CEDS-GDN Policy Brief

On the optimum scale of public water supply

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Background

The existence of clean water is very important for human beings, since it gives a significant impact to the health condition. The availability of clean water supply has strong relationship with the occurrence of certain diseases, such as diarrhea incidence (Castro and Heller, 2009). The impact of provision of clean water and sanitation facilites can be enourmous.

Unfortunately, to provide clean water is not an easy task to be implemented. The capability of government in providing clean water becomes the main issue in developing countries. In Indonesia, it is predicted that more than 48 million people do not have access to proper drinking water system (UNICEF 2006 in Deekd et al, 2008). In more local context, many people still rely on water supply, which is not provided by the government. For example in Bandung regency, up to 2010, only 8.32% of its population is served by pipe water system.

Considering the condition above, it is important to expand the provision of clean water through piped water system. This system is considered as a correct approach since piped water has several advantages. First benefit is related to health issue. Consuming water from piped system is proven to be able to reduce the incident diarrhea (Fewtrell et.al, 2005). The reason behind this condition is the quality of water from piped system. Despite the water from piped system in most developing

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countries cannot be drank directly from the tap, the quality of it is guaranteed by the department of public works to meet minimum quality standard of clean water. In addition, compared to water from private source, the water from piped system is much better, since water from private resources is very often polluted (Allen, 2010).

Second benefit that can be gained from piped water system is the saving of time associated with better access to water supply and sanitation services. A study conducted by Hutton and Haller (2004) found the time saving received by the beneficiaries from using piped water system range from 10 hours per capita per year up to 100 hours per capita per year.

Policy Goal and Alternatives

The government of Bandung Regency has set up a quite ambitious target of water coverage, it is expected in 2015 around 99 % of people in Bandung Regency will have access to clean water (The Government of Bandung Regency, 2010). To reach the target the Government employs two strategies, which are building a small-scale water facility at village level only (Figure 1) and building large-scale water facility at sub district level (Figure 2).

Figure 1. Illustration of small-scale water facility at village level

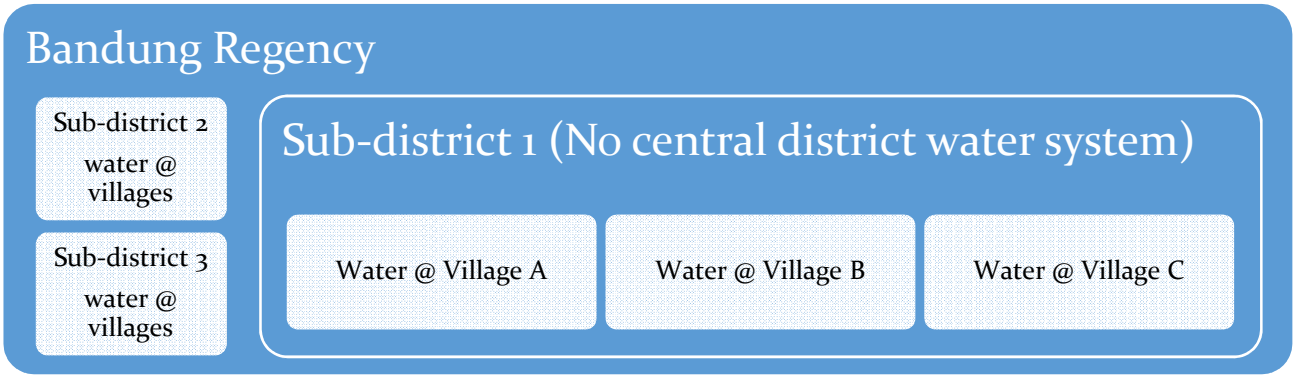
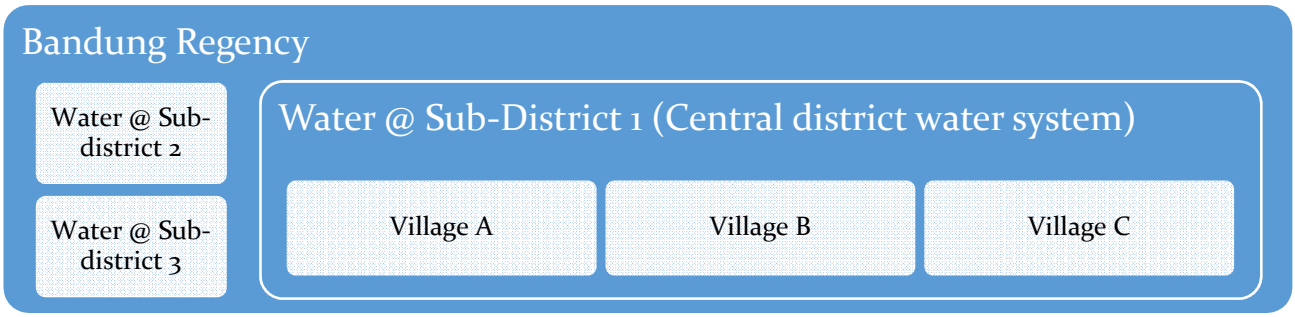


Figure 2. Illustration Large-scale water facility at Sub-district level



The study tries to simulate the provision of pipe water system to around 70 thousand household in Bandung Regency area in 10 years period by constructing pipe water facilities under the two

alternatives above. The targeted 70 thousand households based on the number of household in Bandung Regency area that still do not have access to piped water. Meanwhile, the 10 years target is taken mainly as it is the maximum time of a major can govern the region. Hence, it is rational if we assume the program can be assured to be implemented during that period.

Using Benefit-Cost Analysis (BIA) approach the study tries to calculate the benefits and costs of each approach (small-scale and large-scale piped water system). The benefit of the project come from three sources, i.e. water revenue, health benefit and time saving benefit. The water revenue is calculated the revenue from each projects multiplied with the number of household targeted by the project. While to calculate the health benefit, we need to calculate the expected diarrhea cases reduction—the baseline of expected diarrhea cases (other source) minus expected diarrhea cases with the project (small/ large scale water system). Afterward, it is multiplied with the value of COI diarrhea to get the value of health benefit from the project. Lastly, the biggest benefit comes from time saving, that is the decrease of time for fetching the water multiplied by the regional minimum wage.

The cost of each project consists of the cost of building including (the capital cost) and the operation and maintenance (O&M) cost. First, we calculate the total capital cost and apply the cost recovery factor to find the annual capital cost. Afterward, we add up this annual capital cost with the O&M cost to get the total cost of the project.

The study found that the small scale system costs IDR 17,456 million, and gives total benefit of IDR 93,215 million. Hence, in total, it gives net benefit of IDR 75,759 million. On the other hand, constructing the large scale costs IDR 33,430 million and benefiting the society by IDR 140,438 million. Therefore the present vlaue net benefit of the large water system is IDR 107,008 million. This net benefit is bigger (141%) than the small one.

Not only seeing the benefit and cost of each project. The study also tried to find the channeling of benefit of each project by using Benefit Incident Analysis (BIA) approach. The study found that the increasing access to piped water system has benefited households from Q1 and Q2, which are the poorest income group. Before the project, the benefit of piped water system is only enjoyed by household in the fifth quintile (the richest group of people), since this is the only group that have access to piped water system. After the project, 16% of pipe connection is distributed to Q1 and 17 % to Q2. Therefore, it is clear that the project has increased the equity of pipe water distribution.

Recommendations

From the benefit incidence analysis, this simulation will reduce the inequality of the pipe water provision and increase accessibility of poor household in this facility. Moreover, the result of the

benefit-cost analysis revealed that the two alternatives are viable and beneficial. However, the large scale water system gives more benefits to the community since it give more significant impact on diarrhea incidence reduction and time saving from collecting water. Therefore, if the government of Bandung Regency plan to increase the coverage of clean water provision, it is recommended to build large scale water system instead of small scale water system.

However the cost to provide large-scale water system is higher than the cost for providing small- scale system. Related to this issue, the study proposed two alternatives to fund the development of these water system. Government can privatise the water provider or issue government bond.

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