PROJECT BRIEF

United Nations Development Programme

ENVIRONMENT AND ENERGY

Sierra Leone: Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change.

Issues:

Sierra Leone is particularly vulnerable to the increasing frequency and severity of droughts, floods and severe storms (hail, thunder, lightning and violent winds), and their impacts on sectors such as agriculture, fisheries, water resources, as well as infrastructure and hydro-electric power production. Such climate-related hazards are having increasingly adverse effects on the country and future climate change is likely to further exacerbate the situation.

Figure 1: Sierra Leone communities are vulnerable to climate-related hazards such as extreme rainfall and droughts causing widespread soil erosion and affecting farming, the basis of their livelihoods.

Sierra Leone is particularly exposed to the impact of rainfall variability of and the frequency and intensity of extreme weather events, including heat waves and heavy precipitation events. Heavy rainfall following dry spells often results in extensive flooding throughout the country. The effects of these unusual temperature and rainfall patterns on agriculture, water supply and sanitation are evident in various parts of Sierra Leone. The risks on food security of strictly rain-fed rice cultivation cannot be overlooked. Shifting rainfall patterns have caused disruptions of planting seasons resulting in diminished agricultural production and poverty amongst farmers in particular.

Rainfall variability has also created water shortage problems resulting in decrease in water supply to consumers, reduced stream flow in rivers and watercourses and also health related problems associated with the outbreak of water-born disease.

Project Summary

- Country: Sierra Leone (SL)
- Project Budget: $4,000,000
- Project Funding Source: GEF/LDCF
- Project Co-Financing: $20,347,310
- Project Period: 2013-2017
- Implementing partners: The Ministry of Water Resources (MWR)
- Target area: Kono, Koinadugu, Kailahun and Kenema districts in Eastern Sierra Leone and Makeni, Bombali, Tonkolili and Koinadugu at Bumbuna area.

Actions:

Working in four districts in Eastern Sierra Leone (Kono, Koinadugu, Kailahun and Kenema) and involving more than 110,000 farmers, the project will assist farming communities to develop resilience to drought episodes. The project is also supporting communities in three districts: Bombali, Tonkolili and Koinadugu to establish a network for permanent monitoring of the river flow, upstream and downstream of Bumbuna Dam. This will strengthen the existing emergency preparedness plan to protect their livelihoods established on approximately 96 farm plots in 117 ha of cultivated lands that can be partially or fully inundated, affecting about 150,000 people in 9 wards. At district level, the project will strengthen the capacity of the Sierra Leone Meteorological Department (SLMD), in partnership with the Ministry of Agriculture, Forestry and Food Security, to develop and deliver seasonal forecasting to support the management of the agriculture and the water sectors.

Enhanced capacity of national hydro-meteorological (NHMS) institutions to monitor extreme weather and produce sector tailored weather forecasting

The project intends to bolt on the earlier work undertaken through the UNDP support and other bilateral cooperation initiatives, and rehabilitate critical infrastructure required to build and strengthen the climate-related observational network. This will be achieved by rehabilitating existing manual and automatic stations and installing new Automatic Weather Stations (AWSs) as well as Hydromet Automatic Stations (HASs). This set up will allow the minimum monitoring of significant areas of low-lying coast areas, which frequently flood at high tide resulting in vast areas of mangrove swamp. This will also monitor flat lands, which are subject to extensive riverine flooding in the major river basins of Great Scarcies Basin, Little Scarcies Basin, Moa Basin, Mano Basin, Lokko Basin, Rockel Basin, Gbangbaia Basin, Jong Basin and Sewa Basin. At the national level, the capacity to analyze and process integrated forecast information will be strengthened through training in tailored Weather Forecasting and Special Warning Packaging. The project will also invest into equipment including advanced workstations, computer soft- and hardware, and very importantly through improving the communication system of dissemination and data relation back to the end user. Therefore, through a set of integrated actions directed to enhance capacities of relevant national level partners, the project will enable the establishment of a national Early Warning System.

Efficient and effective use of hydro-meteorological information for generating early warnings and support long-term development plans

The project will strengthen the capacity of SLMD to use weather and climate information to develop timely and accurate weather forecast as well as new tailored products to serve Early Warning System. The project will build on the activities already in place to support the development of a Climate Change -Data Management System (CC-DAMAS) to allow systematic storage and mainstreaming of digital information to support decision making in sector planning. At the same time, the existing dissemination and response mechanisms/systems under the Disaster Management Department (ONS_DMD) will be strengthened to support EWS. With this set up, the project will, at national, district and local levels, develop a communication and awareness raising strategy, pilot application and implementation of local level responses i.e. relating to flood early warning in particularly for vulnerable communities in river valleys with strong participation of Women Farmers Associations. The information from the Data Management System (CC-DAMAS) will be used to analyze agricultural land-use planning in flood- and drought prone areas and develop alternative land use plans for different climate scenarios. Based on the results of this analysis, climate risk projections will be integrated into a comprehensive national database for flooding, soil erosion and drought hazards and vulnerabilities to be established by the project.

Figure 2: Sierra Leone is particularly vulnerable to the increasing frequency of severe storms (hail, thunder, lightning and violent winds).

Expected impacts

The project is in its inception phase. At the local level, early warnings and climate hazard mapping, disseminated correctly and acted on appropriately, can provide economic benefits through reducing losses of agricultural produce, infrastructure (roads and bridges) and disruption to people's livelihoods. This has further knock-on effects on people's health and wellbeing and thus affects communities and social structures. Thus total population benefiting from these developments has the potential to grow hugely if warnings extend to a reasonable percentage of the total population e.g. through a mobile phone relay or similar system.

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We would like to take this opportunity to recognize the partners that have contributed financial and other contributions to the development and implementation of this initiative. These include The Government of Sierra Le and the Global Environment Facility.