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REACHING THE UNREACHABLE: LEVERAGING SATELLITE TECHNOLOGIES FOR REMOTE DISASTER PREPAREDNESS

Abstract

Effective early warning systems (EWS) are critical for mitigating the impact of natural disasters, allowing communities to take timely actions to safeguard their lives, property and livelihoods. Nonetheless, one-third of global population remains vulnerable to natural catastrophes and unprotected by EWS, especially in least developed countries and Small Island Developing States (SIDS), where their implementation lags significantly. This issue becomes even more pressing considering that 1.5 environmental disasters are expected to occur daily worldwide by 2030, according to UNESCO.

A key challenge contributing to this disparity is the dependency of EWS on stable energy sources and mobile connectivity. Remote regions and marginalised communities often lack adequate access to stable communication networks and power supplies, severely limiting the effectiveness and deployment of traditional EWS infrastructure. This article explores the potential of satellite technologies as a promising remedy to bridge this accessibility gap. By leveraging satellite capabilities, enhanced disaster preparedness and response measures can be realised in areas with limited traditional communication and energy infrastructure.

Based on an examination of case studies involving remote communities in the least developed countries, this article examines the potential of satellite-based systems to revolutionise Community Disaster Resilience practices – before, during and after a natural disaster occurs. For instance, by leveraging the wide coverage and accessibility of satellite networks, communities in off-grid areas can access educational resources on disaster preparedness prior to any catastrophe and can coordinate disaster response activities, thereby mitigating the impact of natural hazards and improving overall resilience. Additionally, this article discusses the challenges and opportunities associated with the adoption of satellite-based solutions, such as cost considerations, technological limitations, and regulatory barriers. It highlights the need for collaborative efforts between government agencies, non-profit organisations, and private sector stakeholders to overcome these obstacles, ensure the effective deployment of satellite technologies and provide adequate resources for the involvement of communities.

Ultimately, this article aims to encourage a conversation around the effective implementation of satellite-based technologies in remote areas, promoting equal access to their benefits. As much as generating benefits, the growing commercialisation and the increasing influence of private actors around satellite technologies poses an inherent inequality risk. Access to satellite-based data and technologies for disaster mitigation is therefore a fundamental step to ensure that developing regions and communities can participate and benefit from this technological revolution.