

The Challenge of Achieving Water Security

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ABSTRACT

Many debates have been addressing the issue of water security. They cover a wide range of topics, such as water scarcity, water crises, water resources management, water as an economic good, water as human right, water terrorism, water conflicts, etc. Yet, 'water security' lacks a clear definition. Despite all advantages of science and technology, contributions of academic research, as well as ambitious targets of international organizations, media, governments, etc. aiming universal access to safe water for everyone, over one billion people worldwide still lack access to safe drinking water. This paper aims to through light on several possible reasons that might be causing the misfortune of water security. Positive results of DPSCIR water resource management model implied in China's Maritime Silk Road (One Road) and Silk Road Economic Belt (One Belt) hint the awareness of government that water insecurity is a risk threatening sustainable economic development. If sustainable economic development of each country matches the interests of the 'ruling' international political factors, this awareness could be included in those interests as well. Apparently, the sole achievement of water security in 21st century appears as its biggest challenge.

KEY WORDS: water security, water scarcity, water as human right, Silk Road.

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I. INTRODUCTION

Water is one of the fundamental resources of human well-being. WHO and UNICEF report of 2017 estimates that 2.1 billion people worldwide "lacks access to safe, readily available water at home", and 4.5 billion "lack safely managed sanitation"¹. Since 2000, there has been some progress; billions of people have gained access to basic drinking water and sanitation services. However, these services do not *a priori* provide safe water and sanitation (ibid.). Water is a renewable resource, whilst its supplies are limited and finite. Only 0.3 % of fresh water on earth, locked in ice caps, is available for human consumption (Gleick, 1993, p. 3, as cited in Mehta, 2002 p. 4). Yet, this is not the core reason which causes water scarcity, which is considered as one of the biggest threats of water security. As noted by Rijsberman (2004), it is hard to determine if water is scarce in the physical sense, or it is scarce because it should be used better (p. 1). In the text to follow I shall draw on three issues which aim to through light on the problem of water security. The dilemmas on the conceptualization of water security are followed by the dilemmas on the conceptualization of water as human right. Water security assessment model implied in China's One Road and One Belt region is an instance which points not only the fundamental reasons beyond water scarcity. The conclusion summarizes the main explicit and implicit presumptions of this paper.

II. WATER SECURITY: UNCERTAINTIES IN DEFINITIONS?

The concept of water security is still changing (cf. Lankford et al., 2013; Cook & Bakker, 2012). Water security points "sustainable utilization of water resources, adequate in both quantity and quality, for human well-being, socioeconomic development, and ecological conservation, including an acceptable level of risk of water-related disasters (Zhang at al., 2019, p. 2).

UN-Water (2013) defines water security with regard to "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human

¹ World Health Organization. "2.1. billion people lack safe drinking water at home, more than twice as many lack safe sanitation (2017) <https://www.who.int/news-room/detail/12-07-2017-2-1-billion-people-lack-safe-drinking-water-at-home-more-than-twice-as-many-lack-safe-sanitation>

wellbeing, and socio-economic development, for ensuring protection against waterborne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability” (n. p.)².

In this formulation, the *capacity* of protection of ‘sustainable access to water’ for sustaining human wellbeing etc., and for ‘ensuring protection against’ water-related disasters, etc. is addressed to the population. Also, it’s the *capacity of population* ‘for preserving ecosystems in a climate of peace and political stability’. These formulations might obscure the responsibility of the international organizations and governments, which ought to ensure and bring to the population the capacity to deal with these problems. The anthropogenic impact on the environment influences eco-systems, but the “climate of piece and political stability” depends to a large degree also on the *capacity and capability of political factors* in a given state and region. The context of the latter is the geopolitics of the region, as well as the political and economic interests of international actors. The control over different water-related issues, besides the market control of non-renewable resources, is one of the frames in regards to which superpowers develop their own interests in global terms. Corruption of local political factors is one of many additional circumstances which influence their capacity and capability to ensure to the population their wellbeing in the domain of their protection against water-related problems.

Global Water Partnership’s strategy emphasizes the ‘double nature’ of water, viz. its productive power vs. its destructive force, as well as the importance of an integrated approach to water resources management. The water secure world is the one in which every person has enough safe and affordable water as a grounds to clean and healthy life, and, at the same time, a world in which people are protected from floods, droughts, landslides, erosion, and unclean water-related diseases. The poor management effects on water security are to be advanced by an integrated water resources management, shared responsibility which includes all sectors, such as finance, planning, agriculture, energy, tourism, industry, education, and health.³ This approach is closer to the necessity of the shared responsibility in water resources management. It also accentuates both the positive and negative sides of the ‘water paradox’. However, the whole frame is posed in future ambitions, which implies still wanting water-related solutions.

Water security is defined also as “the reliable availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies” (Grey & Sadoff, 2007, p. 575). This formulation is rather neutral apropos the factors which ought to take responsibilities, in order that water could be ‘secure’.

III. WATER AS HUMAN RIGHT: PRETENTIOUS APPROACH?

The conceptual framework of Vision 21 summarizes the reasoning behind this Foundation: “It is based on the premise that people have the aspirations and energies to fulfill the human right of a clean and healthy world, with access to hygienic conditions, sanitation and water for everyone” (2000, p. 2)⁴. This reasoning is based also on the assumption that “following the turn of 20th century, governments and civil societies accepted access to water and sanitation as basic human rights (...)” (ibid., p. iii). The adequate access to safe water and sanitation services along with the hygienic conditions “are recognized as fundamental human rights”, and, as such, “they are implied in the founding Charter of the United Nations, and supported by major human rights treaties, conventions, covenants and official practice” (ibid., p. 5). It is noted that “this formal designation **empowers citizens** [emphasis added] to demand these services, and **obliges governments** [emphasis added] that have signed the conventions to promote and facilitate the rights – both within their borders and as donors to other countries” (ibid.). The duty on the respect and implementation of this human right by governments “**can help** [emphasis added] to give a high priority to basic services” (ibid.). The criteria on equality set under the Universal Declaration of Human Rights (1948), according to the Article 1: “All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood”. The UN Convention on the Rights of the Child (1986), according to the Article 24: “You have right to the best health care possible, **safe water to drink** [emphasis added], nutritious food, a clean and safe environment, and information to help you stay well”⁵. A minimum quantity of safe water required by person range as follows: drinking and cooking need 10-15 liters per day, hygiene and sanitation need an absolute minimum of 20 liters per day (ibid., p. 35). It shall be noted that the estimated minimum of water needs

² A UN-Water Analytical Brief. “Water Security and the Global Water Agenda” (2013) <http://www.unwater.org/publications/water-security-global-water-agenda/>

³ Global Water Partnership. The Water Challenge (n. y.) <https://www.gwp.org/en/About/why/the-water-challenge/>

⁴ Vision 21. A Shared Vision for Hygiene, sanitation and Water Supply and a Framework for Action (2002) <https://www.wsscc.org/wp-content/uploads/2016/04/Vision-21-A-Shared-Vision-for-Hygiene-Sanitation-and-Water-Supply-and-a-Framework-for-Action.pdf>

⁵ <https://www.unicef.org/rightsite/files/uncrcchildfriendlylanguage.pdf>

“may need to be qualified by other considerations, such as level of service, culture, and distance between a water source and the user” (ibid.).

The need for access to safe drinking water is important for each human being, and the accomplishment of this need would advance the overall welfare of communities which lack safe drinking water. Nonetheless, the explication of human right to safe water necessitates international and national obligations and responsibilities to assure clean water to drink. Put it differently, the sole definition of access to clean water as a human right requires creation of national and international obligations and responsibilities, which will assure to people clean water to drink. This implies that it should be defined what the violation of human right to water would precisely mean (cf. Mehta, L., 2002). Also, it should be defined which National bodies and institutions would take the responsibility to assure human right to water, which would be the penalties of the violation of human right to water, which National and International Court will be obliged to treat the cases of violation of basic human right to water, etc. The definition of water as human right would remain another pretentious approach to water security, if the enforcement of human right to water remains pending.

IV. Pointing the fundamental reasons beyond water scarcity: China’s water security assessment in Maritime Silk Road and Silk Road Economic Belt region

Water scarcity is perceived as the biggest threat of water security. It is faced worldwide, and Middle East and South Asia are typical regions influenced with this issue. The Falkenmark Stress Indicator (FSI) (1989) is one of the most commonly used indicators of the accessibility of water in certain country: “if the amount of renewable water in a country is below 1,700 m³ per person per year, that country is said to be experiencing water stress; below 1,000 m³ it is said to be experiencing water scarcity; and below 500 m³, absolute water scarcity” (Global Water Forum, 2012, n. p.)⁶.

Water shortage is usually defined based on water insufficiency, i.e. on the components of demand for water and population. As noted by White (2012), water scarcity “can be broadly understood as the lack of access to adequate quantities of water for human and environmental uses” (n. p.). Water resource management is another component from which the water security highly depends. Appropriate comprehensive solutions on water resources management can be successfully implemented, also when governments can afford the ‘implementation’ of their awareness that water security is a risk which threatens the sustainable economic developments of their countries.

The Driving Forces-Pressures-Carrying Capacity-State-Impacts-Responses (DPSCIR) water security assessment framework, based on DPSIR model, was designed to build a water security assessment index system in Silk Road Economic Belt (One Belt) and Maritime Silk Road (One Road) region of China, a region in which water resource demand is huge and shows an increasing trend. The One Belt and One Road Initiative is not only China’s most important development initiative, but it’s also “both an opportunity and challenge to the water resources protection (...)” (Zhang at al., 2019, p. 16).

Coupled with the ‘entropy method’ (measure of uncertainty) to calculate weights of the different determining factors, the DPSCIR assessment simulates the water security level of the One Belt and One Road region for the time period from 2017 to 2022 using the Grey Prediction Model (ibid.). Differently from other methods, this model considers the Carrying Capacity of the environment. It is focused on the causal relationship and mutual influence in-between environmental issues, economic activities, and population growth at different scales (ibid.).

The study results demonstrate that the sub-systems of Responses, State, Pressures, and Carrying Capacity Subsystems, namely changes in the ecological environment itself, are components which highly influence the water security conditions of this region. The determining parameters of water scarcity are rather water mismanagement (Hussein, 2017; Edwards, 2013, as cited in Zhang, 2019, p. 2) and uneven water distribution due to economic reasons or environmental factors (Nicol at al., 2012; Hussein, 2018, as cited in ibid.).

V. CONCLUSION

The unclear definitions of water security and water scarcity, as well as the concept of water as human right lacking an idea on the enforcement of this right, are two of many sources which impact the misfortune of ‘water security’. The aim of this paper was to raise these of many issues underlying the ongoing debates on water security. The clear definition of water security in which the responsibilities of the ruling factors would be implied is rather helpful than unhelpful. Water as human right is confusing, if the enforcement of this right is unachievable. The multiple nature of water scarcity gives an insight to the multifaceted water resource. The

⁶ Global Water Forum. “Understanding Water Scarcity” (2012) <http://www.globalwaterforum.org/2012/05/07/understanding-water-scarcity-definitions-and-measurements/?pdf=3555>

instance of DPSCIR method, which considers the dynamic water security level, and which is implemented in One Belt and One Road region of China, gives promising results. But, it also implies that the government is not only aware for the need of sustainable water resource management. If sustainable economic development of each country matches the interests of the 'ruling' international political factors, this awareness would be included in those interests as well. In this case, positive experiences of water security and water scarcity management would be worldwide applied. Therefrom, the sole achievement of water security in 21st century seems to remain its main challenge.

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