

Water affordability problem in developing countries

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EXTENDED ABSTRACT

Background

Water is an essential component for human life. Access to water is considered internationally as a human right. Everyone should have sufficient, safe and affordable water for personal and domestic uses without discrimination (UN, 2002) (Nations 2015). This is echoed in the sustainable development goals (SDG), which specify that universal and equitable access to safe and affordable drinking water has to be achieved for all people by 2030. In a large number of countries, such as in Indonesia, Netherlands, and Brazil, this affordability issue has been accommodated in national law. These recognitions indicate affordability as an important aspect that needs to be addressed in water provision, especially in low and middle-income countries (LMIC). All in all, it is important for policy makers to ensure the availability and affordability of safe water for all households, specifically the poor.

Commonly, water affordability is measured as the proportion of household income spent on water services. In developed countries, where the majority of households are already connected to a good piped water system, this affordability measurement can easily be met. However, in developing countries the water supply setting is far more complex than in developed countries, which makes that this simple measure cannot easily be applied. In developing countries, the development of water infrastructure is often distributed unevenly. Public utilities (such as piped water) often serve only the middle upper class, leaving the poor households served by informal providers, such as mobile vendors, and refilling (bottled water) depots. Focusing the water affordability analysis on households with piped water might underestimate the real affordability problem. Moreover, unlike the purchase of metered piped water that is well documented, households often do not record the exact expenditures and quantity of water bought from mobile vendors which might further impairs the calculation of water affordability.

More importantly, the majority of households in developing countries rely on non-piped water sources that are often obtained without any payment. In this circumstance one can conclude that these households have no affordability problem as they can get water for free. This claim might be true for (rich) households who can, for example, dig a borehole in their premises and pump up the water as much as they need for free. However, it is most likely not true for poor households as their income does not allow them to buy water from better sources.

Furthermore, households in developing countries commonly rely on multiple sources of water for drinking, cooking, bathing and other domestic uses. This situation adds another complexity to the

water affordability analysis in developing countries. For example, a household might have a “free of charge” source of water for bathing and cleaning but prefers to buy (presumably better quality) water for drinking.

Thus far, one can expect that the calculation of water affordability in developing countries might mask the real affordability problem as it covers only a small portion of households, namely those that buy water and that are connected to a piped water network. Additional attention should be given to those with lower quality water sources that cannot afford to buy safe drinking and cleaning water. These households are the ones that suffer most from a water affordability problem and the resulting health outcomes, such as diarrhoea prevalence

To date researches on water affordability focus on households that are connected to piped water and pay the water service, while hardly any study considers the unconnected and nonpayer households. The present study tries to shed light on the water affordability issue in developing countries while extending the current body of knowledge on water affordability by assessing both the connected and payer, and the unconnected and nonpayer households. The analysis is based on Indonesian household data.

Data

The current study utilizes the Indonesia National Socio Economic Survey (Susenas) year 2015. This annual survey was designed to be representative for the national to the district level. The Susenas survey is composed of two questionnaires: core and module. The core questionnaire contains household characteristics and household members' information. Meanwhile, the module questionnaire collects information on consumption and expenditure behaviour of the household both for food and non-food expenses.

Regarding water consumption, Susenas contains the purchase of bottled water in small packaging (600ml) and big packaging (19 litres) during last week as food expenditure. In addition, Susenas records purchase of clean water (from piped water, or non-piped sources bought from water vendors) during last month as non-food (utilities) expenses.

Three categories of usage of water have been distinguished: drinking, cooking and bathing. Ten source of water can be used for bathing: metered piped water, retailed piped water, pumped wells, protected wells, unprotected wells, protected springs, unprotected springs, rainwater, rivers, and others. It is assumed that water used for drinking and cooking comes from these ten sources and branded and refillable bottled water. For the present study, we reclassify these water sources into five groups, namely: branded bottled water, refillable bottled water, metered piped water, other improved water and unimproved water. The latter group includes retailed piped water, unprotected wells, unprotected springs, rivers, and others.

Water affordability calculation

This study considers the net affordability ratio (NAR) that is the share of household's expenditure for fulfilling the basic water needs. Following the Indonesia MoHA decree, we define the basic water needs to be equal to 60 LCD (litre/ capita/ day). As suggested by Gleick (1998), we can further divide this 60 LCD by its purposes into 5 LCD for drinking, 10 LCD for food preparation, and 45 LCD for sanitation, bathing and cleaning. Moreover, households are classified to have an affordability problem if NAR is more than 4% (Indonesia MoHA, 2016).

Tentative results

Twenty-one percent of the households that reported their water expenditure, have an affordability problem if the criterion is a NAR > 4%. Since we know both the sources and usage of the water, we can be more specific when indicating the main cause of the affordability problem. The affordability problem is more severe for households that 1) use other improved and other unimproved water as their main source for bathing, 2) use bottled water and other unimproved water as their main source for drinking water. As expected, the affordability problem is more prominent among poor households.

A very interesting result is that we find that the affordability is less of an issue for households with metered piped water. Consequently, studies relying only or mainly on households with metered piped water focused on a group for which affordability, according to our analysis, is not that much a problem. This illustrates the added value of taking a broader look at the water affordability issue, as has been done in the present study.

The households that do not report their water expenditure are mostly poor and rely on unimproved water. A minority of these households use bottled water and metered piped water. This finding indicates the existence of an affordability problem among non-reported households. Consequently, in developing countries, water affordability is likely to be a more serious problem than is indicated by previous studies which only take metered piped water into account.

Keywords: affordability, developing country, drinking water, Indonesia

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