

## EARLY WARNING ON NYIRAGONGO VOLCANO: Need to strengthen the system

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The city of Goma, in Democratic Republic of Congo, is growing at the foot of Nyiragongo Volcano. This city remains vulnerable to volcanic hazards due to its seriously flawed early warning system.

In 2003, after Nyiragongo eruption (January 2002), Swiss Cooperation (DDC) provided financial support for the establishment and installation of a network of warning sirens on the volcano. Unfortunately, this network was overtaken by the exponential growth of people and the development of Goma city. To overcome this difficulty, Goma Volcanic Observatory, in collaboration with North Kivu Civil Protection Agency, installed signs with four-color warning codes at intersections (City) and in some schools in the city, to explain to the people what behavior to adopt before, during, and after crisis at Nyiragongo Volcano.

Indeed, during Nyiragongo eruption in January 2002, city of Goma had three hundred and fifty thousand (350,000) inhabitants, over an area of 64km<sup>2</sup> with little basic infrastructure; currently, Goma is home to about two million (2,000,000) inhabitants, new housing estates have been created, area of the city has increased from 64 km<sup>2</sup> to 70km<sup>2</sup> and new infrastructure has been created, including new homes, new administrative and commercial buildings, new health facilities, new schools and oil service stations.

However, during its recent eruptions (1977, 2002 and 2021) the Nyiragongo volcano caused loss of life, destruction of basic infrastructure including hospitals, urban roads, fuel stations, administrative and commercial buildings and schools. When there is unpreparedness, failure of the warning system, the loss is enormous, this is the case during the eruptions of the Nyiragongo Volcano towards inhabited areas.