



DJIBOUTI

Reducing Impacts and Vulnerability of Coastal Productive Systems

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Other executing partner	Ministry of Natural Resources (MUHEAT)

As an arid coastal state, Djibouti is highly vulnerable to climate disasters. The majority of the Djiboutian population is found near the coast, and is particularly at risk from sea-level rise and flash floods, as previously seen in 1927, 1989, 1994, and 2004. The vast majority of Djibouti's rural population is highly vulnerable to climatic uncertainty, as they live in deserts or marginal infertile areas, often with highly erodible soils and limited water supply. Because Djibouti does not have permanent surface water bodies, it relies primarily on groundwater and on the seasonal flow of wadis. Climate models to the horizon of 2050 show that impacts on Djibouti's coasts, where most of its population is concentrated, are already significant, and will continue to increase with projected changes in climate. Djibouti's Initial National Communication (INC) to the United Nations Framework Convention on Climate Change (UNFCCC) predicts a potential temperature increase of between 1.7 and 2.1 degrees Celsius, and a potential sea-level rise of 8 to 39 cm. Initial studies of Djibouti's vulnerability to climate change revealed a significant impact on the fragile water balance at country level. The situation in the country will be aggravated by decreased precipitation between 4 and 11 percent, as well as

changes in the pattern of precipitation in terms of geographic distribution, frequency, and intensity. This combination of factors is likely to lead to increased severity of dry spells and more intense wet extremes accelerating erosion and floods. This could have a potentially disastrous impact on the availability of water, particularly in coastal areas.

For example, groundwater recharge will decrease as precipitation drops, while flash floods from wadis may occur more often due to the increase of rare but violent precipitation events, with potential increased risks of lives lost. Sea-level rise is likely to further exacerbate these impacts, particularly with respect to saltwater intrusion into the coastal aquifers, which will adversely impact the already declining water quality. Combined with excessive pumping and overexploitation, sea-level rise poses a severe risk to the country's urban areas. Further, fragile coastal ecosystems, coral reefs, estuaries, and mangroves, which play a crucial role in the livelihood of coastal communities and act as ecological buffer zones, are already showing signs of degradation due to climate change and human pressures. Pressures on the country's remaining mangroves



are expected to increase with predicted changes in the precipitation pattern, with drought and erosion leading to siltation of seasonal waterways and rapid runoff and sedimentation, resulting in a semipermanent closing off of the mangrove.

Project Activities and Expected Impacts

Because of its small size, many of the natural systems in Djibouti are linked and its resources and technical capacity are limited. This project therefore takes an integrated approach to coastal zone management and climate change. It addresses several of the root causes of vulnerability together. The project objective is to address the impacts of climate change on coastal ecosystems and communities by implementing a set of urgent measures that strengthen the capacity to predict future changes, while helping local populations adapt through the adoption of more sustainable production methods, particularly in the areas of water management, agriculture, fisheries, and tourism. This is achieved through a combination of three inter-related components: policy, ecosystem rehabilitation, and disaster prevention and response.

The policy component of the project reinforces institutional as well as technical and technological capacity to implement integrated coastal zone management in the context of a changing climate. It includes a blend of policy initiatives to encourage an enabling environment at the country level, as well as technology transfer in order to address the impacts of climate change on productive coastal systems, in particular in the water, fisheries, and coastal agriculture sectors.

Without this project, planning and development of the coastal zone in Djibouti would continue without due attention to the consequences of increased vulnerability. There would be a continued lack of information and knowledge about existing resources and impacts, such as groundwater potential, soil salinity, coastal erosion and their impacts on the economy.

The ecosystem rehabilitation component of the project addresses the increased risk of extreme climate-induced events due to environmental degradation. These include increased risks of floods, diminishing levels of seasonal rivers and aquifers, increased severity of droughts, and sea-level rise and its associated consequences. This component includes the implementation of physical measures to rehabilitate coastal ecosystems in order to restore their resilience to the above-mentioned impacts. Alternatives for local communities are developed as a means of releasing pressure on the mangroves and on water resources. For example, the rehabilitation of mangroves yields multiple benefits: by serving as a natural barrier to seawater intrusion, the mangrove helps maintain pasture in the surrounding areas. Similarly,

the project addresses issues related to the availability of freshwater for current and future communities by promoting water extraction technologies adapted to decreased rainfall in conjunction with urban center development planning in Khor Angar. Without the project's interventions, degradation of key coastal climate buffers, such as the important mangrove systems at the two project sites, would continue. Deforestation and unsustainable exploitation of these systems would continue unabated as few alternatives exist for local populations. This would increase environmental vulnerability as well as remove an important source of livelihoods as these grounds are an important area for fishing of high-value species.

The prediction and disaster prevention component of the project strengthens the country's capacity to measure and monitor the impacts of climate change, as well as the targeted communities' and the government's ability to respond to them. The ability to measure, anticipate, and prevent potential disasters, including early-warning systems, is the primary focus of the activities implemented. It builds on an existing flood early-warning system currently under development that has not factored in climate information, and that coordinates with current efforts to implement a project for the protection of the capital, Djibouti, against flooding. Without this project the country would continue to rely on ad hoc disaster relief efforts rather than preventing serious losses before they occur. Over the long term, climate-induced risks would continue to be overlooked in decisions concerning coastal development.

Synergies and Coordination

The project builds on plans and policies developed by the government of Djibouti in relevant sectors, as well as on synergies with ongoing and planned projects. For example, the project builds on current efforts by multilateral agencies such as the World Bank and United Nations Environment Programme, to install an early warning system for wadi flooding and extend lessons learned from recently developed disaster management and response tools to the national level or in project sites. The project also builds on initiatives aiming to promote sustainable livelihoods and food security, such as the Food and Agriculture Organization Special Programme on Food Security, which foresees interventions to develop surface water harvesting and fisheries development. Other linkages are established with projects implemented by various partners in other regions of the country, including solar energy projects by the International Fund for Agricultural Development (IFAD), designed to limit fuel wood harvesting, or the GEF-supported project Conservation of the Environment of the Red Sea and Gulf of Aden (PERGSA) for conservation areas.

For More Information

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