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FOREWORD FROM INGER ANDERSEN, NILS STIEGLITZ AND JON MOORE

Clean energy is a cornerstone of the better future we are building for humanity. Neither the Paris Agreement nor the 2030 Agenda for Sustainable Development will be able to fulfill their full potential unless renewable energy replaces fossil fuel generation. Renewable energy avoids the greenhouse gas emissions that warm our planet. It improves air quality and therefore human health. It brings new opportunities to energy-poor communities.

Investing in renewable energy is also an economic opportunity. It is a decision that investors around the world have been increasingly making for a decade. Global Trends in Renewable Energy Investment 2019 – released ahead of the Global Climate Action Summit – shows that in 2018, investors again put hundreds of billions of dollars behind renewable energy and the energy transition we need.

The latest issue of this report – which has tracked trends and opportunities in the sector since 2004 – shows that global investment in renewable energy capacity hit $272.9 billion in 2018, far outstripping investments in new fossil fuel generation. 2018 was the fifth successive year renewables capacity investment exceeded $250 billion. Yes, the 2018 global investment figures were 12% down on the previous year, but this is not a step backwards. Renewable energy, particularly solar photovoltaics, is getting cheaper.

Looking across 2010-2019, the trend of heavy investment becomes even clearer. The report estimates that a total of $2.6 trillion will have been invested in renewable capacity (excluding large hydro) over that period. This corresponds to an estimated 1.2 terawatts of new renewable energy capacity over this decade, more than the entire electricity generating fleet of the U.S. today, and roughly quadrupling the figure of global renewables capacity commissioned at the end of 2009.

Several unexpected findings emerge from the decade perspective taken in the Focus Chapter of this report. One is the meteoric rise of solar PV to become not just the biggest renewable power technology in terms of investment – onshore wind was the number one back in 2009 – but also the most added generation source of any kind during the period. Another has been the precipitous price fall in both solar PV and wind, and a third has been the steady improvements in efficiency of those technologies.

While this demonstrates huge and lasting progress, the pace must increase. Renewables are now firmly embedded in the power generation sector, but only represent 26.3% of total electricity produced – 12.9% if we exclude large hydro. Fossil fuel subsidies, which run into the hundreds of billions of dollars each year, are slowing progress. Investors are still financing coal power plants with tens of billions of dollars each year. Equally, 1.1 billion people lack access to electricity. Providing that access to these people, through technologies such as off-grid solar, will give the Sustainable Development Goals a massive shot in the arm.

This year and next are crucial for climate action. The Global Climate Action Summit on September 23 provides an opportunity for everyone to come forward with new commitments. The final touches will be put on the Paris Agreement later this year. Everybody needs to raise their ambition levels, including investors.

With smart policies that truly value the economic and societal benefits of renewable power, we can accelerate the transition to a renewable energy economy and give people the clean energy future they deserve.

INGER ANDERSEN
Executive Director
UN Environment Programme

NILS STIEGLITZ
President
Frankfurt School of Finance and Management

JON MOORE
Chief Executive
BloombergNEF
“Investing in renewable energy is investing in a sustainable and profitable future, as the last decade of incredible growth in renewables has shown.

“But we cannot afford to be complacent. Global power sector emissions have risen about 10% over this period. It is clear that we need to rapidly step up the pace of the global switch to renewables if we are to meet international climate and development goals.”

Inger Andersen, Executive Director of the UN Environment Programme

“The technologies to use wind, sun or geothermal energy are available, they are competitive and clean. Within 10 years, Germany will produce two-thirds of its power based on renewables. We are demonstrating that an industrial country can phase out coal and, at the same time, nuclear energy without putting its economy at risk. We know that renewables make sense for the climate and for the economy. Yet we are not investing nearly enough to decarbonize power production, transport and heat in time to limit global warming to 2C or ideally 1.5C. If we want to achieve a safe and sustainable future, we need to do a lot more now in terms of creating an enabling regulatory environment and infrastructure that encourage investment in renewables.”

Svenja Schulze, Germany's Federal Minister for the Environment, Nature Conservation and Nuclear Safety

“It is important to see renewables becoming first choice in many places. But now we need to think beyond scaling up renewables. Divesting from coal is just one issue within the broader field of sustainable finance. Investors increasingly care whether what they do makes sense in the context of a low-carbon and sustainable future.”

Nils Stieglitz, President of Frankfurt School of Finance and Management

“Sharp falls in the cost of electricity from wind and solar over recent years have transformed the choice facing policy-makers. These technologies were always low-carbon and relatively quick to build. Now, in many countries around the world, either wind or solar is the cheapest option for electricity generation.”

Jon Moore, Chief Executive of BloombergNEF
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METHODOLOGY AND DEFINITIONS

All figures in this report, unless otherwise credited, come from BloombergNEF, or BNEF, which maintains the world’s most comprehensive database of investors, projects and transactions in clean energy.

The BloombergNEF database at www.bnef.com collates all organizations, projects and investments according to transaction type, sector, geography and timing. It covers many tens of thousands of organizations (including start-ups, corporate entities, venture capital and private equity providers, banks and other investors), projects and transactions.

METHODOLOGY

The BNEF database seeks to cover the following types of asset: all solar, biomass and waste-to-energy, geothermal, and wind generation projects of more than 1MW; all hydropower projects of between 1MW and 50MW; all wave and tidal energy projects; all biofuel projects with a capacity of one million litres or more per year.

Where deal values are not disclosed, BNEF assigns an estimated value based on comparable transactions. Deal values are rigorously back-checked and updated when further information is released about particular companies and projects. The statistics used are historical figures, based on confirmed and disclosed investment.

Annual investment is estimated for small-scale commercial and residential projects such as rooftop solar. These figures, referred to in the investment charts of the report as ‘small distributed capacity’, are based on annual installation data provided by industry associations and governments.

This report does not cover larger hydro-electric dams of more than 50MW, except for brief mentions in Chapters 1 and 3.

The BNEF database also covers all deals in the following categories: equity raising by specialist renewable energy companies from venture capital and private equity funds and public market investors; all acquisitions of specialist renewable energy companies or strategic stakes in those; and all acquisitions and refinancings of renewable energy projects and assets.

Figures on research and development by specialist renewable energy companies are collated annually from the Bloomberg Terminal and other sources. Those on government R&D are estimated annually using a variety of official and third-party sources.

All of this is a dynamic process: as the sector’s visibility grows, information flow improves. New deals come to light and existing data are refined, meaning that historical figures are constantly updated.

This 2019 report contains revisions to a number of investment figures published in the 2018 edition of Global Trends in Renewable Energy Investment. Revisions reflect improvements made by BloombergNEF to its data during the course of the last 12 months, and also new transactions in 2017 and before that have since come to light.
DEFINITIONS

Investment categories in this report are defined as follows:

**Capacity investment**: all money invested in renewable energy generation projects, large or small. It covers both the asset finance of utility-scale projects, whether from internal company balance sheets, from loans, or from equity capital, and the financing of small-scale solar systems of less than 1MW.

**Research and development (R&D)**: all money invested in early-stage renewable energy technologies and techniques, whether financed out of government budgets or from the balance sheets of specialist renewables companies.

**Venture capital and private equity (VC/PE)**: all money invested by venture capital and private equity funds in the equity of specialist companies developing renewable energy technology. Investment in companies setting up generating capacity through special purpose vehicles is counted in the asset financing figure.

**Public markets**: all money invested in the equity of specialist publicly quoted companies developing renewable energy technology and clean power generation.

**Total renewable energy investment**: this brings together all of the above categories – capacity investment, R&D, VC/PE and public markets. It also incorporates an adjustment for re-invested equity (generally when money raised from VC/PE or public markets are then re-invested in renewable energy assets). The adjustment prevents double-counting.

**Mergers and acquisitions (M&A)**: the value of existing equity and debt purchased by new corporate buyers, in companies developing renewable energy technology or operating renewable power and fuel projects. Includes refinancing. M&A is not included in total renewable energy investment because it is money changing hands, rather than new money coming into the sector.

In the 2019 Global Trends report, capacity investment is the main topic of the Focus Chapter (A Decade of Renewable Energy Investment), and of Chapters 1, 3, 4 and 5. Total renewable energy investment is covered in Chapter 2, while R&D, VC/PE and public markets are discussed in detail in Chapter 6. M&A is the subject of Chapter 7.

Commonly used terms in the report are defined in the Glossary after the end of Chapter 7.