Involvement Analysis of Local Governance Actors on Slum Settlements in Indonesia; Empirical Study

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Abstract

The involvement of local governance actors in the slum settlements has been recognized in the literature; however, the interaction between them does not get scientific attention. This study uses socio-technical transition theory to draw the interaction characteristic among the actors. The study aims to examine the actor's involvement and their interaction in managing the slum settlements in the region of Indonesia. This study uses a mixed methodological approach, depth interviews, Focus Group Discussion (FGD), social network modeling, and case study analysis. This study shows that the network of slum settlement management actors in the region depends on the interaction between the central government, regional government, NGO, community, and the private sector. Those actors relate to the development initiative of consolidated slum settlement management and coordinate the development plan, especially in Pekanbaru; hence, the program can be monitored and sustainable. The regional government emerges as the lead actor and mediator in the slum settlement management, as proven by the role and high involvement of the local actor; however, the slum settlement management needs to develop the capacity building of local institutions. It relates to local government decentralization policy, which decides the appropriated policy following jurisdictional limits.

Keywords: regional government; local actor governance; slum settlement

Introduction

One of the main issues of the slum settlement in developing countries such as Asia and Africa are the defiance to provide access to adequate primary city infrastructure services; such as housing provision, water, sanitation, and waste management, and various additional services (Habitat, 2016). Direct defiance from municipal administration performances is their ability to give quality of life service to the society. A slum settlement is one of the most extreme forms of dispossession and exclusion. It constantly becomes an essential factor in the persistence of poverty. Besides, the exclusion that happens in this city becomes a challenge to develop sustainability and inclusive citation (Nations & Settlements, 2020). This unsatisfactory living condition must be caught up and solved by the government.

Indonesia's government established the slum settlement-free city policy initiative, named *KOTAKU,* by publishing regulations No. 1/2011 concerning housing and residential areas. Wherein the implementation of development regarding slum settlement residential area is established decentralization by the regional government with the involvement of active community role. The role of regional government and community in the transition of the program on the development action sustainability has been achieved attention in the

literature. (Bush, 2020) analyzed the role of the regional government in providing the city with green open space to create a sustainable city and livable. Mees et al., (2019) investigated the role of regional governments and the participation of society in the initiative through climate change adaptation. On the other hand, Salvador and Sancho (2021) analyzed the role of regional governments in encouraging climate change policy and sustainable development based on institutional capacity. Sahamies et al. (2022) analyzed the regional governance platform to add value to the innovation and city vitality. The entire study shows that the role and initiative of regional governments are essential in the transformation of sustainable city transition; hence, it is necessary to understand the performances of regional government and local actors that involve and their attempt to facilitate the transformation process.

Geels (2004) identified three primary dimensions that related each other to the socio-technical system, such as: (1) actor networking and social group; (2) regulatory/formal, cognitive, and normative regulations that lead actor's activity; (3) physical and technical features, as if infrastructure. The socio-technical system consists of nature and built elements (infrastructure or resource), also the social and institutional elements as organization and individual (Verbong & Geels, 2010). The critical role of actors and institutions in the system have elaborated in various studies. Fischer and Newig (2016) said that the involvement of the actor and institutions are essential in practicing the development of the region.

In addition, Pedersen Zari et al. (2019) stated that the implementation demands the partnership to enfold the ownership. In the context of slum settlements, solution, participation, and local society ownership become essential to establish the program called *KOTAKU*. Considering the actor, which has various characteristics and interests, the analysis of multi-criteria often determines the action during the development of slum settlement's development in various countries. This kind of analysis has the purpose of ensuring the decision of *the KOTAKU* program that reflects the interest of various actors because they hold an essential role in ensuring the success of program implementation. Several researchers (Almeida, 2019; De Brucker et al., 2013; Gatta et al., 2019) also used the multi-criteria method to analyze the participation of stakeholders in the practice of sustainable development.

The critics highlighted the actor's critical analysis, which addressed the Multi-Level Perspective (MLP). MLP has been criticized because it does not give attention to the agent's role during the transition. Smith et al. (2005) said that was overly descriptive and structural, leaving a bigger room for agent analysis as the intermediary to a more informed, intentional, and effective regime transformation process. F.G.H. Berkhout, A. Smith, (2004) claimed the unclear concept in the implementation of conceptual level empirically and bias on the change model from bottom to up. MLP failed to draw the interaction characteristic appropriately among the actors and institutions in the socio-technical system (Lockwood et al., 2013). These critics increase the necessity to analyze the actor in the various socio-technical systems, considering that the interaction between actors is an essential value to sustainable transition (Fischer & Newig, 2016). Therefore, this study focuses on the actor's involvement at the regional level, especially in Pekanbaru, Indonesia.

Pekanbaru is the regional government that operates the policy from the central government in the development and society field. The regional government takes a role as the leading actor in the implementation and development of the *KOTAKU* program effectively and efficiently. Every challenge and opportunity in the area has been utilized within the limits of their jurisdiction as much as possible. Irrespective of the critical role that the regional government can play in developing a sustainable city, others have known very little about the

slum settlements in Indonesia, especially Pekanbaru. The information, including the actor types, the characteristics of their involvement, and the mechanism they used to implement the program, is not acceptable. Hence, this study is trying to illustrate the challenge. Furthermore, the study conducted on the regional governance role in the slum settlement development is not the first study to discuss. However, this study gives the novelty through the ability to give a new comprehensive insight into the city's implementation without slum settlement at the regional level towards the regional government role and social participation in the initiative of sustainable city development. The result of this study expects to encourage a comprehensive understanding of the role of regional government and society's participation in the city issues that concern sustainable cities in Indonesia.

Methods

The increasing population growth in Pekanbaru cannot be separated from the city problem, especially the slum settlement, drinking water supply, sanitation, waste management also poverty. Most slum settlement in Pekanbaru city place in the downtown and river coastal area has various levels of slum settlement, from the medium and heavy category. The implementation slum settlement program started in 2016-2017 through Pekanbaru Mayor's Decree No. 878/2017 concerns the changes from Pekanbaru Mayor's Decree No. 151/2016 concerns the location determination settlement and slum settlements in Pekanbaru city. There were 19 villages and nine areas with approximately around ± 113,56 Ha (Figure 1). Because of the limited resources, this study focused on Pekanbaru city and discusses the cases from two villages, Limbungan and Sri Meranti

Figure 1. The location of Slum settlement in Pekanbaru City

Source: Bappeda, 2021

Furthermore, this study applied the mixed methodological approach (Creswell, 2014). The mixed methodological approach was appropriate to analyze the actor's involvement by using Social Network Analysis (quantitative) and in-depth analysis to explain the way actors were involved (qualitative). The subject analysis was the actors directly involved in the governance program of slum settlements in Pekanbaru city. This design can collect in-depth information about the involvement of actors in the program. Then, the informant was chosen according to this study because this study needed the information from the actors that were directly involved and had the knowledge regarding the involvement in them.

In the first stage of the study, literature prospecting is conducted to search the program's involved actors, called *KOTAKU* in Pekanbaru city. This study focused on the institutional

arrangements in the main policy document and the observation of the non-governmental organization. Then, this study visited the office of the Pekanbaru Development Planning Agency at Regional Level and obtained the actor's name list, which has already involved in the program, following the decree of Pekanbaru's Mayor No. 518/2017 about the formation of Housing and Settlement Area Working Group in Pekanbaru city. The actor list is reconciled with another list obtained from the literature prospecting. In the collecting data process, the informant has requested to mention the actors involved in the slum settlement program in Pekanbaru city. However, this process did not find another new actor; therefore, this study obtained fifteen actors and two communities involved in the program.

The qualitative data collection was conducted through observation, in-depth interviews, focus group discussion (FGD), and other supporting documents around July-September 2021. The observation used the direct observation of the slum settlement location to obtain the actual illustration of the actor's activity. Then, a depth interview was used with the various actors to acquire the data and information; the instrument used in this study is interview guidelines. This guideline enveloped the concatenation of open-ended questions that become the basis of the discussion between researcher and informant. The last actor to interview was the Mayor as the responsible person for the program. In order to support the data collected from observation and depth interviews, this study sought the documents and related materials. For example, for the data and the information regarding the program's policy, this study sought the regulations document, government regulations, and additional documents from related institutions. The supporting document on actors' social network analysis used the book references, journals, and a dissertation. Furthermore, FGD collects qualitative data from 2 groups of benefit recipients. Each FGD consisted of eight-ten people who came from the community, such as the chief of the hamlet, the chief of the neighborhood, and the community of benefit recipients.

Social networking analysis used the various actors' involvement in the program governance in Pekanbaru city. Cronin (2015) defined the SNA as being technical to identify and represent the interaction pattern between social entities, individuals, groups, organizations, and social artifacts. SNA was based on graph theory and used the technical graphic to analyze the character and pattern of relationships between different entities. Entity (meticulous actor) represented by the point known as a node. Meanwhile, the relationship between one actor and another actor was represented by the line known as ties, edges, or bows (Cronin, 2015). In addition, this study involved 15 actors and two communities.

The relation between entities has been measured in the contact frequency with the decision criteria by the study. This research used two main criteria such as the magnitude and directionality. The magnitude refers to the frequency and the social interaction strength. Meanwhile, directionality refers to the flow or direction of social interaction, which means where the interaction came from or from whom the interaction appears, and for whom the interaction was the purpose. This study measured the magnitude of the information exchange between the actors regarding the slum settlement program in Pekanbaru city. Besides that, the directionality measured the information came from and for whom the network actor directed the interaction. It was visualized with the arrow in the diagram drawn about the network actor.

During the interview, the actors have requested to briefly describe their involvement characteristics in the program. Then, they asked to show another actor who was involved with them and asked whether they exchanged information with each other regularly and collaborated

in the activity on the program or not. The matrix data and criteria were 1, which showed a relation, and 0 showed no connection. The data collected from this study would be formed in the network visualization using the NetDraw component from the software of UCINET 6(Borgatti et al., 2002). The centrality size attached to the software called NetDraw was used to ensure the leading actor and mediator in the actor network. The qualitative data obtained from the observation, depth interview, focus group discussion (FGD), and supporting documents will be analyzed using the interactive models (Huberman, 1994).

Results

Local Actor that Involved in the Slum Settlement Governance

The main actors identified in the governance program called *KOTAKU* in Pekanbaru city were the central government, regional government, private sector, non-governmental organization, and society. This study revealed the 15 principal actors and two communities that benefit from the program; hence, 17 actors will be analyzed regarding their involvement and initiative in the slum governance program. Various actor activities were related to developing and utilizing basic city infrastructure and another element indirectly connected with the city infrastructure activity. For example, the Environment and Hygiene department was concerned with environmental management, especially household waste, and was involved in the garbage dump project. On the other hand, CBS was the side that provided the demographic data and information for regional governments. Even the CBS indirectly involved the infrastructure development; however, the data they own was essential to the regional government to compile the city planning as in Table 1 follows.

Table 1. Type and Actor Involvement of Slum Governance

Actor's Type	Actor's Name	Actor's Role and Involvement
Central Government	Directorate General of Human Settlements (DGHS)	Take responsibility for policy formulation, implementation, monitoring, and evaluation of the coordination program activity. Giving the financial and infrastructure, and technical assistance.
Central Government	Regional Settlement Infrastructure Center (RSIC)	Take responsibility for infrastructure and coordinating the program with the district/city government.
Regional Government	Municipal Government (MG)	Take responsibility for planning and implementing the program at the municipal level and coordinating the decentralization activity to the nearest technical related.
Regional; Government	Development Planning Agency at Sub-National Level (DPASL)	Take responsibility to ensure the slum settlement plan entry to the National Mid-Term Development Plan city, coordinate the entire development planning in the city, and accommodate the aspirations of the community, private, and NGO.

Regional Government	Department of Public Housing and Settlement Areas (DPHSA)	Take responsibility for the planning and implementation of housing and slum settlement, infrastructure, facilities, and public utilities, coordinating with the related technical unit and involving the community, NGO, and private sector in the development initiative of the program.
Regional Government	Department of Public Works and Spatial Planning (DPWSP)	Take responsibility for the planning and implementation of infrastructure procurement and technical support. Coordinate and cooperate with the related technical unit, community, NGO, and private in the development initiative of the program.
Regional Government	Department of Environment and Cleanliness (DEC)	Take responsibility for waste management, environment, and society.
Regional Government	Central Bureau of Statistics (CBS)	Take responsibility for providing the data needs and information to the regional government, especially regarding the demographic conditions of the community.
Regional Government	Sub-District	Give support and guarantee that the program implementation in the work area is managed well. It needs the involvement of the community, non-government organizations, and the private to cooperate in the development initiative of the program.
Private Sector	Local Water Supply Utility (LWSU)	The private company which is involved in the provision of clean water for the community.
Private Sector	City Coordinator (CC)	The associate team that ensures the quality process and implementation of infrastructure activity at the municipal level and community.
Non-governmental Organization	Waha Mitra Indonesia Foundation (WMIF)	NGO focus on increasing community access to clean water with the solar benefit.
Non-governmental Organization	Non-Governmental Organizations (NGO)	Facilitate the entire stages of the program at the sub-district level and provide the investment fund assistance to the NGG.
Non-governmental Organization	Participatory Planning Core Team (PPCT)	Coordinate the development process at the community level and compile the planning document of settlement environmental arrangement, which is assisted by experts.
Non-governmental Organization	Non-Governmental Group (NGG)	Create the proposal and carry out the essential infrastructure activity approved.

Actor's Network in the Slum Governance

The Sociogram network drew relation with the identification of the actor's position. The network node showed 17 actors participating in the program. The link that connected every node showed an interaction or tie that must be maintained among the actors. The one-way

arrow showed the frequency of interaction that one actor has done with another actor, and other actors did not contact them; on the contrary, the two-way arrow showed the reciprocal relationship. The actor's network signified the interactions between central government, regional government, NGO, community, and private (Figure 2); the regional government contracts most NGOs and the private sector in the infrastructure project implementation. Hence, the characteristic of interaction became an information exchange and communication in the program development. Most two-way arrows in the interaction often come from regional governments or NGOs. For instance, WMIF, one of the NGOs engaged in the clean water provision, often actively socialized with the regional government, especially with the DPHSA and the community, if a group or community needs clean water provision.
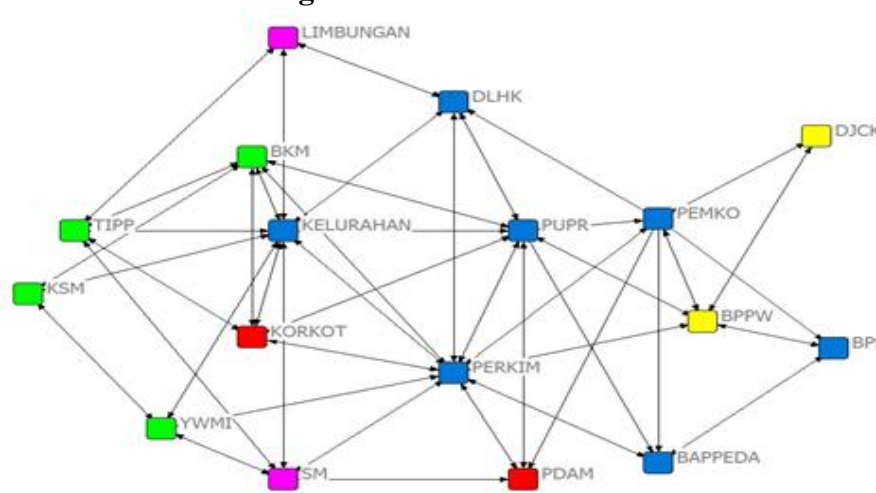
Figure 2. Actor's Network

Figure 2 illustrated the relation network directed between actors in the arrow on the line system that showed the direction of the interaction. The one-way arrow between MG with DPASL, MG with LWSU, MG with CBS, and MG with DEC, is MG's source of interaction. This relation shows that DPASL, LWSU, CBS, and DEC are only involved in the development initiative of the program by the MG when their function was needed. According to the in- depth interview with the informant in DPASL, whether they coordinated the activity or not.

"Therefore, the coordination of program participation and involvement in an activity is needed because we already have a forum in the form of a coordination meeting to discuss the progress of every activity in the program."

On the other hand, the two-way arrow between the actors, such as MG with DPHSA, and MG with DPWSP, generated relations from the coordination of planning and development implementation at the regional level. The DPWSP depends on the DPHSA because the function of the house, facilities, and infrastructure improvement in slum settlements have been made by the DPHSA. Procurement and provision of infrastructure have been made by the DPWSP. Another two-way arrow relation was between sub-district with NGO and sub-district with community. These relations existed in the project implementation development of the slum settlement program. Meanwhile, from the private sector, the CC, as an associate team, has contracted in the program that weaves two-way interaction with NGOs to DPHSA and DPWSP in monitoring the process of infrastructure activity implementation in the city. Then, there was

a two-way relationship between the DGHS with the RSIC and the DGHS with the MG from the central government. This relation characteristic generated from the planning coordination and program development. These findings show that actors' networks were connected, and most of them cooperated in the slum settlement program in Pekanbaru city.

Main Actor in the Actor's Network

Degrees and eigenvector centrality scores were used to identify the leading actor in the network. Table 2 summarized the scores from all sizes of actors' centrality. Degree centrality value from the actor's network showed that DPHSA, Sub-District, and DPWSP were the leading actors in the actor's network with degrees 11, 10, and 9; meanwhile, other actors who have not been mentioned were supporting actors. These scores showed that they had the highest number of connections in the actor's network. However, in the study(Hansen et al., 2020), the centrality degree was an indicator of popularity and did not distinguish quantity and quality. It was just to measure the actor's number related to a particular actor. Therefore, the popularity of actors such as DPHSA, Sub-District, and DPWSP, was primarily related to the fact that most of the actors in the network were connected with them to implement the program development in Pekanbaru.

Table 2. Score of Actor's Centrality in the Collaboration Network of Slum Settlement Program

Actor	Centrality Measures			
	Degree	Betweenness	Closeness	Eigenvector
DGHS	2.00	0.00	44.00	0.07
RSIC	5.00	10.51	30.00	0.19
MG	8.00	8.95	31.00	0.27
DPASL	2.00	3.34	31.00	0.18
DPHSA	11.00	32.94	21.00	0.42
DPWSP	9.00	14.75	24.00	0.37
DEC	4.00	4.14	28.00	0.24
CBS	2.00	0.45	42.00	0.10
Sub-District	10.00	16.42	24.00	0.37
LWSU	3.00	0.69	31.00	0.19
CC	5.00	1.60	29.00	0.25
WMIF	4.00	1.82	30.00	0.17
NGO	6.00	4.95	28.00	0.26
PPCT	5.00	1.94	34.00	0.19
NGG	3.00	0.27	37.00	0.12

The use of eigenvector centrality, it gave the best measure to identify the famous actor in the network on the centrality degree (Figure 3); because it was not only to consider the degree (the number of connections) but also to consider another actor's degree, which related to it (Cronin, 2015). Thus, even if the actor has a low centrality degree, an actor can have the highest eigenvector centrality if another actor connects with them. According to Table 2, it can be seen that even the actors such DGHS, DPASL, and CBS had two centrality degrees. However, eigenvector centrality was different from DPASL, which had the highest eigenvector score of around 0,18. This score showed that the Development Planning Agency at Subnational Level was a more famous actor than DGHS and CBS because most of the actors connected with them, such as MG, DPHSA, DPWSP, and CBS, had the highest centrality degree. In addition, CC is more popular than LWSU, and NGOs were more popular than other NGOs. It cannot be separated from their role in implementing the program development initiatives.

Figure 3. Eigenvector Centrality in the Actor'sNetwork
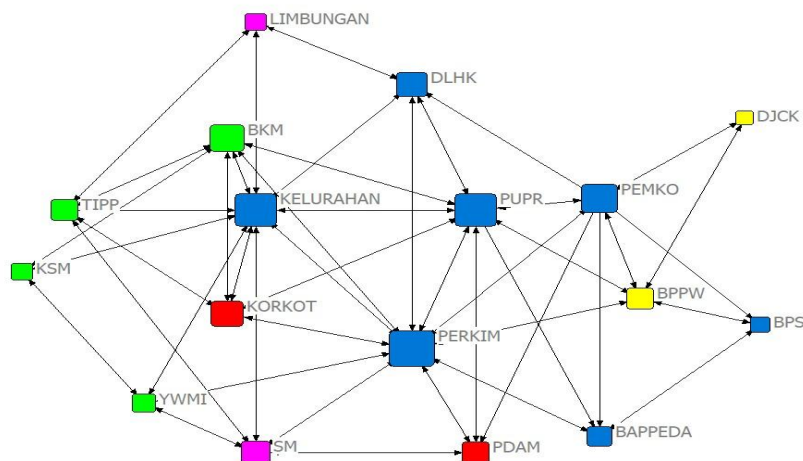
Network Mediator

According to Table 2, centrality in the actor's network can also identify the mediator that existed in the network. It involved the actor's role as the information sender in the network. DPHSA had the highest centrality among other actors, with 32.94. It related to their role in coordinating the entire program development implementation and had a function as the mediator between regional government, NGO, private sector, and community in the implementation of program development, named *KOTAKU*. If there was a problem with the infrastructure, the community tended to report to the sub-district government. This evidence was obtained from the informant from the sub-district, which said as follows.

"For every community problem involving the public service, we are the one as the first side to meet."

Furthermore, DPWSP was the third famous mediator in the actor's network (Figure 4). The relationship of DPWSP with other actors was related to their role in providing and facilitating the activity connected with the city's infrastructure service.

Figure 4. The Centrality in Actor's Network
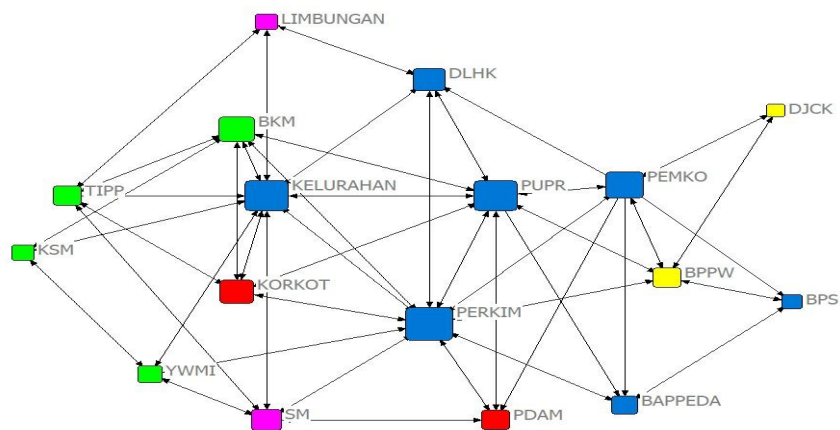
The proximity centrality score generated the result in Table 2 that DPHSA, DPWSP, and Sub-District were closer than other actors in the network. Hansen et al. (2020) stated that the lower proximity centrality score means an actor directly connects to another actor or was only away from most of the network's actors. On the other hand, the higher proximity centrality score means that an actor is more away from another actor in the network. This result shows that the regional government is popular in the actor's network, and their involvement in planning and program development is essential. For example, their initiative role is to provide the installation of wastewater treatment in Limbungan, the procurement of clean water for a community in Sri Meranti, waste management, and others.

Meanwhile, the central government's role, which DGHS and RSIC represent, was included in too low a category. It was related to regional autonomy policy. The region's development implementation authority became the regional government's responsibility. In contrast, the responsibility of the central government was only to give support in the form of directions and technical instructions, also funding support to the regional government. Furthermore, the result of a depth interview with the informant in DPHSA, DPWSP, and Sub-District stated as follows.

"We have already worked hard to fill the community's needs in providing basic infrastructure in slum settlements, either through our initiative or a suggestion from the community who came to us; also, the central government is giving the full support to succeed in the program, named KOTAKU."

According to the stated above, the problem of slum settlements became a problem that became the main priority for both regional and central governments to create a tangible settlement that was livable and sustainable. On the other hand, the community also needed to support and accede to becoming participants in the program because the result of this activity will have a tangible impact on the increasing economy, society, healthy life, and living environment.

Discussion

Case Study: Procurement project of Wastewater Management Installation in the Limbungan Sub-District

Limbungan sub-district includes the slum settlement categorized in Pekanbaru city. This sub-district is placed in the coordinates 101026'56,70''E-101027'7,24''E EL Pekanbaru city. In 2017, DPHSA took the initiative to survey and elemental mapping infrastructure conditions in this sub-district. This survey has been done by sub-district and PPCT in a participatory way with the community's involvement by filling out the questionnaire. This survey has also been implemented towards the availability of local labor, tools, and materials. It is to make it easier to choose the construction techniques used later. The technology prioritizes the local ingredients that are quality and easy to construct by the community and local labor. According to the survey that has been done, various problems are related to essential city infrastructure services, especially sanitation and household waste management. This survey's results follow the planning of the Environmental Arrangement Settlement's document, which PPCT has structured, and the document that existed in the Municipal Slum Settlements

Prevention and Quality Improvement Plan. Therefore, the DPHSA is an initiative to make the Wastewater Treatment Installation Communal in the Limbungan sub-district, at the location of land donated by the local community.

Hence, to detail the procurement project of Wastewater Treatment Installation Communal, the detailed engineering design has been arranged, budget plan and general specification. CC, NGG, and PPCT have controlled this activity. This study aims to determine the quality requirements following the criteria and technical requirements. The verification has been done to guarantee the finished result of technical planning on Wastewater Treatment Installation communal procurement, which has fulfilled the technical standard requirements and criteria design established by the technical team and commitment officer from DPWSP. The budget plan is arranged during the technical planning; basically, the budget is according to technical calculation, which becomes the reference NGO in allocating the obtained funding source from the regional government and as the guidelines during the working implementation by NGG. The fund's disbursement for infrastructure activity from NGO to NGG through the bank account.

During the implementation, the NGO mobilized the workers and materials to the occupation location. The process is performed by the Wastewater Treatment Installation's component, which consists of a sewage treatment unit, control tub piping network, treatment pits, and household connections. The unit location of waste treatment is near the community's house, which is a grand land; this is one of the participations from the community. The existence of construction of communal septic tanks and the rehabilitation of bathing, washing, and latrines, therefore, the waste disposal from the community's toilet has indirectly been wasted into the drainage or river, but it will be wasted on the septic tanks' community.

After the finished project, the next step to do is the inspection from DPWSP. It forms a form of supervision to succeed in the project as the plan that has been established. Then, handover of work was held from NGO to commitment officer to be continued to give the result of Wastewater Treatment Installation procurement to the sub-district. Sub-district should manage and maintain the Wastewater Treatment Installation community through the community role as the benefit recipients. The passive role of the community as benefit recipients has been shifted to become the critical actor and decision-maker because the tiny technology implementation depends on their acceptance and behavior (Söderberg & Åberg, 2002). Various studies have been conducted to investigate the transformation process in wastewater treatment and the socio-technical determinants of the decision that encourage this process (Hiessl et al., 2013; Jeffrey & Jefferson, 2003; Söderberg & Åberg, 2002).

The benefit of project implementation can be perceived directly by the target group. Their environment becomes cleaner, and there is no longer a smell because there is no more household waste such as the rest of the laundry soap from the bathroom in the house gutter. According to the FGD's result, the community benefit recipients stated as follows

"The current condition is more significant than before, and the community has already understood the danger to their health if the waste is directly discharged into the drainage or river."

In this case, the regional government plays a role in the initiative and mediator in the advocacy to encourage community participation and non-governmental community. There is a chance for community involvement and non-governmental community with the program support

and funding from the regional government. Non-governmental communities and communities are directly involved in the program through coordination and cooperation. Therefore, the regional government has been influential in promoting the relationship between non-governmental communities and communities through effective governance. It increases the local government's legitimacy in developing the slum settlement program. On the other hand, the involvement of NGOs and communities is limited. It needs the capacity of institution development, individual also functional/technical, hence they have knowledge and practical technical skills that can help them to arrange and implement the program and activity greater and can be accounted for.

Case Study: Providing Clean Water Project in Sri Meranti Sub-District

The community in the Sri Merani sub-district is one of a group that includes the slum settlement in Pekanbaru. This sub-district is placed in the coordinates 101025'52,21''E-101025'58,89''E EL Pekanbaru city. The survey and location mapping results are the same with the Limbungan sub-district, which obtained various problems faced by the community through municipal essential infrastructure services. One of the problems reviewed is providing clean water suitable for consumption. The community got their clean water from groundwater through bore wells, water packaging, and water supply from TirtaSiak LWSU Pekanbaru that was relatively less affordable for the local community. In recent days, the community has complained about the water condition supplied by LWSU because the water supply is often jammed. The community often comes to LWSU to inquire about the explanation, but the institution side always tells the community to wait because there is an improvement. From the informant explanation in LWSU, it obtained information as follows.

"The management company recently had a debt burden problem responsible by the company to the government and the third side, also half of leaking pipe; however, we will fix it as soon as possible."

The availability of LWSU service cannot solve the clean water needed problem in Sri Meranti. This condition makes it inconvenient to the community; hence they deliver the problem to MG. Then, MG contacted DPHSA to seek a solution. This solution has been offered by DPHSA, which is an initiative to contact the WMIF because this foundation often socializes the organization with DPHSA. WMIF is one of the non-governmental organizations engaged in clean water provision for less fortunate communities with solar water pump technology. This NGO cooperates with Grundfos from Denmark and Water Mission International. Besides, the clean water provision of Mitra Indonesia Foundation acts to give education which concerns the importance of living healthy and maintaining the environment. When the community generates the most public service giving, the production often strengthens the gap that exists within the community (Jakobsen & Andersen, 2013).

During project implementation, the WMIF side is helped by community and non-governmental organizations. WMIF has done the technical process, and the community and non-governmental organizations have done brute force. Water pump installation is placed in a community home location, which is easier to access. A drinking water depot will be made later—this tool works when water is pumped from the well that uses a submersible pump. The driving force from the pump comes from solar energy via photovoltaic cells (PV).

Furthermore, the water will be accommodated in water storage tanks. After pump installation, a test on the water pump to determine the pump capacity. The test result came out good; filling a water tank with a volume of 650 liters only takes approximately 2.5 hours; it depends on the sun's intensity condition. The work on the solar water pump was handed over

to the sub-district government. It will continue to give the facility to the community to manage and utilize to overcome the shortage of clean water. According to the result of FGD, the community involved in the project process states as follows.

"There are no challenges and obstacles during the process of doing a project. Also, the project results even give the community a significant benefit to filling the clean water needed for them."

The initiative from WMIF, clean water provision for the community has helped the task of the regional government in providing the essential infrastructure services for the community in the slum settlement. Water pumps with solar energy can overcome the lack of water in the area by using unlimited energy like the sun, without depending on the State Electricity Company.

With the use of modest technology and affordable cost, the regional government has established the technology transition to the governance of a sustainable city. Bos and Brown (2012)stated that we can take social learning, where successful trials in the field can help create legitimacy to form an alternative government. This case shows that the forms of alternative government have a function as a coordinate mechanism and become the causes of tangible changes in the field. The governance of effective government must be involved in the active role of either the local community or the leadership and commitment of the local government. The governance downplays the regional government's critical role in innovation to support and maintain sustainable development (Evans et al., 2006). The governance needs the regional government to support and encourage; hence it can generate local resources, support, and energy needed to give a benefit in the complex policy environment.

Conclusion

This study explored the actual practice of slum settlement development governance at the regional level, especially in Indonesia, which is proven through the community experiences and actions, non-governmental organizations, private sector, regional government, and central government. The result shows that collaborative action as local stakeholders will facilitate local development for a sustainable community. With the implementation of the SNA method, this study identifies the critical actor in the governance of the program named *KOTAKU* at the regional level, including DPHSA, DPWSP, and sub-district. These three Regional Apparatus Organization had eigenvector centrality scores of 0.42, 0.37, and 0.37. The find shows that the actors are essential in the network; they are the main point of contact and channel among other actors that take a role as an intermediary or liaison institutions of the central government, regional government, local community, and non-governmental organization private sector. Therefore, this study gives the benefit from the use of the SNA (Social Network Analysis) method to identify the actor and give an understanding better about the complex nature of actor's interaction that intertwined in the initiative governance of program development.

The regional government analysis shows that the program's plan and implementation are decentralized according to their respective roles. Regarding the characteristic, an initiative of program development at the regional level has consolidated and coordinated in the Pekanbaru's medium-term development planning. Therefore, its implementation can be monitored well and sustainable. The consistency of this study's result is the same as the previous study conducted in America and Dutch, which shows the role of regional government and local community is significant in sustainable municipal development. With the minimal

availability of resources, increasing actor involvement in the plan and coordination can increase the implementation and function of municipal initiatives sustainably. Therefore, the investment, local capacity building, and active involvement from the local community in the program can significantly give energy to the economy and increase the community.

This study gives modest contributions, where the study generates two conclusions, such as: (1) explicitly, considering the local actor as the socio-techniques system and actor modeling interactions, this study has identified whom the actor is involved and explained their role in interaction in the initiative of program development at the regional level. This case understands the interaction actors often do in the socio-techniques system and gains knowledge about MLP (Multi-Layer Perceptron and co-evolution approach; (2) through the use of the SNA method, it can be learned about the actor's involvement in the plan and implementation initiative of the program at the regional level. In addition, this study may have a limitation, including the limited resources. Hence, the study only focused on one city, Pekanbaru. The study's result can be generalized to other cities in Indonesia that are currently executing the slum-free city program. Further study can use this study as a guideline. This study suggests gaining the city and local actors in local institutional capacity studies. Therefore, the further study can be focused on the capacity development of the institution and institutional learning in the development of slum settlements at the regional level.

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