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COASTAL WEST AFRICA AND CLIMATE CHANGE

VULNERABILITY TO IMPACTS AND INSTITUTIONAL NEEDS

CONTEXT

The coast of West Africa is a mix of urban, peri-urban, and rural areas, as well as natural ecosystems. All of these areas will experience new and challenging stresses associated with climate change, and they will require planning and international cooperation to adapt to changing conditions. The combined pressures of urban growth, a growing demand for resources, and the challenges of carrying out and enforcing land-use planning will likely dominate development concerns along the coast in the future. Understanding the current state of both the natural ecosystems and inhabited areas, as well as possible future climate scenarios, can provide direction for both development and planning.

FINDINGS

The main impacts of climate change on the physical coast include rising sea levels and a higher incidence of extreme rainfall events, both of which can lead to increased flooding. While it is impossible to generalize across the varied ecologies of the West African coast, there are some vulnerabilities that should be of particular concern to policymakers. These include increasing coastal erosion and loss of wetlands, negative impacts on fisheries and croplands, and increasing risks to infrastructure and populations in urbanized areas.

While coastal erosion is influenced by a number of factors, it will likely increase with rising sea levels. Significant gaps exist in our knowledge about the drivers of erosion and the coastal assets that might be affected by erosion, but a new littoral observation network in West Africa should help advance understanding of this vulnerability. Wetlands, including mangroves and deltas, are threatened by rising sea levels, as well as by human encroachment. Better modeling of these ecosystems is needed, particularly for the river deltas, to understand how climate change will interact with growing populations.

While the effects of climate change on fisheries are understood generally, there remains little scientific research on their specific impacts in West Africa. These impacts are important because changes in coastal fisheries could have serious food security implications in countries throughout West Africa. Studies on how fish migratory patterns may shift with a changing climate need to be complemented by efforts to increase regional coordination and enforcement of laws regarding illegal, unregulated, and unreported fisheries.

Croplands in coastal West Africa are among the most productive in the region. Crop productivity in coastal areas is expected to increase with technological change, but better modeling of tree crops, such as cocoa, coffee, rubber, and oil palm, is needed to understand how this economically important sector will respond to climate change.

Each urban and peri-urban area has unique physical and socioeconomic characteristics that govern vulnerability to climate change. In general, however, the infrastructure and high population densities of urban areas on low-lying coastal areas put them at high levels of risk. While urban areas generally have more resources to use for adaptation, these resources may be inadequate if change occurs too rapidly, or if large infrastructures are threatened. As most countries have only a single large city on the coast, collaboration on the lessons of urban planning would best be done on a regional basis.

Currently, it appears as if no single institution in West Africa has all of the capacities nor the mandate needed to address the range of issues associated with climate change along the coast. Hence, existing institutions will need to work in collaboration across national boundaries to share knowledge and experience. The relationships between institutions that generate information and those that influence policy and its implementation are of particular importance. For example, although global institutions are monitoring West African oceans, these activities have yet to result in increased research or information on climate impacts on the coastal zone at either the national or regional level. At the national level, improvements in planning have been limited to a few isolated pilot projects. Within national governments, climate change is typically assigned to the environment ministry, which can struggle to influence the wide range of sectors with coastal interests. At the regional level, there are several institutions with a mandate to support policy development and coordination, but these teams are typically small and overstretched. Coordination is also hampered by the large number of regional and national institutions that gather and manage information relevant to climate change adaptation and coastal management.

RECOMMENDATIONS

A few priority areas for engagement on coastal zone adaptation include large urban centers, mangrove areas, coastal fisheries, and climate information and services. Future research could focus on urban vulnerability assessments and processes to integrate climate change into urban planning to help reduce future risk to infrastructure and populations. Research into the possible effects on mangroves could fit into the existing Mangrove Charter and National Action Plan for West Africa. Regional collaboration could be achieved through the Food and Agriculture Organization or the Abidjan Convention Secretariat.

Climate services — the production, translation, transfer, and use of climate knowledge and information for planning and decision-making — need to be more fully developed in West Africa, especially in coastal areas. Some early warning systems for disasters exist, mainly in the more developed countries, but even in these countries other services are limited and need to be developed.

The climate impacts on particular fish species and ecosystems need to be better understood. Existing impact assessments provide some useful insights, but collaboration with the U.S. National Oceanographic and Atmospheric Administration could help expand this base of knowledge.

ADDITIONAL INFORMATION

This brief highlights key conclusions from Badjeck, M.C., Bohn, B., and Sommerville, M. (2014) *Climate Change and Water Resources in West Africa: Coastal Biophysical and Institutional Analysis*. USAID. Interested readers are invited to review the full paper at <http://community.eldis.org/ARCC/>.