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Rainwater Harvesting: Path to Gain SDG 6

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Clean water is a cornerstone of sustainable development. The Sustainable Development Goals address this issue in their goal number 6, which aims to: “Ensure availability and sustainable management of water and sanitation for all”. Target 6.1 specifies: “by 2030, achieve universal and equitable access to safe and affordable drinking water for all” and substantially increasing recycling and safe reuse globally. One way of achieving this target is by increasing the focus on new methods for rainwater harvesting. With an annual average rainfall of 1800-2000 mm in the coastal areas, Bangladesh is in a good position to benefit from such methods. Even though Bangladesh has made considerable progress in tackling the water crisis, and in improving health and sanitation, there are still about 20 million people who lack access to safe drinking water. The problem is particularly salient in salinity prone coastal areas and arsenic hot spots, where an estimated 43,000 Bangladeshis every year die of waterborne diseases, mostly but not exclusively in poor rural areas. In Bangladesh, fetching water is especially strenuous for women, since they are in charge of water for household use. Rural women find themselves under tremendous pressure and water scarcity is often a cause of domestic violence. Even in coastal areas where water is evidently more available, women must often make several trips every day to fetch water from distant sources. Increased salinity of the groundwater has further exacerbated the vulnerability of already marginalized and disaster-prone coastal communities. Water scarcity also has far reaching cultural consequences: In the remote villages of Bagerhat, a future husband’s access to water has become an important criterion for parents to consider when marrying their daughters. Thus, evidently, water scarcity is a complex problem with wide economic, environmental and social implications. Any suggestion to resolve it also needs to take into account the specific cultural circumstances. Amamizu jars are pottery vessels to supply rainwater for domestic use. Amamizu is a Japanese word, which has two meanings: “sky water” and “sweet water”. Amamizu jars have the potential to be culturally accepted in Bangladesh because there is already a longstanding tradition of collecting rainwater by means of “motka”, earthenware vessels. However, motka are generally much smaller than Amamizu jars and they break easily. Amamizu jars overcome these deficiencies. Two connected Amamizu jars with 1,000 l volume each are sufficient to cover the drinking water needs of a family of 4 throughout the whole year, including the dry season. The technique is affordable, environmentally sustainable, and socially acceptable. To date more than 3000 households have installed Amamizu jars in the saline prone coastal sub-district of Morrelganj in the Bagerhat district. The Amamizu technology was transferred from Thailand to Bangladesh by Skywater Bangladesh (SB) Ltd., in 2011 and has been applied primarily in the Morrelganj sub-district of Bagerhat so far. The mastermind behind this technology is Dr. Makoto Murase alias “Dr. Sky Water”. Dr. Sky Water is a Japanese doctor of pharmacology, and CEO of the Institute for Sky Water Harvesting Co. Ltd. Dr. Sky Water is a globally renowned pioneer in promoting the use of rainwater and he has been honoured with the Rolex award for innovative rain projects in 2002. His mission is to promote the acknowledgement of rain as a precious gift, namely the source of

life. A key characteristic of Amamizu jars is their stability, which means that they can be transported on rough roads without breaking and that they withstand storms. In contrast to other methods of rainwater harvesting, such as those relying on plastic or metal vessels, water stored in Amamizu jars has no bad smell or odour and the water temperature remains comparatively cool even during the dry and hot summer. Most importantly, water stored in Amamizu jars is safe to drink because rainwater is free from arsenic, iron, salinity and human faeces. Rainwater is distilled water; it contains few nutrients. This means that basically bacteria are not able to increase to an unhealthy level in Amamizu jars. Also bio-film produced on the inside wall naturally contributes to clean stored water by its intake of the dissolved nutrients. Amamizu jars need a catchment area on a roof made of tin, concrete and cement or ceramic tiles. The rain that falls on the roof is collected by a plastic gutter and flows into a jar through pipes hanging from the gutter. The “sky water” is then stored in the Amamizu jar. Several Amamizu jars can be connected through an overflow pipe. Each Amamizu jar has a cover on the mouth, which keeps mosquitoes outside, and the water filters through a cloth in order to remove the dirt. Amamizu jars entail a number of social, environmental and economic benefits, which together underline the sustainability of this method. Social benefits: Amamizu jars lead to the reduction of diarrhoea and other water-borne diseases. They free families from their dependence on the contaminated and salty water from ponds or the tube-well water, which often contains arsenic and iron. Amamizu jars are easy to understand and do not require literacy. They are therefore suitable also for contexts with very low levels of education. Amamizu jars can serve as an entry point for health and hygiene education. The delivery and installation of jars is typically combined with training of the recipients. The fact that their usage happens at household level creates a sense of ownership with the individual users. As with other methods that improve access to water, Amamizu entails particularly great benefits for women by relieving them from the burden of fetching water and firewood. The time gained can be used for engaging in productive activities that contribute to the family well-being. Safe drinking water also positively impacts on the health of children and increases their capacities for studying. Relieving children from the tasks related to fetching water moreover means that they have more time, which they ideally use for studying. Environmental benefits: Amamizu jars are environmentally sustainable and do not produce any waste. The jars are made of mortar and they can be used for more than 20 years. The maintenance of Amamizu jars can be done with lemons and does not require any chemicals. The use of Amamizu jars does not require energy and thus reduces the need for firewood and the resulting deforestation. Economic benefits: Amamizu jars are a low-cost way of providing access to water. They only require a single payment upon installation. Their use and maintenance is free. The production of Amamizu jars creates employment for the local population. Due to their sheer volume and weight, but also due to the often poor state of roads in Bangladesh, Amamizu jars need to be fabricated as close as possible to the recipients’ houses. In order to spread Amamizu jars widely and effectively, small Amamizu jar factories should be established across various regions. The fabrication of a jar takes about one day for one person; half a day is required for the installation. Additionally, tasks related to checking the water quality also create employment opportunities. Public water supply systems in developing countries often fail to provide water safe for consumption. One of the reasons is the government’s lack of financial resources. Amamizu jars mitigate this problem by making people less dependent on the government’s supply. An improvement of the health of family members increases their chances for economic well-being. On the one hand, they save the financial resources hitherto spent on the treatment of waterborne diseases. On the other hand, as stated above with regards to women, relieving the family from the physically exhausting and time-intensive activities related to water fetching, means that they have more time and energy to invest in productive activities. To sum up, Amamizu jars are a simple, low-cost, climate friendly and sustainable method for addressing a severe issue that currently hinders sustainable development in many parts of Bangladesh. By providing easy access to potable water and ensuring year round safe water access for the communities, it has the potential to considerably improve the circumstances of people living in arsenic hot spots and salinity prone coastal areas of Bangladesh. However, in order to enact its potential, awareness of Amamizu needs to be raised among the people in charge. The production of Amamizu jars must achieve a certain volume in a region in order to make it economically worthwhile for the producers. Most importantly, different actors, ranging from policy-makers on national and local levels, i.e. the Department of Public Health and Engineering (DPHE), and the Union Parishad (LGIs), to competent NGOs need to be willing to collaborate in order to maximize leverage. By doing so, they will assist Bangladesh in achieving SDG 6 and have an impact on the well-being of millions of people. 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