P-ISSN: 2808-0467
E-ISSN: 2808-5051
Homepage: https://iss.internationaljournallabs.com/index.php/iss

APPLICATION OF THE KAIZEN METHOD IN EFFORTS TO MAINTAIN THE SUSTAINABILITY OF SPRINGS IN INDONESIA

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PAPER INFO
Received:
December 2021
Revised:
February 2022
Approved:
February 2022

ABSTRACT
Background: Indonesia represents about 6% of the world's water sources. This shows that Indonesia has abundant water resources. However, the facts show that most areas of Indonesia experience a shortage of clean water supplies. This is because the spring can be lost within a certain period if there is no planning to maintain its availability. The solution offered is to fulfill clean water needs with the Kaizen method. Kaizen is a 5S philosophy that includes *Seiri*, *Seinton*, *Seiso*, *Seiketsu*, and *Shitsuke*.
Aim: This study aims to review the application of Kaizen methods and their sustainability to be applied in Indonesia.
Method: The methods used in this study are descriptive observational are aimed at describing and describing phenomena of a scientific and human engineering nature.
Findings: The results of this study are packaged in the House Model. The House Model is a tool used by an organization using a concept built to transform into action. Some activities in the house model are tailored to meet the needs of partners and further increase the efficiency and effectiveness of the programs being implemented. The program also has good sustainability in community aspects, regulations, and government.

KEYWORDS
Kaizen; springs in Indonesia; the house model

INTRODUCTION

Water is an essential component of human life, especially in meeting clean water needs for households, industry, and public places. Along with increasing the need for clean water, encouraging humans to continue to provide clean water with good standards of quality, quantity, and continuity is worth using. Under the Sustainable Development Goals 6th point, this is related to the guarantee of availability and sustainable management of clean water and sanitation for all communities. Therefore, fulfilling clean water needs is a fundamental right of the community that the government must provide.

Indonesia represents about 6% of the world's water sources. This shows that Indonesia has abundant water resources. However, the facts show that most areas of Indonesia experience a shortage of clean water supplies, such as in East Nusa Tenggara, Java, Bali, and Sulawesi (Suryani, 2020). This is because the spring can be lost within a certain period if there is no planning to maintain its availability. Even in 2018, the number of springs in Indonesia has decreased by 20-40% within ten years (Maryati & Febriani, 2021). of the factors that affect the decline of the spring are the source of the spring that dries up, the degradation of the catchment, the lack of public concern for the efficiency of water use, and there is no sense of responsibility

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to maintain the spring. One of the areas threatened by the decline of springs is Drawati Village, Paseh Subdistrict, Bandung Regency, which has 155 catchment wells with one spring. However, this spring is threatened to disappear because its location is under the foot of Mount Kasur, which has a very minimal amount of forest area so that the catchment area is threatened to disappear. In addition, the lack of public knowledge related to the importance of maintaining springs. This problem is exacerbated by the emergence of water tourism, resulting in decreased cleanliness around the springs (Hasbiah & Kurniasih, 2019).

Efforts that have been made to maintain springs include taking a personal approach to the surrounding community and issuing regulations to maintain the condition of springs and catchment areas to stay well maintained (Ismawati, Rahayu, & Dewantari, 2020). In addition, efforts made to fulfil clean water include making traditional digging wells and building clean water reservoirs. However, these efforts can still not meet the needs of clean water of the community. This is because the water coming from the digging well cannot be used for drinking and cooking because the well water is cloudy and salty. In addition, efforts to build a clean water reservoir require many funds, where; to build the tub, each family head must spend IDR 25.000 each and from the fund can only make one reservoir (Jupri, Kusuma, Hidayat, & Purnomo, 2015).

Based on the above problems, efforts are needed to meet the needs of clean water of the community. The solution offered is to fulfill clean water needs with the Kaizen method. Kaizen is a 5S philosophy that includes *Seiri*, Seinton, *Seiso*, *Seiketsu*, and *Shitsuke*. In Indonesia, the Kaizen method is known as 5R. This Kaizen method has many advantages in increasing motivation and positively affecting individuals and can create a new system with collaboration and participation (Al Janahi, Zarreh, Wan, & Lee, 2019). In addition, the Kaizen method also emphasizes minor improvements made continuously (Randhawa & Ahuja, 2017). In the Kaizen method, maintenance measures need to be considered in achieving the expected goals.

Therefore, the Kaizen method is very suitable to be implemented as protection in maintaining the availability of clean water for the community. The existence of water care with the Kaizen method is expected to support the realization of SDGs 2030 point 11, namely ensuring the availability and management of clean water that is sustainable and sanitation. This is in line with the objectives of the Kaizen method, which focuses on continuous improvement and optimization of management. In addition, this method also aims to increase public knowledge and concern for clean water and empower the community in terms of recovery of water management problems and other threats.

METHOD

In obtaining data in research, the method used is a qualitative descriptive method. The descriptive method itself is a method that describes or describes an object or situation objectively. Observational qualitative descriptive methods aim to describe phenomena of a scientific and human engineering nature, which pay attention to the characteristics, qualities, and interrelationships between activities (Atmowardoyo, 2018). In this study, the data used was primary data and secondary data. The primary data is data obtained from the results of direct observation in the field; data in the field is collected using observation techniques and documentation techniques. Observations were carried out in several areas in Indonesia, including Jabungan Village, Semarang City. Meanwhile, secondary data is obtained from

literature studies in previous research journals on applying the previous Kaizen method. As for data processing techniques, verification and triangulation techniques are used to check data validity.

RESULTS AND DISCUSSION

Using the Kaizen Method in Protecting Springs

The 5S program, also called the Kaizen method, is often used because it has some of the suitable functions to implement to achieve a better direction. The 5S program (*Seiri*, *Seiton*, *Seiso*, *Seiketsu* and *Shitsuke*) is the basis for the employee mentality to improve and realize quality awareness (Carnerud, Jaca, & Bäckström, 2018). Companies are using the establishment of the 5S program to maintain the spring's sustainability. If using this 5S program, there will be several steps that can be done to maintain the sustainability of the spring. The points are as follows:

1) *Seiri*/Sorting
   The *Seiri* is the first step that can be done. At this stage, there needs to be a sorting between those that will be reached or unused so that later it will be more concise. Examples of implementation are as follows:
   a) The holding of socialization to the community around the spring or certain parties related knowledge to maintain the sustainability of the spring; and
   b) Create a heating board around the spring about "do and don't" to match the sustainability of the spring.
2) *Seiton*/Order
   Seiton is concerned with arranging all goods regularly. This stage is an advanced stage that can be done after the stage is over. The example of implementation is by making a map of the spring area so that it can be known which areas can be accessed by the community and which should not be accessed.
3) *Seiso*/Cleaning
   Creating clean environmental conditions is undoubtedly critical to getting the desired results. Examples of implementation are as follows:
   a) Making a schedule for cleaning the area around the spring;
   b) Complete the necessary cleaning equipment; and
   c) Establish punishment for communities that make dirty areas of spring water.
4) *Seiketsu*/Maintanace
   Caring for or maintaining achievements from previous stages or setting standards must be met. Examples of implementation are as follows:
   a) Scheduling to control hygiene checks.
   b) Make an invitation through social media or platforms that are often visited by the public related to the importance of maintaining the sustainability of the spring.
   c) Planting trees together around the spring area.
5) *Shitsuke*/Sustainability
   Build self-discipline to get into the habit of implementing 5S programs through positive habits and standardization. Examples of implementation are as follows:

a) Open training for volunteer action in maintaining the continuity of the spring.
b) Close relationships with the community or partners to maintain the continuity of the spring.
c) Conduct regular evaluations.

The Household Model Concept in Protecting Springs

The program's implementation adheres to the concept prepared using the house model. The House Model is a tool used by an organization using a concept built to transform a dream into action. Figure 1 will be explained The House Model.

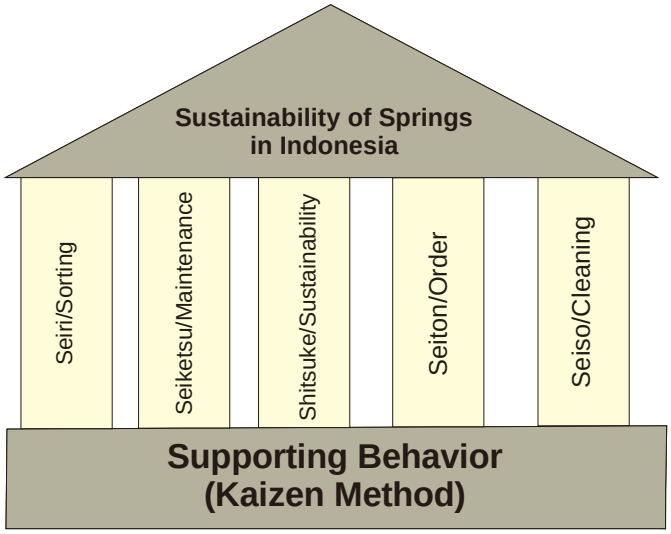


Figure 1. The House Model

According to Horovitz and Corbooz, there are three components to build promising visions: dreams located on the rooftop, the pillar consists of the main methods to achieve this vision, and the foundation is the primary indicator of improved performance the behaviour of supporting factors. In this case, to maintain the sustainability of springs in Indonesia, a community service program is implemented with the principle of the Kaizen Kaizen method (Al Janahi et al., 2019).

The house model diagram shows that this program has five main concepts to realize the research objectives: *Seiri*, *Seiketsu*, *Shitsuke*, *Seiton*, and *Seiso*. The five activities are the result of the improvement approach. Some activities are tailored to meet the needs of partners and further increase the efficiency and effectiveness of the programs being implemented. Empowerment techniques that are carried out also collaborate with counselling, such as providing material given to the community regarding the love of springs and methods of managing springs. Then, training techniques were also carried out to make the community more proactive in maintaining the springs, such as making signs and cleaning. Finally, there is a mentoring technique: conducting FGD (Focus group discussion) to discuss future spring management with various stakeholders (government, partners, and academics).

Preventive and Curative Efforts

Preventive measures and curative actions help achieve goals and solve existing problems. This preventive and curative action effort is reflected in the following points:

1) *Seiri* (Preventive): *Seiri* is the first step in sorting out information so that areas with the potential of springs become efficient. So that, this preventive action involves finding information and recognizing areas that have potential springs.
2) *Seiton* (Curative): *Seiton* is a step in structuring the spring area to be easy to use. So that section is a corrective action in arranging and managing the spring with a sense of responsibility.
3) *Seiso* (Curative): Action in the form of resuscitating the importance of maintaining cleanliness at the source of the spring (figure 2).
4) *Seiketsu* (Preventive): Actions in the form of procedures to care for and maintain the source of the spring.
5) *Shitsuke* (Preventive): The act of loving the existence of a spring.

Preventive measures such as *Seiri*, *Seiketsu*, and *Shitsuke* are carried out by seeking information related to potential areas of spring so that the community can care for and maintain the source of the spring so that there will be a sense of love for the existence of springs. In implementing preventive measures, concrete actions are taken to counsel the importance of spring and disseminate information using social media. This information will continue to be updated, so little by little, it will make a significant impact on the broader community. While in curative actions such as *Seiton* and *Seiso*, done by managing the spring with responsibility, thus raising awareness in the community that the cleanliness of the spring is essential. In implementing corrective actions, actual actions are carried out by cleaning the environment around the springs and making warning signs around the springs. In addition, there is also the idea of making a dam so that the spring's discharge does not decrease.



Figure 2. *Seiso* activity

Success in implementing preventive and curative measures will involve all surrounding communities and open and change all people's minds that this 5S program is not just a program but fosters a sense of community to maintain cleanliness around the springs.

Sustainability Program

The potential availability of clean water is increasingly reduced because the central and local governments prioritize water catchment land for economic development rather than for

environmental conservation. The rise of environmental pollution further exacerbates this. As many as 70 million Indonesians still wastewater carelessly because they cannot access adequate sanitation facilities (Fauziah & Internasional, 2021).

The Central Statistics Agency (BPS) shows that the achievement of access to drinking water is 88%, while access to decent sanitation is in the position of 75%. From this data, there are still 32 million people who have not received access to proper drinking water and 67 million people do not serve access to proper sanitation (Fauziah & Internasional, 2021). The vital role of water in daily life is not limited to meeting essential needs only, such as drinking and bathing. However, it also includes the irrigation needs of agricultural areas, considering that it also supports water and food security. Thus, in Sustainable Development, Goals 6 set eight targets, consisting of six main targets and two implementation targets (way of implementation). The eight targets are outlined in more detail into 29 national indicators. Furthermore, the government has developed indicators derivatives of the National Medium Term Development Plan/RPJMN policy 2015 - 2019. RPJMN by the 6th goal of this Sustainable Development Goals include:

1) Ensure water security through increased knowledge, changes in attitudes and behaviors in drinking water utilization and sanitation programs;
2) Implementation of synergy of drinking water and sanitation carried out at the national, provincial, district / city and community levels;
3) Improved effectiveness and efficiency of funding drinking water and sanitation infrastructure;
4) Maintenance and restoration of water sources and their ecosystems;
5) Fulfillment of needs and guarantee of water quality for daily life for the community;
6) The fulfillment of water needs for productive social and economic needs;
7) Increased community resilience in reducing the risk of water damage including climate change; and
8) Increased institutional capacity, sustainability, and coherence in integrated, effective, efficient and sustainable water resource programs, including increased availability and ease of access to data and information.

Therefore, to overcome this, kaizen methods need to be applied. As already explained, the Kaizen method emphasizes minor improvements made continuously compared to innovation. Therefore, there needs to be a strategy in its application. The adoption of the Kaizen method will be presented in the following figure 3.

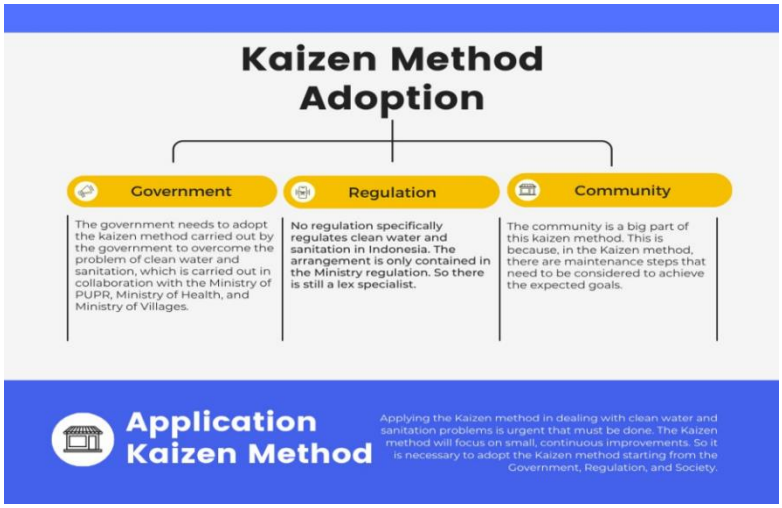


Figure 3. Kaizen Method Sustainability Adoption Strategy

Success Indicator

Standardization or success indicators are needed to determine the Kaizen Method's success. Here are the details of the success indicators:

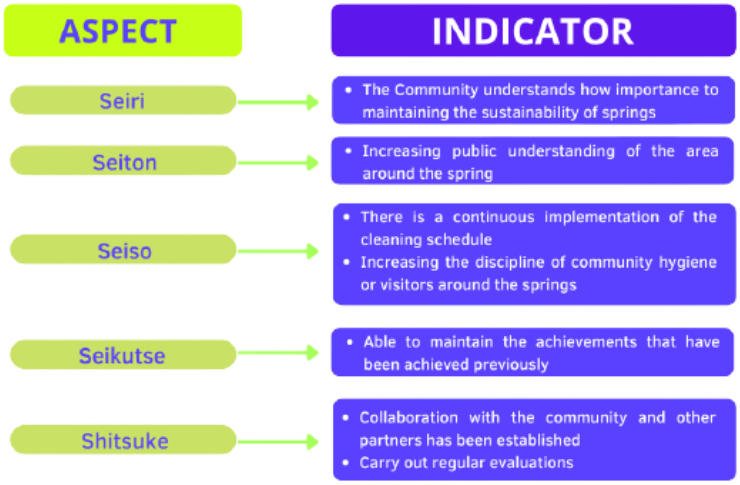


Figure 4. Success Indicator

CONCLUSION

The Kaizen method is very suitable to be implemented as protection in maintaining the availability of clean water for the community. The existence of water care with the Kaizen method is expected to support the realization of SDGs 2030 points 6 and 11. The establishment of the 5S program in the Kaizen method is being used by companies and can maintain the spring's sustainability. The program's implementation adheres to the concept prepared using the house model. There are three components to build promising visions: dream located as the rooftop; pillar consists as the main methods to achieve this vision and the foundation as the leading indicators of improved performance and the behavior of supporting factors. In this case, to maintain the sustainability of springs in Indonesia, a community service program is implemented with the principle of the Kaizen Kaizen method. For this idea to continue, it is necessary to adopt the three aspects of society, government, and regulation.

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