WHAT A WASTE: A CONCEPTUAL FRAMEWORK TO EXAMINE LOCAL RESIDENTS' ACCEPTANCE TOWARDS THE SITTING OF WASTE INCINERATOR

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Received Date: 2nd October 2022
Accepted Date: 3rd January 2023

ABSTRACT

Waste incinerators are a plausible solution for waste management in addressing the increasing generation of wastes. However, community acceptance is forming a hurdle to the waste incinerator implementation, and cause delay, suspension, even cancellation and stop of operation of waste incinerator project. This indicates a pressing need to understand local community response towards waste incinerator implementation in order to mitigate this social barrier, alongside the development of waste incinerator. The objective of this study is to conduct a propose conceptual framework in examining the local resident's acceptance towards the sitting of waste incinerator within the neighbourhood vicinity. A systematic literature review had been conducted in order to propose the conceptual framework. This conceptual framework is based on the theory of planned behaviour, and further being extended with concepts related to risk perception, and energy justice. This framework serves as a theoretical backbone for understanding local response's attitude towards the sitting of waste incinerator, thus, insights in fostering community acceptance can be gained and mitigating the pressing social barriers with the development of waste incinerator.

Keywords: *Waste Incinerator; Attitude; Theory of Planned Behaviour; Risk perception; energy justice; Community Acceptance*

1.0 INTRODUCTION

Solid waste is the most common and unavoidable by-product worldwide, attributed to the development of economic activities and the increase of standard of living. It is expected that solid waste will increase in term of its quantity and its quality - the complexity of the waste. Such increment will cause environmental pollution and affect every single person in the world, regardless of the level of income, education or different countries that we are staying (World Bank Annual Report, 2021). According to the data by Kaza et al. (2018), as shown in Figure 1, waste generated has significantly increased from the year 2016 to the year 2030. Such increment is expected to be continued to the year 2050.

Waste management in federal territory of Malaysia, Kuala Lumpur, is moving forward to reduce the dependence on landfills. As shown in Figure 2.0, landfill that account for almost 89% waste will be reduced to 60%, with an increasing share on recycling treatment technology (18%) and recycling (20%) (Pemandu, 2015). Additionally, waste incinerator has emerged as a potential alternative. Nevertheless, waste incinerator is not without disputes. There are five mini waste incinerators built in the tourism place which are Pulau Langkawi, Tioman, Pangkor, Labuan and Cameron Highland. According to The Star Newspaper (2019), those mini-incinerators can operate favourably to reduce the volume of the solid waste, and the local communities are willing to accept

its placement. However, large waste incinerators had been postponed or the construction being delayed due to the community acceptance issue such as the incinerator in Kepong (Ibrahim, 2017). Therefore, to address the community acceptance issue, this paper aims to develop a conceptual model in examining residents' response towards the sitting of waste incinerator within their neighbourhood.

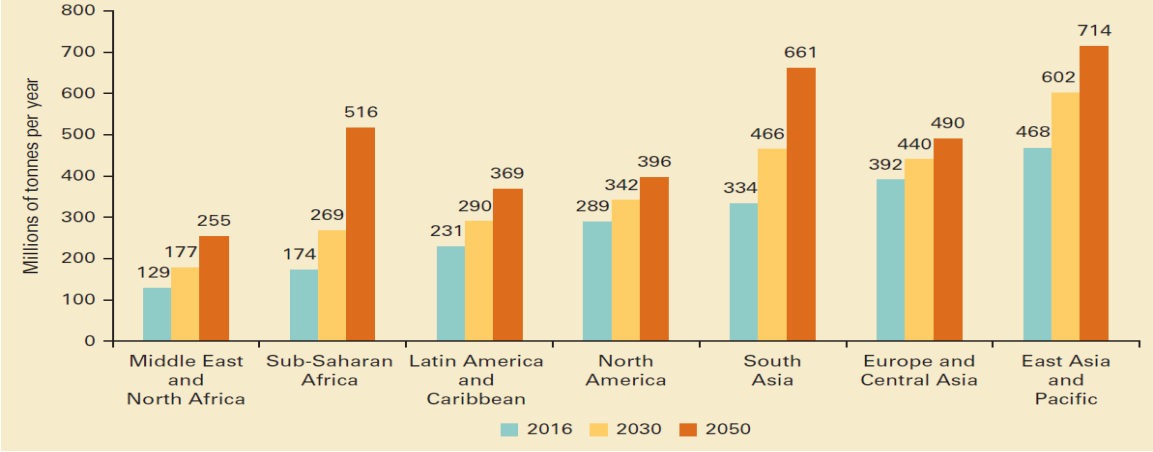

Figure 1: Projected waste generation, by region (millions of tonnes/ years)
Sources: Kaza et al. (2018)

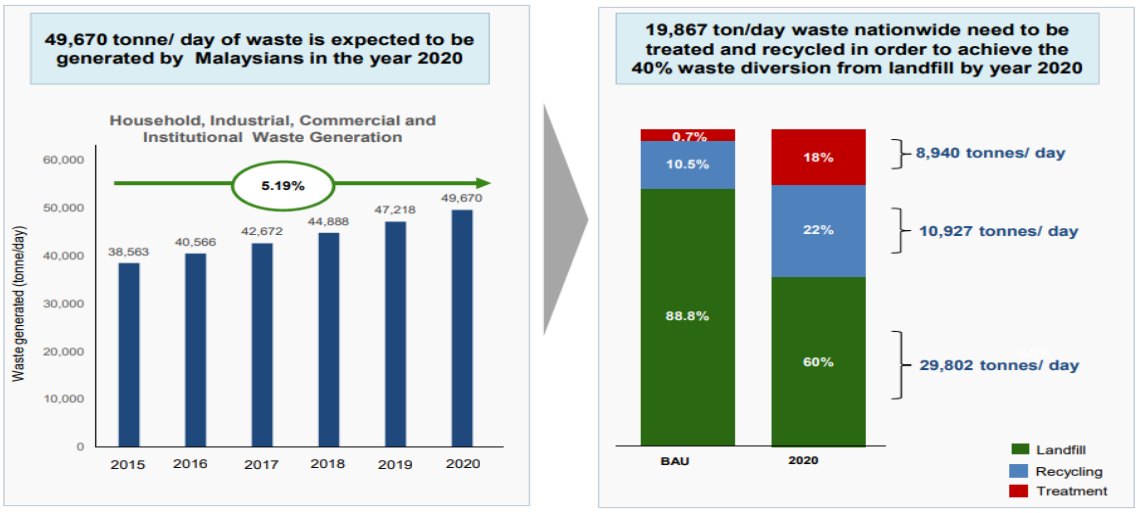

Figure 2: Malaysia waste generation and landfill percentage
Source: Performance Management and Delivery Unit (Pemandu) (2015)

2.0 METHODOLOGY

The risk perception is understood that different beliefs and knowledge from the individual people may cause the different sources of risk (Oltedal et al., 2004). Van Winsen et al. (2011) also mentioned that proper risk management is enough to give people a sense of balance by adopting a conservative risk attitude, thus there will be a relationship between the perceived risk and attitude towards the behaviour. Furthermore, procedural justice is more focused on the process of discussion, and communication with the local neighbourhood and the government and politicians. (Walker, 2009). Distributional justice means that the local people physically feel getting an unequal allocation of the environmental benefit and costs (Walker, 2009). Castelfranchi and Falcone (2005)

also discussed the trust theory unable to use common sense, natural language, or any technical technological decision with an advantage to explain it.

Furthermore, the theory of planned behaviour included three main categories of variables which are attitude, subjective norms, and perceived behaviour control. The attitude towards the behaviour is showing the person's individual feelings and emotions to think and plan about the behaviour intention and action in that situation. It will also bring out the positively and negatively value of the outcome or experience after the action had been performed, Ajzen, (2005, 2020). Subjective norms will be playing the role of the people's perception of the social pressure to perform or not behaviour under consideration. It may also divide into two parts, the injunctive and descriptive norm. Perceived behavioural control is presented as the person's intention whether to act according to the person's individual self-efficacy or ability to perform the behaviour of interest such as required skills and abilities, time, money, resource and more, Ajzen, (2005, 2020).

In conclusion, the theory mentioned above will be recommended in this study to understand how people react, the attitude and behaviour towards waste incinerators.

3.0 COMMUNITY ACCEPTANCE FRAMEWORK FOR WASTE INCINERATOR

Based on the systematic review, a conceptual framework had been proposed to reveal residents' response towards the sitting of waste incinerator. The conceptual framework is shown in Figure 3. And the following subsections will further explain the variables integrated within the framework.

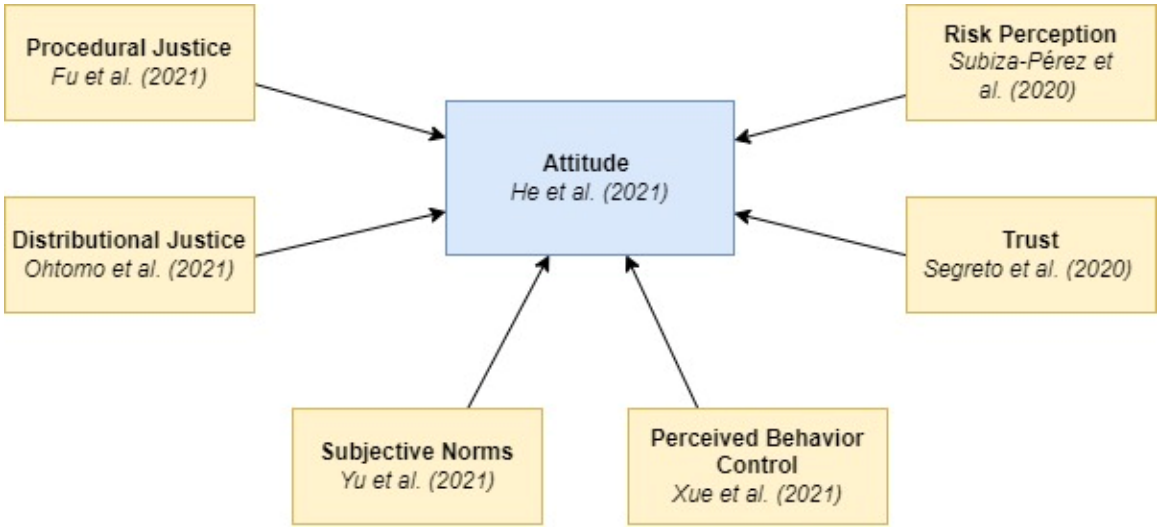

Figure 3: Propose Conceptual Framework of Developing a Model to Facilitate the Implementation of Sitting of the Waste Incinerator

Source: Own Development

Risk perception can be defined as the subjective judgement that people make about the characteristics and severity of a risk. According to Subiza-Pérez et al. (2020) it was found that the risk perception had mentioned that distance is not mainly affecting on people feeling insecure. The waste incinerator can provide a job opportunity for the locals; Bena et al. (2019) and Sun et al. (2019) said that the locals have a significantly negative attitude toward the waste incinerator as it had created more hazers for them compared to other

residences area which had 5km more from it. Therefore, the risk perception and attitude also showed that it is a significant relationship according to the studies above.

Trust refers to when one party trusts another and is a measure of belief in the honesty, fairness, or benevolence of another party. Segreto et al. (2020) mentioned that the mutual trust between the local and the stakeholders of the renewable energy facilities is a critical measurement. As Huang and Yang (2020) showed that the facilities leaders and government in China constructed the waste incinerator to rely on top-down and secretive tactics, and this action causes a broken trusting relationship. Cui *et al.* (2020) also mentioned that the government in China uses a top-down and closed traditional Decide Announce-Defend (DAD) decision-making approach that caused people to feel unfair. Mutual trust is significantly important when building the construction of a waste incinerator in the local residential area. The inevitable anti-incineration will have a higher chance to happen or be carried out when the level of trust in management or government is low as mentioned by Hou et al. (2019). Therefore, trust will also directly influence people's attitudes.

Procedural justice is a concept that focuses on the process of discussion, and communication with the local neighbourhood and the government and politicians, the operator of the waste incinerator. However, residents wish to be able to be a part of the process of decision-making in the sitting of the waste incinerator (Behrsin, 2020). It is also able to reduce the negative effect on people feeling injustice or unfair, Huang & Chen (2021). Therefore, procedural justice also shows that this variable presents again that it is a significant variable while researching waste facilities or industries; so, this variable must be included in this framework to predict people's attitudes and behaviour more accurately. However, the difference in distributional justice is referring to how local people feel getting an unequal allocation of the environmental benefit and costs. It will be becoming a more concern variable in reflecting the public acceptance and people's attitude towards the Not in My Back Yard (NIMBY) projects if the operator or government failed to allocate cost and benefit fairness, Wang et al. (2021). Therefore, procedural justice is needed to be transparent and have the process decision with the local; for the distributional justice is to allocate the cost and benefits average for them to have a positive attitude toward the waste incinerator.

The attitude defines as a mental and emotional entity that inherent or characterizes a person. It also included the set of emotions, beliefs and behaviours towards a particular object, person, thing, or event that can be defined as attitude towards a behaviour. He et al. (2021) said that the residents also have a positive attitude toward waste management when the management took care of their environmental concerns. The people will have a positive attitude and be more willing to accept the waste incinerator, Wall *et al.* (2021). For the definition of subjective norms, it refers to the belief of an important person or group of people will approve and support a particular behaviour. Besides that, Liebe and Dorbes (2019) also discussed the subjective norms about renewable energy facilities. Surprisingly the local people are more willing to accept wind turbines because family and friends support the project as it will provide a better environment. Furthermore, Yu et al. (2020) said that implementing greater policy regulations and incentives by operators and government, will lead to encouraging farmers to possible obtain a positive broken window effect. When a positive in broken window effect, it will lead to people encouraging other people, neighbourhood, and friends to accept it. Perceived behaviour control refers to the perception of the difficulty in performing behaviour. Zhao et al. (2020) said it became tenser while the waste incineration releases the environmental pollutant and caused people anger and have a negative attitude Xue et al. (2021). As they know they have the chance to minimize the health impact issue, thus they will take action to protest it.

4.0 CONCLUSION

Siegrist and Árvai (2020) also mentioned the importance of risk perception for people's behaviour, and there are a few important variables that will be significantly affecting in risk perception which are the characteristics of hazards, the characteristics of risk perceivers, and

the application of heuristics to inform risk judgments. Since the waste incinerator is one of the famous technologies in solid waste management, however, the residents still reject to accept it as the facilities will bring out a hazard and multiple risks to the locals. Significantly, this study will benefit Malaysia in achieving the United Nation's Sustainable Development Goals (SDG) via waste incinerator implementation as a sustainable waste management practice in addressing climate change issues (SGD 13) and adverse environmental issues (SGD 11), and to increase the share of renewable energy generated using solid waste (SGD 7).

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