Prevention and Mitigation of Urban Gullies: Lessons learned from Failures and Successes

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Intense rainfall, inappropriate city infrastructure and lack of urban planning lead to the formation of large gullies in many cities in the Democratic Republic of Congo (DRC), but also many other tropical urban areas. Such urban gullies are clearly an understudied and underestimated geohazard. They are often formed in a matter of hours due to the concentration of rainfall runoff and, once formed, continue to expand during subsequent years. Given their nature and location in densely populated areas, they often claim casualties, cause large damage to houses and infrastructure and impede the development of many (peri-) urban areas. These problems directly affect the livelihood of perhaps more than a million of mainly poor people in DRC and may strongly aggravate as a result of rapid urban growth and climate change. Several initiatives already exist to stabilize existing gullies, but an estimated 50% of these measures fail. Furthermore, prevention receives very little attention.

The PREMITURG-project ("Prevention and Mitigation of Urban Gullies", 2018-2023) aims to contribute to the prevention and mitigation of urban gullies by strengthening the research and decision-making capacity of Congolese universities and other stakeholders in disaster risk reduction. For this, we aim to (i) study the factors controlling this erosion process; (ii) identify the most effective/efficient prevention and mitigation measures with a focus on eco-engineering techniques (iii) study the societal and governance context of urban gullies as well as its influence on the prevention and mitigation of urban gullies; and (iv) valorize and appropriate the obtained research results.

This will mainly be done by the training of 3 MSc and 3 PhD students of DRC. Their research will focus on urban gullies and prevention and mitigation initiatives in Kinshasa, Bukavu and Kikwit. In Kinshasa, also the societal context of urban gullies will be investigated. Apart from the training of these students, the project will support local MSc studies and provide a range of prediction tools, field manuals, trainings, seminars and workshops to assist decision makers and other stakeholders in addressing this issue.

The central philosophy behind this project is that a lot can be learned from already existing initiatives aiming to prevent or mitigate urban gullies. These initiatives are taken by a wide range of actors and stakeholders, but often on an isolated basis. We aim to integrate and study these existing efforts. This will not only allow us to learn from their successes and failures, but will also increase interactions and synergies between the various actors and stakeholders involved with this problem. The insights obtained through this project will also be of great value to other tropical countries where urban gullies are a growing problem.