

Press Release

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Renewable electricity registers record growth, but renewable heat and fuels lag far behind, hindering a shift away from fossil fuels

With a record 30% share, renewable electricity is driving the energy transition. However, renewable-based electricity needs to more than double. Renewable-based heat and fuels need to grow much faster to ensure equitable access and security of supply.

- Renewable energy growth is most noticeable in the power sector (electricity generation), whereas critical energy carriers such as renewable heat and renewable-based fuels remain neglected.
- Solar photovoltaics (PV) had another record year of growth in 2022, with a 37% increase in additional installed capacity.
- Grid-connected wind energy additions fell 17% relative to 2021, due to delays in permitting, disruption in supply chains, and rising material and shipping costs.
- China was home to 44% of renewable energy deployment and also represented 55% of total investments in renewables. Renewable investments in Europe reached 11% and in the United States 10%, while Africa and the Middle East received the lowest share by region, at only 1.6%.

PARIS – Wide-ranging barriers are preventing renewable energy from contributing effectively to meeting the world’s climate and development goals, according to the *Renewables in Energy Supply* module, launched today as part of the annual *Renewables 2023 Global Status Report (GSR)* collection. These barriers include a lack of attention to all energy carriers, a failure to diversify renewable energy technologies beyond wind and solar power, deficiencies in policies, bottlenecks in permitting and grid connections, unequal investment levels in different regions, and continued large investments in fossil fuels.

The *Renewables in Energy Supply* module covers the way final energy is distributed among heat, fuel and electricity, geographies and technologies (bioenergy, geothermal power and heat, heat pumps, hydrogen, hydropower, solar PV, concentrated solar power (CSP), solar thermal heat, ocean power and wind power). *Renewables in Energy Supply* follows the release of the GSR 2023 *Demand Modules*, which explored renewable energy use in the key energy-consuming sectors of buildings, industry, transport and agriculture.

Energy carriers include electricity and heat as well as solid, liquid and gaseous fuels. Currently, the global energy supply is split mostly among heat (49%) and fuel (29%), with electricity having the lowest share (22%). In 2022, the share of renewables in the power sector reached 30%, mainly because the sector has received long-term policy attention that enabled market and technology development and drove down costs. Across all sectors, renewables cover only 12.7% of the total energy system, a relatively low share in the larger scheme of things.

“The record growth of renewables in the electricity sector is positive news. However, we need to more than double this growth and to achieve deep electrification of the heat and transport sectors. We also need to invest heavily in grid infrastructure to address climate change and to provide access to over 700 million people living without electricity, mainly in Africa and Asia,” said REN21 Executive Director Rana Adib.

Meanwhile, the other energy carriers – fuels and heat, which provide most of the world’s energy – have only dismal renewable energy shares of 3.6% and 9.2% respectively. This indicates that efforts are narrowly focused on transitioning the power supply. This limited focus is ultimately slowing the shift to a renewables-based system, delaying efforts to reach the Sustainable Development Goals and maintaining the status quo of energy insecurity.

Greater attention must be paid to renewable heat and renewable-based fuels and to the diversification of renewable energy technologies. While electricity is expected to play an increasingly important role in the global energy supply, the International Energy Agency (IEA) net-zero scenario and the International Renewable Energy Agency (IRENA) 1.5 degree Celsius scenario indicate that electricity will supply only half of the world’s total final energy in 2050.

“This clearly means that we cannot continue to neglect the other carriers – renewable heat and fuels – if we are serious about cutting emissions and addressing the climate, energy and poverty crises. It took time, investment and policy attention to expand to 30% renewable power. We now need to award heat and fuels similar policy attention to achieve the critical shift we need,” said Adib.

Efforts in renewable electricity need to be accelerated as well. Despite the strong focus on the power sector, the ongoing failure to build and extend electrical grids and to speed permitting processes are creating bottlenecks that are slowing the shift to a renewable-based power system. More than 1 terawatt of renewable energy projects are still waiting to be constructed and connected to the grid globally due to delays in permitting and lack of investment in grid infrastructure. The status of Energy Systems and Infrastructure will be addressed in an upcoming module to be released as part of the GSR 2023 collection.

“Even in the power sector, we are still not taking a systemic approach that builds renewable energy as a healthy economic sector and industry by investing in manufacturing capacities, and skilling people. We focus on a few technologies like solar PV and wind and their generation capacity, neglecting distribution and connection to grids,” said Adib. “Electricity generation from renewables means attention to infrastructure. It’s like you manufacture cars and wait

for roads. When we built cars, we did it with confidence that roads will accompany the process. The same thought and action process must apply to renewables.”

Momentum has been building for the creation of a worldwide target for renewable energy in the power sector, to be announced at the United Nations Climate Conference (COP 28) in Dubai in November. Recently, leaders of the G7 countries made a historic pledge to collectively increase the world’s offshore wind power capacity by 150 gigawatts and its solar capacity to more than 1 terawatt by 2030.

“These announcements are welcome signals for both countries and renewable energy markets; however, science and experience tell us that to be effective, these targets need to be urgently translated into concrete actions that will speed the energy transition in all countries – including through national policies, technology development and sharing, equitable investments in all regions, fossil fuel phase-outs, and the removal of barriers and bottlenecks”, said Adib.

The limited approach to the carriers has also been mirrored in the technologies and geographies. Solar and wind power currently dominate the annual additions of renewable power – together contributing 92% – with only 8% coming from other renewables such as hydropower, geothermal, bioenergy, CSP and ocean power.

“The energy crisis, which resulted from the Russian Federation invasion of Ukraine, has shown the importance of security of supply. To shield us from new crises, policy makers must immediately ramp up efforts in all renewable energy technologies, including hydropower, geothermal, ocean, CSP and bioenergy. If we don’t quickly evolve these alongside solar PV and wind, we will still need to depend on coal, oil and gas, and nuclear for our energy supply well into the future,” said Adib.

Geographically, China led the world in renewable energy investments in 2022, with 55% of the global total energy, followed by Europe with 11% and the United States with 10%. Africa and the Middle East together received the lowest share of renewable investments, at only 1.6%. Most of the worldwide deployment in renewables was in China, which accounted for 44% of all solar capacity additions and 38% of all wind capacity additions, pointing to the high geographic concentration of renewable energy additions.

“Within Africa, a continent blessed with an abundance of renewable energy, a silent storm rages on – the prolonged energy crisis, an ignoble plight that the world regrettably chooses to disregard. It is our moral imperative to accelerate the deployment of a sufficient quantity of renewable energy and to ensure that this transition uplifts the most vulnerable, improving livelihoods and fostering sustainable development that reaches far beyond economic gains”, said Joel Nana from Sustainable Energy Africa.

Financial flows are still not shifting fast enough towards renewables and away from fossil fuels. Of the USD 640 billion in global power investments in 2022, 26% still went to fossil fuels and nuclear power, even though renewable electricity is the least-cost option. This means that we continue to lock in more emissions in the atmosphere by investing in fossil fuel

technologies that will soon become obsolete – depriving people and the planet of the sustainability, development, health and jobs benefits of the energy transition.

“Renewable energy is now recognised as the necessary backbone for all energy systems. However, it also needs to be developed as an economic sector, with clear and strategic focus on building a profitable industry. Investment in manufacturing and skilled labour are now crucial to deliver a secure, sustainable and thriving sector,” said Chief Executive Officer of the Global Renewables Alliance Bruce Douglas.

About REN21 and the GSR 2023 Collection

REN21 is the only global community of renewable energy actors from science, academia, governments, non-governmental organisations and industry across all renewable energy sectors. Our community is at the heart of our data and reporting activities. All of our knowledge activities, including the *GSR 2023 Demand Modules*, follow a unique reporting process that has allowed REN21 to be globally recognised as a neutral data and knowledge broker.

Since its first release in 2005, REN21 has worked with thousands of contributors to put the spotlight on ongoing developments and emerging trends that shape the future of renewable energy. Producing this report each year is a collaborative effort of hundreds of experts and volunteers contributing data, reviewing chapters and co-authoring the report.

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