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HIGH RISK ZONES ON FLOODS AND LANDSLIDES DISASTERS IN RWANDA

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Abstract

Disaster risk management as an issue at stake worldwide shifts its emphases from post disaster to pre-disaster phases. Management activities required in pre-disaster phases, such as risk assessment, hazard identification, preparedness or preventive and mitigation measures needs detailed information about hazard characteristics, social, economic, structural vulnerability and capacity. That information is not usually available in many different countries, as it is the case in Rwanda. Based on the international experiences and practices, knowledge of disaster prone areas can be assumed as an alternative for detailed information acquisition, thus contributing to effective disaster risk management.

Identification of disaster higher risk zones on floods and landslides, can lead to better understanding of disaster risk and putting in place measures for risk reduction. Consequently, as Rwanda is prone to natural hazards with lack of adequate information that is essential for effective disaster risk management, due to limited scientific researches; this study aims to address that gap. The results revealed that some areas of the North-Western parts of Rwanda are highly prone to floods and landslides, namely Burera, Musanze, Rulindo, Nyabihu, Ngororero and Rubavu Districts. This is aggravated by some triggering factors such as steep slopes, soil types, heavy rains, land-use Practices and others. Intensity and frequency of disaster events vary from district to district and this geographical dispersal confirms the non-spatial clustering (as confirmed by Moran's I analysis) of risks due to uneven level of Disaster vulnerabilities, coping capacities and available hazards whereby lack of normal distribution of hazards all over all Districts.

Keywords: Disaster, Risk zones, Floods, Landslides, Hazards

DISASTER RISK AND CAPACITIES ASSESSMENT IN THE NORTH-WEST PARTS OF RWANDA

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Abstract

The Republic of Rwanda is located in the Great lakes region of the central Africa. This landlocked country has historically suffered from periodic natural and manmade disasters, mainly in the form of droughts, floods and landslides impacting the agrarian economy and the country's efforts towards sustainable development and poverty reduction.

Vulnerability to Periodic natural disasters is a long term concern. The study therefore aims at conducting an assessment of disaster risks, vulnerabilities and coping capacities in Burera, Nyabihu and Musanze Districts affected floods and landslides in order to put in place mitigation strategies for disaster risks. Different methods and

techniques were used to conduct this study including interviews, questionnaires, focus group discussions, field visits and observations, GIS and remote sensing among others. The analysis comprised the disaggregation of the hazards' characteristics including description of the hazard, Triggering factors, Frequency, seasonality, Duration, sectors affected, impacts, time of recovery, intensity of the hazard and others. In terms of vulnerability. The analysis comprised physical, environmental, social, institutional, economic, profile of the most vulnerable populations, differentiation of impacts, and level of vulnerabilities.

The study results showed that the Disaster Risk reduction is very possible through a comprehensive risk management. There is also a big need to expand capacity building in terms of disaster management, risk mapping to reach cell and village levels, put in place and operationalize early warning systems or hydro-meteorological hazards and many others in order to minimize the disaster risks and where possible to transform them into opportunities. All disasters are not preventable but mitigation is always possible.

GIS BASED AQUIFER VULNERABILITY ASSESSMENT IN HANGZHOU-JIAXING-HUZHOU PLAIN, CHINA.

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Abstract

Hangzhou-Jiaxing-Huzhou plain is among the regions which faces the shortage of water due to its increasing population, industrialization, agriculture and domestic use; hence the high dependence on groundwater. In China, the exploitation of aquifers has been historically undertaken without proper concern for environmental impacts or even the concept of sustainable yield. In order to maintain basin aquifer as a source of water for the area, it is necessary to find out whether certain locations in this groundwater basin are susceptible to receive and transmit pollution, this is why the main objective of this research is to find out the groundwater vulnerable zones using Geographical Information System (GIS) model in Hangzhou-Jiaxing-Huzhou plain. GIS was used to create groundwater vulnerability map by overlaying hydro-geological data. The input of the model was provided by the following seven data layers: Depth to water, net Recharge, Aquifer media, Soil media, Topography, Impact of vadose zone and hydraulic Conductivity.

This study showed that Hangzhou-Jiaxing-Huzhou area is grouped into three categories: High vulnerable zone with 27.4% of the total area, moderate vulnerable zone which occupy the great part of that area 60.5% and low vulnerable zone with 12.1%. This research suggests first the prioritization of high vulnerable areas in order to prevent the further pollution to already polluted areas; next the frequent monitoring of vulnerable zones to monitor the changing level of pollutants; and finally suggests that this model can be an effective tool for local authorities who are responsible for managing groundwater resources in that area.

Key words: Hangzhou-Jiaxing-Huzhou plain, Groundwater vulnerability, GIS, DRASTIC model, shallow aquifer

FORECASTING THE PERFORMANCE OF AN OIL FIELD, COMPARISON OF VARIOUS USED METHODS: THE CASE OF SHUANGHE OILFIELD, CHINA

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Abstract: While being the dominant source of energy, oil has also brought affluence and power to different societies. Energy produced from oil is fundamental to all parts of society. In the foreseeable future, the majority of energy will still come from oil production. Consequently, reliable methods for forecasting that production are crucial. Petroleum engineers have searched for simple but reliable way to predict oil production for a long time.