Informality in Urban Water Supply: A Case of Tambaklorok, Semarang

N R Putri*, J S Setyono

Department of Regional and Urban Planning, Diponegoro University, Semarang, Indonesia

Email: novitarohmana@students.undip.ac.id

Abstract. Significant population growth in urban areas faces limited access to water supply. In 2015, 29% of the global population lacked safely managed drinking water supplies. Ensuring universal access to safe and affordable drinking water for all by 2030 becomes the sixth goal in SDGs 2030. The government’s inability to provide water supply has led to the emergence of informality in urban water supply. Tambaklorok located in the northern part of Semarang has been relying on informal practices to fulfill its water need. From this phenomenon in Tambaklorok, the practice of informality continues to be produced through the particular factors other than the physical availability of a network. This research aims to analyze informality in urban water supply in Tambaklorok, Semarang. To carry out this aim, the method that will be used is a combination of quantitative and qualitative methods. This research found that informality in urban water supply in Tambaklorok caused by lack of access to networked pipe water supply, water utility roles, and practices in non-networked pipe water supply. The research recommended the alternative scheme of water supply for the community in Tambaklorok.

1. Introduction

Developing countries are facing urbanization coupled with rapid and unprecedented urban growth, which is bringing about rising demand for urban services, especially those concerning water supply. In 2018, 55% of the world’s population lives in urban areas, a proportion that is expected to increase to 68% by 2050 [1]. Significant population growth in urban areas faces limited access to water supply. In 2015, 29% of the global population lacked safely managed drinking water supplies. Ensuring universal access to safe and affordable drinking water for all by 2030 becomes the sixth goal in SDGs 2030.

Informal water supply emerges in most developing countries as the result of government inability to provide water supply for all dwellers. Urban water supply is conventionally governed by an institution that is either partly, or wholly, governed by the state, albeit that privatisation of supply is occurring in many countries, and the treatment and delivery of water hold some form of statutory or legal recognition, this being known as formal supply [2-3]. A centralised piping network is the typical mode of delivery in developed nations, while for developing nations this ‘modern infrastructure ideal’ has long been an unrealised dream to which the formal sector has aspired [4]. Informal settlements generally remain unserved and formal supply remains inadequate, typically serving 40–70% of developing city populations, the remainder of whom are responsible for their own water supply, this being termed informal supply [5]. Swyngedouw [6] states informality as a move to "governance-beyond-the-state", meant that non-state actors became more prominent in providing and organising services which previously were, at least on paper, the purview of the state. Roy [7] argues informality can be seen as modes of governance.
The ideal urban water supply in Indonesia is considered by providing piped water network to all urban dwellers. But, the supply of water through piped water network usually does not reach urban poor areas. Semarang City is one of urban areas with a rapid urban growth in Indonesia. PDAM (the city-owned water company) as the mandatory water utility in the city has not been able to cover all regions in Semarang. Based on data of [8] in 2018, PDAM only covers 34.7% of water supply in Semarang city. The rest of households fulfill their water needs through informal water supply in varying sizes and scales. One of the cases in which households fulfill their water needs through informal water supply occurs in one of the areas in the northern part of Semarang which is Kampung Tambaklorok.

This research aims to analyze informality in urban water supply in Tambaklorok, Semarang. Regarding the phenomenon in Tambaklorok, informality continues to be produced through the particular factors other than the physical availability of a network. These particular factors beyond the physical availability of a network can be used as an input to provide an adequate and suitable form of water supply in a certain area or particular setting which in this case is Kampung Tambaklorok.

This paper is structured into five sections. The first section provides introductory and background of the research. The following part discusses the theoretical framework of informality in urban water supply. A short description of study area and the methods used in the research are explained in the third section. The fourth part of this article elaborate results and synthesize findings. Some concluding remarks conclude the paper.

2. Theoretical perspective about informality in urban water supply

Urban informality is viewed as a system of norms that governs the process of urban transformation itself [9]. Informality can be portrayed as a particular mode of urban governance. Informality in urban water supply is seen as a ‘mode of urban governance’ for the underserved population, which is largely allowed and even encouraged by governments because it is increasingly viewed as a necessary and acceptable mode of urbanism [10]. Understanding informality in urban water supply can be conducted through the understanding of the production of informality. Kooy [11] argues that the persistence of so-called informal water supply in cites of the global South, and the absence of an urban infrastructural ideal, is not a reflection of lack of development. Rather, informality continues to be produced through the particular politics of development processes. Bakker and Kooy [12] examine factors that explain the persistent failure of both public and private water supply system operators to achieve high rates of individual network connections to poor households in urban areas. Building on the discussion, they present a concept of ‘governance failure’ as it applies to urban water supply to poor households, positing that governance failures apply not only to water supply providers and governments, but also to poor households, whose capability to connect may be undermined by a range of economic and non-economic factors. Following from this definition, ‘governance failure’ occurs when institutional dimensions of water management and decision-making do not effectively take into account the needs of poor households, creating disincentives for the water supply utility to connect poor households and/or for poor households to connect to the network.

3. Study area, data, and method

The study takes place in Kampung Tambaklorok which administratively consist of four (12-15) community unit (RW) in Tanjungmas Village, North Semarang Sub-District. Kampung Tambaklorok is the biggest fishing village in Semarang located in the coastal of Java Sea. The community of Tambaklorok has relied on the informal practice in urban water supply since the beginning of the development of this settlement in 1950. The community rely on informal practices because this settlement once is an illegal and undeveloped area. The condition caused the area could not be served by networked pipe.
To carry out the aim of this research, the method used is a combination of quantitative and qualitative methods. The first phase is quantitative method which conducted through questionnaire. The data collection through questionnaire collects data from household as the main objects in this research. The second phase is qualitative method which conducted through interview observation and document review. A series of interviews with public figures in Tambaklorok, neighborhood unit (RT/RW) head, city government (BAPPEDA), and city water utility (PDAM) are used to validate the findings from questionnaire.

4. Results and discussion

There are three main factors that cause informal in urban water supply in Tambaklorok remains to occur albeit physical infrastructure installation of networked pipe water supply. First, the lack of access to networked pipe water supply. Networked pipe water supply is water supply provided by PDAM Tirta Moedal as city water utility. It is being operated in centralised piping network water supply system. The access to networked pipe water supply in Tambaklorok is lacking mainly caused by its previous status as an illegal area and the lack of land tenure which causes PDAM was unable and unwilling to provide water services. It is compounded by the community perspective about networked pipe water supply. Based on the assessment about community perspective on networked pipe water supply, the community of Tambaklorok has a poor perspective about networked pipe water pressure, water quality, and water cost and transaction.

Second, informal practices are caused by a lack of formal governance. The city water utility has a role related to community involvement in the decision-making process and incentive for connecting to networked pipe water supply. Community involvement in the decision-making process and incentive for connecting to new piping networks are factors affecting community decision to choose informal water supply. The community of Tambaklorok has community meetings to discuss community issues includes water supply. The community can convey their aspirations through these community meetings. The community of Tambaklorok has frequent community meetings. They have monthly meetings in every RT and RW to discuss their neighborhood. The community of Tambaklorok also has a good result in community participation. It means the community of Tambaklorok has a strong social capital to plan, operate, and maintain its water service. Community involvement in planning, operation, and maintenance has been key to the successful provision of water service. It can be a consideration for the authority to provide a better option of water provision in Tambaklorok. Meanwhile, the community of Tambaklorok has a poor interest in incentive for connecting to networked pipe water supply. Besides, the previous incentive in the form of relief in pipe connection installment was not really effective to make the households choose to connect to networked pipe water supply.
Third, informal practices are caused by the availability of better choices outside the networked pipe water supply. The existence of non-networked water supply practices such as vended water and bottled water becomes the driving factor of the continuity of informal water supply in Tambaklorok. These practices have relied upon for decades and the actors of these informal practices which are the local water vendors have a strong influence and power in Tambaklorok. The assessment in the community perspective on non-networked pipe water pressure, quality, and water cost and transaction show very positive results. The non-networked pipe water supply in Tambaklorok run by informal water vendors also use pipeline infrastructure. The community claimed that the water flow originating from informal water vendors in Tambaklorok has a smooth water flow and the water flows regularly. The community also has a very positive assessment of water quality. The community of Tambaklorok prefers the source of non-networked pipe water which comes from groundwater with no chemical treatment. The community of Tambaklorok assesses that non-networked pipe water cost is more affordable since they do not have to buy another water source. The water transaction is also more convenient for its fluctuating income. The practice of informal water supply which more suitable for the community in Tambaklorok makes this practice remains to occur on their daily basis in water provision.

Figure 2. Informality in Urban Water Supply in Tambaklorok

5. Conclusion

Informality can be seen as a mode of governance. The daily practice of informality in water supply in Tambaklorok is another mode of water supply outside the formal water supply. The informality in water supply in Tambaklorok emerges in the form of private water vendors drawing from deep well sold directly by pipe connection. There are three main factors in Tambaklorok which cause informality remains to occur in their water supply. Those are lack of access to networked pipe water supply, ineffective water utility role, and the better level of service of non-networked water supply. Informality is proven to fill the gap between demand and supply in water provision. It remains to occur on a daily basis of water supply in Tambaklorok build upon several factors. However, for Tambaklorok case, this informal practice is not sustainable regarding the private vendors as the main actor who somehow monopolize the groundwater source. The use of groundwater as the source of non-networked pipe water supply also becomes an environmental issue because it exacerbating the land subsidence in Tambaklorok which located in the coastal areas. At some point, the current informal water practice might be the most convenient water supply in Tambaklorok, but the better option of water supply can be done for the community of Tambaklorok.

References
[1] UN DESA 2018 The 2018 Revision of World Urbanization Prospects
[2] Marston A J 2014 *Water Alternatives* 7(1), 72–88
[3] Misra K 2014 *Water Alternatives*, 7(1), 15–34
[4] Graham S, Marvin S, Routledge 2002 Splintering Urbanism: Networked Infrastructure, Technological Mobilities, and the Urban Condition (London: Routledge)
[5] Ahlers R, Cleaver F and Rusca M 2014 *Water Alternatives* 7(1), 1–14
[6] Swyngedouw E 2005 *Urban Studies* 42 (11), 1991–2006
[7] Roy A 2012 *Urban Informality: The Production of Space and Practice of Planning. The Oxford Handbook of Urban Planning* The Oxford Handbook of Urban Planning pp 1–17
[8] Central Bureau of Statistic 2018 *Semarang Municipality in Figures* Semarang: Central Bureau of Statistic
[9] Roy A 2005 JAPA 71(2) 147–158
[10] Wutich A, Beresford M, Carvajal C 2016 *World Development* 79 14–24
[11] Kooy M 2014 *Water Alternatives* 7(1) 35–53
[12] Bakker K, Kooy M 2008 *World Development* 36(10) 1891–1915