

The image features a light blue background with several dandelion seed heads. Some are in sharp focus, while others are blurred. In the upper right corner, there are several colorful geometric shapes: a teal circle, a blue circle, a yellow circle, and several elongated bars in teal, orange, blue, and yellow. The text "RENEWABLES NOW" is centered in a dark, sans-serif font.

RENEWABLES NOW

Renewable Energy Systems and Infrastructure

Renewables-friendly infrastructure is the missing piece for a renewables-based energy system

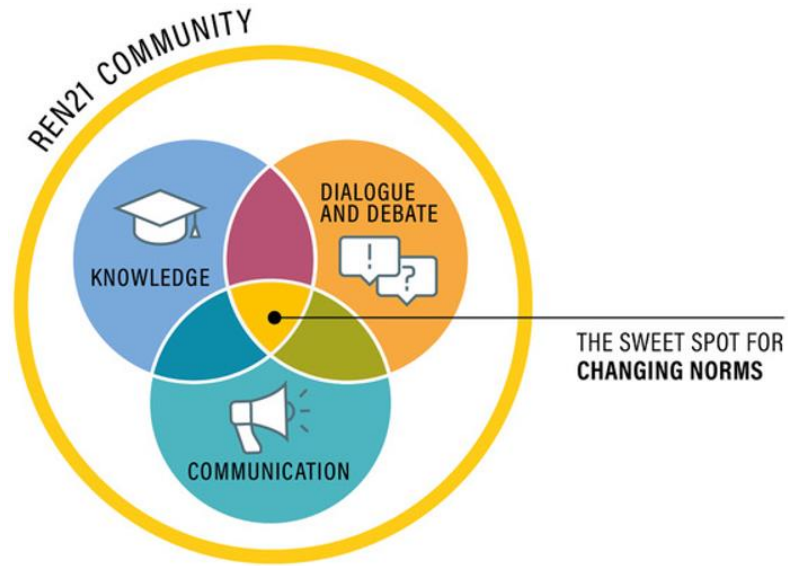




WHO WE ARE

OUR APPROACH TO DRIVE CHANGE

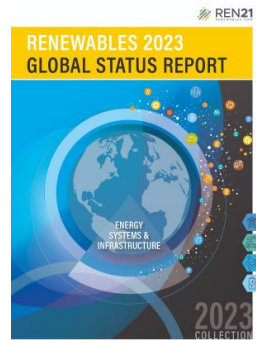
REN21 PILLARS



Position knowledge strategically, build on the REN21 community and their roles, **engage** with usual and unusual suspects to **change norms**.

THE ANNUAL GSR COLLECTION

REPORTING ABOUT THE BUILDING BLOCKS OF THE RENEWABLES SYSTEMS



Renewables Energy Systems and Infrastructure

- Sector coupling.
- Demand side management.
- Energy storage.
- Grids.



Previous Modules:

- Renewables in Energy Demand
- Renewables in Energy Supply
- Economic and Social Value Creation with Renewables
- Global Overview



GSR 2023 COLLECTION – RENEWABLE ENERGY SYSTEMS AND INFRASTRUCTURE

WHAT CHANGED IN 2022?



Energy Crisis was further exacerbated by Russian Federation invasion of Ukraine in February 2022



Energy prices reached their highest levels since 2008, impacting all energy-consuming sectors

Starting in October 2021, rapid economic rebound following COVID-19 led to tighter energy markets



High inflation became a global phenomenon during 2022

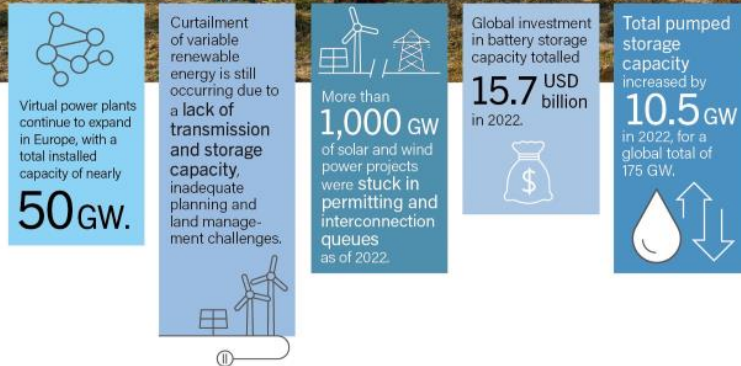




KEY FIGURES AND TRENDS

DIGITALISATION AND INTERCONNECTIONS ENABLING RENEWABLE ENERGY DEPLOYMENT

DIGITAL TECHNOLOGY CAN IMPROVE THE ENERGY SYSTEM'S RELIABILITY

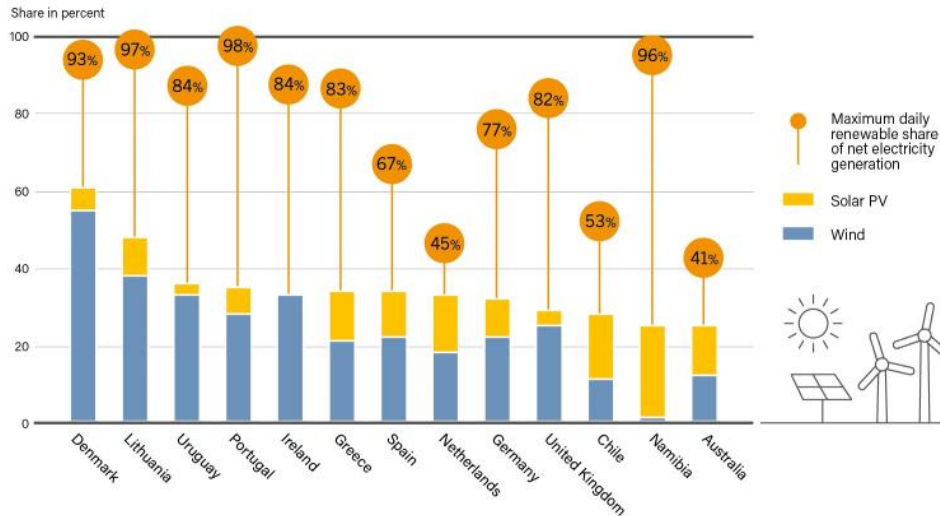


More than 1,000 GW of solar and wind power projects are stuck in permitting and interconnection queues.

VARIABLE RENEWABLES IN ELECTRICITY GENERATION

THE SHARE OF VARIABLE RENEWABLE ENERGY SOURCES IN ELECTRICITY EXCEEDED 12% FOR THE FIRST TIME IN 2022

 Top Countries for Share of Variable Renewable Electricity Generation, and Maximum Daily Renewable Share of Net Electricity Generation, 2022

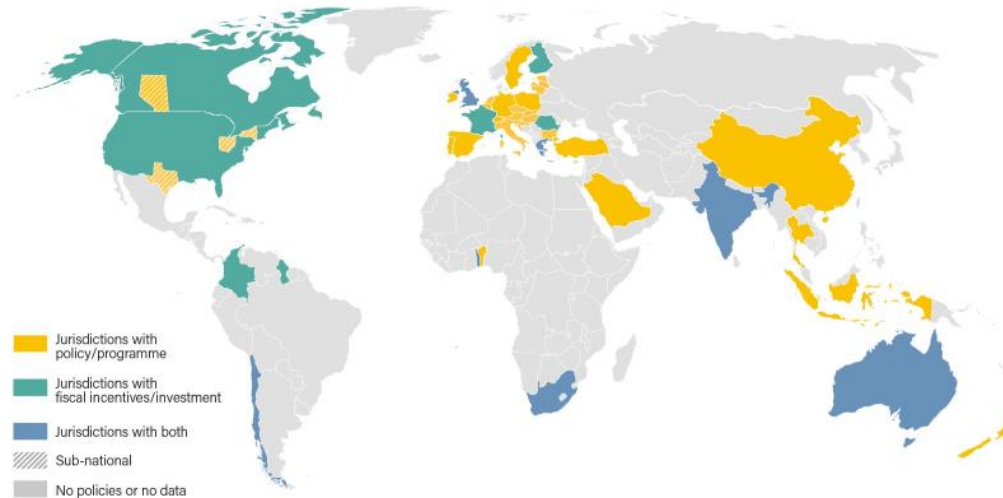


Several countries have seen much higher shares, including Denmark, Uruguay, Portugal, Greece and Germany.

POLICIES FOR ENERGY STORAGE

STORAGE POLICIES WORLDWIDE TAKE DIFFERENT FORMS

 Policies Supporting Renewable Energy Storage at the National and Sub-national Level, 2022

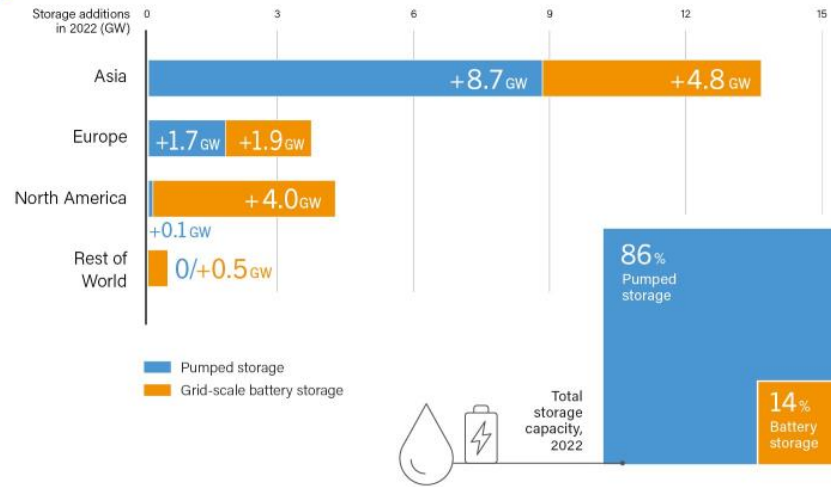


By the end of 2022, only 11 national and subnational jurisdictions globally had targets for energy storage capacity, whether pumped storage or battery storage.

PUMPED STORAGE AND UTILITY-SCALE BATTERY STORAGE

PUMPED STORAGE IS A RELIABLE AND FLEXIBLE ENERGY STORAGE SOLUTION THAT BALANCES SUPPLY AND DEMAND ON THE GRID

 Capacity Additions of Pumped Storage and Utility-Scale Battery Storage, by Region, and Total Storage Capacity, 2022



Pumped storage continues to account for the largest portion of global storage capacity by far. **Utility-scale battery capacity** is growing much faster but from a relatively small base.

THANK YOU!

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