

Building resilience through infrastructure-based solutions with community involvement

The increased frequency and severity of natural disasters expose communities to a wide range of risks they are often ill-equipped to handle. Rural and urban communities lose livelihoods and homes, suffer physical danger and health problems and may need to relocate. Governments are often forced to repeatedly commit limited resources to rebuilding vital infrastructure for transport, energy, education, sanitation and health services. This damage to communities and infrastructure stalls the development process, but when both infrastructure and communities are made more resilient, it is possible to manage risks and foster sustainable development.

UNOPS helps governments and development partners construct disaster-resistant infrastructure and increase the resilience of communities against natural disasters. UNOPS implements more than \$1 billion worth of projects for a range of international partners every year, operating in more than 80 countries, often in the most challenging environments. UNOPS has designed and constructed major infrastructure projects such as schools, roads, bridges and hospitals to the highest standards, able to withstand extreme weather events.

UNOPS is committed to adding value to the projects it supports, by developing innovative disaster risk reduction solutions drawing on the experience of its specialized engineers and project managers. UNOPS focuses on sustainability, capacity development, gender empowerment and transparency at all stages of design and implementation.

The following examples illustrate UNOPS support to disaster risk reduction projects:

El Salvador Reducing the effects of violent storms

El Salvador is one of the most vulnerable countries to natural disasters in Latin America. The country is exposed to a growing number of hurricanes and tropical storms from the Pacific and Atlantic oceans. UNOPS is working with the Government and the United Nations Development Programme (UNDP) to reduce the vulnerability of urban areas to flooding, erosion and landslides created by extreme precipitation. This will be achieved by developing resilient infrastructure that can resist the impacts of large storms. Current interventions to address rain flows are focused on downstream measures designed to prevent major erosion or



A road in El Salvador shown before and after UNOPS worked to increase its resistance to storms, on behalf of the Government of El Salvador and UNDP. *Photo:* UNOPS

flooding. Increasingly, however, such measures are becoming highly expensive and mostly ineffective. A broader watershed management approach that also addresses upstream measures is necessary to reduce peak flows and the stress on current drainage infrastructure. The approach focuses on managing flooding and erosion risks in the lower basin through infrastructure interventions in the upper basin. Such investments can be smaller and more cost effective, since they will protect houses, roads, bridges, and existing drainage. The project will also improve water management and diminish pressure on water resources.

Haiti Supporting the Ministry of Public Works to develop disaster-resistant building guidelines

UNOPS has been mandated by the Haitian government to provide construction guidelines to help the country build back better after the 2010 earthquake, with funding from the World Bank. The project's primary objective was to gather structural information to plan the city's reconstruction and to enable displaced people to return to their homes. UNOPS is working within the Haitian Ministry of Public Works, Transportation and Communication and has assessed the structural damage to more than 400,000 buildings. UNOPS is also providing technical and administrative support for the preparation of guidelines on increased seismic and cyclone resistance for new buildings.

Bangladesh Running disaster management programmes

With annual floods affecting on average fifteen percent of its land, Bangladesh is susceptible to water-borne diseases, mass internal displacement and disruption to food supply. The Comprehensive Disaster Management Programme

was designed to improve Bangladesh's ability to reduce risks from natural disasters and improve response and recovery activities. On behalf of the Ministry of Food and Disaster Management, the UK Department for International Development (DFID), UNDP and the European Commission, UNOPS was one of three organizations implementing the programme during 2004 to 2009. Over that time UNOPS supported hundreds of community risk assessments and helped develop risk reduction plans, advocacy programmes and disaster management training schemes. To empower local communities, UNOPS helped create a mechanism to coordinate interventions, oversaw a programme gap analysis to assess what was needed, and helped establish a local grants programme to provide small-scale risk reduction interventions and livelihood security strategies.

Afghanistan

Improving livelihoods through disaster resilience

The village of Jabraeel on the banks of the Harirod River in Herat province has repeatedly suffered from flooding as the water overflows the river's natural banks. UNOPS is implementing an Italian-funded programme on Enhancing Disaster Preparedness and Emergency Response, which helped Jabraeel village construct a retaining wall to limit flooding. Experts evaluated the needs in the village and developed an action plan with the community. Women in the community were trained to build gabion baskets (cages weaved from wire) and men filled them with stones, ensuring full community participation in the process. The gabions were then used to build a wall that would reduce the damage caused by flooding.

The Democratic Republic of the Congo

Improving urban planning and enhancing preparedness for volcanic eruptions

Mount Nyiragongo last erupted in 2002, destroying part of Goma city centre, leaving nearly 160 people dead and over 120,000 people homeless. In order to provide more effective warning to the one million people living nearby, a Volcano and Environmental Risk Management Unit was opened in 2007. The risk management unit is implemented by UNDP and executed by UNOPS, with funding from governments of the United Kingdom, Switzerland and Luxembourg and the European Union. The data collected by the unit in collaboration with the local Volcanic Observatory has enabled safer urban planning. The project has also taught hundreds



Women from the village of Jabraeel, Afghanistan make the wire baskets (gabions) needed to reinforce retaining walls and mitigate river flooding. **Photo:** UNOPS

of thousands of school children what to do in the event of an eruption.

Indonesia

Building earthquake-resistant schools

UNOPS built over 200 schools across the Archipelago on behalf of the United Nations Children's Fund. The project was aimed at creating educational facilities of a much higher quality than existed prior to the 2004 tsunami. The basic school design set new standards in earthquake resistance and typically incorporated: six classrooms, separate toilet facilities for girls and boys with washbasins to encourage improved hygiene, a teacher's office, and an outdoor play area. The designs of all school facilities were adapted to the specific needs of each community and the requirements of each construction site. All of the schools were completed in 2010.

Sudan

Increasing resilience to drought

The Golo reservoir supplies water to El Fasher town. DFID funded the rehabilitation of the reservoir in 2010, as well as the on-going construction of a pipeline to carry water from the reservoir to the town, both with implementation support from UNOPS. Our activities have included the rehabilitation of the reservoir, silt removal from another reservoir at Wadaa and the rehabilitation of a water harvesting dam. The project will increase the region's resilience against drought and will benefit approximately 450,000 people.