Is the Thai Society an Example of a Disposable Culture? A Sustainable Community Case Study in Chiang Mai

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Abstract

This study examined if Thai society is an example of a disposable culture or not truly so. The following questions have been addressed:

1. Has the public promotion of educational messages helped people to reduce waste and engage in recycling as part of their lifestyle?

2. Does a lack of infrastructure for garbage collection have an impact on household and public trash?

3. Has the state been handing out penalties punishment, and incentives to the people to reduce the amount of garbage?

4. How much impact has the business trash collection and recycling market contributed to reducing waste?

The research views Thai society as an example of struggling to rise above the image of being a disposable culture. Becoming a sustainable community takes the heart, soul, and spirit of all members involved to perform their role because being sustainable is a long-term idea for life.

Keywords: Disposable Culture, Enterprises, Public Education, Recycling, Sustainable Community

Introduction

A sustainable community is an idea that needs full collaboration from the locals, government officials, and law enforcers to see a positive outcome come through on a timeless basis (Purnomo, Anand, and Choi, 2017), especially in reducing waste. A good structure that applies a system with standards builds confidence in being sustainable by the community.

In Thailand, the issue of developing a standard procedure for managing garbage collection or waste has been met with some riddles that may look easy to solve but somehow seem out of reach. Educational promotion of messages in a friendly animated manner asking the public for cooperation in reducing waste and engaging with recycling has not been taken into high consideration by the majority as part of their lifestyle (Ounsaneha et al., 2020). With the absence of a proper infrastructure of a garbage collection system, the routine for reducing waste cannot properly function thus leaving household and public rubbish piled along the streets (Yukalang Clarke and Ross, 2017). Companies that are given concessions by municipalities are often ill-equipped to manage the aggravating waste problems (Sawetrattanakul et al., 2019). Although the state should be the authority on an assorting household, commercial, and public trash the laws enforcing them have been ambiguous in charging the penalties or distributing incentives to get issues mainstreamed in

order (Srisuwannaket and Liumpetch, 2019), instead, the market mechanism is asked to come with some innovative methods to alleviate the amount of debris (Vassanadumrongdee and Kittipongvises, 2018).

As one of the greatest places for tourism and traveling for foreign vacationers and locals the activities of recreation and leisure have also drawn upon a large number of plastic water bottles and food-related debris that could not be thrown away appropriately due to an improper waste disposal system (Gamage Nadeeka Thushari et al., 2017). Construction and renovation of real estate, commercial facilities, and public premises have brought about a pile of filth and wasted materials littered along the roads as dumpster trucks neglect to put a cover sheet to prevent the garbage from accidentally flying out (NationThailand.com, 2018). With frustration and doubt about the government's inadequate management of providing a proper waste management system, some individuals have taken action to keep their homes clean by secretly dumping their garbage at public sites, in a barren wasteland, or burning the garbage in the forest (Bangkokpost.com, 2015). This is the cultural behavior of a disposable culture when the institution fails to develop a proper framework for administrating proper garbage collection.

To be a sustainable community that values sanitation requires full cooperation, collaboration, and coordination with all stakeholders involved. On the matter of curbing waste, the actions of people are interdependent to make the expected results happen. But with a breakdown in discipline and systems management (Suma et al., 2019) the balance of trying to live in a clean and healthy environment does not bode well as the amount of refuse spoils the natural beauty of the rural environment and urban landscape in the eyes of the people.

Research Aim and Objectives

This study aims to examine whether Thai society is an example of a disposable culture or not truly so. In the question of "Is Thai society an example of a disposable culture" the following inquiries have been addressed below to determine the answer:

1. Has the public promotion of educational messages helped people to reduce waste and engage in recycling as part of their lifestyle?

2. Does a lack of infrastructure for garbage collection have an impact on household and public trash?

3. Has the state been handing out penalties punishment, and incentives to the people to reduce the amount of garbage?

4. How much impact has the market for business trash collection and recycling contributed to reducing waste?

Literature Review

Public Educational Promotion on Reducing Waste and Recycling for a Sustainable Community

The importance of having a public educational promotion campaign on reducing waste and recycling for a sustainable community is to direct the attitude and behavior of working and supporting the idea of sanitation and clean living in one's community. For a community to be sustainable Kwan et al. (2019) asserts that "*this long-term planning objective of a social-environmental system in balance calls for cooperative functioning among government, institutions, community groups as well as individuals; and the concept is continuously building up from the bottom up through community initiatives*." The idea functions along the line when the public is given the technical know-how and access as an incentive for reducing and recycling (Bortoleto et al., 2012). The ongoing format for encouraging the public to partake in the campaign can only be good as the promotion idea itself needs to seek improved ways of providing the provisions and plan to lessen the burden on the activities (Yukalang et al., 2018). No one is isolated from the behaviors and actions of others; a sustainable community becomes so due to the surrounding support from family members complying with the policy, fellow neighbors fully cooperating, and community regulation for sorting waste (Xiao et al., 2017). While the messages are important to get the public's collaboration in reducing and recycling the state officials still need to coordinate the facilities and training to let people know that the right results are being accomplished along the process (Almasi, 2019). Mwanza and Mbohwa (2017) indicated that "*without rules and regulations especially in waste management, it becomes impossible to develop*

sustainable systems as usually most of the responsibilities will be left to the municipalities. Their study also stated that "*if the community and households are bound by regulations and rules, sustainable development of recycling systems would be achievable from the economic, environmental and social aspects but not in isolation of other drivers.*"   According to He et al., (2018), the government needs to address the priorities of social problems, in building attractive communities and buildings and improving public participation, by providing inhabitants with sound residential, educational, medical, and a good social security system so that they have the stamina to support the idea of reducing waste and recycling.

A Garbage Collection Infrastructure for a Sustainable Community

Garbage collection is a huge complex task that requires the effortless cooperation of stakeholders within their community to be part of a solution. Richmond et al., (2018) provide a case on how waste tends to become a bigger problem when the road networks do not serve as the means for garbage trucks to do their tasks with convenience and concentration to reach every household. Studies done by Banditvilai and Niraso (2017) take a look at the current infrastructure model to determine where the gaps are and propose a simulation framework with a heuristic approach developed for assigning waste collection zones and routings. Triki (2017) examines the routing system to determine where improvements should be made in extending a flexible planning scheme for some municipal waste collection zones to obtain the maximum benefit. Nevertheless, a proper infrastructure for garbage collection needs to be adapted to the needs of the community such as being able to socialize with their fellow participants to inquire about some curious points and being able to see the beneficiaries from the program to keep the behaviors collaborating on the scheme (Fitria Widiyanto and Rahab, 2017).

When the infrastructure is not properly functioning, the household within the community takes drastic measures by disposing of their garbage in bigger bins that are located near commercial centers or indiscriminately in any convenient place, while others hire laborers to scavenge their trash from an informal sector (Rimi Abubakar, 2017). Restoring the confidence of the community for sustainable planning requires the policymakers and legislators to get the public involved to come up with solutions that are respectable towards the dignity of people, and mindful of those who are minuscule in power and influence (Grant, Beed and Manuel, 2018).

The best practices done to keep the idea of a sustainable community going comes from encouraging a moderate lifestyle that alters the way people buy products or acquire services that are more eco-friendly and can be reusable for other home or social functions to lessen the impact on the environment (Geissdoerfer et al., 2017). Munyasya and Chileshe (2018) cite "*innovation as a driver that could be sustained by the proactive strategy of developing initiatives to enhance resource management, water conservation, and innovative renewable energy*". In addition, the researchers claim that a "*lack of steering mechanism" could be addressed by the following: (i) establishing a governance framework to encourage greater transparency and responsibility in reporting and communicating sustainable requirements; and (ii) resource usage at the project development and implementation stages.*

Policies on Fines and Punishment, and Incentives for a Sustainable Community

When using the method of rewarding and punishing to uphold a sustainable community the policy instruments will need to be evaluated throughout the course to determine if the results from the approach have gotten to the most desired level or to be aware that the application may need to be refined to make people see that it's worthwhile to be a part of (Chhatre et al., 2012). Whether it's for encouraging people to go along with the process or letting them know the consequences of not complying, the key is to promote the behavior that is accepted by decision-makers to find more productive and innovative methods of easing the burden for supporting a sustainable community (Gebara, 2013). Gebara and Agrawal (2017) pointed out that "*the rewards and punishments approach is also in conflict with the notions of distributive justice (i.e., focus on short-term outcomes) and it can be a very blunt and undiscriminating way of changing behavior can easily punish good and reward bad behavior.*"

While penalties are authorized by the legislation to eliminate unwanted behaviors and enforce cooperation with the law, incentives are done as a welcoming form for people to do things more enthusiastically through innovation or creativity that includes a variety of economic and facilitative measures, which can also be non-monetary, to support the behavior. Radzuan et al., (2014) asserted that "*potential conflict may also exist if there is a mismatch between the effectiveness of the current incentives policy with*

residents' need on the actual site", but most importantly the incentives will help individuals buy into the scheme as long as the stakeholders are involved to provide their input and suggestion. Furthermore, the format of the incentives must be coordinated, promoted, and applied that meet the needs and values of the targeted audience with a good understanding of some changes that may have to occur as well as letting the members recommend the necessary changes along the process (Laurian and Crawford, 2016).

The fines, punishment, and incentives can only do so much as long as the policymakers and legislators do their part to raise the level of standard of the community by making stakeholders take accountability and ownership of
the idea of sustainability. Cease et al., (2019) suggested creating best-fitting incentives for local communities through the economic, policy, public awareness, and organizational dimensions to provide stakeholders with the potential to be exposed to other opportunities that would contribute to living in a sustainable community. Although it's not possible to get every single behavior to collaborate and cooperate in supporting a sustainable community, the process of law has to be implemented to demonstrate the credibility of the structure and its system. For example, White (2017) states that with the approach of restorative justice, the intentions are "*to empower victims and involve multiple stakeholders in decision-making who participate largely voluntarily in processes that take place outside of mainstream forums such as courts; this features restitution and reconciliation, and attempts to change how offenders think about their crimes.*"

Enterprises Providing Services for Trash Collection and Recycling for a Sustainable Community

In some cases, there is an informal group of waste collectors who either work as individuals, groups, or micro-enterprises that perform the duty of collecting the garbage from the household or at certain districts in town but do so behind the doors of a mutual agreement with officials, or as in violation of the public policy when transporting the waste to the official dumping grounds (Scheinberg et al., 2010). They perform the functions of recycling, scavenging, and sorting out the waste all for the sake of earning an income by selling their services or selling valuable materials to other companies buying the scrap for commercial reproduction (Gunsilius et al., 2011a). Bartolacci et al., (2018) assert that the enterprises would be more sustainable by using and selling separate waste collection products as secondary materials as the means for increasing revenues and/or decreasing costs, improving profitability and financial sustainability.

Although the role of duty is inspirational towards a clean and healthy living community, with some income to be made, some locals detest doing this type of business because they deem it to be dirty and degrading to one's status in society (Chen et al., 2018). In developing countries where there are questions still unanswered about a proper structure and system for managing waste the occupation of collecting garbage remains labor-intensive, low technology, low-paid, and unregulated work (Wilson, Velis and Cheeseman, 2006) which become difficult to attract and recruit individuals who have talent and unique skills to support a sustainable community.

No matter the amount of spirited will in fostering a sustainable community there has to be a framework that enables all relevant stakeholders to provide valuable insights for enterprises to be more innovative and creative in handling the waste collection. The trash that is discarded from the household and around the public vicinity by the people requires a strong collective responsibility for their actions in being aware of the need to make improvements in the value chain along the products used and other materials used along the service processes (Baxter et al., 2016). Gunarathne et al., (2020) believe that a lack of support from the government and other financial incentives would discourage the informal sectors from taking on the business of collecting garbage to remain for the long term, thus a formalized framework needs to be put into place to make all things favorable towards sustainability.

Research Methodology

To examine whether Thai society is an example of a disposable culture or not truly so, the data collection of the research focuses on the four research questions that begin with a survey. A random sample of 1000 individuals was drawn from local community members who took part in a Likert scale survey asking them to rate their opinions on five proponents to determine the level of Thailand being a disposable culture for each of the following questions:

1. Which factor do you believe has helped promote public education in reducing waste and recycling to make your community sustainable?

2. Which factor has maintained the garbage collection infrastructure for making your community sustainable?

3. Which factor do you believe has upheld the policies on fines and punishment, and incentives that keep your community sustainable?

4. Which factor do you believe has allowed enterprises to provide services for trash Collection and recycling that contribute to your community being sustainable?

Results from the survey will be analyzed to determine where opinions lean the most for obtaining insights towards the aim of examining whether Thai society is an example of a disposable culture or not. An example of this survey is located in the appendix section.

Results and Analysis

Educational Promotion on Reducing Waste and Recycling for a Sustainable Community

Factors believed helping promote public education in reducing waste and recycling for making a sustainable community

■ A) The public is given the technical know-how and access as an incentive.

■ B) The public is encouraged to take part in the campaign.

■ C) Surrounding support from family members complying to the policy, fellow neighbors fully cooperating, and community regulation for sorting waste.

■ D) State officials coordinating facilities and training to let people know that the right results are being accomplished along the process.

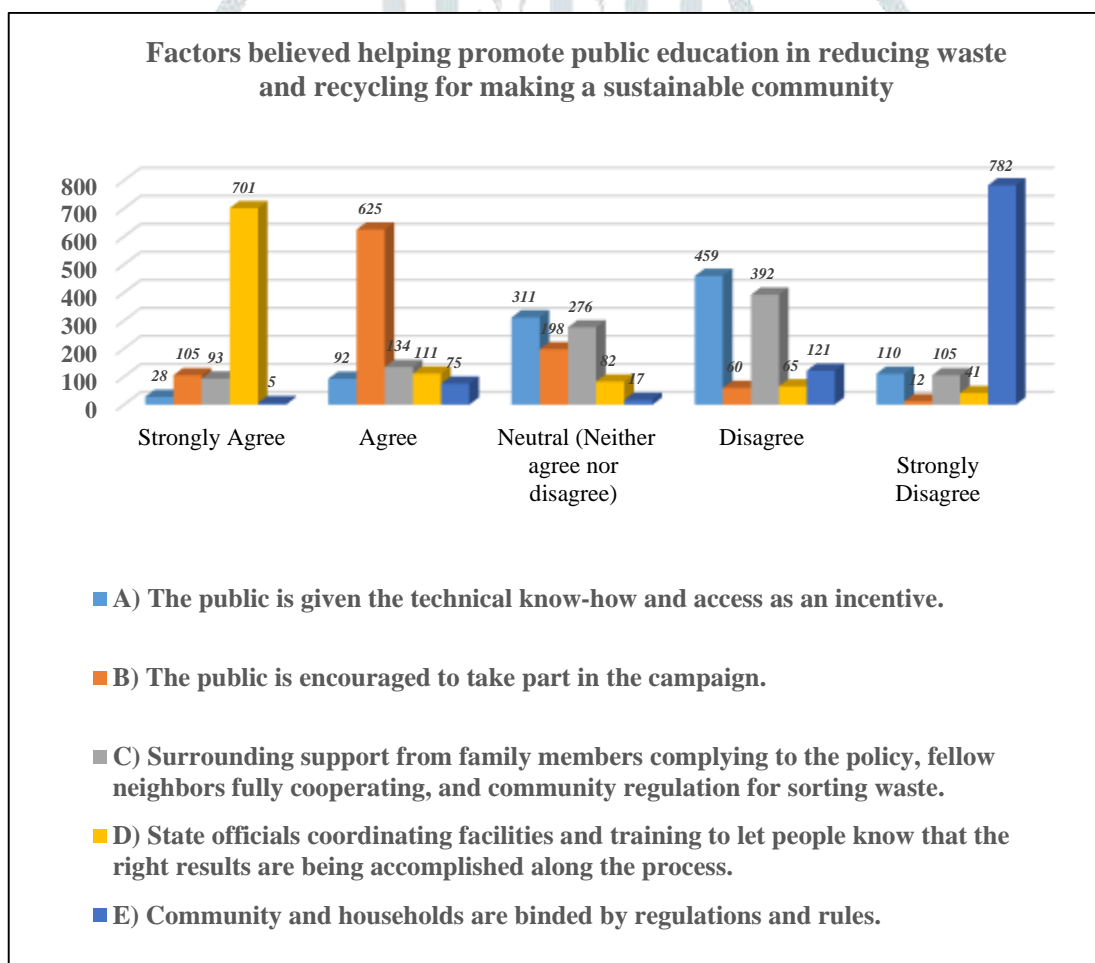■ E) Community and households are binded by regulations and rules.

Table 1. Factors Promoting Public Education in Reducing Waste and Recycling

With regards to the issue of public education being promoted to reduce waste and recycling, 70% of the local community members are truly convinced that state officials are doing their duties in coordination and training to let people recognize that the correct results are being attained within the initiative. 63% of the people do somewhat see that their local government is taking actions to get people encouraged to be part of the campaign in reducing waste and recycling. However, there is a strong belief that the community and households are not adhering to the regulations and rules (78%). Furthermore, 46% don't see any technical know-how and access being given as an incentive to the public, while 39% believe that the support from family members complying with the policy, cooperation from neighbors, and community regulation for

sorting waste are lacking. With the graphic results in Table 1, the facts illustrate that public education can only be so effective in getting collaboration and cooperation from the local community members as the rules and regulations are administrated seriously, while the process of disseminating the technical know-how is provided continuously and proper support from relatives, cooperation amongst neighbors, and regulations for sorting waste are being performed with sincerity. Public education is part of the pillar or one of the grand plans for achieving a sustainable community, not a magical solution that resolves everything.

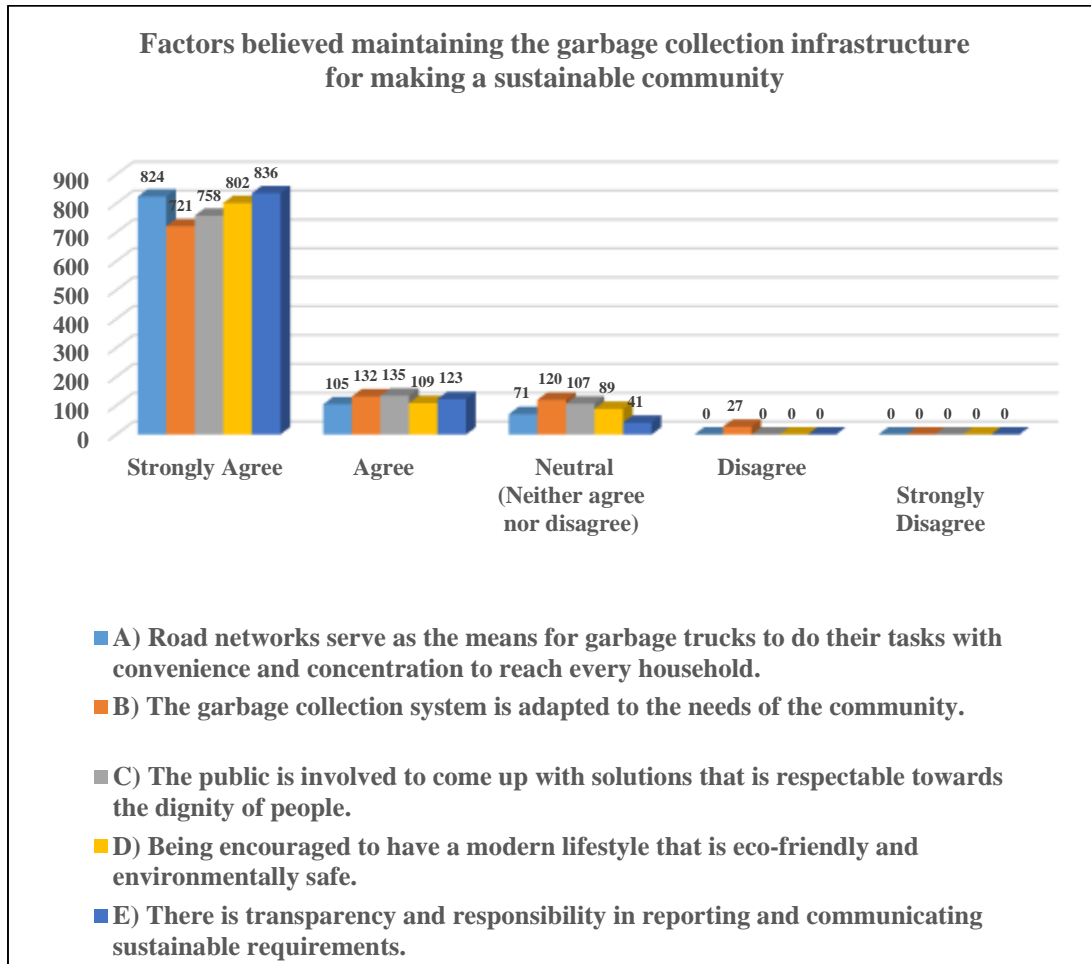*A Garbage Collection Infrastructure for a Sustainable Community*

Factors believed maintaining the garbage collection infrastructure for making a sustainable community

- A) Road networks serve as the means for garbage trucks to do their tasks with convenience and concentration to reach every household.
- B) The garbage collection system is adapted to the needs of the community.
- C) The public is involved to come up with solutions that is respectable towards the dignity of people.
- D) Being encouraged to have a modern lifestyle that is eco-friendly and environmentally safe.
- E) There is transparency and responsibility in reporting and communicating sustainable requirements.

Table 2. Factors Maintaining Garbage Collection Infrastructure

The local community members are in wholeheartedly consent that the garbage collection infrastructure is maintaining itself to make the community sustainable: 84% believe that there is transparency and responsibility in reporting and communicating the sustainable requirements; 82% see the road networks serving the means for garbage trucks to do their tasks with convenience and focusing to reach every household; 80% feel that they are encouraged on having an eco-friendly and environmentally safe modern lifestyle; 76% are under the notion that is included in providing solutions that are respectable towards people's dignity; 72% are impressed that the garbage system collection is meeting with the community's needs. The numerical figures in Table 2 illustrate that overall local community members are experiencing a positive outlook on the infrastructure of garbage collection. The credit for this is attributed to the road networks and garbage collection system, the public being involved and encouraged to have a modern lifestyle, and the transparency and responsibility all functioning together as an organic system aiming for a healthy and sustainable community.
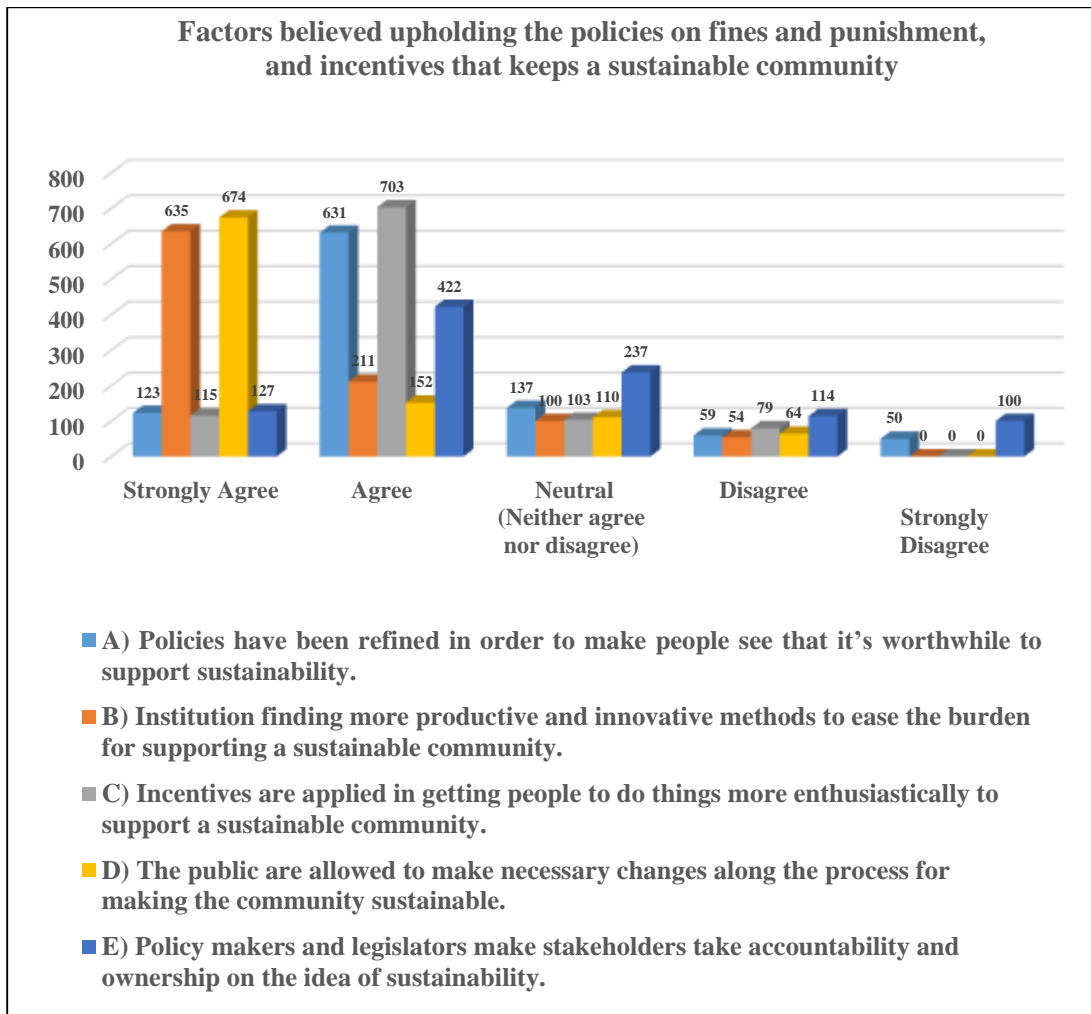
Policies on Fines and Punishment, and Incentives for a Sustainable Community

Factors believed upholding the policies on fines and punishment, and incentives that keeps a sustainable community

A) Policies have been refined in order to make people see that it's worthwhile to support sustainability.

B) Institution finding more productive and innovative methods to ease the burden for supporting a sustainable community.

C) Incentives are applied in getting people to do things more enthusiastically to support a sustainable community.

D) The public are allowed to make necessary changes along the process for making the community sustainable.

E) Policy makers and legislators make stakeholders take accountability and ownership on the idea of sustainability.

Table 3. Factors Upholding Policies on Fines and Punishment, and Incentives

For the issue of upholding policies on fines and punishment, and incentives the feedback from the survey revealed that the sample is in full support that they are given permission to make the necessary changes in the process (67%) and finding the institution to be productive and innovative to ease the burden for support (64%). Moreover, the sample group is in accord with the issue of incentives applied for people to do things more enthusiastically (70%), policies being refined to make it worthwhile (63%), and stakeholders being held accountable by the policymakers and legislators (42%). Based on the graphics, the findings tell us that policies on fines and punishment, and having incentives are ideal to get the behaviors and attitudes most likely to comply with the idea of keeping the community sustainable. Thus, most people within their community will perform and do their share of upholding sustainability as long as the mechanisms are there to govern the right actions and warn others about committing the wrong ones.

Enterprises Providing Services for Trash Collection and Recycling for a Sustainable Community
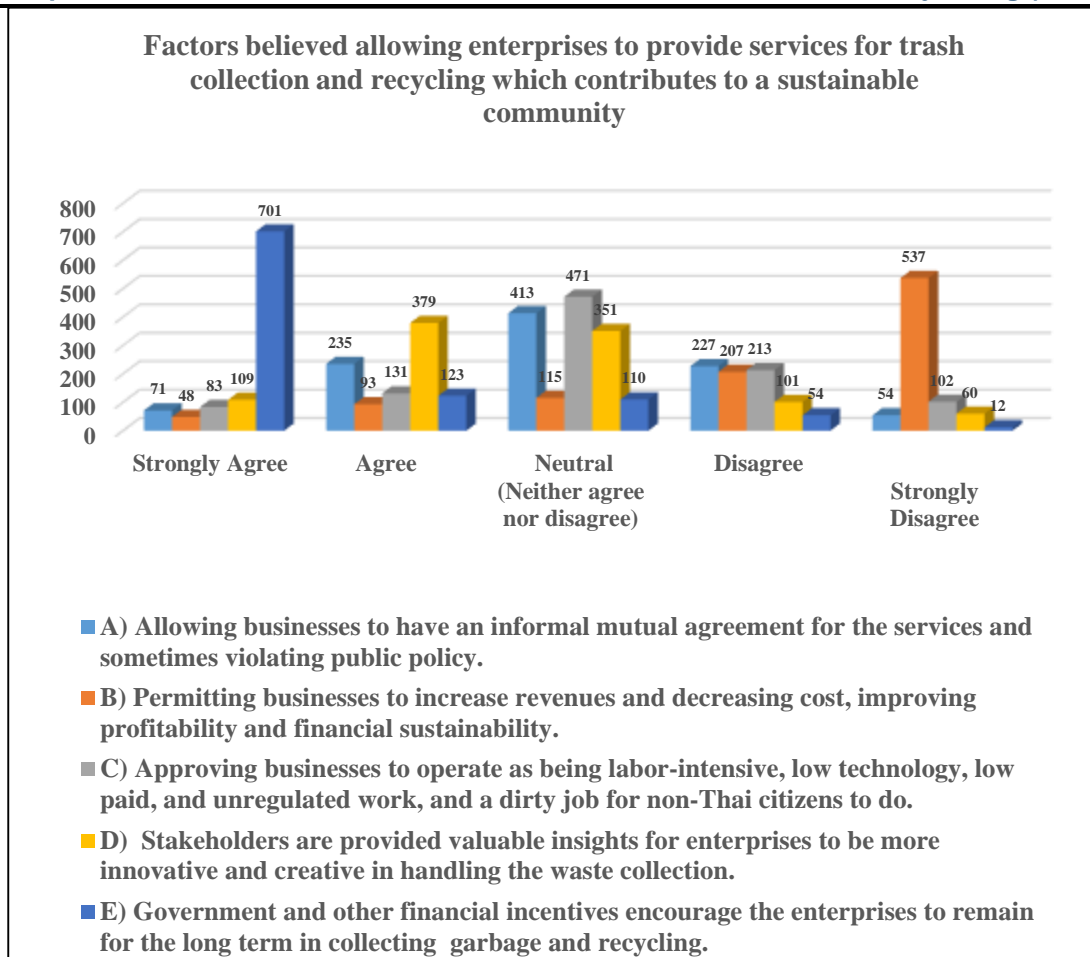
Factors believed allowing enterprises to provide services for trash collection and recycling which contributes to a sustainable community

- A) Allowing businesses to have an informal mutual agreement for the services and sometimes violating public policy.
- B) Permitting businesses to increase revenues and decreasing cost, improving profitability and financial sustainability.
- C) Approving businesses to operate as being labor-intensive, low technology, low paid, and unregulated work, and a dirty job for non-Thai citizens to do.
- D) Stakeholders are provided valuable insights for enterprises to be more innovative and creative in handling the waste collection.
- E) Government and other financial incentives encourage the enterprises to remain for the long term in collecting garbage and recycling.

Table 4. Factors Allowing Enterprises to Provide Services for Trash Collection and Recycling

The responses from the local community on the subject of allowing enterprises to provide trash collection and recycling services are only in high certainty with regards to the government and other financial incentives encouraging enterprises to remain for the long term (70%). Meanwhile, the data shows that the issue of permitting businesses to increase revenues and decrease cost, improving profitability, and financial sustainability does not truly bode well for the enterprises in providing the services. There are neutral feelings towards approving businesses to operate as being labor-intensive, low technology, low paid, and unregulated work, and a dirty job (47%), as well as the matter of allowing businesses to have an informal mutual agreement for services and sometimes violating public policy (41%). The sample group does admit that stakeholders provide valuable insights for enterprises being more innovative and creative (38%). The enterprise can only do its part if the government takes active measures to assist it in making its operation efficient enough to stay above its overhead costs and providing some incentives to keep its services sustainable enough to meet the goal of the community.

Discussion on Thai Society as an Example of a Disposable Culture

With the information gathered in graphic details from a sample study in Chiang Mai, the research views Thai society as an example of struggling to rise above the image of being a disposable culture. Becoming a sustainable community takes the heart, soul, and spirit of all members involved to perform their role because being sustainable is a long-term idea for life. It starts with education with state officials representing the foundation to coordinate events to let the local public know when aims are being achieved and the goal is being reached. For the goal to be achieved Thai state officials will have to recognize that the systems providing access to the technical know-how and campaigns to encourage participation will have to be much more effective than written or spoken messages. The most evident problem is the administration of regulations and rules which fail miserably to get people in the community to comply, and cause others to have doubt leading to a lack of support for complying with policies.

The positive news is that the infrastructure of garbage collection is functioning to the satisfaction of the public's viewpoint. Despite policies, rules, and regulations still needing to be developed it's a relief to know that the networks are in connection and that the garbage collection system is adapting to the needs of the community. Furthermore, the people are involved and are encouraged to live an environmentally friendly and healthy lifestyle, as well as being able to report issues that are a matter of concern. Policies that are aimed towards motivating the locals to maintain the behaviors towards sustainability are effective, just as long as individuals do not have a heavy burden on taking the tasks while being rewarded for their effort as well as being able to make some adjustments in the process. Most importantly, the public would like to know that other companies or organizations are also committed to the cause instead of being the cause of the problem. Taking action and getting righteous results with the public is the idea for collaboration towards a sustainable community.

Having a sustainable community in Thailand means that the business of trash collection and recycling has to be in full support because efficient decision-making has to be made for laying schemes that meet the needs of the local community and government agenda. It seems that public officials are not too fond of having private enterprises be part of the solution in contributing to a sustainable community. There aren't that many locals willing to engage in the business of collecting trash and recycling due to the fear of having the image of being dirty and disdainful in the public eye. Without the capacity and capability for developing a network of agents to help reduce disposed garbage the long-term sustainability plan will stagnate, and the Thai society becomes an example of lessons that we must keep on learning to find ways of preventing to be a disposable culture.

Conclusion

This study examined to see if Thai society is an example of a disposable culture or not truly so. While the infrastructure for garbage collection is functioning well and policies are carried out to get people involved in the campaign, there still needs to be an improvement in getting the educational messages across to people and allowing commercial agents to be part of a catalyst for reducing waste. The only drawback was that the study was conducted in Chiang Mai instead of the Thai northern region which could have provided much more robust information to get deeper insights into the research questions for an effective analysis. The theory of this study will need to continue to other provinces in northern Thailand and other regions to truly know with a strong conviction that Thailand is an example of a disposable culture.

References

Almasi, A., Mohammad, M., Azizia, A., Berizie, Z., Shamsif, K., Shahbazig, A. and Alireza Mosavia, S. (2019). Assessing the knowledge, attitude, and practice of the Kermanshahi women towards reducing, recycling, and reusing municipal solid waste. *Resources, Conservation & Recycling*, 141, 329–338.

Banditvilai, S. and Niraso, M. (2017) Simulation of the Night Shift Solid Waste Collection System of Phuket Municipality. In: Ferraro M. et al. (eds) Soft Methods for Data Science. SMPS 2016. Advances in Intelligent Systems and Computing, vol 456. Springer, Cham., 17-24.

Bangkokpost.com (2015). Trash burning blamed for Chiang Mai smog. Retrieved from https://www.bangkokpost.com/thailand/general/488821/trash-burning-blamed-for-chiang-mai smog

Bartolacci, F., Paolini, A., Grazia Quaranta, A. and Soverchia, M. (2018). Assessing factors that influence waste management financial sustainability. *Waste Management*, 79, 571-579.

Baxter, J., Lyng, K.A., Askham, C. and Hanssen, O.J. (2016). High-quality collection and disposal of WEEE: environmental impacts and resultant issues. *Waste Management*. 57, 17-26.

Bortoleto, A.P., Kurisu, K.H. and Hanaki, K, (2012). Model development for household waste prevention behavior. *Waste Management*. 32(12), 2195–2207.

Ceasea, B., Kima, H.A., Kima, D., Kob, Y. and Cappel, C. (2019). Barriers and incentives for sustainable urban development: An analysis of the adoption of LEED-ND projects. *Journal of Environmental Management*, 244, 304-312.

Chen, X., Tai, C., Wu, L., Tsai, F. and Srimanus, K. (2018). Business models for social innovation of municipal solid waste recycling companies: comparison of two business cases in Thailand and Taiwan. *Sustainability*, 10(1009), 1-13.

Chhatre, A., Lakhanpal, S., Larson, A.M., Nelson, F., Ojha, H. and Rao, J. (2012). Social safeguards and co-benefits in REDD+: A review of the adjacent possible. *Curr. Opin. Environ. Sustain*., 4, 654-660.

Fitria Widiyanto, A. and Rahab, (2017). Community participation in bank of garbage: Explorative case study in Banyumas regency. *Masyarakat, Kebudayaan dan Politik*, 30(4), 367-376.

Gamage Nadeeka Thushari, G., Chavanich, S. and Yakupitiyage, A. (2017). Coastal debris analysis in beaches of Chonburi Province, eastern Thailand as implications for coastal conservation. *Marine Pollution Bulletin*, 116, 121-129.

Gebara, M.F. and Agrawal, A. (2017). Beyond rewards and punishments in the Brazilian Amazon: practical implications of the REDD+ Discourse. *Forests*, 8(66), 1-27.

Gebara, M.F. (2013). Importance of local participation in achieving equity in benefit-sharing mechanisms for REDD+: A case study from the Juma Sustainable Development Reserve. *IJC*, 7, 473-497.

Geissdoerfer, M., Savaget, P., Bocken, N.M.P. and Hultink, E.J. (2017) The circular economy - a new sustainability paradigm? *Journal of Cleaner Production*, 143, 757-768.

Grant, J. L., Beed, T., and Manuel, P. M. (2018). Integrated community sustainability planning in Atlantic Canada: Green-washing an infrastructure agenda. *Journal of Planning Education and Research*, 38(1), 54-66.

Gunarathne, N., de Alwis, A. and Alahakoon, Y. (2020). Challenges facing sustainable urban mining in the e-waste recycling industry in Sri Lanka. *Journal of Cleaner Production*, 251 (119641), 1-13.

Gunsilius, E., Spies, S., García-Cortés, S., Medina, M., Dias, S., Scheinberg, A., Sabry, W., Abdel-Hady, N., Florisbela dos Santos, A. and Ruiz, S. (2011). Recovering resources, creating opportunities Integrating the informal sector into solid waste management. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Retrieved from https://www.giz.de/de/downloads/giz2011-en-recycling-partnershipsinformal-sector-final-report.pdf

He, B., Zhaob, D., Zhua, J., Darkoc, A. and Gou, Z. (2018). Promoting and implementing urban sustainability in China: An integration of sustainable initiatives at different urban scales. *Habitat International*, 82, 83-93.

Kwan, M., Kong, A. and Lam, T. (2019). Promoting green living by the Jockey Club Museum of Climate Change in Hong Kong. *International Journal of Marketing Studies*, 11(2), 55-63.

Laurian, L. and Crawford, J. (2016). Organizational factors of environmental sustainability implementation: an empirical analysis of US Cities and counties. *Journal of Environmental Planning and Policy*, 18(4), 482-506.

Mwanza, B.G. and Mbohwa, C. (2017). Drivers to Sustainable Plastic Solid Waste Recycling: A Review. *Procedia Manufacturing*, 8, 649-656.

NationThailand.com (2018). Thailand becoming the 'garbage bin of the world'. Retrieved from https://www.nationthailand.com/news/30347404

Ounsaneha, W., Laosee, O., Tachapattaworakul, T.T., Suksaroj, Srisamai, P. and Rattanapan, C. (2020). Tourist behavior of plastic waste reduction in the coastal area of Trang province, Thailand. *International Journal of Environmental Science and Development,* 11(4), 165-169.

Purnomo, E.P. Anand, P.B. and Choi, J. (2017). The complexity and consequences of the policy implementation dealing with sustainable ideas. *Journal of Sustainable Forestry*, 37(3), 270-285. Radzuan, I.S.M., Fukami, N. and Ahmad, Y. (2014). Cultural heritage, incentives system, and the sustainable community: Lessons from Ogimachi Village, Japan. *GEOGRAFIA Online, Malaysian Journal of Society and Space*, 10(1), 130-146.

Richmond, A., Myers, I. and Namuli, H. (2018). Urban informality and vulnerability: a case study in Kampala, Uganda. *Urban Sci*., 2(22), 1-13.

Rimi Abubakar, I. (2017). Household response to inadequate sewerage and garbage collection services in Abuja, Nigeria. *Journal of Environmental and Public Health*, 2017, Article ID 5314840, 1-11.

Sawetrattanakul, S., Jansri, S.N., Tantranont, N. and Setthapun, W. (2019). Appropriate guidelines of waste management for Keudchang Sub-district, Maetang District, Chiangmai Province, Thailand. *Asian Journal of Applied Research for Community Development and Empowerment*, 3(1), 6-8.

Scheinberg, A., Simpson, M., Gupt, Y., Anschütz, Y., Haenen, I., Tasheva, E., Hecke, J., Soos, R., Chaturvedi, B., Garcia-Cortes, S. and Gunsilius, E. (2010). Economic Aspects of the Informal Sector in Solid Waste Management. GTZ (German Technical Cooperation), Eschborn, Germany. Retrieved from http://www2.gtz.de/dokumente/bib-2011/giz2011-0116en-informal-sector-solid-waste-management.pdf

Srisuwannaket, T. and Liumpetch, C. (2019). Tackling Thailand's food waste. Retrieved from https://www.bangkokpost.com/opinion/opinion/1778159/tackling-thailands-food-waste-crisis

Suma, Y., Pasukphun, N., Hongtong, A., Keawdunglek, V., Laor, P. and Apidechkul, T. (2019). Waste composition evaluation for solid waste management guideline in a highland rural tourist area in Thailand. *Applied Environmental Research*, 41(2), 13-26.

Triki, C. (2017). Solving the periodic edge routing problem in municipal waste collection. *Asia-Pacific J. Operat. Res*. 34 (3), 1-13.

Yukalang, N., Clarke, B. and Ross, K. (2018). Solid waste management solutions for a rapidly urbanizing area in Thailand: recommendations based on stakeholder input. *Int. J. Environ. Res. Public Health*, 15 (7), 1302–1325.

Yukalang, N., Clarke, B. and Ross, K. (2017). Barriers to effective municipal solid waste management in a rapidly urbanizing area in Thailand. *Int. J. Environ. Res. Public Health*, 14(1013), 1-23.

Vassanadumrongdee, S. and Kittipongvises, S. (2018). Factors influencing source separation intention and willingness to pay for improving waste management in Bangkok, Thailand. *Sustainable Environment Research*, 28(2), 90-99.

White, R. (2017). Reparative justice, environmental crime, and penalties for the powerful. *Crime Law Soc Change*, 67, 117–132.

Wilson, D.C., Velis, C. and Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. *Habitat Int*. 30, 797-808.

Xiao, L., Zhang, G., Zhu, Y., and Lin, T. (2017). Promoting public participation in household waste management: A survey-based method and case study in Xiamen city, China. *Journal of Cleaner Production*, 144, 313-322.

Appendix

1. Which factor do you believe has helped promote public education in reducing waste and recycling to make your community sustainable?
A. The public is given the technical know-how and access as an incentive.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

B. The public is encouraged to take part in the campaign.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

C. Surrounding support from family members complying with the policy, fellow neighbors fully cooperating, and community regulation for sorting waste.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

D. State officials coordinating facilities and training to let people know that the right results are being accomplished along the process.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

E. Community and households are bound by regulations and rules
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

2. Which factor has maintained the garbage collection infrastructure for making your community sustainable?
A. Road networks serve as the means for garbage trucks to do their tasks with convenience and concentration to reach every household.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

B. The garbage collection system is adapted to the needs of the community.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

C. The public is involved in coming up with solutions that are respectable to the dignity of people.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

D. Being encouraged to have a modern lifestyle that is eco-friendly and environmentally safe.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

E. There is transparency and responsibility in reporting and communicating sustainable requirements.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree]
[ ] Strongly Disagree

3. Which factor do you believe has upheld the policies on fines and punishment and incentives that keep your community sustainable?
A. Policies have been refined to make people see that it's worthwhile to support sustainability.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

B. Institutions find more productive and innovative methods to ease the burden of supporting a sustainable community.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

C. Incentives are applied in getting people to do things more enthusiastically to support a sustainable community.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

D. The public is allowed to make necessary changes along the process for making the community sustainable.
[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

E. Policy makers and legislators make stakeholders take accountability and ownership on the idea of sustainability.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

4. Which factor do you believe has allowed enterprises to provide services for trash Collection and recycling which contributes to your community being sustainable?
A. Allowing businesses to have an informal mutual agreement for the services and sometimes violating public policy.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

B. Permitting businesses to increase revenues and decrease costs, improving profitability and financial sustainability.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

C. Approving businesses to operate as being labor-intensive, low technology, low-paid, and unregulated work, and a dirty job for non-Thai citizens to do.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

D. Stakeholders are provided valuable insights for enterprises to be more innovative and creative in handling waste collection.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree

E. Government and other financial incentives encourage the enterprises to remain for the long term in collecting garbage and recycling.

[ ] Strongly Agree
[ ] Agree
[ ] Neutral (Neither agree nor disagree)
[ ] Disagree
[ ] Strongly Disagree