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Strategy of Community Pro-Environmental Behavior for Sustainable Development

Hanna Cintya Maulidiana[1], Wike[2*], Sumi Lestari[3], Dini Atikawati[4]

[1] Masters in Environmental Resource Management and Development, Brawijaya University Malang, Indonesia.
[2] Faculty of Administrative Sciences, Brawijaya University Malang, Indonesia.
[3] Faculty of Psychology, Brawijaya University Malang, Malang, Indonesia
[4] Postgraduare School, Brawijaya University Malang, Indonesia.

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Corresponding Author:
Wike
wike_fia@ub.ac.id

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Abstract: This research aims to develop pro-environmental behavior strategies of community in sustainable development. This research is qualitative research, which emphasized on understanding certain phenomena in depth, explained descriptively in order to explain the description of people's pro-environmental behavior according to conditions in the field objectively and comprehensively. The research was conducted in October 2023, located in Turigede Village, Kepohbaru District, Bojonegoro Regency. The results of this research indicate that Turigede Village Community has carried out several aspects of pro-environmental behavior in the form of saving electrical energy, mobility and transportation, collecting rubbish that could be resold, as well as being enthusiastic about participating in community service. Government and the environmental conditions of the village still have many wild bushes and bamboo forests. Meanwhile, the supporting factors for community pro-environmental behavior are cognitive factors in the form of community knowledge. It explains how to care for the environment and situational factors consisting of villages having various institutions whose functions can be optimized.

Keywords: Environmental; Strategy community; Sustainable development

Introduction

Sustainable development is a global program that aims to achieve a balance between environmental, economic, and social sustainability caused by current environmental issues, such as climate change, depletion of the ozone layer, water scarcity, loss of vegetation, inequality, insecurity, hunger, and so on (Mensah, 2019). Sustainable development in Indonesia is regulated in Presidential Regulation Number 59 of 2017, which contains the implementation of achieving sustainable development goals in Indonesia which consists of 17 goals and then localized to the village level through the Minister of Village Regulation *(Permendesa)*, Development of Disadvantaged Areas, and Transmigration Number 13 of 2020 concerning Priorities for the Use of Village Funds in 2021, which is then updated once a year until the last published is the Regulation of the Minister of Villages *(Permendesa)*, Development of Disadvantaged Regions and Transmigration number 7 of 2023 concerning Priorities for the Use of Village Funds in 2024 to finance activities, which supports the achievement of 18 Village SDGs goals.

Village SDGs are an integrated effort to create villages without poverty and hunger, economic growth that is evenly distributed, villages caring about health, environment, and education, women-friendly villages, networked villages, as well as culturally responsive villages that involve the community in village development for current prosperity without sacrificing meeting the needs of future village generations while still concerning to environmental sustainability (Alisjahbana et al., 2018). In order to realize sustainable development goals in villages, it is not only the role of the Village Government needed, but also the

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involvement of the community in developing village potential (Artisa, 2023).

Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management states that the community has the same and broadest rights and opportunities to play an active role in environmental protection and management in the form of monitoring, opinions, and reporting. However, in fact, human behavior is the cause of environmental problems, such as air pollution, drought, and environmental pollution (Rifayanti et al., 2019). Environmental problems are also caused by unsustainable production patterns and consumer behavior of modern humans to meet all aspects of needs (Nguyen et al., 2023). There needs to be significant behavioral changes at all levels of society to meet the goals of sustainable development and create a healthy environment for human life (Gill et al., 2022)

The behavior of maintaining environmental sustainability is known as pro-environmental behavior, which is a conscious effort to minimize the negative impact of one's actions on nature. This includes practices, conserving resources or energy, using non-toxic substances in production or agricultural activities, and reducing waste production (Kollmuss et al., 2002). Pro-environmental behavior is able to encourage environmental optimization and sustainable development (Si et al., 2022). In addition, individuals with high pro-environmental behavior will tend to try to minimize negative impacts on the environment by improving and maintaining environmental quality (Palupi et al., 2018).

In Indonesia, people's pro-environmental behavior is still relatively low. This can be seen from the waste problem, which is still the main issue of environmental pollution. Numerous Indonesian people still throw rubbish carelessly (Arlinkasari, 2018). Mounting piles of rubbish have caused Indonesia to experience ecosystem (Mulati et al., 2022). A survey conducted by Kompas Research and Development in October 2022 among respondents aged 17-35 years found that a pro-environment lifestyle has not been fully formed in their daily habits, especially in terms of using public transportation and purchasing new clothes. Research conducted by Salsabila et al. (2021) states that students in the campus area still rarely engage in pro-environmental behavior.

People's low level of pro-environmental behavior is influenced by various factors, both related to the individual's own factors or internal factors and factors outside the individual or external factors. The internal factors include knowledge about how important it is to protect the environment around them (Mandra et al., 2021), environmental awareness (Imandha, 2023), attachment to places (Rezkika et al., 2019) awareness of consequences (Arlinkasari, 2018) and emotional intelligence (Haigil, 2023). Then, external factors are environmental policies implemented by the government (Kuslantasi et al., 2022), the existing legal system (Tang et al., 2023)the condition of infrastructure and environmental management (Si et al., 2022), the availability of infrastructure (Mu, 2022) and the influence of peers (Ardhiyansyah et al., 2022). These factors can become obstacles in realizing sustainable development in villages because it is feared that community behavior that is not pro-environment will reduce the carrying capacity of the environment and cause long-term detrimental impacts and threaten economic, social, and environmental sustainability, which will cause development problems in the future (Rahman et al., 2021).

Research on pro-environmental behavior focuses more on the factors that influence it. Even in Bojonegoro itself, there has been no research related to pro-environmental behavior. Meanwhile, research on sustainable development has been widely carried out, such as implementing sustainable development policies (Tay et al., 2019) and village SDGs in villages (Rizky & Mashur, 2022), achieving village SDGs in village planning, budgeting documents (Sugandi et al., 2023) as well as sustainable development strategies (Tofani et al., 2022). However, there is no research on sustainable development strategies in villages through community pro-environmental behavior. Therefore, this research provides new information by recognizing the pro-environmental behavior of village communities and pro-environmental behavior strategies to realize sustainable development goals.

Method

This research used a qualitative approach with descriptive explanation. Thus, the findings obtained can be explained and described according to conditions in the field in a comprehensive and objective manner (Sugiyono, 2017). Focus study have important role in directing study in accordance with objective study. This research was carried out in Turigede Village, Kepohbaru District, Bojonegoro Regency in October 2023, as initial observations showed that in the community's pro-environmental behavior in this village was low, supported by the results of the village's SDGs data collection score. This research used two data sources, namely primary data and data secondary. Primary data were through observation or interviews with informants and respondents. Meanwhile, the use of secondary data was obtained from literature reviews, previous research, and testing the validity of data for research with qualitative methods, covering credibility (validity internal), transferability (external validity),

dependability (reliability), and confirmability (objectivity). After data analysis and calculations have been carried out, the next step was to develop a pro-environmental behavior strategy using SWOT and grand strategy analysis.

Results and Discussion

The community's pro-environmental behavior strategies were analyzed through research results obtained from interviews with informants. Based on the results of the analysis, it is known that the strengths are; the people has saved electrical energy; their mobility and transportation behavior is good; they collected waste that could be resold; enthusiastic about participating in community service; recognizing how to protect the environment; they exploit water for other purposes, such as agriculture; as well as throwing rubbish carelessly and burn it. People do not recycle waste. Their thrifty behavior is still poor regarding the use of single-use plastics in buying and selling activities and choosing products that can be refilled. They still use non-organic fertilizers and disinfectants, lack of community environmental awareness, no affective feelings or sense of ownership towards the environment, and do not care about what other people have done to the environment.

Identification of external factors of community pro-environmental Behavior based on opportunities include having an active village institution and health cadres. Moreover, village transfer funds can be used to finance supporting infrastructure or activity programs related to environmental sustainability. Villages can apply for infrastructure assistance, training and counseling, to related agencies. The village government can issue regulations related to making or issuing regulations regarding preventing environmental damage. There is a *Rosok Collector* Business, *sedekah bumi* or clean village activities, that must be carried out every year. There is also a mutual cooperation service month activity program, which is must be implemented by the village.

Threats in this situation include lack of behavioral supporting infrastructure, counseling and training, lack of information and outreach regarding environmental protection to the community, no regulations and legal system regarding actions that can damage the environment, no disasters have ever occurred due to human activities that damage the environment. When the farmers get bad yield results, it assumes that it is due to lack of maintenance, not because of the quality of the soil. There are too many chemicals and imbalance in the ecosystem, lots of privately owned bushes and bamboo forests, and the condition of the village infrastructure is still not evenly developed.

Based on the research results, the infrastructure development in Turigede Village is still uneven, especially that there are still many damaged roads construction infrastructure, such as drainage and earth retaining walls is also uneven, as well as farming roads. So that the village income and expenditure budger/*APBD* is more focused on building roads, drainage, retaining walls, and farming roads.

IFAS and EFAS Matrix Analysis

Based on Table 1, the weight is determined using the balanced weight value method, where the weight value of each item is similar (Riyanto *et al.*, 2021). Meanwhile, the rating value is based on the results and the information obtained from the key informant, namely the Head of Turigede Village.

Table 1. IFAS Matrix Results of Pro-Environmental Community Behavior

No.	Factor	Weight	Ratings	Score
Strength				
1.	People have saved electrical energy	0.08	4	0.333
2.	People's mobility and transportation behavior is good	0.08	4	0.333
3.	People collect rubbish that can be resold	0.08	4	0.333
4.	People are enthusiastic about participating in community service	0.08	4	0.333
5.	People realize how to protect the environment	0.08	4	0.333
	Amount	0.38		1.54
Weakness				
1.	People exploit water for agricultural purposes	0.08	4	0.31
2.	People throw rubbish carelessly and burn it	0.08	4	0.31
3.	People do not recycle waste	0.08	2	0.15
4.	People's frugal behavior is still poor regarding the use of single-use plastics in buying and selling activities and choosing products that can be refilled	0.08	2	0.15
5.	People still use non-organic fertilizers and disinfectants	0.08	4	0.31
6.	Lack of public environmental awareness	0.08	4	0.31
7.	There are no affective feelings towards the environment	0.08	4	0.31
8.	Don't care about what other people do to the environment	0.08	4	0.31
	Amount	0.62		2.23
	Total	1.00		3.83

Table 2. EFAS Matrix Results for Pro-Environmental Community Behavior

No	Factor	Weight	Ratings	Score
Opportunity				
1.	The village has active institutions consisting of the Village Consultative Body *(BPD)*, Neighborhood Units *(RT)*, Community Units (*RW*), Family Welfare Empowerment *(PKK)*, Youth Organization *(Karang Taruna)*, Farmer's Group, Village-Owned Enterprises *(BUMDesa)*, and the Village-Owned Enterprises *(HIPPA)*	0.07	4	0.28
2.	The village has health cadres	0.07	4	0.28
3.	Carry out village development planning related to environmental sustainability efforts using village transfer funds	0.07	4	0.28
4.	Villages can apply for assistance with infrastructure, training, and counseling to the relevant agencies	0.07	4	0.28
5.	The Village Government can make or issue regulations regarding preventing environmental damage	0.07	4	0.28
6.	There is a rubbish collecting business	0.07	3	0.21
7.	Use moments of *Sedekah Bumi* or village clean activities to increase village cleanliness and love for the environment	0.07	3	0.21
8.	There is a Mutual Cooperation Service Month activity program that must be implemented by the village	0.07	3	0.21
	Amount	0.65		2.03
Threats				
1.	Lack of infrastructure to support environmental sustainability	0.07	4	0.28
2.	Lack of outreach and training programs	0.07	4	0.28
3.	Lack of information and outreach regarding environmental protection	0.07	3	0.21
4.	There are no regulations and legal systems regarding actions that can damage the environment	0.07	4	0.28
5.	There has never been a disaster due to human activities that can harm the environment	0.07	3	0.21
6.	There are many private-owned bushes and bamboo forests.	0.07	3	0.21
7.	The village infrastructure condition is still unevenly developed	0.07	3	0.21
	Amount	0.49		1.68
	Total	1.00		3.71

Based on table 2, the weight is determined using the balanced weight value method, where the weight value of each item is similar (Riyanto et al., 2021). Meanwhile, the rating value is based on the results and information obtained from the key informant, namely the Head of Turigede Village.

The results of calculating internal and external factors produce a strength value of 1.54, weakness of 2.23, opportunity of 2.033, and threat of 1.68. Then, in order to draw a SWOT diagram by knowing the X and Y axis. The X axis formula is obtained from the strength-threat values, while the Y axis is obtained from the opportunity-threat values (Riyanto et al., 2021). The calculations are as follows:

Table 3. Determination of Quadrants/Strategy

Factor	Score	Coordinate	Position	Quadrant
Strength (S)	1.54	SW = -0.63	(-)	III
Weakness (W)	2.15			
Chance (O)	2.03	0-T = 0.35	(+)	
Threat (T)	1.68			

The results obtained based on the grand strategy matrix are in the position of quadrant III with coordinates (-0.63 ; 0.35) because it has the value (X = negative, Y = positive) . In this quadrant, it shows a weak situation for Turigede Village but has great opportunities. The strategy used is stability or turn around or changing tactics where the pro-environmental behavior of the people of Turigede Village has the opportunity to become better by covering up their weaknesses. More details can be seen in Figure 1.

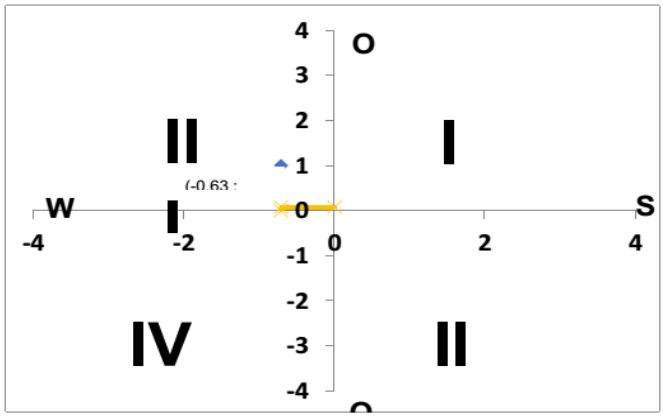

Figure 1. Grand strategy matrix

Furthermore, the results of the SWOT analysis and alternative strategies are considered in preparing a pro-environmental behavior plan for the Turigede Village community and presented in Table 4.

Table 4. Results of SWOT Matrix Analysis of Alternative Community Pro-Environmental Behavior Strategies

Internal	Strength /S	Weakness /W
	1. People have saved electrical energy 2. People's mobility and transportation behavior is good 3. People collect rubbish that can be resold 4. The community is enthusiastic about participating in community service 5. People know how to protect the environment	1. People exploit water for agricultural purposes 2. People throw rubbish carelessly and burn it 3. People do not recycle waste 4. People's frugal behavior is still poor regarding the use of single-use plastics in buying and selling activities and choosing products that can be refilled 5. People still use non-organic fertilizers and disinfectants 6. Lack of public environmental awareness 7. There are no affective feelings towards the environment 8. Don't care about what other people do to the environment
External		
Opportunity /O	SO Strategy	WO Strategy
1. The village has active institutions consisting of *BPD, RT, RW, PKK, Karang Taruna, Farmer's Group, BUMDesa* and *HIPPA* 2. The village has health cadres 3. Carry out village development planning related to environmental sustainability efforts using village transfer funds 4. Villages can apply for assistance with infrastructure, training, and counseling to the relevant agencies 5. The village government can make or issue regulations regarding preventing environmental damage 6. There is a Pengepul Rosok business in the village 7. Using Sedekah Bumi activities to increase village cleanliness and love for the environment 8. There is a mutual cooperation service month activity program that must be implemented by the village.	1. Planning village development with clean and renewable energy 2. Improving road infrastructure and transportation systems in villages 3. Developing Pengepul Rosok business so that it can continue to bring economic, social, and environmental benefits 4. Conduct a routine community service schedule in each village area besides the schedule that has been implemented 5. Optimizing the role of institutions and health cadres to strengthen community environmental awareness by taking advantage of the earth charity moment and active participation in mutual cooperation month activities 6. Make regulations regarding the prohibition of environmental pollution 7. Facilitate infrastructure that can support the community to behave pro-environmentally	1. Collaboration between the Village Government and the HIPPA institution to manage agricultural water and create and socialize a ban on freely buying and selling water for agricultural purposes. 2. Providing waste management facilities, such as temporary waste storage areas, creating and socializing waste-related regulations to overcome waste problems so that people do not throw waste carelessly 3. Using the role of village institutions and health cadres to carry out outreach and education regarding the importance of protecting the environment by carrying out pro-environmental behavior to increase public awareness 4. Hold training activities related to sustainability efforts, such as training on recycling and making organic fertilizer 5. Providing information either through banners, social media, or campaigns related to pro-environmental behavior 6. Using the earth charity moment and the month of mutual cooperation to improve village cleanliness, environmental awareness, and compassion for the environment.
Threat /T)	ST Strategy	WT Strategy
1. Lack of infrastructure to support environmental sustainability 2. Lack of outreach and training programs 3. Lack of information and outreach regarding environmental protection 4. There are no regulations and legal systems regarding actions that can damage the environment	1. Community service activities to clean up the entire village area, both village-owned and private land 2. Increase public awareness to behave pro-environmentally 3. Supporting rubbish collectors' efforts to collect household waste	1. Complete facilities to support community pro-environmental behavior 2. Controlling the activities of Turigede Village residents in carrying out environmental activities 3. Provide sanctions or firm action to residents who carry out activities

Internal	Strength /S	Weakness /W
5. There has never been a disaster caused by human activities that damaged the environment 6. There are many wild bushes and privately owned bamboo forests 7. Uneven development of village infrastructure	from residents' homes, thereby indirectly reducing the buildup of rubbish	that impact the environment

The analysis results of the pro-environmental behavior position in the SWOT diagram are in quadrant III, where the the organization is in a weak position but has the opportunity to rise and cover its weaknesses. Therefore, the recommended alternative strategy for the pro-environmental behavior of the Turigede Village community is to minimize their weaknesses by taking advantage of existing opportunities. The WO strategy is an alternative strategy recommended for community pro-environmental behavior; namely collaboration between the Village Government and *HIPPA* institutions to manage agricultural water; provide waste management facilities, such as temporary waste storage areas, create; socialize waste-related regulations to overcome waste problems so that people do not throw away its waste carelessly; using the role of village institutions and health cadres to carry out outreach and education regarding the importance of protecting the environment by carrying out pro-environmental behavior to increase public awareness; holding training activities related to sustainability efforts, such as training on recycling and making organic fertilizer; providing good information through banners, social media, or campaigns related to pro-environmental behavior, using the earth charity moment and the month of mutual cooperation to increase village cleanliness, environmental awareness; and compassion for the environment.

This strategy is a planning strategy as a priority in the community's pro-environmental behavior. In this strategy, there are community cognitive factors, namely environmental awareness and also situational factors, namely support for facilities, regulations, and village government policies that can help the community to behave pro-environmentally. As a result, in implementing pro-environmental behavior in the community, there needs to be a full role for the village government in making environmental management policies in the village, such as making written regulations regarding the prohibition of environmental pollution, re-evaluating village development plans, including environmental sustainability programs or infrastructure in the village development plan for the following year and optimizing the role of village institutions.

Conclusion

The Turigede Village community has carried out several aspects of pro-environmental behavior, namely in the form of saving electrical energy, mobility and transportation, collecting rubbish that can be resold, and being enthusiastic about participating in community service. Factors inhibiting people's pro-environmental behavior are cognitive factors; namely lack of public awareness of the need to preserve the environment; emotional factors, namely no affective feelings towards the surrounding environment; only concerning to personal property; social psychological factors, not caring about the state of the surrounding environment whether there is pollution, damage or other effects resulting from community actions; and situational factors, namely lack of infrastructure to support behavior, such as rubbish dumps, waste management facilities, lack of counseling and training, lack of information and outreach about environmental protection, no clear rules regarding prohibitions or management environment from the village government; and the environmental conditions of the village where there are still many wild bushes and bamboo forests. Meanwhile, the supporting factors for community pro-environmental behavior are; cognitive factors, in the form of community knowledge about how to care for the environment and situational factors consisting of villages having various institutions whose functions can be optimized; villages also have health cadres whose roles can be maximized in relation to environmental health and education; and the transfer funds. Villages can be utilized to finance matters related to infrastructure supporting environmental sustainability and training and counseling programs. Relevant agencies can be asked for assistance regarding the procurement of infrastructure and outreach activities. The village government can create and issue regulations related to preventing environmental damage.

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Author Contributions
Conceptualization: H.C.M, W, S.L, D.A data curation: H.C.M, W, S.L, D.A funding acquisition: H.C.M, W, S.L, D.A methodology: H.C.M, W, S.L, D.A visualization: H.C.M, W, S.L, D.A writing – original draft: H.C.M, W, S.L, D.A writing – review & editing: H.C.M, W, S.L, D.A

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Conflicts of Interest
We certify that there is no conflict of interest with any financial, personal and other relationships with other peoples or organization related to the material discussed in the manuscript.

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