

**IMPACT SERIES**

# STRENGTHENING FLOOD RESILIENCE IN GEORGIA



**50  
YEARS**

*Empowered lives. Resilient nations.*



Supporting Progress On Sustainable Development Goals, including:



# In a region highly at risk of floods, UNDP and the Adaptation Fund are working with the Government of Georgia to build resilience in the Rioni River Basin, home to over 200,000 people.

## OVERVIEW

Settled amongst high mountain ranges and low-lying valleys, the residents of the Rioni River basin — extending from the Caucasus Mountains to the Black Sea — are naturally exposed to floods, flash floods and landslides. While infrequent, these hazards have in the past caused considerable damage to the lives and livelihoods of thousands.

**“In terms of disasters, flooding is one of the most significant concerns in Georgia,” notes Nino Antadze, UNDP’s Environment and Energy Team Leader in Georgia. “Past floods have devastated local infrastructure and the economy, affecting the lives and livelihoods of tens of thousands of people.”**

Between 1995 and 2009, damages due to floods were estimated at over US\$ 1 billion. The worst individual incident was in 1987, when flooding impacted over 36,000 people in the capital region and cost over \$500 million in damages. That same year flooding in the Rioni Basin destroyed at least 3,000 homes and 1300km of roads, killing 150 people and costing over \$700 million.

Recurrent floods and landslides erode socio-economic gains and hold back growth, a concern for the country’s development progress. Estimates are that, in the last 10-years alone, flooding has left 10,000 hectares of arable land no longer fit for agricultural purposes. These impacts are particularly sharp for a population whose average plot size per person is only 0.14 hectares and where 90 percent of the population rely on agriculture.

It is clear that persistent low-level floods combined with occasional disasters have significant ramifications for local development, impacting on everything from food production and livestock rearing, to infrastructure and social services. In response to this, the Government of Georgia is placing considerable emphasis on strengthening flood resilience.



## PROJECT: Climate Resilient Flood and Flash Flood Management

May 2012 – December 2016;  
200,000+ people and nearly  
4,000 properties in risk-zone;

Programme funded by the  
Adaptation Fund and UNDP;

Budget: US\$ 5,060,000 (\$4,900,000  
Adaptation Fund, \$160,000 cost-shared  
by UNDP)

## RESULTS

10 hectares of greenery planted along  
riverbanks;

Gabion walls in place in nine  
communities, protecting 4000+ people;

Four communities with fortified  
shoreslines;

35 early warning monitoring stations  
in place;

Floodplain policy developed.



## ADDRESSING RISK, BUILDING RESILIENCE

UNDP, together with the Adaptation Fund, the Ministry of Environment and Natural Resources Protection, and the National Environment Agency, are addressing risk and building resilience along the Rioni River through the Climate Resilient Flood and Flash Flood Management Project.

This entails an integrated approach that:

1. Strengthens local infrastructure;
2. Supports development of floodplain policy; and
3. Enhances early warning systems and preparedness measures

## EMPOWERING COMMUNITIES

At the local level, UNDP works with people closest to the flood zone and helps them to mitigate, adapt and manage risk. Efforts include building up vegetative cover to improve water saturation and movement; trenching and terracing the land around villages to keep water at bay; and planting deep-root bushes and trees, such as nut and acacia plantations, to help maintain the land and soil against erosion and improve water absorption.

While in the past residents installed metal nets reinforced with cement, agroforestry and shoreline protection offer a much more promising, effective and sustainable solution, anchoring the riverbank for the long-term.

**“Trenching, terracing, planting bushes and trees – all those simple methods can protect us for the coming water. We had no idea about that before,” says Nodar Khabeishvili, who attended an information session on bioengineering in November 2015.**

All efforts at the local level are based on interviews and topographic surveys. This helps specialists to determine areas in the past that have proven susceptible to flooding. Risk assessments and GIS mapping also help to identify areas particularly predisposed to floods and support modelling and infrastructure development, such as where to place gabion walls.



As of February 2016, the project has helped plant 10 hectares of greenery along riverbanks, and helped nine communities and 4000+ people construct gabion walls and strengthen river shorelines. **This directly lends support to SDGs 2, 11 and 13, focusing on food security, sustainable human settlements and climate change respectively.**

### EARLY WARNING AND PREPAREDNESS

In order to track water levels and inform people quickly and efficiently, the programme has installed stations along the river and its tributaries to measure both water levels and movements. These stations can not only facilitate evacuation if needed, but can also track long-term water patterns and feed this to a central database. This helps provide risk information to policymakers and developers and avoids construction in known risk-zones. To complement this, historic information on past disasters, including flashfloods, mudflow patterns and landslide locations (including meteorological and hydrological data), have been digitized and shared with the Government.

Thus far, 35 stations have been installed along the river, including 5-meteorological stations, 20 meteorological posts to track weather patterns, and 10 hydrological posts to track water levels in the river. **This component directly supports SDG 1 on poverty eradication by helping to achieve the target to reduce disaster exposure for those most vulnerable.**

### RISK-INFORMED DEVELOPMENT

UNDP also takes a longer term and more comprehensive tactic, working with the Government to put in place the institutional and policy changes that are needed for lasting change. This includes revising legislation on land use and building codes.

Key to this is the **Floodplain Zoning Policy Framework**, which aims to ensure that all future development is risk-informed. By requiring that new building and infrastructure developments draws on disaster and climate risk information, the Framework delivers a systematic means to address risk. UNDP and the Government are currently considering expanding the initiative and making it the template for a national risk-informed policy.

**“Hydro-meteorological threats in Georgia have become more frequent and intensive over the last 20 years as a result of climate change. To address and effectively manage these threats Georgia needs to introduce specific policies that will reduce the risk to the flood-prone areas and promote economic development of these regions,” says Nino Antadze.**

**Support for risk-informed development policies and systems directly supports SDG 9 on sustainable infrastructure.**

### SUPPORTING SUSTAINABLE DEVELOPMENT GOALS

The work of UNDP and partners along the Rioni River Basin is supporting that region’s efforts to protect development gains and achieve the Sustainable Development Goals. This includes progress to eradicate poverty, support food security, tackle climate change, and strengthen settlements and infrastructure. However, work on climate change and disaster risk reduction supports each of the SDGs, directly or indirectly, and this list, while not exhaustive, should be considered a snapshot of the critical importance of risk-informed development.

## 17 GOALS TO TRANSFORM OUR WORLD



### SD Goal 1

#### End poverty in all its forms everywhere

By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters;

### SD Goal 2

#### End hunger, achieve food security and improved nutrition and promote sustainable agriculture

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain eco-systems, that strengthen capacity for adaptation to CC, extreme weather, drought, flooding and other disasters that progressively improve land and soil quality.

### SD Goal 9

#### Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Develop quality, reliable, sustainable and resilient infrastructure including regional and trans-border infrastructure to support economic development and human well-being with a focus on affordable and equitable access for all.

### SD Goal 11

#### Make cities and human settlements inclusive, safe, resilient and sustainable

By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters including water-related disasters with a focus on protecting the poor and people in vulnerable situations.

### SD Goal 13

#### Take urgent action to combat climate change and its impacts

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.