IWRM Action Hub

RESOURCE

Quantifying water vulnerability: a multi-dimensional approach

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Description / Abstract

In today’s uncertain world, vulnerability of water supplies is of increasing concern. A number of factors influence this, ranging from physical conditions through to human management capacities. Across the Orange River Basin in southern Africa, these threats arise from overpopulation and farming pressure, with agrochemical and industrial runoff as well as harsh weather conditions giving rise to severe problems of erosion and land degradation. Under conditions of climate change, these threats are exacerbated, as temperature rises and water resources become more erratic. Since water is both an essential instrument of livelihood support and a crucial factor of production, there is a need to develop more effective mechanisms to identify those areas where its scarcity or poor management can bring about a slowdown in the development process. This urgency is heightened by the international commitment to the Millennium Development Goals (MDGs), supposedly to be reached by 2015. In addition to the MDGs, governments are also committed to the development of basin management plans for Integrated Water Resources Management (IWRM). This means that, in order to try to allocate water in an equitable and efficient way, better understanding is needed of all of the complexities of managing water across heterogeneous basins. It is now recognized that effective water management is much more dependent on effective governance than on hydrologic regimes. Ranging from traditional local customary norms and practices dating back through generations to the latest state-of-the-art science-based international agreements, water governance is a key to supporting the lives and livelihoods of local populations. Access to information is an essential feature of any of these approaches, and harmonization of data on water issues is long overdue. This paper provides an outline of an index-based methodology on which an assessment of water vulnerability can be made. In this approach, supply-driven vulnerability (from water systems) and the demand-driven vulnerability (from water users), are evaluated at the municipal scale. By combining these various dimensions together mathematically, a Water Vulnerability Index (WVI) can be generated.

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