Good Governance Role for a Sustainable Solid Waste Management in Rural Community

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Abstract. As one of the problematic countries with the solid waste management issue, Indonesia has created many regulation and initiatives through its central government to local government in dealing with this problem. However, not all region succeeded in solving this solid waste issue as there are lack of good governance implementation in the local government. This study aims to analyse the best practice of good governance's principles in a local government of Paulan Village which succeeded to develop a sustainable solid waste management for the rural community. This study used qualitative approach through official reports and newspaper publication review, field observation, and an interview in collecting the data. The data were analysed by descriptive content analysis. This study finds that the local government of Paulan Village has proofed that the implementation of good governance has succeeded to maintain the sustainability of solid waste management in Paulan Village. Moreover, it also finds that participation, rule of law, also effectiveness and efficiency are the strongest three of eight good governance principles which influence the sustainability of solid waste management in Desa Paulan.

1. Introduction
A well-managed solid waste is one of the essential indicators in achieving sustainable development, especially related to environmental sustainability, which contributes to a better living condition and health, prevents waste from entering the oceans, mitigates climate change, and restores terrestrial ecosystems [1]. Since the issuance of Law Number 18 of 2008 concerning Solid Waste Management, gradually in the past decade, the Indonesian Government (central to local) has shown improvement in dealing with waste management issues by making several supporting regulations, as well as holding campaigns and activities involving the community to be more concern about the waste they generate. Based on the research of Jambeck et al. [2], in 2010, Indonesia was ranked second out of the top 20 countries with problems in handling plastic waste, with the amount of untreated plastic waste reaching 3.22 million tons/year and 10.1% or 0.48-1.29 million of them end up in the ocean. The results of this study have triggered the Indonesian Government and the people to be more concern about the environment, especially in handling domestic waste. Based on the source of waste, according to the Director-General of Waste Management, Garbage and Hazardous Toxic Materials (PSLB3-KLHK), Rosa Vivien Ratnawati, waste sources in Indonesia are dominated by household waste (48%), followed by waste from traditional markets (24%), commercial areas (9%), and evenly distributed in other areas [3], while based on its composition, the type of waste in Indonesia is dominated by organic
waste (60%), followed by plastic waste (14%), paper (9%), rubber (5.5%), and other waste (11.9%) [4]. On the one hand, the amount and type of waste in Indonesia, tends to increase along with the growth of Indonesia's population and its needs which also increase every year. This is inseparable from the role of the community as waste producers and the central and local governments’ initiatives as the party in charge of managing the waste problems in each region.

The main challenges in solid waste management are mostly related to inadequate place of waste generation and collection, transportation, recycling process, and inadequate disposal process [5]. Developing countries, such as Indonesia, generally have a solid waste problem that is exacerbated by faulty waste management systems (which until now still depend on open dumping and open burning systems for waste processing), lack of supporting infrastructure, as well as problems with population growth, economic growth, urbanization, and industrialization [6]. At present, most of the 450 landfills in Indonesia still use the open dumping system, and only a few of them have used the sanitary landfill system with a collect-transport-dump scheme of management cycle [7]. However, both the open-dumping system and the sanitary landfill are still not sufficient to solve the problem of waste management in Indonesia due to inadequate supporting infrastructure in many areas as well as the lack of public concern in solid waste issue. Poor waste management in Asia-Pacific countries, including Indonesia, is inseparable from weak waste management policies which result in low public participation in sorting and reducing waste, low tax collection on waste transportation and disposal services, and the need for funding and capacity building in solid waste management system by the local government [8]. Therefore, in addition to provide a supporting infrastructure for waste management, the application of good governance’s principles at the local government level is also essential in achieving a sustainable solid waste management system by involving all stakeholders in the region waste problems from up to downstream.

The implementation of good governance’s principles has a positive impact on the sustainability of waste management in local region. The Local Government of Paulan Village is assumed as a local government that has implemented the principles of good governance, particularly of its solid waste management program. Been running since mid-2019, Paulan Village has given up its dependence on Regional Government of Karanganyar to transport the village waste to the landfill site. That decision was inseparable from the role of the Head of Paulan Village, Joko Margono, who emphasizes the involvement of various stakeholders starting from the community, district government, till the private sector to participate in planning and executing the policy of Desa Paulan’s solid waste management. This study aims to analyze how the principles of good governance work to achieve sustainable waste management in Paulan Village by interconnecting the empirical studies with each principle.

1.1. Good Governance Principle

Based on the findings of Stojanovic et al. [9], the implementation of good governance cannot be generalized as a major factor in achieving sustainable development goals, although, it is very influential for success in several indicators. However, Ramzy [10] found that both good governance and sustainable development have interconnection for each other. Moreover, many studies state that the implementation of good governance can encourage the achievement of sustainable development goals at the local level [11], especially in terms of formulating policies and strategies to achieve sustainable regional development by a collaboration of involving stakeholders [11, 12]. The concept of good governance itself can be understood in the context of governmental administration and matters related to democracy (politic) and development [14]. In building the resilience of a government institution in achieving development goals, eight principles of good governance must be fulfilled, namely: participation; the rule of law; equity and inclusiveness; transparency; responsiveness; consensus and legitimacy; effectiveness and efficiency; and accountability [13–15].
1.2. Research Method
This study used a qualitative approach through official reports and newspaper publication review, field observation, and an interview with the Head of Paulan Village in collecting the data. After that, the data were analyzed using descriptive content analysis method. The results of the analysis are then evaluated by interrelating the results with the eight principles of good governance. Through this research, it will be found which good governance's principles have the strongest impact on the sustainability of waste management in Paulan Village, especially in terms of increasing local community participation.

2. Results

2.1. Participation
The realization of independent waste management in Paulan Village cannot be separated from the role of the private sector that offering to build waste processing facilities in the form of eco-friendly incinerators and giving a lesson of composting technique of organic waste. Besides, the private sector also provides a network for selling the sorted waste (generally the valuable non-organic waste such plastic bottle and cardboard) that has been sorted by the community. However, during the development, the participation of local communities from upstream to downstream is the key success of solid waste management in Paulan Village, particularly the campaign of waste sorting.

2.2. Rule of law
Solid waste management in Paulan Village is handled by BUMDes (Village-Owned Enterprises). The existence of BUMDes in this occasion is to realize a professionalism in village's solid waste management, in which to avoid the trust issue or conflict of interest between the local government and all involving stakeholders. Besides, BUMDes also has responsible to enforce the policy of this local solid waste management program, such giving incentives or disincentives which are given to customers (in this case the local community) who pay or do not pay for management fee and who do or do not sort the waste in their houses.

2.3. Equity and inclusiveness
Primarily, the meaning of equity is often related to justice or equal opportunity for all people regardless of his or her caste, gender, colour, race, religion or faith and social status. However, this is not found among the people of Paulan Village who uphold tolerance among humans. Besides, every resident of Paulan Village who has fulfilled his or her obligation to pay for management fee of solid waste and performs waste sorting in their houses has the same opportunity to aspire his or her opinion for a better solid waste management in Paulan Village. Moreover, the waste management in Paulan Village has often been a pilot and has received visits from other local governments since it officially started operating in July 2019.

2.4. Transparency
Since began to operate in July 2019, the Head of Paulan Village, Joko Margono has always ensured that all information regarding the development of solid waste management in Paulan Village can be conveyed to the entire community and assisted by BUMDes as the operator. In addition, the local government also opens access for anyone who wants to learn about the local solid waste management program in Paulan Village due to terms and conditions applied [16, 17].

2.5. Responsiveness
Deciding to do the management of their own waste independently is a form of responsiveness from the local government and the local community. Once, they had a bad experience back in 2018, which there was overload tons of waste in the village due to not being transported to Sukosari Landfill by the operator (a private party partnering with the district government) for more than a month [19]. Back in
early 2019, the people of Paulan Village had been offered by PT. X to build an eco-friendly waste processing facility and being assisted in making self-sufficient solid waste management system.

2.6. Consensus and legitimacy
As explained before, regarding the relationship between Paulan Village waste management and the “rule of law” principle, the BUMDes is the party responsible for the operational management of waste in Paulan Village. This initiative came from the Head of Paulan Village and supported by the village community to realize professional and independent solid waste management.

2.7. Effectiveness and efficiency
The sustainability of solid waste management in Paulan Village is driven by economic factors that are beneficial to all involving stakeholders, especially the local community. According to Joko Margono, the implementation of self-sufficient management will not only have a positive impact on the village environment, furthermore it gives a positive impact on the community’s economy. This is because, for every citizen who sorts their waste, they will receive a reward in the form of savings using the Waste Bank model, which is calculated based on the amount of cardboard/paper and plastic bottles collected. Besides, the output from waste processing facility is also very useful. The waste is turned into liquid fertilizer and compost which can be obtained free of charge for residents or people around the village who need it. On the one hand, the local government can also save around 1.6 million rupiahs per month which were previously budgeted for transporting the solid waste to landfill every month [20].

2.8. Accountability
Regarding the context of accountability, as the program has only been running for a year, Joko mentioned that there is no need for an audit to be carried out, particularly by the external audit agency. On the other hand, so far, there has been no digital instrument to be used as a platform for operational periodic reporting of the waste management that can be accessed by the wider community. Therefore, recently, all forms of reports are still carried out conventionally through monthly letters to the local community and for the outsiders who want to know the data can directly contact the Head of Paulan Village, Joko Margono.

3. Conclusion
Based on the eight principles of good governance, the local government of Paulan Village can be said to have implemented some of these principles in planning and implementing a self-sufficient solid waste management program. Even though they have not implemented all the eight principles, Paulan Village’s waste management has been able to sustain till present as well as it has succeeded in increasing the involvement of all involving parties and is economically profitable for the local community. It finds that the principles of participation, rule of law, also effectiveness and efficiency are the three main principles that have been most strongly implemented in the Paulan Village waste management policy. However, future research is needed, especially regarding the relationship between the principles of good governance and the level of environmental awareness of the community.

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