



Evaluation of Community-Based Sanitation Program Implementation in Central and East Java

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Abstract

Goal 6 of the SDGs has a target for clean water and sanitation, by 2030 the UN has a target of providing universal access to sanitation. Safely managed sanitation can support the progress to supporting socioeconomic development and promoting equality. In developing countries, a majority of the general population does not have access to proper sanitation. Therefore, there are still many challenges faced for sanitation in developing country. Unmanaged sanitation has a negative impact to human health and the environment. In developing countries that has a lot of under developed and rural area, community-based sanitation program is one of the approach for educating and improving sanitation. This study has an objective to evaluate the current implementation of community-based sanitation programs in Indonesia. This study is a literature review that analyzed various sources in a systematical way to evaluate the implementation of community based sanitation programs in Indonesia. In conclusion, the implementation of community based sanitation programs yield a positive impact for the targeted community. The factors that has influence are community involvement, funding and enforcement of sanctions.

Keywords: Sanitation, Community-Based, Clean water, Open defecation, SDGs

Abstrak

Sasaran 6 SDGs memiliki target untuk air bersih dan sanitasi, pada tahun 2030 PBB memiliki target untuk menyediakan akses sanitasi universal. Sanitasi yang dikelola dengan aman dapat mendukung kemajuan, mendukung pembangunan sosial ekonomi dan mempromosikan kesetaraan. Di negara-negara berkembang, mayoritas populasi umum tidak memiliki akses ke sanitasi yang layak. Karena itu, masih banyak tantangan yang dihadapi untuk sanitasi di negara berkembang. Sanitasi yang tidak dikelola memiliki dampak negatif terhadap kesehatan manusia dan lingkungan. Di negara-negara berkembang yang memiliki banyak daerah tertinggal dan pedesaan, program sanitasi berbasis masyarakat adalah salah satu pendekatan untuk mendidik dan meningkatkan sanitasi. Studi ini memiliki tujuan untuk mengevaluasi implementasi saat ini dari program sanitasi berbasis masyarakat di Indonesia. Studi ini adalah tinjauan pustaka yang menganalisis berbagai sumber secara sistematis untuk mengevaluasi pelaksanaan program sanitasi berbasis masyarakat di Indonesia. Kesimpulannya, implementasi program sanitasi berbasis masyarakat menghasilkan dampak positif bagi masyarakat sasaran. Faktor-faktor yang memiliki pengaruh adalah keterlibatan masyarakat, pendanaan dan penegakan sanksi.

Kata kunci: Sanitasi, Berbasis Masyarakat, Air bersih, Buang Air Besar Terbuka,

1. INTRODUCTION

Access to proper sanitation are basic human needs that needs to be fulfilled. This issue relates closely to goal number 6 in the Sustainable Development Goals (SDGs) which focuses on clean water and sanitation. In fact, one of the target calls for universal access to sanitation by 2030. Meaning a major proportion of the population should have access to safely managed sanitation services. (Mcgrahan, 2015) Clean water and sanitation

is closely related with other SDGs such as no poverty (Goal 1), good health and well being (Goal 3) and decent work and economic growth (Goal 8), According to the SDGs, the indicators for a 'safely managed drinking water and sanitation services' are use of improved facilities that includes the accessibility, availability and quality of water services, and the treatment and disposal of wastewater. (WHO, 2017)

According to the World Health Organization (WHO), "Sanitation refers to the provision of facilities and services for the safe management of human excreta from the toilet to containment and storage and treatment onsite or conveyance, treatment and eventual safe end use or disposal. More broadly sanitation also included the safe management of solid waste and animal waste." (WHO, 2018)

Diseases such as diarrheal disease, trachoma and intestinal helminthes are diseases that related to poor access to sanitation and drinking water. According to WHO, other infectious diseases such as cholera, typhoid, dysentery and impaired cognitive function are also related to inadequate sanitation. In addition, inadequate sanitation can have negative impact on a person's wellbeing through anxiety, reduced school attendance and threat to safety. Unsafe sanitation services or practices has a negative impact on the environment such as polluting water sources with fecal-pathogens. (World Health Statistic, 2017) Contamination of water sources, especially ones that is used as drinking water sources will impact public health as well as the quality of the environmental ecosystem. The degradation of the environment and public health has an implication on the economic aspect. Cambodia, Indonesia, Philippines and Vietnam experience approximately US\$ 9 Billion losses each year due to poor sanitation management practices. (Minh & Hung, 2011)

These diseases and negative consequences can be prevented by implementing proper sanitation and drinking water systems. A study estimated that the risk reduction due to water treatment at point of use results in 37% reduction in diarrheal cases. (Clansen, 2017) Non-health related benefits include time saving and more time spent at school for children. In addition, Safe and proper management of sanitation can support the socioeconomic development progress and promotes equality. A study by Hutton et al, conducted a cost-benefit on improving clean water and sanitation services, it is concluded that the cost-benefit ratio is at least US\$5 in economic benefit per US\$1 invested. (Hutton, Haller, & Bartram, 2007) Suggesting that the improvement of health gives economic returns that outweigh the economic investments required to build a proper sanitation and clean water services. (Hutton, 2012)

Equality of service is one of the challenges in providing proper sanitation, from the total global population that is unserved by proper sanitation 80% of which in Africa, South Asia or East Asia. These are parts of the world are largely composed of developing country. According to McGranahan, four institutional challenges for providing low-cost sanitation are: 'a collective action challenge, a coproduction challenge, an affordability challenge, and a housing tenure challenge.' (Mcgranahan & Mitlin, 2016) The first challenge, a collective action challenge, stated that sanitation problems are dependent on the sanitation facilities and the behavior of others. The second challenge relates that to the inability of the stakeholders involved (state, resident, etc) to collaborate in providing safely managed low-cost sanitation. The third challenge is quite straightforward in that those with low incomes simply cannot afford proper sanitation. Lastly, the house tenure challenge relates to land ownership and fear of being displaced which result in reluctance to invest on proper sanitation facilities. (Mcgranahan & Mitlin 2016)

The biggest challenge in Indonesia regarding sanitation are the rural-urban gaps, for example more developed areas such as Jakarta has better sanitation that eastern provinces such as Papua. Although Indonesia has had improvements in recent years, with 71% of households having access to drinking water while 62.1% have access to sanitation. Still, the gap of coverage ranged from 89.3% in Jakarta to 23.9% in East Nusa Tenggara. (Asfifah, et al., 2018)

A solution that can be implemented in middle-income and low-income such as Indonesia is community-based sanitation programs. (Hope, 2015) This approach are implemented to address the lack of provision from private sector or the government. This bottom-up approach are based on the belief that communities can effectively manage water and sanitation services through collective action. The approach utilizes social capital, that includes social networks and shared trust. (Dickin, Bisung, & Savadogo, 2017)

A study in India shows that individuals are more likely to adopt a good sanitation behavior if an acquaintance also did the same. (Shakya, Christakis, & Fowler, 2012)

This study has an objective to evaluate the current implementation of community-based

sanitation programs in Indonesia. The programs that will be analyzed in this study is CLTS and PAMSIMAS. The aspects to be evaluated is the type of program implemented, factors that has influence, the result of the program. The factors that influence the success and sustainability of the program will be further studied. This knowledge will be usefully for planning future community based sanitation programs.

2. METHOD

This study is a literature review that analyzed various sources in a systematical way to evaluate the implementation of community based sanitation programs in Indonesia.

The result and discussion contains discusses about the challenges and benefits of community-based sanitation program. Next, 4 case studies will be analyzed according to the aspects of area, type of program, influencing factors, and result of the program. Of the 4 case studies in this study, 2 cases are located in East Java, 2 cases in Central Java. A conclusion will be drawn on the influencing factors and the result of community-based sanitation programs.

3. RESULT AND DISCUSSION

To evaluate the implementation of community based sanitation programs in Indonesia. Some case studies of programs that has been implemented in various areas in Indonesia are analyzed and compared in order to better understand implementation of these programs and the lesson learned.

3.1 Case study area description

There are 4 case studies that are studied in this study. Case study 1, 2 and implemented the CLTS program while case study 3 and 4 implemented PAMSIMAS program. The programs are located as follows:

Case study 1: Gucialit Village, Gucialit District, Lumanjang Regency, East Java (Nugraha, 2015)

Gucialit Village has an area of 11.38 Km² and a population of 5,089 people that is divided into 1,512 families. This area is located in Gucialit District ± 25 km northwest of Lumajang City Center. (BPS Kabupaten Lumajang, 2018) According to public records, of 305,569 Families in Lumajang district, 83.35% had access to latrines in 2014.

The majority of the population works as farmers.

Case study 2: Parning Village, Jaticalen District, Nganjuk Regency, East Java (Zahrina, 2015.)

Parning Village has an area of 6.19 km² and a population of 3,399 in 2017. (BPS Kabupaten Nganjuk, 2018) The condition of community latrines in this area, the location of the latrine, and the improper protection or cover of the toilet, as well as the unpleasant impression of the latrine still indicate improper latrine conditions.

Case study 3: Temanggung Regency in Central Java Province. (Insani & Uny, 2016.)

Temanggung Regency has a total area of 870.65 km² and has 20 district with 266 rural and 23 urban villages. Temanggung Regency has a total population of 759,128 people. (BPS Kabupaten Temanggung, 2018) The increasing population of Temanggung Regency from year to year shows that, the need for clean water is also increasing. The population in rural areas with safe drinking water access is 67.79% and the population with proper sanitation is 61.47%. In 2015, the PAMSIMAS program was implemented in 108 villages in the Temanggung Regency

Case study 4: Prambanan District, Klaten Regency, Central Java Province (Saputra, 2016)

Prambanan District is located in the westernmost part of Klaten Regency and is a border area between Klaten Regency and Sleman Regency. Prambanan District has a population of 50,047 people, The population density of Prambanan Subdistrict is 2117 people / Km². The largest type of livelihood in Prambanan District is 41.03% is farmers and the lowest is 13.67% is breeders. There are 5 villages that have been reached by the PAMSIMAS program, Sanggrahan Village , Pereng Village, Kotesan Village, Cucukan Village and Sengon Village. The problem in Prambanan District is the drying up of water sources during the dry season, there is an iron content so that the water is yellowish, and improper management of wastewater.

Table 1. Summary of Case Study Area

Case Study	Area
Case Study 1 (Nugraha, 2015)	Gucialit Village, Gucialit District, Lumanjang Regency, East Java

Case Study	Area
Case Study 2 (Zahrina, 2015)	Perning Village, Jatikalen District, Nganjuk Regency, East Java
Case Study 3 (Insani & Uny, 2016)	Temanggung Regency in Central Java Province.
Case Study 4 (Saputra, 2016)	Prambanan District, Klaten Regency, Central Java Province

3.2 Description of programs implemented

3.2.1 Community-Led Total Sanitation (CLTS)

In case study 1 & 4, the program implemented is Community-Led Total Sanitation. This approach focuses on raising awareness about open defecation and its negative effect to human health, furthermore the program encourages communities to have healthy latrines. A notable principle of this approach is that there are no financial subsidies. (Galvin, 2015)

In Indonesia, according to the Ministry of Health, STBM or Community-Led Total Sanitation consists of 5 pillars, 1) Stop open defecation (Stop BABS); 2) Wash hands with soap (CTPS); 3) Safe drinking water and food management (PAMM-RT); 4) Management of household waste (PS-RT), and 5) Management of household wastewater (PLC-RT). (PERATURAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR 2 TAHUN 2014) Of the 5 Pillars, the first pillar, stop open defecation is the most influential pillar that has great effect towards public health and the environment. In addition, the first pillar is the gateway to total sanitation. (Nugraha, 2015) In management of household waste, the goal of improving human health and environmental quality can be made through the involvement of the community. (Ismail & Sidjabat ,2019) In addition, The problem of waste pollution in water and sea bodies must be a concern of various agencies including education, and contribute in various scales, especially local scale (Sidjabat et al., 2019)

According to The National Development Planning Board (BAPPENAS), 25 million people in Indonesia still practice open defecation, although there about 21% reduction from 2015 where UNICEF found that there are 32 million people that still practice open defecation. (Nugraha, 2019) While according to World Bank, worldwide about 9.052% of the global population still

practiced open defecation. This numbers shows that even in a modern society, this unsanitary behavior is still commonly found in society. (The World Bank) A research done in 2016 that analyzed the relationship between CLTS implementation and diarrhea cases shows that by the implementation of CLTS there is a reduction in the number of diarrhea cases in the area. Of the five pillars that is included in CLTS, the pillars that has influence on the reduction of diarrhea cases is Stopping open defecation, Hand-washing with soap and treatment of household wastewater. While, Safe drinking water and management of food as well as management of household waste do not have a relationship. (Mukti, Raharjo & Dewanti, 2016)\

3.2.2 PAMSIMAS

PAMSIMAS is the abbreviation of “Penyediaan Air Minum dan Sanitasi Berbasis Masyarakat” or Community Based Water Supply and Sanitation. This program is of the National Community Empowerment Program run by the Indonesian government. PAMSIMAS includes preparation, planning, implementation, operation and maintenance stages. Currently, there are two stages that has been completed PAMSIMAS I (2008-2012) and PAMSIMAS II (2013-2015) and is now entering the third stage PAMSIMAS III (2016-2020). This project receives funding from the local government budget as well as international funding from World Bank and Australian government through the Department of Foreign Affairs and Trade (DFAT) [Pamsimas]

The approach includes preparing the necessary facilities such as drinking water and sanitation as well as building community awareness and capacity to live clean and healthy lifestyles. Another aspect in this program is the formation of management body called BPSPAMS that is responsible for managing the facilities. The components that is involved in this program are, community empowerment, CLTS approach, supplying clean water and sanitation facility, incentives and technical support. [Pamsimas]

3.2.3 Comparison between PAMSIMAS and CLTS

Community-Led Total Sanitation is an approach that is widely implemented internationally, while PAMSIMAS is an approach that is developed by the Indonesian government. While, CLTS focuses on changing

social behavior with regards of sanitation in a community, PAMSIMAS focuses on providing proper clean water and sanitation infrastructures or in other words the bigger picture of sanitation and clean water. For this reason, PAMSIMAS commonly receive funding from government or international organizations, while CLTS are not subsidized. Although both has a similar target of improving sanitation, the approach and the means used to reach that target is different.

3.3 Result of program implementation

In the first case study that is implemented in Gucialit Village. Since the implementation of CLTS there are several positive changes. First, the area is open defecation free (ODF), previously the people defecate in fields or gardens. Second, the latrine conditions now have improved, most of the area have converted from using unhealthy latrines to healthy latrines, with some exception in places that has difficult access to water. Healthy latrines mean latrines that have building made of concrete), has a room and a roof that protects it from the weather so it does not contaminate the surrounding environment and equipped with water. As a result of being open defecation free and having healthy latrines, there is no more human feces that can be seen in the surrounding environments. The implementation of CLTS also reduced diseases such as diarrhea and skin disease, although the researchers did not provide the exact numbers of the decrease.

In the second case study, since the implementation of CLTS in 2009, only about 8.51% of the community or as many as 60 people in Perring village still often do open defecation. People who use shared latrines is as much as 18.6% (128 people). 129 people owns healthy and permanent toilets and while 388 families owns semi-permanent toilets.

The PAMSIMAS program implemented in the third case study were able to build drinking water facilities with a capacity of 401.67 liters / second even though the water demand is only 207.60 liters/second. In addition, the program built sanitation facilities by building hand-washing facilities and toilets in primary schools. For maintenance purposes, a management body, BPSPAMS is formed in every village. The program was completed in one year. The community is satisfied with the benefit obtained from the PAMSIMAS

program. With the existence of the PAMSIMAS program the community lived healthier life.

In the last case study, the form of PAMSIMAS implementation in Prambanan District begins with the socialization from the central government or BAPPEDA, followed by the planning, implementation of monitoring and evaluation phase. There are no percentage of improvement provided in this research, but it is stated that this program receives a good reception by the surrounding community and it said that it helps the problem of water shortage in dry season.

3.4 Factors influencing success and failure

Like every activity there are supporting factors that can contribute to a program's success as well as inhibiting factors that can contribute to the failure of a program. By analyzing the supporting factors and inhibiting factor, a lesson can be learned which can contribute to the success of future programs. The factors that affect each case study is summarized below in table 2.

Table 2. Supporting and Inhibiting factors

Case Study	Supporting Factors	Inhibiting Factors
Case Study 1	<ol style="list-style-type: none"> 1. Public Participation 2. Enforcement of Sanction or Rules 3. Monitoring Mechanism 4. Clear strategic Plan 	<ol style="list-style-type: none"> 1. Lack of funding 2. Community Acceptance 3. No Standardized Procedure or Guidebook
Case Study 2	<ol style="list-style-type: none"> 1. Support from professional human resources 2. Enforcement of Legal Sanctions 3. Awareness of Community 	<ol style="list-style-type: none"> 1. Lack of funding 2. Lack of time
Case Study 3	<ol style="list-style-type: none"> 1. Minimal third party interference 2. Community's adaptability 3. Funding by government 	<ol style="list-style-type: none"> 1. People's low economic capacity 2. Natural factor 3. Lack of Time 4. Low community awareness
Case Study	<ol style="list-style-type: none"> 1. Community participation 	<ol style="list-style-type: none"> 1. Rejection by the

Case Study	Supporting Factors	Inhibiting Factors
4	through funding, idea, manpower	2. community Technical Issue
	2. Good Cooperation and teamwork	3. Destruction of property by locals

A clear supporting factor is the reception and participation of the targeted community, this factor will determine the speed of which the project may be completed and how successful the program will be. Without support from the local community, a project might be too dependent to third party stakeholders, therefore it is suggested that if a program face rejection from a community, it is best to terminate the program. (Ceptureanu, Ceptureanu, Luchian, & Luchian, 2018) Community participation can be in the form of money, material, manpower, skills, ideas, social, decision-making, representation. (Nurbaiti & Bambang, 2018)] The characteristic of the individuals inside the community such as financial level, gender and age group also influence the level of participation (Nurbaiti & Bambang, 2018) Meanwhile, participation from the community in the form of local knowledge can reduce repair costs later on but has no impact to the maintenance of an infrastructure, although this result might vary with different populations. (Holcombe, Berg, Smith, Anderson, & Holm-Nielsen, 2017) Therefore securing good community participation will greatly contribute to a program's success and sustainability

In several cases funding is identified as a determining external factor to a program's success or failure. Especially in infrastructure focused programs such as PAMSIMAS. Diversity in funding sources will increase the chances of success in a community based programs (Ceptureanu, Ceptureanu, Luchian, & Luchian, 2018). A study found that over 90% of highly successful programs received external financial support. (Hutchings, et al., 2017) From the 4 case studies above, only one case study clearly mentioned that they had received funding from the government.

Two out of two case study mentioned that the enforcement of sanction contributes as a supporting factor. Although there is no substantial evidence that enforcing sanction

will be effective in combating non-compliance. (Hutchings, et al., 2017) There is also the additional concern about the ethics and appropriateness of enforcing sanctions. (Ficek & Novotny, 2018) However, there are some cases where implementing local community by-laws that is accepted by the community members may result in the change of social norms. (Hutchings, et al., 2017) For this reason, sanctions are a sensitive factor that should only be implemented with the consent of the community members and should adapt to the culture and norms of the targeted community.

Research by Al'Afghani et al., suggests that community based sanitation program has four key issues: "absence of legal personality, lack of asset security, lack of financial security, and lack of a service standard." (Al'Afghani, 2019) Therefore improvement in the way the government conduct this projects is needed in order to ensure greater success with these type of projects.

4. CONCLUSION

In conclusion, the implementation of community based sanitation programs yield a positive impact for the targeted community. The comparison between case studies is summarized in the table 2. There are two type of programs, CLTS and PAMSIMAS. Generally, the result that is obtained are reduced ODF and improvement in sanitation facilities. The factors that is mentioned in the case studies are community involvement, funding and enforcement of sanctions. Community involvement and funding are great contributing factor to the success of a program, while enforcement of sanctions has no supporting evidence of its influence. With the nation-wide implementation of community-based programs, it is hoped that this can resolve the equality of sanitation quality issues that exist in Indonesia. Suggestion for further studies should focus on the implementation of of communal water treatment plants and the management of such facilities, which have high operational cost. Especially regarding the wastewater sludge which needs to be disposed properly. (Kurniawan, Hakiki & Sidjabat, 2018)

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