



## The Kamoro Suspension Bridge in Madagascar

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### Abstract

The government of the Republic of Madagascar has been granted a funding by the International Development Association (IDA) for the *Projet d’Urgence pour la Préservation des Infrastructures et la Réduction de la Vulnérabilité (PUIPIRV)*. Part of the project consists in renovating the country’s main infrastructures. The Madagascar Roads Authority is in charge of managing the subsequent activities. The Kamoro suspension bridge is the most prominent civil engineering site in Madagascar and has been the subject of an important study realized by the present authors. The study consisted in assessing its state of conservation, its residual capacity and providing solutions for guaranteeing its efficiency. The article synthesizes the conducted studies and the structural choices made. Such decisions must absolutely take into account the territorial context in which they will be carried out.

**Keywords:** Suspension bridge, Cable-stayed Bridge, low-medium span bridge.

### 1 Introduction

The Madagascar Roads Authority (ARM) is being funded by the World Bank in order to rehabilitate certain strategic bridges along the National Road 4 (RN4). The RN4 links the province and city of Mahajanga in the North-West of the country to the capital Antananarivo. Proceeding in the direction of Antananarivo, a few kilometers after having encountered the traffic coming from the RN6 that comes from the north, there are two major civil structures. After 5 km, there is the Kamoro suspension bridge (Fig.1) and 65 km further there is the truss beam viaduct that crosses the rocky rapids of the Betsiboka river.

The present authors have participated in the assessment and rehabilitation of the Kamoro suspension bridge.

### 2 The existing Kamoro Bridge

The Kamoro suspension bridge was designed and built in the nineteen thirties by the company led by the French engineer G. Leinekugel Le Cocq (Fig.2), son-in-law of the famous designer and constructor Ferdinand Arnodin (1845-1924), author of many patents in the field of construction [1].