

## **Carbon Sources and Capture in Morocco: Challenges and Opportunities**

Morocco, a North African nation with a growing economy, faces a significant challenge in managing its carbon sources and implementing effective carbon capture solutions. This abstract provides a quantitative overview of the current state of carbon emissions in Morocco and explores numerical opportunities and challenges associated with carbon capture in the country.

Morocco's carbon sources are primarily derived from its energy sector, where fossil fuels still constitute approximately 60% of its energy mix, leading to the emission of over 60 million metric tons of CO<sub>2</sub> annually. The country's industrial sector also contributes significantly to carbon emissions, with emissions from industrial processes totaling around 19 million metric tons of CO<sub>2</sub>.

To address these substantial carbon sources, Morocco has set ambitious targets, including increasing the share of renewable energy to 52% of its electricity production by 2030 and reducing greenhouse gas emissions by 17% by 2030 compared to business-as-usual scenarios.

Carbon capture and storage (CCS) and carbon capture and utilization (CCU) technologies have the potential to play a crucial role in mitigating Morocco's emissions. The country's geological formations offer opportunities for CCS, with estimated storage capacity of over 10 gigatons of CO<sub>2</sub>. CCU technologies could also be applied in various sectors, such as agriculture and cement production, to reuse captured carbon.

However, significant challenges exist in realizing these opportunities. Financial investments required for CCS and CCU projects in Morocco are substantial, potentially reaching billions of dollars. Technological advancements and international collaborations are necessary to make these solutions economically viable and technically feasible. Additionally, regulatory frameworks need to be developed and streamlined to support the deployment of these technologies.

In conclusion, Morocco's efforts to address its carbon sources and implement carbon capture solutions are backed by substantial numerical data. While ambitious targets have been set, substantial investments and technological advancements are needed to achieve these goals effectively. By embracing innovative approaches and international cooperation, Morocco can make significant strides in reducing its carbon footprint and contributing to global climate change mitigation efforts.