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***Future Mangroves: Effects of Climate Change on Mangrove Forests in Semi-Arid Regions and Consequences for Coastal Communities***

Along tropical coastlines, mangrove forests provide multiple benefits to local communities, including fisheries production and storm/tsunami protection. Globally, however, mangrove forests have declined by 30-50% in the past 50 years due to widespread destruction from development, shrimp farming, and over-harvesting. Climate change is further impacting these forests, causing the expansion of tropical mangroves into temperate regions due to rising temperatures. Mangroves also occur along semi-arid coastlines, yet we know very little about how climate change might impact their growth in these regions. For example, increased atmospheric CO<sub>2</sub> may make semi-arid mangrove forests more resilient to climate warming by increasing the efficiency with which they exchange water for carbon. Semi-arid mangrove forests occur in regions particularly vulnerable to climate impacts, including member states of the Climate Vulnerable Forum such as Senegal, Kenya, and Madagascar. Knowing how climate change will affect mangroves is key to ensuring successful community-led sustainable development projects such as mangrove reforestation. This study aims to assess the impacts of climate change on mangrove forests and the consequences for coastal communities in semi-arid regions. Using an interdisciplinary approach involving experimental plant science and field-based community case studies, the “Future Mangroves” project encompasses multiple themes of the United Nations 2030 Agenda, including the Climate Action, Life on Land, Gender Equality, and No Poverty sustainable development goals. Working with TCD and the Mary Robinson Foundation – Climate Justice, this project is advancing our understanding of how forested coastal wetlands respond to climate change, improving sustainable development in some of the world’s most climate-vulnerable communities.

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