

# Stakeholder participation in conservation of yellow-crested cockatoo (*Cacatua sulphurea abbotti*) and its habitat in Masakambing Island, Indonesia

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**Abstract.** Ihsannudin, Antriandarti E. 2022. Stakeholder participation in conservation of yellow-crested cockatoo (*Cacatua sulphurea abbotti*) and its habitat in Masakambing Island, Indonesia. *Biodiversitas* 23: 3950-3959. The yellow-crested cockatoo (*Cacatua sulphurea abbotti*, Oberholser 1917) is found only on Masakambing Island, Indonesia. Its conservation efforts are now facing hardship due to massive exploitation of their habitat, and stakeholder contribution is essential. The study was conducted on Masakambing Island using a sequential exploratory mixed method design. The results show that based on a ladder of participation, central government, local government, and non-government organization (NGO) are at the second top of the ladder (co-learning), while the community group is at the lower level (cooperation) and the local community at the lowest (compliance ladder). Limited knowledge, resources, and group characteristics contribute to the failure to be at the top level. Meanwhile, the local government, NGO, and community groups achieve a large participation dimension. The central government reaches medium coverage, while the local community has the lowest coverage. Therefore, it is necessary to get support from all stakeholders and put the local community as the main actor using a pragmatic approach. The lack of consideration from the views of older people and community members may add to the complexity of defining financial exploitation, which can result in problems in detection, disclosure, and underreporting of incidences.

**Keywords:** Community, government, ladder, mixed-method, NGO

## INTRODUCTION

Deep concern towards endangered species, including yellow-crested cockatoo (*Cacatua sulphurea abbotti*, Oberholser 1917/ *C. s abbotti*), is not without reason. The existence of wild cockatoos have important ecological attribute and could provide protection, environmental balance, and landscapes (Bezzalla et al. 2019; Ricart and Rico-Amorós 2021).

Collar and Marsden (2014) explained that *C. s abbotti* is one of six sub-species in Indonesia as endemic species in Masakambing Island. It is listed under Appendix 1 International Union for Conservation of Nature (IUCN) as a critically endangered species, with only 22 populations left (Nandika et al. 2020). The decline of the cockatoo population is mostly due to hunting for trading and being pets, as well as decreasing habitat areas (Nandika and Agustina 2018; Ihsan et al. 2021).

The issue is more complicated since their habitats are located in privately owned areas. Only four countries have conducted such studies (Capano et al. 2019). Shumba et al. (2021) reported that easy access to private areas has a high vulnerability to deforestation due to infrastructure development and agricultural land conversion. What makes it worse is that the landowners may not necessarily see the importance of conservation and may have their motive-values and cultural reason regarding the place (Farmer et

al. 2015). Therefore, stakeholders should also go hand in hand in promoting dialogue to achieve conservation goals and avoid conflicts.

Masakambing Island is located in Sumenep District, East Java Province, Indonesia (7.79 km<sup>2</sup>) and is categorized as a small island (Indonesia Law 1/2014). Small islands are vulnerable to environmental changes due to their geographical structure, socio-economic, and climate (Scandurra et al. 2020). Therefore, from socio-economic and political perspectives, small islands face serious problems and potential conflicts related to the accessibility of water, land, and food resources (UNEP 2013; Bambrick 2018). For this reason, conservation needs good understanding and communication among the stakeholders through effective participation (Assan and Hunt 2018).

Studies on stakeholder participation must be comprehensively conducted since the high dynamics between those involved would likely inflict conflicts. These conflicts are caused by the relationship's background, form, and characteristics (Veríssimo and Campbell 2015). For example, conflict of interest between conservation and economic needs occurs because of the different nature of animals, habitats, and socio-economic reasons (Sawchuk et al. 2015; dos Muchangos et al. 2017). Furthermore, it should be considered that the stakeholders involved commonly come from various types, such as elements of

the government, NGOs, companies, and community groups (Katikiro et al. 2021).

A study on stakeholder participation in conservation is crucial. According to Baker-Médard et al. (2021), a study on participation in conservation programs is important to be conducted to gain environmental justice and the program's success. Currently, the participation study is reaching a post-participation consensus phase (best practice and learning from mistakes) (Reed 2008). Based on the focus, participation is divided into normative participation (focusing on achieving democracy and equal benefits) and pragmatic participation (focusing on quality improvement and resilience) (Reed et al. 2009). The characteristic of the participants will serve as a foundation to determine the implementation of the conservation activities.

The study of stakeholder participation could be the key to the success of conservation activities which will bring many benefits (Mbaru and Barnes 2017). The ladder of participation might be shaped by adjusting to the typology of the design of the ladder of participation with 8 levels in economic development study, 5 levels in environment study, and 7 in advocating study (Arnstein 1969; Kanji and Greenwood 2001; VeneKlasen and Miller 2002). It is reasonable that the ladder of participation design still leaves a wide-open window to be explored, especially in this study (Carpentier 2016).

A specific participation study must be carried out to comprehend the dimensions of participation concerning the types and the ways (Cohen and Uphoff 1980). Ipsen and Hall (2022) agreed the dimension of participation would help understand and direct the intervention and technology to increase participation. Therefore, this paper intends to investigate stakeholders' participation through an analysis of the ladder and the dimension of participation.

## MATERIALS AND METHODS

The study uses a sequential exploratory mixed-method design, analyzing qualitative data in the first phase and quantitative data in the second to explain the qualitative findings (Clark and Creswell 2015). Qualitative data are subsequently correlated to the ladder of participation, whereas quantitative data is to the participation dimension.

Primary data were collected through observation and interviews, both open-ended and close-ended. The observation aimed to obtain an overview of the conservation of stakeholder participation. Open-ended guided interviews were addressed to the central government (Balai Konservasi Sumberdaya Alam – Seksi Konservasi Wilayah IV Jawa Timur or Natural Resources Conservation Agency– Conservation Area Section IV of East Java), local government (Masakambing Island Village Government), NGOs (Konservasi Kakatua Indonesia-Indonesian Parrot Project or Indonesian Cockatoo Conservation–Indonesian Parrot Project), community group (Pecinta Alam Kawali or Student Adventure Club of Kawali) and local community (village elders, teachers, religious leaders, women leaders, youngsters, and local conservationists).

Meanwhile, the close-ended interviews involved representatives of each stakeholder with the question, as shown in Table 2. For the local community, in particular, questionnaires were delivered to the respondents selected using proportionate random out of 1,365 Masakambing population. Fifty-two percent of the population lives in Tanjung Village, and the rest in Ketapang. Based on this proportion, 160 respondents were selected, consisting of 83 people from Tanjung (52%) and 77 from Ketapang (48%), without considering that more than 10% of the population is considered adequate, as stated by Gay et al. (2012).

The data for the participation ladder were subsequently processed with the qualitative method—an interactive model with a bottom-up approach which afterward concluded the level of participation of each stakeholder. This concept was adapted from Kanji and Greenwood (2001), which suggested 5 levels of participation where activities describe the criteria of each level, as in Table 1.

Meanwhile, the data for the participation dimension were processed with the quantitative method and descriptive analysis. This concept is proposed by Cohen and Uphoff (1980). According to them, the participation dimension is basically about what is done (types) and how it is done (ways). See Table 2 for the elaboration of the case of participation dimension in the conservation of the yellow-crested cockatoo and its habitat in Masakambing. Finally, questionnaires were distributed to respondents from each stakeholder to fill the answer choices presented.

**Table 1.** The concept of ladder of participation

Ladder level	Level of participation ladder	Overview of the occurring conditions
5	Collective action	Activities are self-determined and mobilized without the intervention of outsiders.
4	Co-learning	Activities are conducted by sharing knowledge with outsiders, creating new understanding and working together to determine activity plans.
3	Cooperation	Working together with outsiders in setting priorities for activities; responsibility for directing the process lies with outsiders.
2	Consultation	Asking opinions; outsiders analyze and determine actions.
1	Compliance	Conducting activities with incentives; outsiders direct the plan and the process.

Source: Kanji and Greenwood (2001)

**Table 2.** Participation dimensions of stakeholders in the conservation of yellow-crested cockatoo and its habitat

Variable	Operational definitions	Sub variable	Indicators
What (The types of Participation)	Distinguishing the type of participation	Decision Making of conservation activities	Initiation Process Obedience
		Implementation of conservation activities	Resource delivering Management Coordination
		Acceptance of benefits of conservation activities	Money Social Pride
How (The ways of participation)	Considering how participation is implemented	The basis of conservation activities	Motivation Incentives Task value
		Level of conservation activities	Organizational activity Variety of activities through the organization, Direct participation Indirect Participation
		Duration of conservation activities	Past Future
		Perceived effects of conservation activities	Community development Community Interaction, Economic quality Ecosystem quality

All those dimensions (types and ways) determine the coverage of the participation that Likert scales (very low =1, low =2, medium = 3, high =4, and very high = 5) and then converted into interval data using Method of Successive Interval (MSI). Furthermore, data is analyzed by descriptive frequency analysis.

### Data analysis

In Masakambing, the conservation of the yellow-crested cockatoo and its habitat involves many stakeholders. The central government, local government, NGO, community group, and local people share their interest in this project. Natural Resources Conservation Agency has to carry out the state mandate to conserve the species. In contrast, the local government has authority over the use of the area on the island. NGO Indonesian Cockatoo Conservation - Indonesia Parrot Project and Student Adventure Club of Kawali aspire to save the birds. At the end of the line, there are villagers of the island owning the land where those birds roam and have intensive interaction with them.

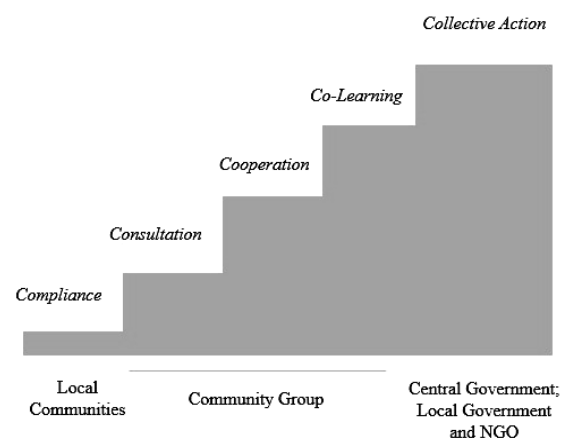
### Ladder of participation

The ladder of participation analysis is intended to determine the participation level of each stakeholder in a particular program based on their ideas, knowledge, decisions, and implementation. The ladder of participation categorization also serves to diagnose, evaluate and be a strategic tool in overcoming policy problems (Hurlbert and Gupta 2015). For example, each stakeholder's position on the ladder regarding the conservation in Masakambing Island (Figure 1).

The central government is at the level of co-learning, indicated by the fact that they share knowledge with outsiders, create new understanding, and work together to

set up their activity plans. Mainly, they share knowledge with NGOs that usually are more competent and experienced. The central government started its involvement in 2011, long after the NGOs. They cooperate with local government regarding land administration, interaction with local people, and human resource support. The position on the ladder of central government is implied in the statement below.

“At least once a year, we survey the population of yellow-crested cockatoo and always involve KKI-IPP, village authorities, PA Kawali, and other parties.” (Interview: Head of Natural Resources Conservation Agency).



**Figure 1.** Stakeholder ladder of participation in the conservation of yellow-crested cockatoo and its habitat in Masakambing Island, Indonesia. (Source: Processed Primary Data 2021)

They focus heavily on the animals and rarely touch the community. Initiation of EEA (Essential Ecosystem Area) establishment is one of their few programs intensively involving other government elements (forestry agency). As mandated by President Instruction 3/2010, EEA carries out a duty to protect life support systems and preserve biodiversity, ecosystems, and their sustainable utilization.

Government agencies are very influential in motivating other stakeholders to get involved in conservation activities. But unfortunately, their programs have not effectively reached local people. If the government ignores the existence of local communities when implementing conservation programs, it creates doubts and suspicions restricting the program's success (Cuya et al. 2021). Furthermore, Richard and Ratsirarson (2013) suggested that involvement of the local community should be directed toward sustainable development, basic equality, stronger trust, and lesser conflicts. In this context, the central government should try harder to increase local community engagement in conserving cockatoos through community empowerment. It is such a crucial measure since they are the owners of the land where the birds live.

Local government also occupies the 4th level of co-learning. Authorizing all kinds of permits, budgeting, and regulatory policies, they have the keys in their hand. Even so, they are not fully independent in applying for their programs. Their achievement is mostly encouraged by other stakeholders. Their limited knowledge and resources—similar to central government—make them rely on other resources.

“We don’t know to conserve yellow-crested cockatoos, but we always try to support and facilitate all activities for that cause.” (Interview: Head of Masakambing Village 2021)

One of the phenomenal benchmarks is the issuance of village regulation 1/2009 regarding the conservation of the yellow-crested cockatoo and its habitat. The NGO initiated and assisted in the drafting and eventually served as an effective law umbrella. A similar contribution of the local government has also been proven to provide control over conservation activities in Białowieża National Park, Poland (Niedziałkowski et al. 2012). Likewise, the local government positively responded to the designation of Masakambing Island as EEA and the introduction of ecotourism in yellow-crested cockatoo conservation. EEA means greater commitment towards the implementation of capacity building, as well as independence and welfare of the surrounding community according to the Decree of Minister of Forestry No. 456/Menhut-II/2004. Full involvement of village authority is essential since they are the closest institution to the local people and work with them daily. Therefore, they need to be encouraged to start their project on conservation and be convinced that it would bring economic benefit in the long run. At the very least, it would provide more job opportunities for the villagers (Bassi et al. 2017).

NGO participation is also at the co-learning level. While it is true that their activities may be conducted without knowledge sharing, they cannot operate without collaboration with other stakeholders, mainly local people

and village authorities. NGO earns a reputation as the pioneer of conservation in Masakambing, is highly competent, and has access to well-established funding. Still, they cannot mobilize their program on their own. Take the protection of yellow-crested cockatoos nests, for example. Seven of nine nests are found on people's farms and dwellings, while the rest are in state-owned mangrove forests.

The same thing happens with the ecotourism project that the NGO initiated. They need local people's participation in providing facilities, accommodations, and meals. They cannot leave out the local government, either. Besides from the required permit for their activities, the NGO needs the local government to issue relevant regulations as legal standing for the conservation. Village Regulation No 1/1999 was then enacted as the result of this dialogue.

“In any way, conservation efforts for yellow-crested cockatoo in Masakambing are inseparable from the local community as the owner of habitat areas and local government in charge of authority and policies.” (Interview: Director of KKI-IPP 2021).

The co-learning level for the NGO is a logical consequence of the fact that the birds survive in non-conservation areas with private ownership status. Therefore acceptance and willingness of the local community to get involved are the main keys. Even in the state-owned area, the local community and local government involvement are necessary.

A community group represented by PA Kawali occupies the 3rd level of the ladder of participation or cooperation. They work together with outsiders in setting up priorities and responsibilities. Directing roles lie within the outsider's hand, especially in central government and NGOs. A community group is a precious asset in the collaboration due to their proximity to the location and emotional bond. Many PA Kawali members are native of Masakambing or related to the people living there. Since they are a student club from the local high school, it is understandable that they cannot take part optimally. Formal education is still their primary concern.

“As an educational institution, we focus more on education and awareness raising. However, we always participate and collaborate with other parties in yellow-crested cockatoo conservation in Masakambing.” (Interview: Instructor of PA Kawali 2021).

Although this particular stakeholder is not heavily involved in technical aspects of the conservation, the awareness, education, and engagement they bring about hold valuable weight and contribute positively to other stakeholders. The younger generation will leave a positive impression and useful values for conservation. In addition, students who were once engaged in conservation activities instead of only theoretical classes, would eventually become leaders and environmental innovators (Rarasandy et al. 2020).

The local community is at the lowest level of the ladder of compliance. The result is derived from the condition that they do not have a plan and are motivated only by incentives. Outsiders direct every step of their program.

The villagers asked for the US \$ 72.96 when handing over the bird to the NGO for rehabilitation. Likewise, when maintaining a nesting tree, they ask for money in return. The village regulation 1/2009 had to include punishment of US \$ 364.79 in amercement for cutting down trees with nests.

"I don't catch the cockatoos, for I am afraid to be jailed. I don't mind the birds and don't care if they are not here. They should not only care for the birds; they should also care for us who own the trees with the nests and for our fruits eaten away by those birds." (Interview: local inhabitant 2021).

The local community is still at the lowest level of awareness. They merely comply with the regulations and prohibition to hunt and trade the cockatoos. They neither understand nor see the social and economic benefits. Conservation knowledge, even the traditional ones, are not instilled in their mind. It is such a loss since Traditional Ecological Knowledge (TEK) at least could lead to appropriate conservation practice (Xiang 2016).

However, their ignorance is understandable considering that the majority of them (20.4%) are low educated and categorized as poor 86.8% (BPS 2018). They do not have local TEK either, as most of them were not born on the island, making them unconnected with the cultural history of the yellow-crested cockatoos. Unfortunately, the habitat's sustainability would benefit them ecologically and economically. For this reason, the local community should have been at a higher level on the ladder. They should have at least gotten into collective action or co-learning level. This follows Alexandridis et al. (2018), stating that cognitive response, affection, attitude, belief, behavior, and livelihood options would influence the participation of the local community in conservation.

As we can see, no stakeholders are reaching the highest level (collective action). Limited human resources (knowledge and expertise) and funding force them to collaborate with other parties. The local government must also be involved in taking care of the legal aspects, such as permits and facilitation. Likewise, the villagers cannot be abandoned. They have the most vital role in the collaboration but still have a long way to get to the top of the ladder. In short, it is difficult for the stakeholders to reach the highest level characterized by self-determination and the capability to run activities without external intervention. Indeed, this composition would possibly change depending on the characteristics of stakeholders and types of activities (Arnstein 1969).

The local community has the biggest chance to reach the top of the ladder. When it happened, it would mean they had gained the awareness and capability to carry out the conservation activities independently or what is called "community-based conservation." Therefore, in addition to the fact that the habitat of yellow-crested cockatoos is in their areas, the effects of conservation would be directly perceived. According to Reed (2008), such circumstance would happen to provide that (i) support were available for the empowerment activities; (ii) other stakeholders continued assisting; (iii) some goals were stated clearly and agreed upon by all stakeholders; (iv) facilitators were

available (v) traditional, and scientific knowledge were integrated and (vi) the institutions were strong. For this reason, studies on how to get the community to the point where they can run community-based conservation are necessary.

### Participation dimensions

As mentioned earlier, the level of participation dimension should be assessed by the type of activities (or "what") are done and the way (or "how") it is done. Therefore, the scope is analyzed by quantitative method and will be categorized into very high, high, medium, low, and very low levels.

Regarding conservation activities, they assessed using two aspects; decision and implementation. The decision process consists of exploring ideas, decision-making, and consistency in making decisions. In contrast, implementation comprises the contribution of resources, management, and coordination. Furthermore, the assessment is based on the benefits obtained by each stakeholder from the activities, i.e., material, social, or personal benefits. Lastly, the objective of the assessment is to evaluate the conservation activities technically, managerially, and financially. The second dimension of participation is assessed by looking at the activities' motives, media, duration, and impacts.

### Central government

The research shows that central government participation has medium coverage with a score of 78 in total. It is the accumulation of the score of type of conservation (36, medium) and way of conducting the activities (42, medium). Almost all aspects under these two categories are assessed as medium level. It is important to notice that bureaucratic processes dominate their participation.

In terms of the implementation, the moderate achievement might be due to limited personnel and budget. The size of the area, scope of work, and distance to the location are the main reasons behind this low achievement. So far, the central government can only visit the field once a year just to take inventory of the bird population. Coordination with other stakeholders has been set but not getting as far as the point of technical measures. Naturally, the benefit aspect of their program is not too strong either. Both the government and villagers do not get any tangible material benefits. Their program is exclusively conducted for their own sake and has never touched the technical and financial aspects of other stakeholders.

The central government is principally carrying a constitutional mandate to conserve the habitat of endangered species according to Law 5/1990 concerning Conservation of Biodiversity Resources and Its Ecosystem. In this matter, their medium coverage is caused by their solid structure regarding the programs. In the field, they have held socialization programs, inventory of species population, and habitat protection. They have also invited other stakeholders to get involved. For example, they collaborated with Forestry Agency to establish a Forest Farmer Group to support conservation attempts.

However, the duration of their activities can only be categorized as a medium since they just started in 2011 when the population of yellow-crested cockatoos had been drastically declining to only 13-15 left (Nandika et al. 2020). When this setback got wide publication, the awareness started to increase, and some short, medium, and long-term programs were beginning to be established. However, the impacts of the programs could only still be classified as medium, with the most significant outcome being the improvement of the ecosystem quality. It is the consequence of their focus only on the existence of the animals and their habitat. In the future, the central government's participation dimension would increase intensively due to the issuance of the Decree of Director General of PHKA No. 200 / IV / KKH / 2015 concerning the determination of the yellow-crested cockatoo as a priority animal for increasing population.

Strictly following the regulation, the central government, as part of the bureaucratic system, often imposes restrictions. It is shown by, for example, their conservation program, which focuses only on the animals and the habitat. In contrast, the program in Masakambing should also pay attention to the community that owns the areas. Moreover, the fact that they are far from the sites makes it more urgent to involve local people who should be assisted and empowered through an intensive social approach. Learning from conservation programs in Romania, North America, Central Asia, and Africa, this kind of situation can be overcome by inviting other stakeholders to collaborate by emphasizing socio-economic aspects and prioritizing the livelihood of the local community (Stringer and Paavola 2013; Bixler et al. 2015). In that case, people's occupation was enhanced through farming and fishery—their main professions—.

### **Local government**

Better than central government, local government has a high level of participation dimension both in the type and the way of conservation. Their total score is 101 (42 on the type of participation—medium— and 59 on a way of participation-high). The main factor is that they have regional authority and intensive interaction with the local community.

The local government has medium coverage in the decision dimension related to ideas, decision-making processes, and implementation. The village regulation mentioned previously is a phenomenal starting point for conserving the yellow cockatoos. Their other important decisions are village budget policies to support conservation activities, the initiation of an ecotourism program, and EEA establishment.

Regulatory policies and facilitation appear to be the dominant aspects controlled by them. They gain great benefits from the conservation activities, mainly in a social and private sense. Their village is gaining popularity and is visited by many researchers and tourists, stimulating infrastructure development. Unfortunately, the local government's participation is still quite low in technical, management, and financial evaluations. Besides lacking technical expertise, the central government mostly

administers its management and funding. It is such a setback since they should have played a role as initiators upon stakeholder synergy with the authority they possess.

It is worth mentioning that their participation type has achieved very high coverage. They might be motivated by their sense of duty as it is their designated task to improve the community's well-being and turn the conservation activities into a development motor. On the other hand, they are driven by the benefits they will get from the conservation. It seems that the local government needs to consider aligning the budget at the village level based on conservation.

Their types of activities are considered high in coverage since their organization makes the participation more orderly structured, and solidly institutionalized. One of their direct activities is manifested in productive projects such as producing t-shirts with yellow-crested cockatoo print, while the example of their indirect activities is facilitating the involvement of other stakeholders.

Starting taking part in 2018, their duration of participation is very high. It looks like they want bigger participation in the future, especially after realizing that the birds get the attention of many stakeholders. They also expect that the conservation activities would stimulate other infrastructure development and empowerment programs in addition to improving the ecosystem quality. The latter is trying to be accomplished by a tree planting program and mangrove conservation. The EEA would certainly help achieve this target.

The high level of local government's participation dimension should be maintained. They have the authority and thus opportunity to issue some policies which will directly affect local people. Without the participation and commitment of local government, the community would usually lose their interest, too (Chirenje et al. 2013). The local government should serve as the activities manager so that each program would run well (Arifa 2019). They also need to make people aware that conservation would bring benefits, particularly economic ones.

### **Non-government organization (NGO)**

The participation dimension of NGOs is quite high, too (91). Their types and ways of conducting their activities are also high in coverage (45 and 46, respectively).

Concerning the participation types, all the NGO activities are high in score, starting from the initiation of ideas, the decision-making process, to the implementation. In reality, almost all ideas of the conservation programs were initiated by the NGO, making them a pioneer in this project. They have the required competency and funding resources. Their activities are effectively organized, covering program planning, protection, preservation and utilization implementation. Their empowerment projects include training on mangrove fruit processing, coconut soap production, and ecotourism initiative. However, in their opinion, all of them are not yet satisfying, even when collaboration with other stakeholders has been set.

The NGO participation dimension in benefit gain is at medium coverage as they have no interest in obtaining material, social, or personal benefits. Their main focus is

preserving the yellow-crested cockatoo species. On the contrary, their dimension in evaluation shows high coverage, especially in the technical aspect. Concerning financial evaluation, they do not have the authority to evaluate other stakeholders in the project. Therefore, their financial evaluation is conducted internally for the sake of accountability to the donor.

Regarding how they participate, NGOs have strong coverage on account of their intense motivation to carry out technical conservation upon the species. In addition, their motivation might root in their sense of responsibility to their donor, who has provided the funding as proposed. Although they are aware of the importance of focusing on local people, their coverage in giving incentives to them is at a medium level. On the other hand, they have high coverage in participation forms due to their strong network with global conservation institutions. They also have a large database and various conservation programs. Their duration is very high, too, as they started to get involved long before other stakeholders. They focus more on reinforcing community involvement, ecotourism, and EEA. Furthermore, they rehabilitate mangroves areas, plant special trees for yellow-crested cockatoos, and build “Beka Park” as a conservation site. Even so, those projects have not significantly improved the quality of the ecosystem.

It seems that the NGO has the most variety of ways and more creative ones, too. But, again, it has something to do with their competency and satisfactory resources. According to Aldashev and Vallino (2019), the involvement of NGOs may provide efficiency either in conservation activities or in collaboration with local communities. Hence, their participation should be encouraged and more intensive, particularly concerning community empowerment. Reflecting on the finding of Slavíková et al. (2017), the success of NGO participation in a conservation program in Czech was contributed by several strategies such as (i) buying a plot of the area that could be managed as a conservation area; (ii) raising awareness among local community concerning the value of sustainable nature; (iii) increasing conservation funding; (iv) cooperating with other stakeholders; (v) hiring local people and inviting new stakeholders; (vi) investing in the ecotourism; (vii) promoting attractive panorama around the area.

### Community group

Student Adventure Club of Kawali has high coverage (93) in the participation dimension, implied by both types and ways of conservation activities (with a score of 44 and 49, respectively). As a partner for other stakeholders such as the central government and NGO, this community group has high participation coverage in decision-making. They contribute their ideas, join the decision-making process and keep their commitment. Likewise, their coverage of the implementation is high. Although they lack funding, they have many personnel and precious asset. Their geographical and social proximity to the site makes them become a connector between local people and central government/NGO. It helps the coordination and implementation of the program among all stakeholders.

Their coverage is also high in gaining benefits. The highest benefit they perceive is pride since most of the members (students of Masalembu High School) are mostly from Masakambing Island or related to the villagers living there. However, the participation dimension of this group on evaluation is quite low. This group does not have any authority to evaluate other stakeholders. They can only provide personnel to support the conservation program implementation either on their own or by collaborating with other stakeholders.

This stakeholder is strongly motivated to join the conservation program as they see it as a learning tool. Their organizational involvement is also comprehensive. Their awareness, expertise, and emotional attachment to the place are big assets for conservation. Consequently, central government and NGOs always ask for their support, especially related to education, training, and extension.

Starting their involvement at the same time when the NGO came to the island, this stakeholder is categorized as very high in the duration of participation. Their real contribution is manifested in producing various souvenirs with a yellow-crested cockatoo theme. They also take part in planting trees for cockatoos. Therefore, the participation coverage of this community group in enhancing local people regarding conservation is quite high. They have raised local people's awareness of the importance of sustainability of the yellow-crested cockatoo and its habitat. In addition, their planting of trees for the advantage of the birds has contributed to improving the quality of the Masakambing ecosystem. Their endeavor is similar to what has been done by Romanian students involved in national park conservation. They take part in inventorying biodiversity, campaigning for awareness and understanding of the urgency of conservation, as well as developing conservation education for the public (Stringer and Paavola 2013).

Although their activities are not that many, the Kawali club has contributed to increasing the awareness, knowledge, and skill of their peers in Masalembu High School regarding the conservation of yellow-crested cockatoos. This result is linear with Neiman and Ades (2014), who stated that significant change in motivation, attitude and behavior towards conservation would occur when students join, learn, practice and get involved in conservation activities. Furthermore, Ardoin et al. (2020) explained all those attitudes would be developed when students participate and collaborate with conservation scientists, managers, and organizations, especially those focusing on local problems and dimensions. Therefore, considering the precious awareness and educational value that can be obtained from participating in such kind of community group, it is recommended that other stakeholders should always involve in them.

### Local community

The participation (the types and the ways) dimension of the local community was analyzed using descriptive frequency analysis upon 160 respondents (Table 3). The types of participation are assessed by 4 questions consist of: (i) decision making of conservation activities (initiation,

process and obedience); (ii) implementation of conservation activities (resource delivering, management and coordination); (iii) acceptance of benefits of conservation activities (money, social and pride); (iv) evaluation of conservation activities (technical, managerial and financial). Meanwhile, the ways of participation are assessed by 4 questions consist of: (i) the basis of conservation activities (motivation, incentives, task value); (ii) the level of conservation activities (organizational activity, variety of activities through the organization, direct and indirect participation); (iii) duration (past and future); (iv) perceived effects (community development, community interaction, economic quality and ecosystem quality).

The answer of each question is scaled by Likert with criteria very low = 1; low =2; medium =3; high = 4 and very high = 5. The total value of The types of participation and the ways of participation are then categorized into interval values based on the number of 160 respondents. Since the data obtained are ordinal data, it has to be converted into interval data using the successive interval method (Method of Successive). The result suggests that the majority of the local community has a very low participation dimension regarding the types and the ways of participation (41.9%).

Based on the type of participation dimension, the local community shows a very low coverage, especially regarding ideas and decision-making processes (46.3%). However, they are willing to conform to the decision and report that they do not violate it.

In the implementation, their dimension is quite low, too (50%). They do not contribute to the conservation's resources, management and coordination. In their perception, the program does not them yield any economic benefits, even when various development programs are coming to their place following the conservation. Their participation in evaluation is also very low (56.3%) because they cannot evaluate both in technical, managerial and financial aspects of conservation activities.

Since their motivation is weak, it is understandable that their ways of participation are very low in coverage (58.1%). Their participation is not outstanding both at a personal or organizational level. They have not established any organizations concerning the preservation of the birds. Naturally, their duration of participation is low, following their poor understanding and awareness.

Most of them do not favor the activities that they think are more concerned with the birds than people. They do not see any effects from the efforts that advance the community, increase interaction, or enhance ecosystem quality (41.9%). The programs are assumed as top-down instruction, excluding the local community. For this reason, conservation activities should be more inclusive, making people aware that the programs would also benefit them. The community will get a positive impact in terms of society, economy, and ecology. In addition, conservation efforts will fail without community participation because the cockatoos live (nest and feed) on people's land instead of in state-owned conservation areas (such as national parks, nature reserves, or wildlife reserves).

The local community basically has the chance to be a better stakeholder because they: a) are obedient to regulation; b) usually share the awareness with their family members; c) allow the birds to nest in their trees; and d) are open to other stakeholders and accept the conservation activities. Kenny and Connors (2017) agreed that the best community development, including conservation, should be community-based.

Ignorance of the value of the yellow-crested cockatoos is the main reason behind this low participation dimension. As mentioned previously, they are not strongly motivated because they do not see economic benefits. Actually, as stated by Emerton (2001), conservation activities are most likely to bring benefits, both direct (such as ecotourism, research) and indirect (ecosystem services). The implication is that encouragement of the local community's involvement would be better grounded on pragmatic participation (Reed 2008). Conservation activities should be led toward economically beneficial empowerment activities. It is perfectly reasonable since, as the habitat owner, they are the most affected by the existence of the birds. The activities, therefore, can be designed in such a way to create income from the conservation directly and indirectly (Nilsson et al. 2016). Some direct alternatives are agriculture, fishery, and ecotourism, while the indirect ones can be agriculture product processing and creative industries (souvenir production, for instance). For this goal, a study on the best model for community empowerment must be carried out. Herewith, collaboration among shareholders with their specific competence is absolutely required (Mbaru and Barnes 2017; Brescancin et al. 2018). Their collaboration must be organized effectively so that their roles are not overlapped.

**Table 3.** Participation dimension of local community in conservation activities

Interval value	MSI value	Category	Total	Percentage (%)
≤ 43.2	≤ 39	Very Low	67	41.9
43.2-62.5	39.1-54.1	Low	50	31.3
62.6-81.8	54.2-69.1	Medium	31	19.4
81.9-101.1	69.2-84.2	High	9	5.6
≥ 101.2	≥ 84.3	Very High	3	1.9
Total			160	100



The highest achievement in the ladder of participation only reaches the second top (co-learning level). The central government, local government, and NGOs are at this level. Meanwhile, the community group occupies the lower level (cooperation), and the local community is at the lowest (compliance). The failure to get to the highest participation ladder is rooted in limited knowledge, resources, and legal status of the land (private ownership).

In terms of the participation dimension, the central government has medium coverage; local government, NGOs, and community groups have high coverage, while the local community has very low coverage. The participation of the local community would be improved when conservation activities bring pragmatic or economic impacts. This signals all stakeholders to design community empowerment-based-conservation activities with economic benefit. Thus, a solid collaboration among stakeholders is absolutely necessary. Participation of the local community as the main player should also be encouraged. The local government can act as the coordinator of this community-based conservation.

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