Meeting water needs for sustainable development: an overview of approaches, measures and data sources

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An essential part of a global transition towards sustainability is the Millennium Development Goals (MDG), providing a blueprint of goals to meet human needs. Water is an essential resource in itself, but also a vital factor of production for food, energy and other industrial products. Access to sufficient water has only recently been recognized as a human right. One central MDG is halving the population without access to safe drinking water and sanitation.

To adequately assess the state of development and the potential for a transition towards sustainability, consistent and meaningful measures of water availability and adequate access are thus fundamental. Much work has been done to identify thresholds and definitions to measure water scarcity. This includes some work on defining basic water needs of different sectors. A range of data and approaches has been made available from a variety of sources, but all of these approaches differ in their underlying assumptions, the nature of the data used, and consequently in the final results.

We review and compare approaches, methods and data sources on human water use and human water needs. This data review enables identifying levels of consumption in different countries and different sectors. Further comparison is made between actual water needs (based on human and ecological requirements), and recognised levels of water abstraction.

The results of our review highlight the differences between different accounts of water use and needs, and reflect the importance of standardised approaches to data definitions and measurements, making studies more comparable across space and time. The comparison of different use and allocation patterns in countries enables levels of water use to be identified which allow for an adequate level of human wellbeing to be maintained within sustainable water abstraction limits. Recommendations are provided of how data can be defined more clearly to make comparisons of water use more meaningful and consistent.