



## One step toward rethinking alternative MDG water accessibility indicator and its health issues

Ligane Massamba Séne \*

International Food Policy Research Institute (IFPRI) - West and Central Africa Office, Dakar,  
Senegal. [jalimase@yahoo.fr](mailto:jalimase@yahoo.fr); [L.Sene@cgiar.org](mailto:L.Sene@cgiar.org);

Adjibou Barry

National Agency of Statistics and Demography of Senegal (ANSD)  
, Dakar, Senegal. [barry.ajibou@yahoo.fr](mailto:barry.ajibou@yahoo.fr)

Water access is a challenge for poverty reduction in developing countries. According to the estimates, 783 million people at the global level do not have access to clean water. Sub-Saharan Africa has some of the worst deficits. Meeting the Millennium Development Goal (MDG) drinking water target would improve health and well-being. The proportion of people without sustainable access to improved water is used as a measurement indicator for the monitoring of achieved progress toward the water MDGs. However, this statistic is incomplete because it does not take into account all the aspects regarding accessibility and also the criteria on which it was defined are so ambiguous.

As far as this paper is concerned, we aim to complement and attempt to overcome the shortcomings of the MDG indicator by computing a multidimensional measurement based on an objective weighting scheme and including sanitary issue, quality and distance through an explanatory analysis and a general covariance structure model or Structural Equation Modeling (SEM). This latter includes a Confirmatory Factor Analysis (CFA). We tested how well the classes of water accessibility were characterized by the factors from the CFA and also assessed empirically the linkage between water accessibility and health. This investigation on the multi-dimensional nature of access to water provides a response to the partial nature of the MDG indicator.

We find that the indicator used in the MDG framework overestimates water access when using Demographic and Health Survey in Senegal for illustration. The results of the general covariance structure model also establish a significant relationship between the latent variable of water accessibility and latent household health status. The availability of water would be one of the prerequisites for achieving the MDGs related to health. Our analysis provides a method that would allow policy makers to get an efficient estimate the access rate and to effectively identify households at the margin. Health issues related to drinking water access indicate that existing interrelations between MDG targets (the link between MDG goal 7 that includes target 10 on water access and MDGs sanitation related targets 4,5 and 6) should be considered for optimal resource allocations. Hence, this framework can be a valuable contribution to the monitoring of drinking water access after 2015 with the post-2015 Development Agenda by providing a more appropriate measure of the global efforts toward the achievement of the water MDGs for efficient and targeted public interventions.

**Keywords:** water; accessibility; multidimensional; health.