

CLIMATE CHANGE MITIGATION AND ADAPTATION

GUIDELINES FOR INTEGRATING CLIMATE CHANGE IN DESIGN AND IMPLEMENTATION OF TRANSPORT INFRASTRUCTURE IN RWANDA

BACKGROUND

Reports show that Rwanda is among the countries most vulnerable to climate change. Climate change is affecting all sectors of development of human beings including transport. The latter is affected by the increase in temperature, high and intense precipitation, which causes flooding, landslides, erosion and sedimentation. To better cope with these events and disasters, the infrastructure development sector needs to consider climate change in its designs, plans and budgets. This project aims to develop recommendations for the improvement of existing guidelines for transport infrastructure with respect to climate change adaptations.

DESCRIPTION

The working methods were based on reviewing the existing best practices, assessment of the current practice, site visits for the identification of gaps in the implementation stage and conducting discussion with practitioners i.e. consultant and contractors. The assessment resulted in the recommendations for improvement of the transport infrastructure guidelines, as follows:

Planning process of road infrastructure:

- Planning should focus on the sealing of rural unpaved roads
- Costs for maintenance inspections should be integrated in the budget

Design and construction of transport structure:

- Include climate change scenarios in hydrological model
- Design of storm water drains and the downspout, including the water catch basins / check dams/detention basins to reduce the frequency and extent of downstream flooding, erosion, sedimentation and water pollution
- Proper costing of adaptation and mitigation measures to be included in the contract cost
- Proper rehabilitation of sites used during road construction (quarries, borrow pits, dumping sites, crusher and asphalt plants, campsites, etc.) according to their subsequent use
- Analyse of the rate of sedimentation for bridges and culverts



Concrete paving at high slopes ensure mobility during the rainy season with greening to avoid erosion. Photo by Dieudonne Niyigena

DESCRIPTION CONT.

- Plant trees and /or grasses with long roots on cuts and embankment slopes against erosion
- Shape the earthen drain to allow water to run in the channel
- In the choice of the alignment of a new road, the section of the project prone to flooding, landslides, erosion and scouring should be identified and analysed in particular

Maintenance of transport structure:

- Regular inspection of the crossing structures before the start of every rainy season
- Routine maintenance to clean the drainage systems
- Visual condition assessment of roads and bridges, especially before the rainy season
- Inspections of bridge foundations especially piles from scouring problems which is one of the causes that reduce the bearing capacity of piles, hence the destruction / collapse of the whole bridge

IMPACT

As the aim of the project was to develop the recommendations for the improvement of existing practice, the findings were shared and discussed with the Technical Committee that reviewed the standard “Rwanda Standard RS 267-1. Feeder Roads-Part1: Guidelines for design”. They were included in the revised standard in its second edition of 2021.

LESSONS LEARNED

Preserving the nature with the application of nature-based solutions (NBS). Specifically, to look at the area of application and their limitation as well as their advantages to the local community. These should be investigated in areas with landslides, erosion and high rate of sedimentation in rivers. The NBS lacks documentation and guidelines in Rwanda

Country: Rwanda

Sector: Other (transport)

Key words: Climate, Transport sector, Guidelines

Contact details:

Mr Niyigena, Dieudonne
didniyigena@gmail.com