

## Benin energy storage for renewable energy

Renewables are an increasingly important source of energy as countries seek to reduce their CO<sub>2</sub> emissions and dependence on imported fossil fuels. Renewables are mainly used to generate electricity, though renewable technologies can also be used for heating in homes and buildings. Renewable biofuels are also an emerging technology solution to decarbonise parts of the transport sector.

Note that modern renewables excludes traditional uses of biomass, such as burning collected wood, agricultural byproducts or dung for cooking or heating. This has serious negative consequences on health and the environment, including contributing to millions of deaths annually from air pollution, and is targeted for phase-out in international development and climate goals and in the IEA's Net Zero scenario.

Biofuels, mostly made from plants, and waste products, such as household trash and industrial wastes, can be burned to generate electricity or heat. This can have environmental and climate advantages compared to burning fossil fuels, though the impact varies widely depending on the fuel source and how it is used. Traditional uses of biomass for heating and cooking, which remain a major source of energy in many developing countries, are targeted for phase-out in international climate goals and IEA scenarios.

Biofuels are used in all parts of the energy system: as replacement for oil-based fuels in transportation, to generate electricity, for heating buildings, or to provide heat for industrial processes.

Renewables such as solar panels, wind turbines and hydroelectric dams generate electricity without burning fuels that emit greenhouse gases and other pollutants. As the costs of solar panels and wind turbines have fallen dramatically in recent years, renewables now represent the cheapest source of new electricity generation in many parts of the world.

Renewable heat sources have made fewer inroads in industry, as many important industrial processes such as steelmaking require higher heat than renewable fuels can achieve. New techniques and technologies will be needed to decarbonise these areas.

COTONOU, December 7, 2023- While high growth over the past decade has helped Benin reduce poverty, the country's development gains are threatened by the impact of climate shocks, according to the new Country Climate and Development Report (CCDR) released today. Bold actions are needed to promote sustainable and inclusive growth, seizing opportunities for greater forest and land management, resilient urban infrastructure, and energy transition to achieve universal access to electricity.

Benin has amongst the lowest greenhouse gas (GHG) emissions globally, yet it remains one of the most vulnerable countries to climate change, ranking 152 out of 181 countries for extreme climate vulnerability.

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Floods are increasingly severe and pose significant challenges to the inadequate water supply, sanitation, and waste collection systems. In addition to increased deforestation, the country's 125 km of coastline is suffering from severe coastal erosion, which is likely to worsen if nothing is done.

"The issue raised by the report is how to reconcile development with the challenge of climate change in order to protect the poor and vulnerable," said Nathalie Picarelli, World Bank Senior Economist, and principal author of the report. "Our report estimates that almost half a million to a million more people could fall into poverty by 2050 if no adaptation measures are taken."

Benin's vulnerability to climate change is due, in part, to an economic structure dependent on agriculture and informal employment. However, there is cause for optimism if the country chooses to move quickly towards building a resilient economy, with investment and policy options focused on adaptation to climate change risks.

"Benin has made significant progress in parts of the coast to tackle coastal erosion, but more needs to be done as it records one of the highest rates of coastal erosion in the Gulf of Guinea," said Manuela Ravina Da Silva, World Bank Environmental Specialist and co-author of the report. "There is also a need to invest more in mitigation measures, including renewable energy, to expand access to electricity for the country's people and tackle deforestation through sustainable land use systems to meet the country's reforestation aims by 2030."

Adapting to climate change requires a resilient growth model. Government and the private sector need to be better prepared to deal with climate change; building adequate institutions and governance structures will be crucial. While all sectors will have to become more resilient, this is especially urgent for agriculture and land use, urban and network infrastructure, and human development (education, health).

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