

Smart People as a Participation Model for Infrastructure Development

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Abstract—The research objective is to identify the coastal community participation model for the development of infrastructure that has been built with a slum-free city program (KOTAKU). The participation model smart city indicator is smart people. Research location Coastal village two areas in Sedati. Both villages have received the KOTAKU program in order to improve infrastructure. Qualitative and quantitative descriptive research methods with questionnaire and interview techniques. The analysis technique used Arnstein's typology percentage and scoring. The result, seven indicators of the KOTAKU program that was built with the level of development achievement of 100% drainage, 100% installation of drinking water in the village Banjar Kemuning and 88% in the village Gisik Cemandi, waste treatment program and 100% fire disaster mitigation, 100% toilet construction in Banjar Kemuning and 87% in Gisik Cemandi, repairs to uninhabitable houses and paving 100% environmental roads. The participation model was developed with an indicator smart people in the form of the contribution of labor and the ability to provide snack foods included in step 6 for Banjar Kemuning, which means that the community has been able to become a partner, and step 5 for Gisik Cemandi which means that the community is still used as a reference.

Keywords—*Arnstein typology; coastal area; infrastructure; KOTAKU; smart people*

I. INTRODUCTION

Some theories about "Smart City" or "Kota Pintar" is stated that smart city is a city of the future, which is a city that is set as comfortable as possible in terms of security, comfort, ecology, and efficient. All efficiency on the concept of the future city is seen in the pattern of supply and use sustainable infrastructure capacity starts from use of electricity, water, transportation, sanitation and other infrastructure. Infrastructure usage activities are able to achieve efficiency because it was designed, built, and maintained using advanced and integrated technology. Besides that, there are also sensors electronically with network connected to a computerized system starting from data bases, tracking and algorithms in every decision making. [1].

Referring to the smart city concept, it seems that there needs to be an elegant and smart movement to make the coastal area become a smart area, especially in the settlement infrastructure services. A great idea to make a smart coastal

area, especially from the aspect of infrastructure, is considered quite logical and important because 60% of Indonesia's population is in the coastal area. The fact that Indonesia is an archipelagic country, causes the existence of settlements on the coast to receive great attention so that the lives of coastal communities are more prosperous. The results of the study show that the condition of infrastructure, especially latrines in the coastal villages of Sedati, is still a major need for their welfare with the aim that people no longer defecate in the sea, rivers and ponds [2].

The Government of Indonesia has committed to implement the KOTAKU Program (Kota Tanpa Kumuh) in 271 districts/cities, 34 Provinces with a collaboration platform which means handling slums by integrating various resources and funding sources, including from the central, provincial, district/city, donor, private sector, community, and other stakeholders. The KOTAKU program aims to improve access to infrastructure, and basic services for urban slums to support the realization of urban settlements that are livable, productive and sustainable [3].

There are two coastal villages in Sedati Subdistrict that get the 2016 KOTAKU Program, that is Banjar Kemuning and Gisik Cemandi. Geographically Banjar Kemuning Village is one of the villages in Sedati Subdistrict with the distance to the Capital District of the District around 7 Km, while the distance to the Capital of the District is 15 Km. Banjar Kemuning Village has a land height of 4 M from sea water surface, an area of 384,689 Ha, and a population of 1,768 people, with similar livelihood characteristics, such as farmers, farm laborers, fishermen and fishermen workers. Gisik Banjar Village also geographically and monographically has similar characteristics to Banjar Kemuning Village, which has a height of 4 M from the sea level, a larger population of 2,094 people and the majority of the people living as farmers, farm laborers, fishermen and fishermen workers [4].

The KOTAKU Program carried out in coastal villages includes 7 (seven) indicators of infrastructure in accordance with the target and targeted work programs, namely; Improvement of RTLH (Rumah Tak Layak Huni), Paving of environmental roads, Provision of drinking water, Development of environmental drainage, Procurement of domestic waste, Waste processing and fire mitigation. These seven indicators are the basic needs of the environmental

infrastructure from KOTAKU development program and what coastal communities needs.

During the development of the KOTAKU Program, an active role is needed in the form of citizen participation, both physically and non-physically, so that the infrastructure that is built becomes a shared responsibility, jointly owned and oriented towards sustainable aspects. Therefore we need a model of participation from coastal communities to achieve it. The participation model that examined in this study uses the smart city indicator, which is smart people.

Smart city directs many indicators to achieve it, one of which is smart people. The development of the infrastructure provided becomes well developed if there is high community participation to develop it, so smart people can be used as a model concept to build the level of participation. Smart cities that are oriented to the coastal region, namely smart coastal city is a creative idea to make the coastal area smart, the smart people become the main focus in this research. Smart people as laborers, creative workers, knowledgeable, voluntary in organizing, preserving the environment, economic capacity and availability of infrastructure are important indicators of smart city [5].

The smart people indicator can certainly be implemented in coastal areas with a strategy in accordance with the characteristics and capabilities of coastal communities. The implementation of smart people in the implementation of the KOTAKU Program is in accordance with the ability of the community both in the form of donations of energy, thought and providing snacks for builders [6].

Expresses about participation as involvement in the decision making process, program implementation, obtaining benefits and evaluating illegas program. Participation is the mental and emotional involvement of a person in a group situation that encourages them to support the achievement of goals in the group's goals and take responsibility for the group [7].

The Minister of Home Affairs Regulation No. 5 of 2007 concerning the Guidelines for Structuring the Village and Village Community Institutions states that participation is the participation and active involvement of the community in the development planning process [8]. Dwiningrum also defines participation that is almost the same as other researchers that community participation is the evolvement of community members in the development and implementation of development programs or projects undertaken in local communities [7].

There are four stages of community participation in the KOTAKU Program, namely; decision making stage, program implementation stage, benefit taking phase, and evaluation stage [9]. The results of the research recommend that community involvement is needed to run the program with the aim that the previously useless community will be useful, helpless to be empowered, maximize the performance of the sub-district apparatus, synergize between the District, Villages, community leaders and the community itself, motivating the regional head so that the empowerment program is able to move the community as beneficiaries of benefits [10].

Referring to the results of the research, smart people are the dominant factor in the implementation of the KOTAKU Program, so this research is important to do [10].

II. MATERIALS AND METHOD

A. Secondary Data Retrieval

Secondary data were obtained from the relevant agencies, including Bappeda, Cipta Karya Public Works Office, Sedati District Office, Sidoarjo Regency Statistical Center and Village Monographs.

B. Primary Data Retrieval

The primary data collection aims to find out the existing infrastructure conditions that were built through the KOTAKU Program, so as to obtain an overview of the availability of infrastructure and the participation of the fishing community in the implementation of the KOTAKU Program. The primary data collection was carried out by distributing questionnaires and in-depth interviews to selected respondents.

C. Sample Collection and Analytical Methods

The research lokus was in the coastal villages of Banjar Kemuning and Gisik Cemandi, coastal population and the number of samples was 90 household divided into 57 families on the Gisik Cemandi coast and 33 households on the Banjar Kemuning coast. The number of samples with 10% accuracy limit was obtained by 100 respondents randomly. The level of participation is obtained from the scoring analysis technique by using the Arnstein typology, as in the interval formula, and the map of the research location is shown in figure 1:

Formula: $T \times P_n$

T = The total number of respondents who voted

P_n = Weight number choices

In order to get the interpretation results, you must first know the highest score (X) and the lowest score (Y), namely:

Y = Highest score x number of respondents

X = Lowest score x number of respondents, skor terendah x jumlah responden, then the resulting value is used in the formula $\text{Index \%} = \frac{\text{Total score}}{Y} \times 100$, so the interval formula is obtained:

$$I = \frac{100}{\text{total indeks}}$$

$$\text{Then} = \frac{100}{8} = 12,5 \approx 12$$

$$\text{Results (I)} = 12$$

The results of the calculation formulation of the Arnstein Typology formula can be concluded as in table 1.

TABLE I. LEVEL OF PARTICIPATION SCORING BASED ON ARNSTEIN'S TYPOLOGY

No.	Participation Rate	Weight	Value
1	Citizen Control	8	85 - 100%
2	Delegated Power	7	73 - 86%
3	Partnership	6	61 - 72%
4	Placation	5	49 - 60%
5	Consultation	4	37 - 48%
6	Informing	3	25 - 36%
7	Therapy	2	13 - 24%
8	Manipulation	1	1 - 12%

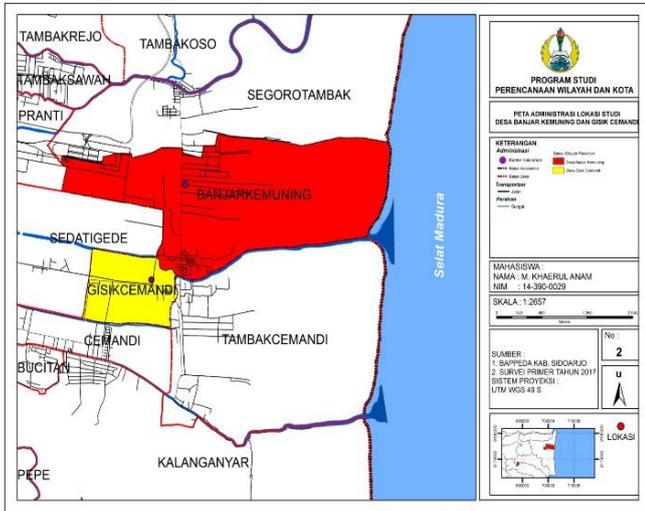


Fig. 1. Map of research location.

III. RESULTS AND DISCUSSION

A. Existing Condition of KOTAKU Program Implementation

The KOTAKU Program is carried out on the basis of the Directorate General of Human Settlements' Strategic Plan for 2015-2019, namely improving the quality of national slums with the program's goal of achieving urban slums eradication. The aim of the KOTAKU Program is to increase access to basic infrastructure and services in urban slums to support the realization of urban settlements that are livable, productive and sustainable. This research was conducted in the coastal area of Sedati, namely the Banjar Kemuning Village and the Gisik Cemandi Village.

The two coastal villages received priority in the implementation of the KOTAKU Program in 2016 earlier than the three other coastal villages such as the Kalanganyar coastal village, Tambandi Cemandi and Segoro Tambak. There are 7 infrastructures that become KOTAKU Program, namely the improvement of RTLH (Rumah Tak Layak Huni), Paving of environmental roads, Provision of drinking water, Development of environmental drainage, Procurement of domestic waste, Waste processing and fire mitigation. Each of the existing conditions of the achievement of infrastructure development implementation is described in table 2.

TABLE II. ACHIEVEMENT OF INFRASTRUCTURE DEVELOPMENT KOTAKU PROGRAM

KOTAKU Program	Banjar Kemuning Village		Gisik Cemandi Village	
	Implemented	Not Implemented Yet	Implemented	Not Implemented Yet
Drainage Development	100%	0	100%	0
Installation of Drinking Water Channels	100%	0	88%	12%
Waste Management	100%	0	100%	0
Disaster Mitigation	100%	0	100%	0
Domestic/ Sanitation Waste Procurement	100%	0	87%	13%
Improving RTLH	100%	0	100%	0
Environmental Road Improvement (Paving)	100%	0	100%	0

Source: survey and analysis results, 2018

Table 2 explain that the implementation of the KOTAKU Program from 7 infrastructure indicators was built in the level of development achievement of 100% drainage, 100% installation of drinking water PDAM in Banjar Kemuning Village and 88% in Gisik Cemandi Village, waste treatment program and 100% fire disaster mitigation, latrine construction 100% in Banjar Kemuning and 87% in Gisik Cemandi, repairs to uninhabitable houses and paving of 100% environmental roads.

B. Smart People towards Deep Level of Community Participation Implementation of the KOTAKU Program

Smart people is the ability that must be started and owned by coastal communities in their participation in any infrastructure development built by the government, one of which is through KOTAKU Program. The implementation of smart people can be in the form of community actions as labor, creative workers, having the knowledge provided in the implementation of the KOTAKU Program development. The details of the implementation of smart people are explained in table 3.

TABLE III. SMART PEOPLE TO THE PARTICIPATION RATE COMMUNITY IN PROGRAM IMPLEMENTATION KOTAKU

Coastal Village Name	Smart People Form to the Participation Level	Participation Level Model
Banjar Kemuning	<ol style="list-style-type: none"> 1. Donate energy 2. Providing snacks 3. Cooperating with the authorities in the implementation of KOTAKU 4. The community carries out itself with the supervision of village officials 	The 6th ladder partnership (or community power ladder) at this level, government divides responsibility with the community both in the arrangement and decision making of policy even though the full decision is still on the government side

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REFERENCES

- [1] R.E. Hall, "The Vision of A Smart City," Workshop 2nd International Life Extension Technology, Paris, France, 2000.
- [2] Suning and E.S. Soedjono, "Mapping The Environmental Sanitation Conditions Of Coastal Communities At Sedati Sub-District, East Java, Based On Geographic Information System," *International Journal of Academic Research*, vol. 4, no. 2, 2012.
- [3] Circular of the Ministry of Public Works and Public Housing of the Directorate General of Human Settlements Number: 40/SE/DC/2016 Concerning the Uncluttered City General Package Program, 2016.
- [4] Sedati District in Figures. Report Book, 2018.
- [5] N. Taewoo and T.A. Pardo, "Conceptualizing Smart City with Dimensions of Technology, People, and Institutions," *The Proceedings of the 12th Annual International Conference on Digital Government Research*, 2011.
- [6] I. Rosyida and F.T. Nasdian, "Society and Stakeholder Participation in Corporate Social Responsibility (CSR) Program and the Impact of Rural Community," *Sodality: Jurnal Transdisiplin Sosiologi, Komunikasi, dan Ekologi Manusia*, vol. 05, no. 01, 2011.
- [7] S.I.A. Dwiningrum, *Desentralization and Community Participation in Education*. Yogyakarta: Student Library, 2011.
- [8] Regulation of the Minister of Home Affairs Number 5 concerning Guidelines for Structuring Village and Village Community Institutions, 2007.
- [9] H.E.P. Irvan, "Community Participation in the Kota Tanpa Kumuh Program (KOTAKU) in Pesisir Village, Lima Puluh Sub-District, Pekanbaru City," *Journal of JOM Fisip*, vol. 5, no. 1, 2018.
- [10] D. Rohimat, R. Rahmawati and G.G. Seran, "Public Partisipation On Implementation Of KOTAKU/PNPM Program In Ciawi Municipality," *Jurnal GOVERNANSI*, vol. 3, no. 2, 2017.

Table 3. Cont.

Gisik Cemandi	<ol style="list-style-type: none"> 1. Donate energy 2. Providing snacks 3. Cooperating with the authorities in the implementation of KOTAKU 4. The community carries out it self with the supervision of village officials 	<p>The 5th ladder which means Referral (Placation). At this level the community has begun to have an influence on the government program, this is proven by the involvement of the community who are members of the committee (cooperative body) consisting of representatives from government agencies</p>
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Source: Results of analysis, 2018

Table 3 explain that the participation model based on Arnstein Typology scoring was developed using the smart people indicator in the form of donations of energy and the ability to provide snack foods included in ladder 6 for Banjar Kemuning Village, which means that the community is able to become a partner, and ladder 5 for Gisik Cemandi Village which means the community is still used as a reference.

IV. CONCLUSION

The seven indicators of the KOTAKU program were built with 100% drainage achievement, 100% PDAM water drinking installation in Banjar Kemuning Village and 88% in Gisik Cemandi Village, 100% fire treatment and 100% fire mitigation program, 100% latrine construction in Banjar Kemuning Village and 87% in Gisik Cemandi Villa, repairs to uninhabitable houses and paving of 100% environmental roads.

Scoring-based participation mdel Arnstein's Typology was developed using the smart people indicator in the form of the contribution of labor and the ability to provide snack foods included in ladder 6 for Banjar Kemuning Village, which means that the community is able to become a partner, and ladder 5 from Gisik Cemandi Village which means the community still used as a reference.