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Community Behavior Regarding Waste Management in Slums (Case Study: Lamglumpang, Ulee Kareng, Banda Aceh)

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ABSTRACT

In Banda Aceh, garbage is a significant concern. The trash problem requires the participation of the community. However, there are still numerous litterers, such as in the Gampong Lamglumpang, Ulee Kareng district. Gampong Lamglumpang is one of the villages identified as slums in Banda Aceh City. Poor waste management is a contributing factor to the slums. This study intends to assess the community's waste management practices in Gampong Lamglumpang and propose solutions to these issues. The study uses a descriptive quantitative by employing a questionnaire to collect data, which would be analyzed using Microsoft Excel. The data collection used the purposive sampling method. The sampling was up to sixty families. According to findings, many families were still burning their waste, indicating that their waste management was still insufficient. The author's suggestion for the government is to play a role in changing people's behaviour, such as by giving education and socialization of the 3Rs (reuse, reduce, and recycle) and by teaching the community how to transform garbage into something of economic worth. In addition, the Government must optimize waste transportation for must be optimized for the preservation of a clean environment.

Keywords: behavior, garbage, society

1. Introduction

Waste management remains a critical issue in Banda Aceh City, with profound implications for both the urban environment and public health. From 2009 to 2017, Banda Aceh was awarded the Adipura, a recognition for cities that excel in maintaining cleanliness and environmental management. However, since 2017, the city has struggled to regain this prestigious award due to a rising waste production rate that now reaches 240 tons per day. This increase has outpaced the city's capacity to manage waste, threatening both environmental and public health outcomes[1][2][3]. Effective waste management is now one of the foremost environmental concerns that must be addressed urgently to mitigate the negative consequences[4]. In several areas of the city, including Gampong Lamglumpang in Ulee Kareng District, improper waste disposal is a common practice. Many residents dispose of waste irresponsibly—either by littering, dumping waste on vacant land, or by burning it. Such waste management practices contribute to the degradation of the local environment, clogging drainage systems and exacerbating the spread of slums. Ulee Kareng, which includes Gampong Lamglumpang, has earned a reputation for having some of the worst environmental conditions in Banda Aceh. According to a 2021 decree from the Mayor, the area contains 92.36 hectares designated as slum land[5].

Gampong Lamglumpang is particularly affected by waste management challenges due to its severe shortage of green open spaces, comprising only 7% of the area. This lack of space, coupled with the high population density, leads to an increase in the volume and variety of waste, further exacerbating the challenges associated with waste disposal[5]. Household activities are the primary source of waste in the area, with poor management practices contributing to pollution and environmental harm. Moreover, a lack of community awareness and inadequate participation in waste management efforts remain major obstacles to solving this issue. Despite efforts from the Banda Aceh City Government to address these challenges, the city's waste management capacity remains insufficient. Without improved infrastructure and greater community involvement, addressing the waste problem in Gampong Lamglumpang becomes increasingly difficult. One critical factor in improving waste management is fostering a culture of active community participation, which can help limit the volume and spread of waste. This requires not only better infrastructure but also comprehensive education and socialization about proper waste disposal practices.

The purpose of this study is to examine the waste management behaviors of the Gampong Lamglumpang community and propose practical solutions. Specifically, this research aims to: 1) analyze the current waste management practices within the community, and 2) provide actionable recommendations for improving waste management strategies to enhance environmental quality and public health. Research by Madiasworo (2017) emphasizes the role of community participation in preventing the spread of slums, highlighting the need for awareness programs to improve waste management[6]. Additionally, Sahroni (2019) argues that community-based learning strategies can increase public participation in waste management programs[7]. The introduction of waste management systems, such as waste banks, has been proven effective in promoting recycling and community involvement[8]. Proper waste management not only prevents pollution but can also be economically beneficial if handled correctly[9][10].

To improve waste management in Gampong Lamglumpang, it is essential to integrate education about reducing, reusing, and recycling waste. Yolarita (2011) explains that applying the 3R principles significantly contributes to improving waste management practices[11][12]. Furthermore, as shown by Yuliastuti et al. (2013), enhancing community participation through education on waste management can lead to more sustainable environmental practices[13]. Public perception of waste management also plays a significant role in determining participation levels, with better environmental awareness correlating with more responsible waste disposal behaviors[14][15]. Additionally, the role of government and community leaders is pivotal in motivating positive behavior changes. Research by Setiawan & Haryadi (2010) underscores the importance of local leadership in shaping community practices towards waste management[14]. Providing the community with access to proper infrastructure, such as waste sorting bins and waste collection systems, can also encourage better waste disposal habits[16][17].

The positive impacts of education on behavior, as discussed by Sudiarti (2017), show that educational interventions can foster better waste management practices and awareness[18]. Similarly, community engagement strategies, informed by leaders such as Manurung (2008), emphasize the importance of leadership in driving sustainable practices, not just at the individual level, but within larger community contexts[19]. This study will provide insights into the existing waste management issues in Gampong Lamglumpang and propose practical measures to tackle these challenges, thereby contributing to the broader goal of creating a cleaner and more sustainable urban environment.

2. Method

This study utilizes a descriptive quantitative approach to examine community behavior in relation to waste management in Gampong Lamglumpang. According to Sugiyono (2018), quantitative research is a systematic empirical method focused on the collection and analysis of numerical data[20]. The research data was collected through questionnaires and then analyzed using Microsoft Excel to conduct statistical calculations. Descriptive statistical analysis was employed to summarize the data and provide a clear interpretation of the results. To select participants for the study, a purposive sampling technique was applied. This method allows for the selection of respondents based on specific characteristics relevant to the research objectives[21]. The criteria

for choosing respondents included: (1) both married and unmarried individuals who either own or rent property, (2) individuals aged 18 years and older, (3) a monthly income between Rp. 0 to Rp. 10,000,000, (4) a range of educational backgrounds from no formal education to a Master's degree, and (5) residents of both rented and owned homes.

The target population for this study consists of 870 families in Gampong Lamglumpang, as recorded by the BPS Kota Banda Aceh (2021)[22]. Following Sugiyono's (2019) guidelines, a sample of sixty households was selected, which falls within the recommended sample size range of 30 to 500 respondents[23][24]. Before distributing the questionnaires, both validity and reliability tests were conducted to ensure the accuracy and consistency of the data. The validity test was performed using the Pearson correlation method in Microsoft Excel, where the r-count for each question was compared to the r-table. Questions were considered valid if the r-count exceeded the r-table value, and invalid if otherwise. To assess the reliability of the questionnaire, Cronbach's Alpha coefficient was calculated, with a value greater than 0.6 deemed acceptable for reliability.

The questionnaires were designed using a 5-point Likert scale to measure responses, where 1 represents very dissatisfied, 2 represents dissatisfied, 3 represents neutral, 4 represents satisfied, and 5 represents very satisfied. In this study, several variables were considered based on the Behavior Control Concept. These variables include Actor (the individuals involved in waste management activities), Activity (the type of waste management practices being carried out), Activity Intensity (how frequently these activities occur), Place of Activity (the location where activities take place), Space Relationship (the interaction between the location and activity), and Activity Time (the time when these activities are carried out). Table 1 provides a more detailed breakdown of these variables and how they were categorized for this study.

Table 1. Research Variables Based on Behavior Control Concept

Variable	Sub- Variable
Actor	Type of Actor
	Actor's Age
Activity	Activity Type
	Activity Intensity
Place of Activity	Room Type
	Space Relationship
	Space Attribute
Activity Time	Working Days (Morning, Afternoon, Evening)
	Holidays (Morning, Afternoon, Evening)

3. Results and Discussion

The results from the questionnaire data provide important insights into the waste management behavior of the residents of Gampong Lamglumpang. A total of 60 respondents participated in the survey, providing a representative sample for this study. The analysis focuses on key activities such as waste sorting, waste disposal methods, community involvement in cleaning activities, and the role of environmental factors in shaping behavior.

Waste Management Practices

The findings show that waste management practices among the residents of Gampong Lamglumpang are far from optimal. A significant portion of the population still engages in burning waste, a practice that contributes to air pollution and poses health risks. Specifically, 35% of respondents reported burning waste occasionally, while 25% did so frequently. Despite the environmental dangers, burning waste is perceived by some as the simplest and least expensive method of disposal. This result aligns with previous research indicating that improper waste disposal methods, such as burning, remain common in many parts of developing urban areas[25].

In terms of waste sorting, the community shows low participation. Only 5% of respondents consistently sort their waste, while a larger portion (27%) rarely sorts waste, and another 27% never engages in sorting. This suggests a lack of awareness or infrastructure to support waste sorting, which is a key component of effective waste management. The low engagement in waste sorting is consistent with findings by Yuliastuti et al. (2013), who noted that without proper education and facilities, community participation in waste management remains limited[13]. Table 2 presents the results of the validity test for the questionnaire used in this study. The validity test was carried out using the Pearson correlation method to ensure that the questions accurately measure the relevant variables related to waste management behavior in Gampong Lamglumpang. The R count values for all questions exceeded the R table value of 0.254, indicating that all questionnaire items were valid. This confirms that the questions effectively assessed the desired constructs and could be relied upon for further data analysis. Table 3 displays the results of the reliability test conducted using Cronbach's Alpha, a method that evaluates the internal consistency of the questionnaire. Cronbach's Alpha values range from 0 to 1, with values above 0.7 generally regarded as indicating reliability. In this study, the Cronbach's Alpha value was 0.72, which is above the acceptable threshold of 0.70. This result signifies that the questionnaire is reliable, meaning that the questions consistently measured the variables related to waste management practices, thus ensuring stable and trustworthy results across different respondents.

Table 2. Questionnaire Validity Test

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
R Count	0,399	0,327	0,676	0,603	0,729	0,716	0,438	0,513	0,437	0,392
R Table	0,254	0,254	0,254	0,254	0,254	0,254	0,254	0,254	0,254	0,254
Result	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid

Table 3. Questionnaire Validity Test

Cronbach's Alpha Value	Reference Value	Result
0,72	0,70	Reliable

Community Involvement in Waste Management Activities

Respondents were also asked about their involvement in community activities related to waste management. The results indicate that only 45% of respondents frequently clean their yards, while others rarely or occasionally participate in such activities. This reflects a general trend of limited communal efforts in waste management activities. Community service and collaboration on environmental issues are not frequent, as 55% of respondents rarely engage in community service, and 32% participate only occasionally. These findings suggest that although there is a certain degree of individual responsibility for household waste, collective action for environmental upkeep is still lacking.

The community's behavior towards environmental conditions also plays a significant role. 37% of respondents indicated that environmental conditions frequently influence their behavior, and 33% acknowledged that environmental factors occasionally impact their actions. This highlights the potential for improving waste management practices by addressing the broader environmental context, as suggested by Nuqul (2005) [26][27]. This connection between environment and behavior suggests that improving local environmental conditions could motivate better waste management practices. Table 4 presents a breakdown of the demographic characteristics of the respondents. It provides information on their age, income, occupation, and education level. The data shows that the respondents in Gampong Lamglumpang are predominantly in their productive working years, with the largest age groups being 28-38 years (25%) and 50-60 years (25%). Economic conditions also play a key role, with 43% of respondents earning between Rp. 1,000,000 and Rp. 2,000,000 per month, reflecting a lower-middle-income community. In terms of occupation, the most common roles were household wives (33%) and merchants (25%). Regarding education, a significant portion of the

respondents had completed high school (37%) or obtained a bachelor's degree (27%). This demographic diversity suggests that factors like income and education may influence the level of participation in waste management practices within the community.

Table 4. Characteristics of Respondents

Age	N	%	Income	N	%	Occupation	N	%	Latest Education	N	%
17-27	7	12	Not working	3	5	Merchant	15	25	No School	1	2
28-38	15	25	Uncertain	2	3	Household Wife	20	33	Elementary School	1	1
39-49	14	23	>0-1.000.000	1	2	Civil Servant	5	8	Junior High School	9	15
50-60	15	25	>1.000.000-2.000.000	24	43	Self-employed	1	2	High School	22	37
61-71	8	13	>2.000.000-3.000.000	6	10	Student	3	5	Bachelor Degree	16	27
72-82	1	2	>3.000.000-4.000.000	3	5	Construction labourers	1	2	Master Degree	1	2
			>4.000.000-5.000.000	4	7	Employee	11	18			
			>5.000.000-<10.000.000	0	0	Village Apparatus	3	5			
			>10.000.000	2	3	Retired	1	2			

Economic and Educational Influences

An analysis of the respondents' demographic characteristics revealed that economic status and education level significantly influence waste management behavior. The majority of respondents (43%) fall into the lower-middle-income bracket, earning between Rp. 1,000,000 and Rp. 2,000,000 per month. Economic conditions play a crucial role in shaping participation in waste management practices. According to research by Yuliastuti et al. (2013), economic constraints often hinder the adoption of proper waste disposal methods, as people from lower-income backgrounds may not have access to the necessary facilities[13].

Education also emerges as a key factor influencing waste management behavior. The majority of respondents (37%) have completed high school, followed by 27% with a bachelor's degree. Those with higher education levels are generally more aware of the importance of waste management and are more likely to engage in responsible waste disposal. This finding is supported by Jayanti et al. (2014), who found that higher levels of education positively correlate with more responsible waste management behaviors[15].

Waste Transportation and Infrastructure

The study also looked into the role of waste transportation services, which are an essential part of waste management. Results from the survey show that garbage trucks rarely enter residential areas. Only 2% of respondents reported that garbage trucks frequently come to collect waste, while 55% stated that trucks visit only occasionally. This suggests significant gaps in waste transportation services, which could be addressed to improve waste management efficiency in Gampong Lamglumpang. Table 5 and Figure 1 presents the findings on the waste management activities of the respondents, focusing on practices such as community service, waste sorting, and waste disposal methods. The data reveals that a significant portion of respondents engage in improper waste disposal, with 35% of participants reporting that they occasionally burn waste, and 25% doing so frequently. This suggests that improper waste disposal methods, such as burning, are still prevalent in Gampong Lamglumpang despite their negative environmental impact. Regarding waste sorting, only 5% of respondents consistently sort their waste, while 27% rarely do so, and another 27% never engage in sorting.

These results indicate a lack of infrastructure or knowledge to support proper waste sorting practices. Additionally, the data shows limited community involvement in waste management activities. 55% of respondents rarely participate in community service, and 32% participate only occasionally. This highlights a general reluctance toward collective environmental action. The findings suggest that while there are some individual efforts to manage waste, communal engagement remains insufficient, indicating the need for more awareness and education on the importance of collective waste management efforts.

Table 5. Activity

Respondent's Answer Results	Doing Community Service Activities	Throwing Garbage Out of Place	Burning trash	Garbage Sorting	Gathering with Citizens
Average	2 Rare	2 Rare	3 Sometimes	2 Rare	3 Sometimes

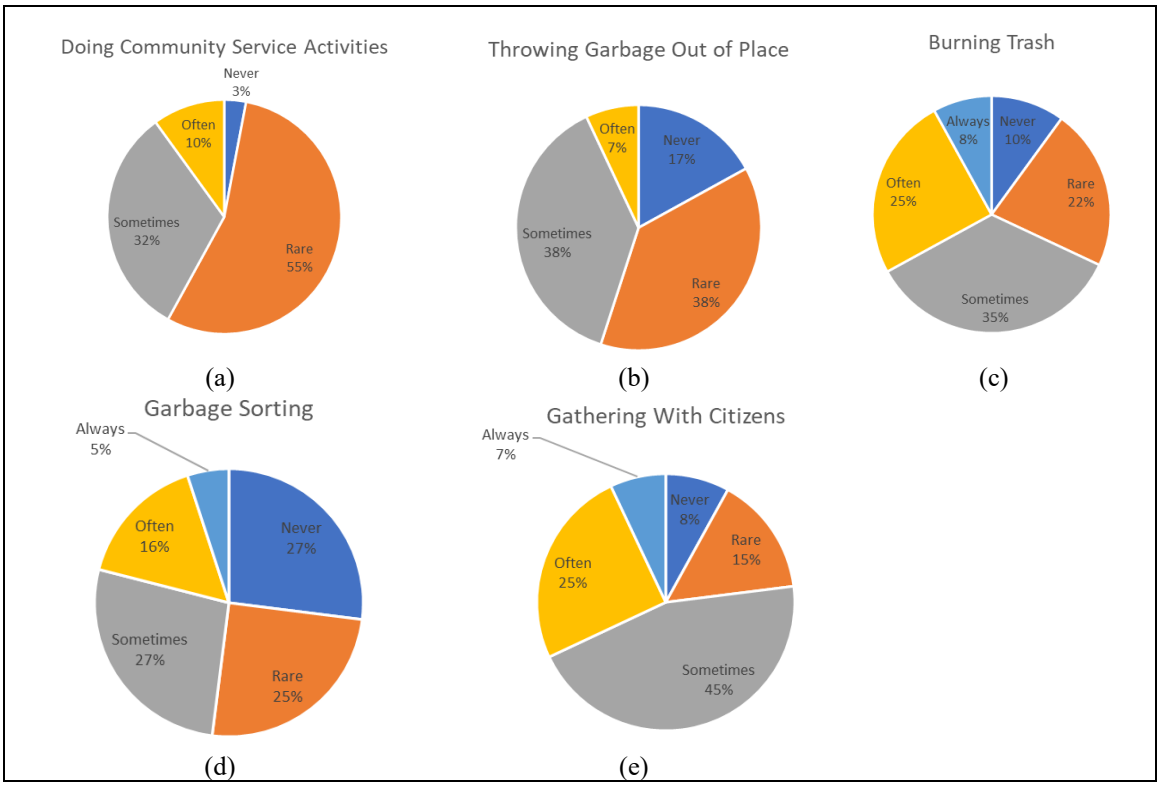

Figure 1. Activity

Environmental Awareness and Government Role

One of the most crucial findings of the study is the need for greater environmental awareness and government intervention. Respondents indicated that waste management practices could be improved through better education about sorting, recycling, and the health impacts of improper waste disposal. According to Sudiarti (2017), educating communities about waste management is essential to altering waste handling behaviors[18]. Furthermore, government involvement is critical in providing the necessary infrastructure and creating policies to support waste management practices. This includes increasing waste collection frequency, providing recycling bins, and implementing community education programs focused on the 3Rs: reduce, reuse, and recycle.

In conclusion, the results from Gampong Lamglumpang suggest that while there is some individual effort in managing waste, collective action remains limited, and there are significant barriers such as economic

constraints, lack of education, and inadequate infrastructure. By improving waste management systems, enhancing education on environmental issues, and increasing government support, the community can make substantial progress towards more sustainable waste management practices. These findings align with global best practices, as seen in Japan, where advanced waste management systems have successfully improved public participation and environmental sustainability[28][29]. Table 6 and figure 2 presents the findings regarding the location of waste management activities in Gampong Lamglumpang. The results indicate that waste management activities, particularly waste disposal, are significantly influenced by the presence of waste collection services. According to the table, 55% of respondents reported that garbage trucks occasionally visit their neighborhood. This suggests that while there is some waste management infrastructure in place, it is inconsistent and may not be sufficient to cover the entire area. Additionally, 37% of respondents acknowledged that environmental conditions frequently influence their behavior, which indicates that a cleaner environment could potentially encourage more responsible waste disposal. These results emphasize the need for more reliable and frequent waste collection services to foster better waste management practices in the community.

Table 6. Place of Activities

Respondent's Answer Results	Entry of the Garbage Truck	Environmental Conditions That Influence Behavior
Average	3 Sometimes	4 Often

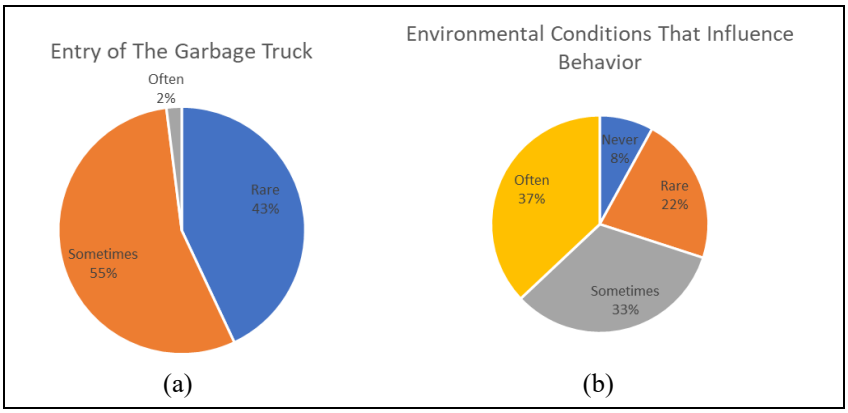

Figure 2. Place of Activities

Table 7 and Figure 3 shows the timing of waste management activities performed by residents. The data reveals that 46% of respondents rarely clean drainage systems, and 48% rarely clean the environment, which indicates low levels of communal cleaning efforts. However, 45% of respondents reported that they frequently clean their yards, highlighting a more active individual effort in maintaining the cleanliness of their immediate surroundings. This suggests that while there is a strong individual responsibility for waste management in terms of yard cleaning, communal activities such as cleaning public spaces and drainage systems are less frequently carried out. These findings suggest that while some efforts are made in individual waste management practices, collective action is still insufficient.

Table 7. Activity Time

Respondent's Answer Results	Cleaning the Yard in the Morning or Evening	Cleaning Drainage in the Morning or Evening	Cleaning the Environment Weekly
Average	3 Sometimes	2 Rare	2 Rare

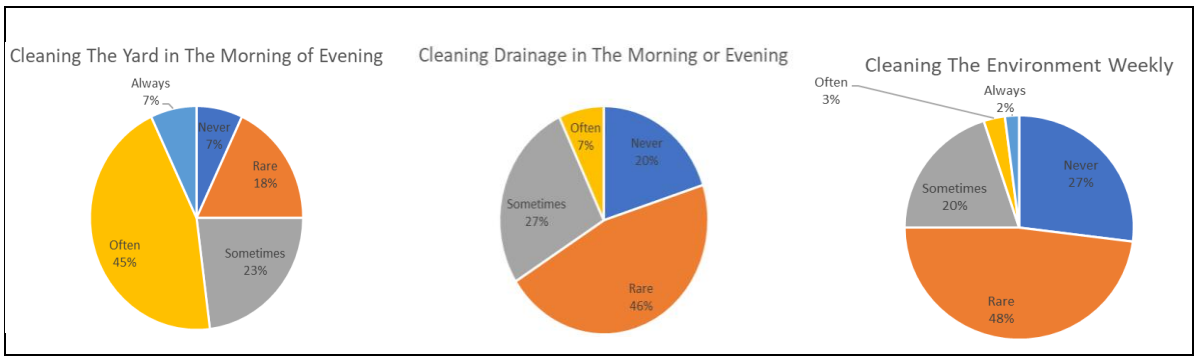

Figure 3. Activity Time

Figure 4 illustrates the potential for transforming waste into valuable products through community efforts. By repurposing waste into handcrafted materials, the community can create economic value while addressing the growing waste problem. This approach not only reduces the volume of waste but also encourages sustainable solutions, which is crucial for Gampong Lamglumpang. Educating the public about the benefits of repurposing waste can foster a sense of responsibility and reduce the burden on local authorities to manage waste. This strategy aligns with the principles of reduce, reuse, and recycle (the 3Rs), which is essential for enhancing waste management practices in the community. In line with this, Figure 5 introduces the concept of the Smart Trash Bin, an innovative waste management solution already implemented in countries like Japan. These bins, equipped with sensors, allow for efficient waste collection and monitoring, ensuring that waste is regularly collected and reducing the likelihood of littering. Implementing such smart technologies in Gampong Lamglumpang could streamline waste management processes, increase community involvement, and promote environmental sustainability. Together, these solutions highlight the importance of both education and technological innovation in improving waste management systems and promoting a cleaner, more sustainable environment.

Figure 4. Handcrafted waste materials

Figure 5. Smart Trash Bin

4. Conclusion

The community's waste management practices in Gampong Lamglumpang continue to be improper. People still burn trash to dispose of it. Moreover, the community's environmental consciousness remains minimal.

The author offers as a remedy the need for proactive government participation in this topic. People's behaviour must be altered through education and socialization on trash management. Properly managed garbage can have economic worth, which can be communicated to the general public through education. To ensure environmental purity, it is also vital to optimize garbage transportation, and there is a need for sustainable urban development in waste management.

5. Acknowledgments

The authors declare that there is no conflict of interest regarding the publication of this paper. The research was conducted independently, and the authors have no financial or personal relationships that could inappropriately influence the study's findings or conclusions.

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References

[1] DLHK3, Electron. Lett. https://dlhk3.bandaacehkota.go.id/2017/08/05/raih-piala-adipura-yang-ke-9-kalinya-kota-banda-aceh-kembali-catat-sejarah/ (2017)
[2] Bakri, Electron.Lett. https://aceh.tribunnews.com/2021/11/14/produksi-sampah-banda-aceh-tinggi-capai-240-ton-per-hari ,(2021)
[3] Zulkaraini, Electron.Lett. https://www.kompas.id/baca/humaniora/2022/05/20/produksi-sampah-di-banda-aceh-meningkat-kemampuan-mengolah-terbatas, (2022)
[4] Y. Walicki, I.Tjollo, and H.Warami, “Perilaku Masyarakat dalam Mengelola Sampah Rumah Tangga di Distrik Manokwari Timur Kabupaten Manokwari”, in Cassowary 3, (2020)
[5] UU No. 18 of 2008, “Pengelolaan Sampah”
[6] T. Madiasworo, “Konsep Pencegahan Permukiman Kumuh”, in Makalah Lokakarya Pokja PKP Program KOTAKU, (2017)
[7] Sahroni, “Pembelajaran Masyarakat Berbasis Masalah sebagai Strategi Meningkatkan Partisipasi Masyarakat dalam Program KOTAKU”, in Jurnal Indonesia untuk Kajian Pendidikan 4, (2019)
[8] A.S.Suryani, “Peran Bank Sampah dalam Efektivitas Pengelolaan Sampah (Studi Kasus Bank Sampah Malang)”, in Aspirasi 5, (2014)
[9] E.Damanhuri, and T.Padmi, “Pengelolaan Sampah Edisi Semester I-2010/2011”, in Diktat Kuliah TL-314, (Faculty of Environmental Engineering Study Program Civil and Environmental Engineering Bandung Institute of Technology, Bandung, 2010)
[10] A.R.Purnama, and U.Ciptomulyono, “Model Optimasi Alokasi Pengelolaan Sampah dengan Pendekatan Inexact Fuzzy Linear Programming (Studi Kasus: Pengelolaan Sampah di Kota Malang), in Prosiding Seminar Nasional Manajemen Teknologi XIV, (2011)
[11] E.Yolarita, “Pengelolaan Sampah dnegan Prinsip 3R di Kota Solok”, Thesis, Padjajaran University, 2011.
[12] B.Chanda, “Pengantar Kesehatan Lingkungan”, (EGC, Jakarta, 2012).
[13] I.A.N.Yuliastuti, I.N.M.Yasa, I.M.Jember, “Partisipasi Masyarakat dalam Pengelolaan Sampah di Kabupaten Bandung, in Jurnal Ekonomi dan Bisnis Universitas Udayana 2, (2013)
[14] B.Setiawan, and Haryadi, “Arsitektur, Lingkungan, dan Perilaku”, (Gadjah Mada University Press, Yogyakarta, 2010)
[15] L.R.G.Jayanti, Shali, and K.Nanda, “Studies on Seasonal Incidence, Nature of Damage and Assessment of Losses Caused by Girdle Beetle on Glycine Max”, in Annals of Plant Protection Science 22, pp.320-323
[16] H.P.Putra, A.R.Taufik, and A.Juliani, “Studi Hubungan antara Tingkat Pendidikan dan Pendapatan Keluarga terhadap Sikap dalam Pengelolaan Sampah Rumah Tangga (Studi Kasus di Desa Condongcatur, Depok, Sleman, Yogyakarta),” in Jurnal Sains dan Teknologi Lingkungan 5, (2013)

[17] Riswan, H.R.Sunoko, and A.Hadiyarto, "Pengelolaan Sampah Rumah Tangga di Kecamatan Daha Selatan", in Jurnal Ilmu Lingkungan 9, (2011)
[18] D.Sudiarti, "The Effectiveness of Biofertilizer on Plant Growth Soybean EDAMAME", in Journal of SainHealth 1, (2017)
[19] A.H.Manurung, "Modal Untuk Bisnis UKM", (Kompas, Jakarta, 2008).
[20] Sugiyono, "Metode Penelitian Kuantitatif, Kualitatif dan R & D", in Research Methods, (Alfabeta, Bandung, 2018), pp.523-526
[21] Sugiyono, "Metode Penelitisn Kuantitatif, Kualitatif dan R & D" in Research Methods, (Alfabeta, Bandung, 2016).
[22] BPS Kota Banda Aceh, "Kota Banda Aceh dalam Angka 2021", (BPS Kota Banda Aceh, Banda Aceh, 2021)
[23] Sugiyono, "Statistika untuk Penelitian", in Research Methods, (CV Alfabeta, Bandung, 2019)
[24] H.A.Ankesa, S.Amanah, and P.S.Asngari, "Partisipasi Kelompok Perempuan Peduli Lingkungan dalam Penanganan Sampah di Sub DAS Cikapundung Jawa Barat", in Jurnal Penyuluhan 12, (2016), pp.105
[25] Rendi, J.Arifin, F.Herlina, S.Ihsan, B.Hartadi, M.Suprapto, and M.Irfansyah, "Edukasi Pengelolaan Sampah dan Pendampingan Pengunaan Mesin Pembakaran Sampah di Desa Semangat Dalam," in Jurnal Pengabdi Al-Ikhlas 7, (2021), pp.170-192
[26] R. D. Arisona, "Pengelolaan Sampah 3R (Reduce, Reuse, Recycle) Pada Pembelajaran IPS untuk Menumbuhkan Karakter Peduli Lingkungan," in Jurnal Pendidikan Islam 3, (2018), pp. 39-51
[27] F.L. Nuqul, Appl. Phys. Letters. https://psikologi.uin-malang.ac.id/wp-content/uploads/2014/03/Pengaruh-Lingkungan-Terhadap-Perilaku-Manusia-Studi-Terhadap-Perilaku-Penonton-Bioskop.pdf (2005)
[28] Mulyadi, Edi, O.Hendriyanto, and N.Fitriani, "Konservasi Hutan Mangrove sebagai Ekowisata", in Jurnal Ilmiah Teknik Lingkungan 1, (2010), pp.51-57
[29] Tribunnews, Electron. Lett. https://www.tribunnews.com/internasional/2016/04/29/tempat-sampah-pintar-jepang-menyambut-olimpiade-2010 , (2016).