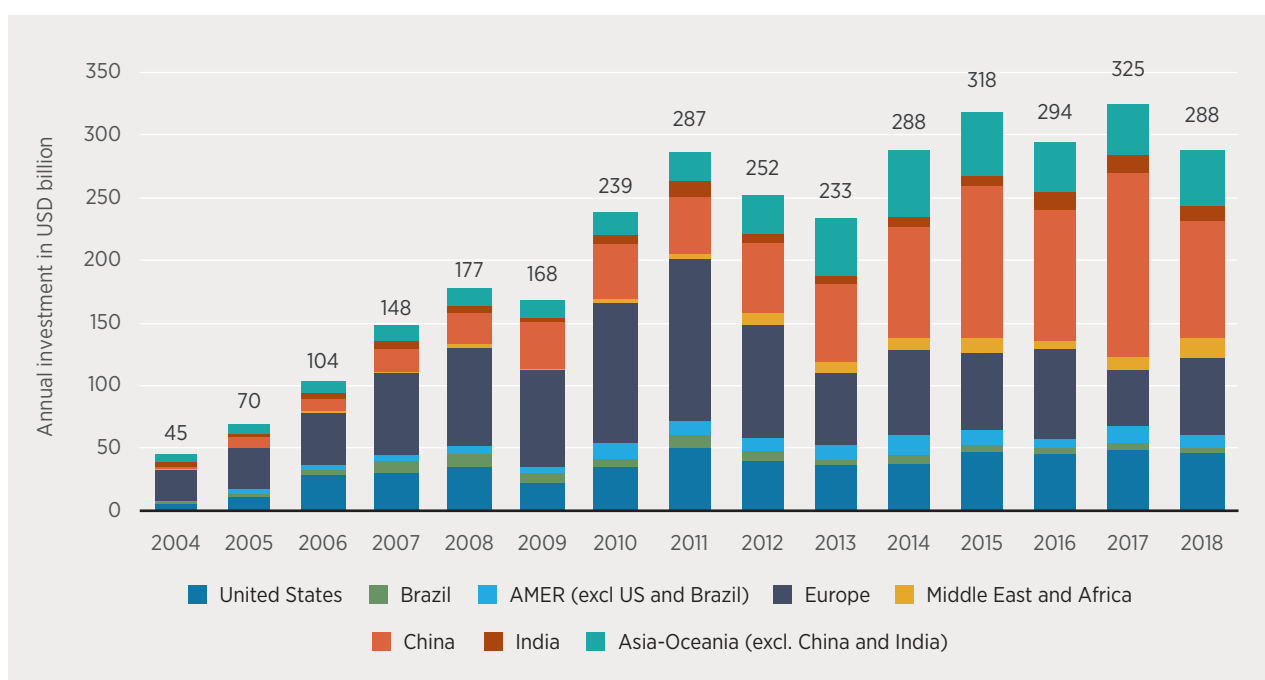
As renewables have become a compelling investment proposition, global investments in new renewable power have grown from less than USD 50 billion per year in 2004 to **around USD 300 billion** per year in recent years (Frankfurt School-UNEP Centre/BNEF, 2019), exceeding investments in new fossil fuel power by a factor of three in 2018 (REN21, 2019).

While hydropower still accounts for the largest share of the total renewable power capacity (50% of the 2018 total), solar and wind power have accounted for the largest shares of both annual capacity installations and annual investments in recent years (IRENA, 2018). **Solar photovoltaics (PV) and wind** power accounted for 90% of total renewable power investments in 2018 (Frankfurt School-UNEP Centre/BNEF, 2019). A forthcoming report from IRENA and the

Climate Policy Initiative (CPI) further examines the breakdown of capital flows, first between private and public sources, and then by institution type.

Another defining trend of renewable energy investments has been a **geographic shift towards emerging and developing markets**, which have been attracting most of the renewable investments each year since 2015, accounting for 63% of 2018 renewable power investments (Figure 1). Besides China, which attracted 33% of total global renewable energy investments in 2018, other top emerging markets over the past decade include India, Brazil, Mexico, South Africa and Chile (Frankfurt School-UNEP Centre/BNEF, 2019). Nevertheless, many developing and emerging countries in Africa, the Middle East, South-East Asia and South-East Europe still have a largely untapped renewables investment potential.

Figure 1 Global renewable energy investment (excl. large hydropower), in USD billion, by region, 2004-2018



Source: Frankfurt School-UNEP Centre/BNEF, 2019

Note: The figure shows investment in renewable power excluding end-use and large-scale hydropower (since data are from the BloombergNEF database, which does not include large-scale hydropower as "new energy"), which amounted to USD 273 billion, plus renewable energy investments through public markets, venture capital/private equity, and research and development. These investments together totalled USD 288 billion in 2018. Separately, large-scale hydropower investment in 2018 was around USD 16 billion, bringing the renewable energy power investment total to USD 289 billion and renewable energy investment (excluding end-use) to USD 304 billion.

In addition to the growing technological and geographical diversity, the renewable energy investment landscape is also witnessing a proliferation of **new business models and investment vehicles**, which can activate different investors and finance all stages of a renewable asset's life. Examples include the rise of the green bond market, growing interest in corporate procurement of renewable power and new business models for small-scale renewables such as the pay-as-you-go model.

Despite generally positive investment trends, however, far more needs to be invested in renewables in order to meet sustainable development and climate goals and to realise the many benefits of the energy transformation.

IRENA has estimated that investment in the energy system that puts the world on the path to limit global temperature increase to below 1.5 degrees Celsius (the “Energy Transformation” path) would focus on renewables, energy efficiency and associated energy infrastructure, and needs to reach a cumulative **USD 110 trillion for the 2016-2050 period**.

Of this amount, around 20%, or USD 22.5 trillion, will be needed for new renewable power capacity generation alone in the 2016-2050 period (IRENA, 2019a). This implies an annual renewable power investment of around USD 662 billion, *i.e.*, at least a doubling of annual renewable power investment compared to the current annual level.

Institutional capital must become an integral part of the world's transition to a sustainable economy



INSTITUTIONAL INVESTORS AND RENEWABLES

While the institutional investors analysed in IRENA's study form a heterogeneous group, operating within different sector-specific and national circumstances, they also face several common trends (IRENA, forthcoming (a)).

Growing assets

Their global assets are large and growing.

While a broader group including asset managers commands assets of well over USD 100 trillion, the group analysed in IRENA's report (pension plans, insurance companies, sovereign wealth funds, foundations and endowments) manages around **USD 85 trillion** (Figure 2), which has been growing at an annual rate of around 4-7% over the past decade (Preqin, 2019; SWFI, 2019; WTW, 2019).

Regional shift

Markedly faster growth is occurring in emerging and developing markets.

This is due to their growing economies, populations and expansion of pension plan and insurance coverage. Double-digit growth rates have been recorded for pension plans and insurance companies in several countries in Africa, Asia and Latin America. Ten out of 20 African sovereign wealth funds were created since 2010 (Quantum Global, 2017). Such local capital can help bridge local infrastructure funding gaps and support long-term sustainable development.

IRENA's analysis of the current state of institutional investments in renewables reveals large potential that so far remains mostly underutilised.

Vast investment potential

Institutional assets are often managed very conservatively, especially in the case of emerging and developing markets. Many are increasingly searching for higher yields and better asset diversification.

Renewable energy assets provide such investors with the opportunity to diversify their portfolios and to benefit from relatively strong, stable and long-term "bond-like" returns, matching institutional investors' long-term liabilities, while minimising the risk of stranded assets.

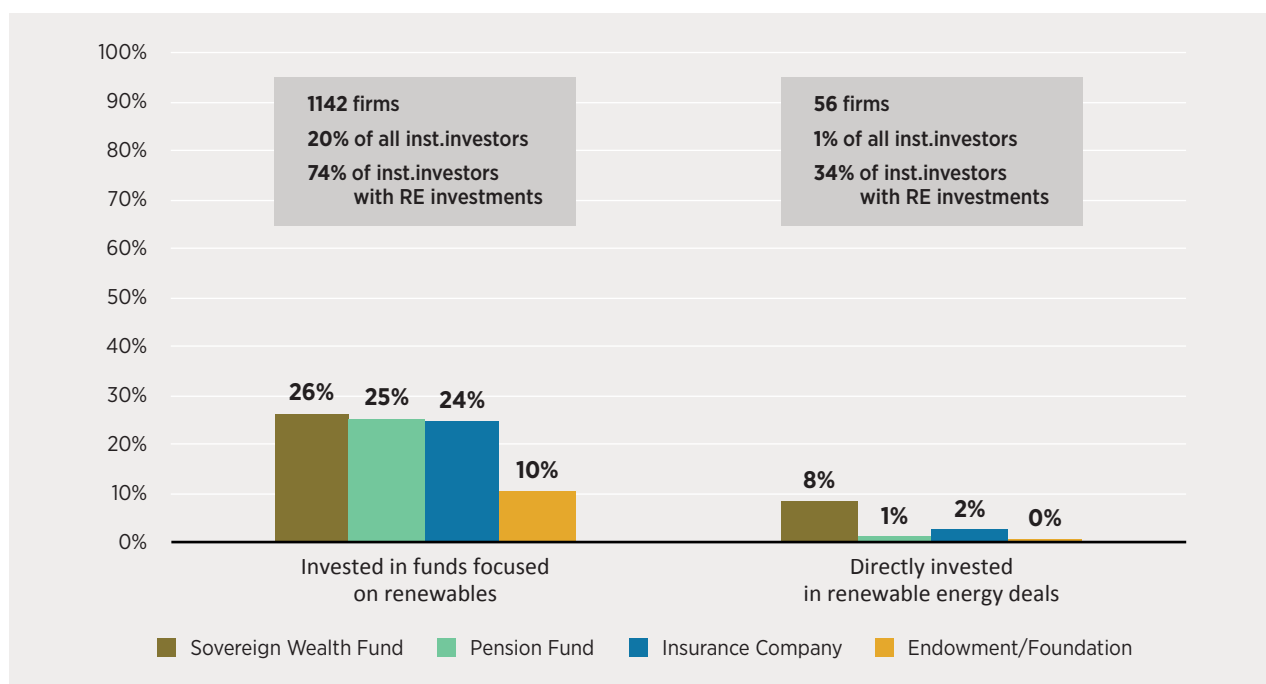
Evolving fiduciary standards and growing social and regulatory demands for inclusion of sustainability aspects in investment mandates are also gaining ground across the world, and favouring increased renewable investments.

Figure 2 Assets under management of the institutional investors, USD trillion, 2018-2019 average



Source: Preqin, 2019; SWFI, 2019; WTW, 2019

Figure 3 Number of institutional investors with investments in renewable energy (projects and/or renewable-focused funds), 1990 to Q2 2019



IRENA analysis based on Preqin data

From the sample of over 5800 institutional investors and their investments for the past two decades, 37% of institutional investors have made infrastructure investments, 25% have invested in energy-related funds, while **20% have invested in renewable energy-focused funds** and only around **1% have made investments directly in renewable energy projects** (Figure 3).

Size effect

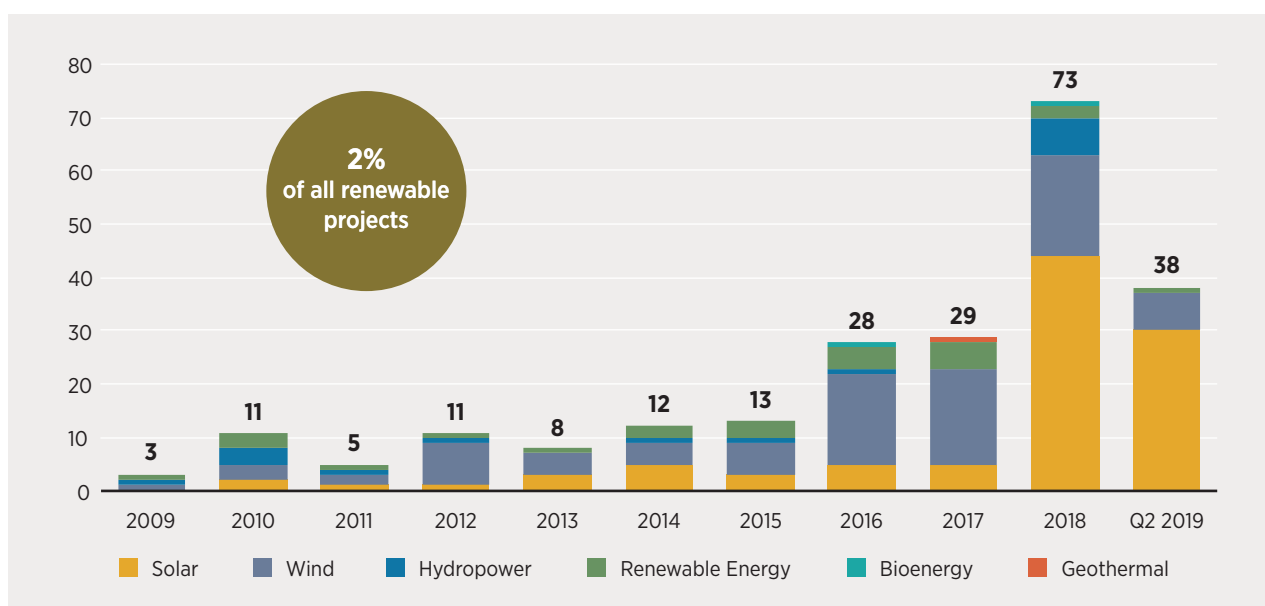
Institutional investors with renewable energy assets are larger than average. Average assets under management for such investors total USD 30 billion, more than double the average assets under management for institutional investors in the whole sample (USD 12 billion). Furthermore, institutional investors with only direct renewable investments are larger than institutional investors with only indirect investments (USD 34 billion of assets under management versus USD 24 billion). As well, the average deal size increases from USD 199 million to USD 434 million when institutional investors are involved. IRENA's discussions with institutional investors support hypotheses that **larger investors have greater internal capacities for investments**

in relatively new asset classes like renewables, and that larger transactions are more likely to attract institutional investors as bigger ticket sizes lower the per-unit transaction costs.

Investment amount

The number of direct renewable energy projects involving institutional investors has increased over time, from as few as 3 recorded transactions in 2009, to 73 in 2018 and 38 for the first two quarters of 2019 (Figure 4). Over the past decade, institutional investors were involved in 231 renewable energy direct financing transactions. However, this represents only **1.8% of all renewable energy projects** in the dataset analysed over the same period. The total annual amount financed by institutional investors was nearly **USD 6 billion in each of 2018 and 2017** (CPI, 2019). While this marks an increase from around USD 2 billion invested in each of 2016 and 2015, it represents only around **2% of the total renewable project investments in 2018** (Frankfurt School-UNEP Centre/BNEF, 2019; CPI, 2019; IRENA and CPI, 2018).

Figure 4 Number of renewable energy projects that involved institutional investors, by technology, 2008 to Q2 2019



IRENA analysis based on Preqin data

Technology preference

Around 81% of all renewable power deals in which institutional investors took part over the past decade were in wind and solar technologies.

This reflects the global technological trend in the renewable power sector as a whole. However, compared to total renewable power investments over the past decade, **institutional investors have favoured wind more strongly.** For the 2009-2018 period, global investments in solar projects were around 50% of total renewable energy investments, followed by wind which accounted for 39% (Frankfurt School-UNEP Centre/BNEF, 2019). For the same period, considering only renewable project investments involving institutional investors, wind accounted for 45% and solar for 24% of all transactions. This is most likely because wind is a more established renewable technology with larger transaction sizes that attract institutional investors. In the sample analysed, the average transaction size for a wind project was USD 211 million, compared to USD 124 million for solar.

Investment stage preference

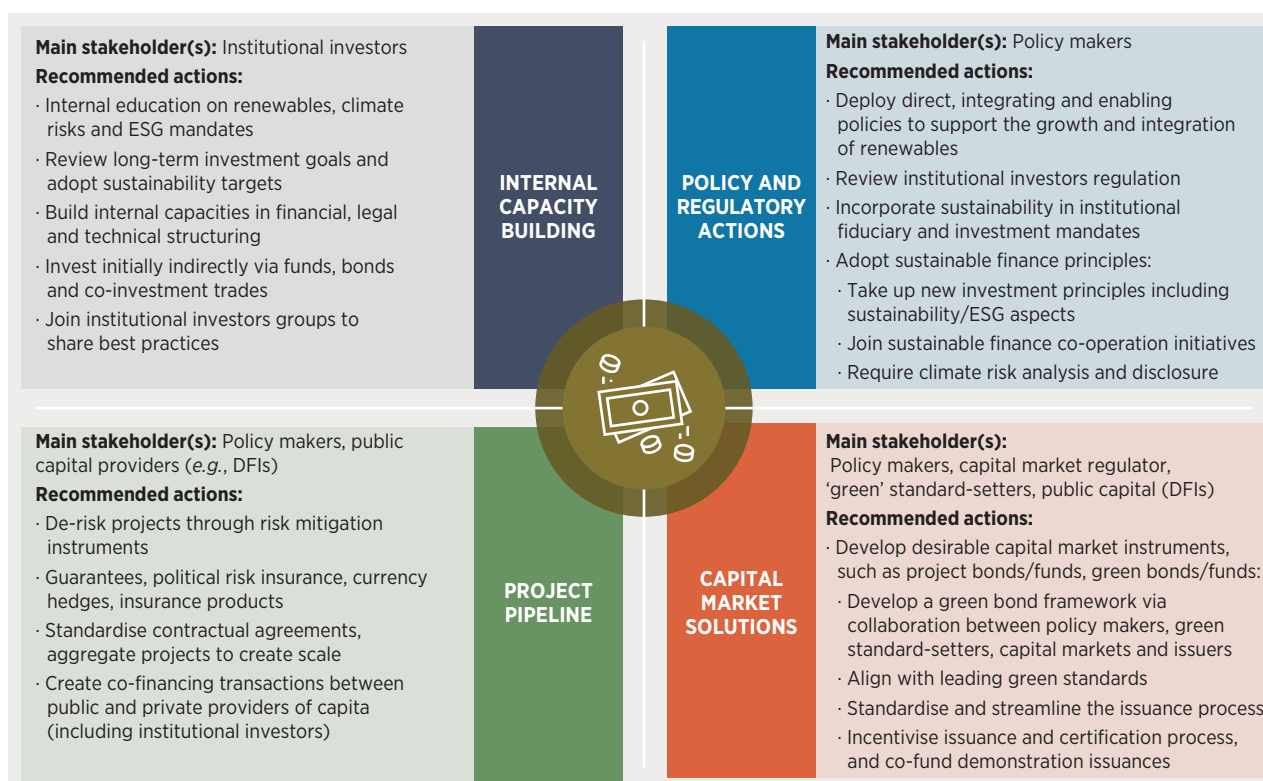
Institutional investors exhibit a strong preference for already-operating assets, which help them avoid early-stage risks associated with the structuring and construction stages. Over 75% of all renewable energy deals involving institutional investors during the 2009 to Q2 2019 period were secondary-stage transactions, *i.e.*, investments in already operating assets not requiring further funding, while around 22% were for the construction of new assets (*i.e.*, greenfield stage), and a small portion went to brownfield projects (already operating assets that require improvement or expansion). Investment vehicles that help such investors channel their assets into already operating projects are therefore important, as is building internal capacities for earlier-stage investments.

The potential for institutional investment in renewables remains greatly underutilised

RECOMMENDATIONS

Institutional investors could play a more active role in renewable-sector investments and become a significant contributor to the global capital shift towards low-carbon solutions. Such a shift will, however, require combined efforts on multiple fronts with active engagement from all stakeholders: policy makers, institutional investors, providers of public capital, capital markets and others.

- **Policy and regulatory solutions** that can steer institutional capital towards renewables encompass direct, integrating and deployment policies that support the overall growth and integration of renewable energy, review of investment restrictions faced by institutional investors including the addition of clear long-term sustainability or ESG (environmental, social and governance) mandates, and development of the sustainable finance sector, including the adoption of frameworks for the analysis and disclosure of climate change risks. France's 2015 Energy Transition Law, for example, requires the country's institutional investors to disclose their greenhouse gas emissions as well as how climate change will impact their assets (Mazzacurati, 2017). Meanwhile, the Task Force on Climate-related Financial Disclosures (TCFD) sets out recommendations for what "decision-useful" climate-related disclosure looks like (TCFD, 2017).
- **Capital market solutions** can link institutional capital with renewable assets by delivering efficient investment vehicles, such as project bonds, project funds and green bonds, providing investors with a desirable scale, simplicity, credit assurance and liquidity. The supply of such instruments can be increased through stakeholder co-operation, the adoption of green bond frameworks aligned with leading standards, and economic incentives to compensate for higher issuance costs (IRENA, forthcoming (b)). The Nigerian Green Bond Market Development Programme provides a successful example of a collaborative effort between local policy makers, the stock exchange (FMDQ OTC Securities Exchange) and specialised non-governmental organisations (Financial Sector Deepening Africa and the Climate Bonds Initiative), which resulted in the first sovereign green bond issuance in Africa in 2017 and the first certified corporate green bond in Africa in 2019 (CBI, 2019).
- **Lowering barriers related to renewable energy projects** can create a pipeline of investable renewable assets through greater provision and use of risk mitigation instruments, adoption of standardised processes and contractual agreements that lower transaction costs, and co-financing initiatives that enable the sharing of know-how and returns between providers of public capital (e.g., development finance institutions (DFIs)) and institutional investors. IRENA's initiatives such as the Risk Assessment and Mitigation Platform (RAMP), a database of risk mitigation products, and the Open Solar Contracts collaboration with the Terawatt Initiative, which offers standardised contractual agreements for solar PV, provide important tools to lower project-level barriers.
- **Building internal capacities** within institutional investors in the areas of governance, financial, technical and legal structuring, as well as the impacts of climate change and institutional investors' own role in minimising these impacts, should occur in tandem with the above proposed changes. Collaboration with other institutional investors, as well as indirect and co-financing investments in renewables, can also help institutional investors enter the renewable sector, share best practices and learn to manage new risks while maximising the benefits from renewable energy assets. The recently announced partnership between the Asia Investor Group on Climate Change (AIGCC) and Caisse de dépôt et placement du Québec (CDPQ), a Canadian pension fund and one of the world's largest investors in renewable energy, to develop capacity building training for low-carbon investments for Asian investors is an example of a potentially impactful collaboration (CDPQ, 2019).

Figure 5 Recommended actions to scale up institutional investments in renewable energy

IRENA analysis based on Preqin data

OPPORTUNITIES FOR ENGAGEMENT

As the only international organisation dedicated solely to renewable energy, IRENA is uniquely positioned to support countries in their transition to a sustainable energy future. IRENA provides analytical guidance and develops solutions for market opportunities, successful business models and financial instruments; supports renewable energy projects throughout their life cycle; leads the global discourse; connects key stakeholders; and provides a global forum for the exchange of best practices.

Fostering an enabling environment for renewable energy investments

IRENA analyses the socio-economic footprint of the energy transition and helps countries with tailored policy frameworks so that increased deployment of renewables results in a sustainable transformation. IRENA provides in-depth and up-to-date guidance on a broad array of renewable energy policies, assesses employment data and gender and community engagement, and guides countries in their policy design. IRENA also

provides up-to-date renewable energy statistics and valuable information on the renewable sector's innovation and technological trends.

Investment analysis and project facilitation

IRENA analyses current and emerging renewable energy finance trends, including the emergence of innovative financing instruments, risk mitigation instruments, business models and countries' attainment of their Nationally Determined Contributions (NDCs) under the Paris Agreement. This work identifies market gaps and opportunities, provides actionable recommendations to stakeholders and informs IRENA's regional engagements (IRENA, 2016, 2017, 2019b; IRENA and CPI, 2018 and forthcoming). IRENA facilitates and supports renewable energy projects throughout their life cycle and helps build a pipeline of bankable projects through online digital platforms and stakeholder collaborations. IRENA provides resource assessment and site

suitability analysis, helps stakeholders develop bankable project proposals and connects project developers with providers of capital, technology and services.

IRENA also organises capacity building workshops for financing institutions to enhance their understanding of renewables, and helps them prepare investment-ready projects, including using structured financing approaches and risk mitigation instruments. In addition, the IRENA and Terawatt Initiative Open Solar Contracts initiative will soon deliver a set of standardised and simplified documents for solar PV projects to boost project bankability.

Capacity building, stakeholder engagement and collaboration

IRENA regularly engages with and brings together various sector stakeholders such as public and private providers of capital, policy makers and developers, via roundtables, panels and other industry events, to create an ongoing dialogue, tackle pending challenges and share best practices. IRENA works with global partners, such as the United Nations Development Programme and other agencies, to create global synergies through break-through initiatives such as the newly created Climate Investment Platform whose goal is to crowd-in private capital to sustainable energy.

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About IRENA

The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that serves as the principal platform for international co-operation, a centre of excellence and a repository of policy, technology, resource and financial knowledge, and a driver of action on the ground to advance the transformation of the global energy system. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity. www.irena.org

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