

Linking Education and Water in the Sustainable Development Goals

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Highlights:

1. In the development of the post-2015 development agenda, the water-education nexus offers opportunities for dealing with a variety of different sustainable development challenges including: inequity in education, disaster recovery, and local mobilization.
2. In order to respond to water-related sustainability challenges, people worldwide need to acquire "water literacy." The term is used here to refer to appropriate knowledge about various aspects of water use and management in order to ensure safer water consumption and to contribute to Disaster Risk Reduction (DRR). We believe that water literacy can be acquired by obtaining basic literacy competencies and a certain level of education.
3. In order to create opportunities for people to gain the knowledge and skills they need so that they can respond effectively to water-related sustainability challenges, it is essential that government representatives and other stakeholders acquire an accurate understanding of water-related issues and that systems be established for implementing concrete measures.

Water-Education Nexus

In discussions about the Post-2015 Development Agenda, education is considered a major target domain (United Nations, 2013a; OWG, 2014; SDSN, 2014). It is a broad topic area that crosses disciplines and affects most issue-specific aspects. Progress made on education in the Millennium Development Goals (MDGs) indicates that development endeavors beyond 2015 must include provisions for equal opportunity for people to receive a quality education. It is evident that citizens who are equipped with appropriate knowledge, skills,

and competencies are able to respond more adequately to issue-specific sustainable development challenges. Considering that the Rio+20 outcome document states that the Sustainable Development Goals (SDGs) should be "limited in number," this implies that particularly important opportunities lie in identifying "critical nodes" (Young et al., 2014), and water education could be a leading candidate.

Improving water literacy of all people is essential for overcoming a host of different sustainable development challenges. The water-education nexus—i.e., a focus



on improving water literacy for all people around the world—should be clearly integrated into the SDGs. This policy brief takes a broad perspective, with environmental, economic, and social aspects included, to develop a menu of targets which can be tailored to meet the needs of diverse actors at multiple levels. We present sample indicators for various targets to monitor and assess progress. These targets and indicators will of course need to be adjusted to local contexts.

Progress toward education-related MDGs (Goals 2 and 3)

The total number of primary school-age children not enrolled in school was almost halved—from 102 million in 2001 to 57 million in 2011 (United Nations, 2013b). Although gender equality in education has been achieved in many regions in the world at the primary education level, only 2 of the 130 countries achieved the goal at all educational levels by 2011. In relation to these statistics, the bi-directional water-education nexus should be taken into account going forward: While education improves water literacy, water, in turn, affects educational conditions and opportunities. For example, the rate of school attendance of girls improves when water is more accessible. A study shows a 15 minute reduction in water collection time increases the proportion of girls attending school in Ghana by 8-12 percent (Nauges and Strand, 2011). Thus, in our efforts to respond to water-related sustainability challenges, we cannot (and should not) neglect the particular importance of promoting education for girls and women.

Safe Water Accessibility

It is widely understood that the appropriate use of safe water is an important factor in reducing the incidence rate of diarrhea and contagious diseases transmitted via “unhygienic water” (e.g. UNICEF, 2013). Moreover, safe water is also important to mitigate impact of heavy metal/ chemical contaminated water. For example, in Bangladesh, between 35 million and 77 million people are at risk of arsenic poisoning, mainly from the drinking of tube-well water (Smith et al., 2000).

Learning to use safe water appropriately requires a minimum level of education. For example, research scientist Nagata and his colleagues (2011) point to clear differences between the ways that the literate and the illiterate handle water. Also, the WHO/UNICEF Joint

Monitoring Programme for Water Supply and Sanitation (JMP) mentions inverse relationship between level of education and open defecation rate, such as in Nepal (WHO and UNICEF, 2014).

In rural areas, people have few opportunities to acquire such knowledge. School enrollment and literacy rates are typically low. Household poverty, the school enrollment rate and the Gini coefficient of education among the lowest 10% income bracket of the population (see, for example, Castello and Domenech, 2002) have been useful indicators for understanding the educational inequities that exist. Statistical data collected up to 2011 indicate that 83% of those people without access to improved water live in rural areas (WHO and UNICEF, 2013). Furthermore, even those with access to safe water often still use well water from sources that are not secured from disruptions.

The water-education nexus requires education related to the source of safe water. Research results suggest that the expansion of water literacy, including knowledge about how to use well water, prepare water for consumption, handle waste water, etc., would be tantamount—both—to an increase in the number of people who use water safely and to the control of diseases caused by “unhygienic water.”

It needs to be noted that the goals, targets and indicators of water accessibility should focus on issues of water accessibility and should be designed to take geographic area of residence and household poverty into account.

Global Target: Improve the literacy rate by XX % in order to increase the number of safe water users by XX %.

Menu of Targets:

- A.** All people who have received three or more years of education participate in “water practice” training by 2030.
- B.** All people participate in educational programs related to “unhygienic water” and infectious-disease prevention by 2030.
- C.** All mothers receive education in water sanitation by 2030.

Indicators:

- a. Number of people who have been enrolled in school for three or more years
- b. Number of years of formal education received by women
- c. Gini coefficient of education
- d. Types, incidence, and death rate of infectious diseases caused by “unhygienic water” (e.g. death rate due to diarrhea)
- e. Proportion of population with reliable, long-term access to an improved water source (local level)
- f. Proportion of population with access to improved sanitation (local level)

Achievement of the MDG target related to water accessibility

Between 1990 and 2010, the total number of people with access to safe drinking water increased by approx. 2 billion to 6.1 billion, about 89% of the total world population (WHO and UNICEF, 2012). Meanwhile, regional disparity and economic inequality have expanded. Relatedly, while 90% of the populations in Latin America, the Caribbean, Northern Africa and Asia have access to safe drinking water, only 61% in Africa have access. In all, about 780 million people in Africa lack access to safe drinking water (WHO and UNICEF, 2012).

Global Target: Improve water literacy of all people in order to reduce water-related disaster damage.

Menu of Targets:

- A.** All primary schools conduct education for water-related disaster risk reduction by 2030.
- B.** Achieve a minimum 80% survival rate after water-related disasters by 2030.

Indicators:

- a. Data about water-related disasters (scale, affected population, causes)
- b. National- and local-level disaster risk assessment (water-related)
- c. Data about water-related disaster organization and preparedness training programs (qualitative and quantitative)

Water-related Disasters

The importance of water literacy in connection with natural disaster response and recovery is clear. Cases have been documented in which the lack of knowledge about the danger of water-quality deterioration following a water-related disaster led to infectious diseases and other negative health effects (e.g., from drinking contaminated tap water without boiling) (Mosley et al. 2004). One noteworthy example of the contribution of education to disaster response comes from the Japanese coastal town of Kamaishi, in the prefecture of Iwate, where 99.8% of secondary-school students survived the tsunami and flooding caused by the 2011 Great East Japan Earthquake (Sato, 2012). This was, in part, due to local school and community-led education for Disaster Risk Reduction (DRR) which had been regularly conducted prior to the events. This example demonstrates that one key to reducing the scale of damage triggered by water-related disasters (including direct deaths and infectious disease casualties) is water-related DRR education. These forms of education will only become more important, as global warming and other environmental factors are likely to increase the frequency and scale of water-related disasters around the world.

The Hyogo Framework for Action 2005-2015 points to the importance of ensuring access to appropriate training and educational opportunities for those populations considered “socially vulnerable,” including women. Moreover, to reinforce coastal hazard risk management and local community safety and resilience, various studies demonstrate the importance of improving all shareholders’ knowledge about water issues (Dewi, 2007; Marfai and King, 2008; Marfai et al., 2008; Ristic et al., 2012).

Water Literacy in Management

In order for personal- and community-level water literacy to improve, water supply and irrigation facilities must be developed and enhanced at national and local levels, and awareness-raising activities must be conducted for the general public. This means that national and local governments must become fully knowledgeable about water and sanitation-related issues so that they can successfully implement concrete measures. Some national and local administrations show little interest in these subjects. For example, in a survey conducted by WHO and UNICEF in Nepal, 54% of the general public supported an allocation of the local development budget to water and sanitation-related projects, whereas only 11% of their local leaders shared the same view (WHO and UNICEF, 2000). Pokhrel and Viraraghavan (2004) concluded from this survey that the limited interest of local leaders came from their insufficient knowledge about water issues.

Scientists Marfai and King (2008), who surveyed flood-affected areas in Indonesia, reported that the development of a disaster management framework resulted in reduced damage. They contend that safety and disaster-reduction training is indispensable, not only for local communities, but also for local and national government representatives. Fulfilling this need is one of the Priority Actions of the Hyogo Framework for Action that was adopted at the World Conference for Disaster Reduction (United Nations International Strategy for Disaster Reduction [UNISDR], 2007).

Global Target: Improve water literacy of all local governments and residents through educational activities to ensure safe water use and to promote sustainable water supply and irrigation facility development.

Menu of Targets:

- A.** All local governments adopt a training program aimed at improving governmental water literacy by 2030.
- B.** Achieve a minimum 80% literacy rate of all agricultural populations by 2030.

Indicators:

- a. National and local governments engaged in water and

sanitation-related projects

- b. Countries and regions experiencing water-related disputes
- c. Countries and regions where water-related disputes have either ceased or have been resolved, dispute resolution methods and their success (conventions, armed forces, etc.)
- d. Estimated demographic changes of the agricultural population until 2030 (by region)
- e. School enrollment rates in agricultural regions
- f. Urban-rural disparity in water and sanitation

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