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Rural:urban inequalities in post 2015 targets and indicators for drinking-water

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ABSTRACT

Disparities in access to drinking water between rural and urban areas are pronounced. Although use of improved sources has increased more rapidly in rural areas, rising from 62% in 1990 to 81% in 2011, the proportion of the rural population using an improved water source remains substantially lower than in urban areas. Inequalities in coverage are compounded by disparities in other aspects of water service. Not all improved sources are safe and evidence from a systematic review demonstrates that water is more likely to contain detectable fecal indicator bacteria in rural areas. Piped water on premises is a service enjoyed primarily by those living in urban areas so differentiating amongst improved sources would exacerbate rural:urban disparities yet further. We argue that an urban bias may have resulted due to apparent stagnation in urban coverage and the inequity observed between urban and peri-urban areas. The apparent stagnation at around 95% coverage in urban areas stems in part from relative population growth – over the last two decades more people gained access to improved water in urban areas. There are calls for setting higher standards in urban areas which would exacerbate the already extreme rural disadvantage. Instead of setting different targets, health, economic, and human rights perspectives, We suggest that the focus should be kept on achieving universal access to safe water (primarily in rural areas) while monitoring progress towards higher service levels, including greater water safety (both in rural and urban areas and among different economic strata).

1. Introduction

Access to safe, reliable drinking water in sufficient quantities is fundamental for good health and wellbeing (Hunter et al., 2010). Global monitoring of drinking-water and sanitation is provided by the Joint Monitoring Programme (JMP) of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). The JMP reports on the status and trends in drinking water and sanitation coverage at global, regional and country levels. It uses an internationally-comparable method (Bartram et al., submitted for publication), and draws on censuses and the increasing number of nationally-representative household surveys that have become available since 1990. The outcome is considered one of the better-monitored of the targets associated with the Millennium Development Goals (MDGs) (Waage et al., 2010).

The MDGs include target 7c, to "halve, by 2015, the proportion of the population without sustainable access to safe drinking water" (UNGA, 2001). This target is measured via an indicator that assesses access to an 'improved' source, which identifies source types with some degree of protection from contamination (e.g. piped water, boreholes, protected springs) (WHO/UNICEF, 2011). An underlying rationale for targeting of drinking-water access in development policy, and the sole rationale for targeting of drinking-water safety, is health concern. Since the signing of the Millennium Declaration, the human right to water and sanitation has been recognized (de Albuquerque, 2012; UNCESCR, 2003; UNGA, 2010) drawing attention to the unacceptability of the MDG target which can be achieved with 768 million still lacking safe water. There is increasing consensus that future targets must strive for universal access (WHO/UNICEF, 2013a,b). Both public health and human rights perspectives bring to the fore the importance of increasing equality. While the public health evidence to underpin programs to reduce inequality is contested (Lynch et al., 2000), associated arguments include the imperative to focus resources on the most vulnerable and the idea that reducing inequalities will benefit all sectors of society, not just the poorest (Woodward and Kawachi, 2000).

Unlike most MDG targets, the associated indicator was specified to be disaggregated for rural and urban populations from the outset (UNGA, 2002). However, separate rural and urban targets were not established, nor was progress against such targets monitored. The omissions are noteworthy for two reasons. Firstly, rural versus urban status has been consistently reported on a country level and documents

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substantive and near-universal inequalities. Secondly, country-by-country progress towards the MDG target is reported even though the targets were originally meant to be global and no country-level indicator was specified in the Millennium Declaration (UNGA, 2002; Vandemoortele, 2009).

Here we argue that an "urban bias" may have resulted in the post-2015 targets from the increasing population of urban areas and the inequity observed between urban areas and peri-urban areas or slums, and that the differences between rural and urban settings have been obscured by this with adverse impacts on both. Although we show that use of improved sources has increased more rapidly in rural than urban areas, the proportion of the population using an improved water source remains substantially lower in rural than urban areas. Additionally, the improved–unimproved classification does not incorporate water quality, affordability, and sustainability dimensions (Clasen, 2012; Shaheed et al., 2014); we have previously presented evidence (Bain et al., 2014) that rural water quality is often worse than urban water quality and that economic classes are difficult to compare between urban and rural areas. Neither health, economic nor human rights perspectives suggest that water access in urban areas should be prioritized above rural areas.

2. Status of rural:urban inequalities in drinking water

The JMP has consistently reported substantive inequality between rural use and urban use of improved sources of drinking-water. Most recently, the JMP reported that only 4% of the global urban population uses unimproved sources of drinking-water but that 19% of the rural population does so. This trend in inequality is consistent globally, for all MDG regions and for the overwhelming majority of countries (WHO/UNICEF, 2013a; Table 1).

"Access" alone does not fully reflect inequalities between rural and urban areas since water may be unsafe or not available in sufficient quantities. Differences in access can be compounded by disparities in the other aspects of water service: accessibility, quantity, accessibility, affordability, continuity of supply, and quality issues (WHO, 2011). For example, rural dwellers spend longer collecting water. An analysis of survey data from Sub-Saharan Africa found that almost one in five rural dwellers had to walk at least 30 min to collect their water whereas only 7% of urban dwellers did so (WHO/UNICEF, 2011). Such differences may partly reflect more widespread purchasing of drinking water from vendors in urban areas, and point to great difference in water services between the two settings. Time taken to collect water has also linked to the quantity of water used by households (Cairncross and Cliff, 1987) suggesting that there may be a disparity in the amount of water used by urban and rural dwellers. Water sources in both urban and rural areas can be unreliable, providing intermittent water access. However, data collected on urban piped supplies, for example those available through the International Benchmarking Network for Water and Sanitation Utilities, cannot readily be compared with the frequency of non-functioning community sources such as handpumps in Sub-Saharan Africa (Foster, 2013).

Disparities in health outcomes are also evident. According to an extensive analysis of household survey data, children in rural areas are more likely to have diarrhea in the weeks prior to the survey and their chances of survival are lower than those living in urban areas (Gunther and Fink, 2010).

Similar disparities exist for sanitation (Rheingans et al., 2014; WHO/UNICEF, 2013a) and lack of adequate sanitation facilities, including safe storage and treatment of feces, has a strong influence on the availability of safe water. For example, it is well established that the use of pit latrines, which are more common in rural areas, can negatively influence ground water quality (Graham and Polizzotto, 2013).

Inequalities are also reflected in developed nations, where the burden of disease outbreaks (Craun et al., 2010) and exposure to non-compliant drinking-water (Richardson et al., 2009) disproportionately affect rural populations supplied by small systems. Such small systems are a major focus of efforts to improve water quality in higher income countries, for example as part of the Protocol on Water and Health (Rickert and Schmoll, 2014).

3. Global trends

Here we analyze the implications of separately applying the MDG target formulation of halving the proportion of the unserved to rural and urban populations (Fig. 1).

If separate global targets had been applied, the rural target would have been met in 2011. Between 1990 and 2011, the proportion (Fig. 1A) of the rural population without access to an improved source reduced from 38% to 19% (WHO/UNICEF, 2013a). In contrast, little progress was made in reducing the proportion of the urban population without improved sources (5% in 1990 and 4% in 2011) (WHO/UNICEF, 2013a). The slow progress in urban areas is driven in part by rapid urbanization: from 1990 to 2011 the proportion of urban residents grew from 43% to 52%, with global urban population growing from 2.27 billion to 3.62 billion people (59.5% growth), whereas the rural population only grew by 10.6% from 3.02 billion to 3.34 billion (WHO/UNICEF, 2013a). Easterly (2009) has argued that targets can be framed as percentage versus absolute changes, in terms of change versus levels, or positively (focusing on those with safe water) versus negatively (focusing on those without safe water). While the study examines the impact of such target formulation decisions on apparent MDG progress across Africa, the same target formulation choices affect rural versus urban comparisons. In absolute terms (Fig. 1B) progress was greater in

Table 1
Proportion of rural and urban households using improved drinking-water and piped water in the home in 2011.
Source: Data downloaded from wssinfo.org (WHO/UNICEF, 2013a).

	Use of improved sources[a] of drinking-water (%)		Use of piped drinking water in the home (%)		Population in 2011 (in millions)	
	Rural	Urban	Rural	Urban	Rural	Urban
Caucasus and Central Asia	78	96	29	84	44	34
Developed countries	97	100	79	97	277	972
Eastern Asia	85	98	45	95	685	746
Latin America and the Caribbean	82	97	64	94	124	472
Northern Africa	89	95	73	91	75	93
Oceania	45	95	11	74	8	2
Southern Asia	88	95	15	54	1166	563
South-eastern Asia	84	94	13	51	332	268
Sub-Saharan Africa	51	84	5	34	557	321
Western Asia	78	96	66	88	68	144
Global	81	96	29	80	3335	3615

[a] Improved water sources include piped water on premises and collection from protected shared community sources including standpipes, protected wells, boreholes, and rainwater harvesting.