

# The Role of Willingness to Sacrifice towards Pro-environmental Behavior in Jakarta Citizens

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**Keywords:** Pro-environmental Behaviour, Willingness to Sacrifice, Jakarta

**Abstract:** The decreasing of environmental quality in Jakarta caused by the interference of the Jakarta citizens itself, but there are still many attempts by some citizens and governments to improve the environment with pro-environment behaviour. One of the most significant factors contributing to pro-environmental behaviour is the willingness to sacrifice (WtS). This study aims to see whether WtS contributes significantly to pro-environmental behaviour. The number of samples in this study was 332 samples with characteristics of age 21-65 years old and domiciled in Jakarta. In this study, the instruments are the General Ecological Behavior and Willingness to Sacrifice for The Environment. Based on the result of regression, there is a significant role between WtS toward pro-environmental behaviour ( $p = 0.001$ ,  $p < 0.05$ ) and  $R^2 0.031$ . For further research, it is expected to add other factors such as attitudes toward the environment and commitment to the environment that can form the pro-environmental behaviour in one study.

## 1 INTRODUCTION

Jakarta has a complex living environment. Starting from the number of slum settlements, polluted rivers, and air and water pollution, the quality of Jakarta's environment continues to decline. Based on data contained in the Indonesia Environment Quality Index (IKLHI) (2012) report, Jakarta ranks last on the index of environmental quality compared to other cities in Indonesia. Besides, according to data obtained from the Sustainable Cities Index (2016), Jakarta ranks 85th out of 100 cities in the world in Green City aspect. Aspects of Green city include environmental risks, air pollution, drinking water and sanitation, energy, greenhouse gas emissions, greenhouses, and waste management (Sustainable Cities Index, 2016). With these ratings, Jakarta has a reduced environmental quality.

One of the most apparent environmental issues in Jakarta is the flood. According to data obtained from the National Disaster Management Agency (2016), within the last five years, there are 1,212 cases of floods in Jakarta and from those cases have claimed casualties and resulted in substantial losses. According to the Jakarta Regional Library and Archives Board (2015), the danger of floods and puddles in Jakarta is due to the overflow of river water and rain (Hastari, 2015). According to the Director-

General of Waste Management, Waste and B3 KLKH, in 2019 Jakarta is predicted to produce 68 million tons of garbage with 9.52 million tons of plastic waste which is one of the causes of flooding (National geographic, 2016). That condition caused by the behaviour of people who throw garbage in the river so that the river flow becomes obstructed (Hapsari & Zenurianto, 2016). According to Irianto, other causes are people who build houses on the banks of the river (Salmah, 2012). Also, flooding also caused by the urbanization is so high that a lot of green open land that used as a place to live. The reduced number of green public areas also narrows the waterways and water absorption that could potentially cause flooding (Hapsari & Zenurianto, 2016).

In addition to flooding, pollution is also an environmental problem in Jakarta. According to the Jakarta Regional Library and Archive Board (2015), the environmental quality in Jakarta is the third city in the world with high pollution levels, both water, air and land pollution (Hastari, 2015). According to the IKLHI (2012) report, air quality, especially in large cities and metropolitan areas heavily influenced by transportation activities such as inefficient use of cars with one car occupied by only one person. According to the Jakarta Regional Library and Archives Board (2015), the air pollution occurring in Jakarta

dominated by transportation that generates 70 percent of total nitrogen oxide contamination (NO<sub>x</sub>) emissions.

There have been many attempts by the government to reduce environmental problems. According to Smart City Jakarta (2016), several things have been done by the government to overcome the flood disaster such as shallow river normalization, cleaning of integrated waste treatment plant (TPST), and hygiene campaign. Also, the government has made a pay-plastic policy, where one plastic is priced at Rp 200 in supermarkets to reduce the amount of plastic waste, but the program does not last long because the plastic waste in Jakarta is increasing (UNAIR News, 2016). However, the Jakarta government's efforts to address environmental issues are not enough to reduce environmental problems.

From some of the above explanations, it appears that the people of Jakarta still throw garbage out of place, choose to drive private vehicles rather than public transportation, and it shows that people do not yet have pro-environment behaviour. Pro-environmental behaviour is a concern, awareness, and understanding of personal consequences for environmental protection (Bronfman, Cisternas, López-Vázquez, la Maza, and Oyanedel, 2015). Besides, Sawitri, Hadiyanti, and Hari (2015) define pro-environment behaviour as a conscious act done by individuals to reduce the adverse impacts of human activities on the environment and to improve environmental quality.

Nevertheless, there are still people who conduct activities that show that they have pro-environmental behaviour. According to Homburg and Stolberg (in Sawitri et al., 2015), individual characteristics with high pro-environmental behaviour are active in the environment (such as participating actively in environmental organizations). Non-activist action in the public sphere (such as petitions on issues) ecological issues), environmentalism in personal life (energy savings, purchasing recyclables), and behaviour within the organization (such as product design). Actual activities are undertaken by the community in pro-environmental behaviour one of them is to follow the events organized by the government such as Clean Up Jakarta Day where the people of Jakarta annually participate clean the streets of the garbage (Clean-Up Jakarta Day, 2018).

Also, a handful of Jakarta residents are also recycling reusable waste to be a creation or item that can be useful to the surrounding community (Tunas Nusa, 2014). Another thing that some Jakarta people do is cycling to work or elsewhere to reduce and

prevent the increase of air pollution in Jakarta (Bike to Work, 2018). Individuals with high pro-environment behaviour may also be affected by their age, socioeconomic or income status, and sex (Gifford & Nilsson, 2014; Bronfman et al., 2015).

Six factors can shape pro-environment behaviour, that is a personal norm, new ecological paradigm, awareness of consequence, an ascription of responsibility, personal value, and willingness to sacrifice (Willuweit, 2009). Willingness to Sacrifice (WtS) is one factor that can play a role in pro-environment, it is because WtS is the determining factor whether the society will behave pro-environment or not (Davis, Le & Coy, 2011; Chen & Zheng, 2016).

WtS represents the extent to which decisions made by individuals will improve welfare despite sacrificing self-interest, cost, or effort (Davis et al., 2011). With WtS encouragement on the individual, he will be more active in activities related to welfare and environmental protection (Han & Hyun, 2016). Pro-environment behavior that can be grouped as a form of WtS is the willingness of individuals to buy environmentally friendly products, although slightly expensive (replacing plastic with their own shopping bags and buying organic food), willing to lower the standard of living (replace the air conditioner with fan), and accept environment-related government policies (Chen & Zheng, 2016). In WtS, a handful of Jakarta people have a willingness to accept a policy of increasing the price of plastics to shop for the protection of the environment from plastic waste (Suryani, 2016). Besides, the people of Jakarta are also willing to pay more for waste processing (Emalia and Huntari, 2016).

Results of research conducted by Davis et al. (2011) found that WtS has a significant and positive relationship with pro-environment behaviour, where the number of relations is 0.52. Also, Willuweit (2009) found that WtS can predict pro-environment behaviour significantly so that WtS has a very significant role in the formation of pro-environment behaviour. Another study conducted by Iwata (in Davis et al., 2011) found that individuals who had higher WtS to the environment would have a higher responsibility to the environment. Han and Hyun (2016) found that the role of WtS against a person's intent to conduct pro-environment behaviour was 0.740 or 74%.

The purpose of this research is to see the role of Willingness to Sacrifice toward pro-environment behaviour in Jakarta citizens. Benefits that can be expected from this research that can be a reference in designing programs that encourage people to increase

further the willingness in sacrifice to improve or preserve the environment to help the formation of appropriate pro-environmental behaviour.

### 1.1 Pro-environment Behavior

Pro-environment behaviour is a conscious act to minimize the adverse effects of individual behaviour on the environment (Kolmuss & Agyeman, 2002). Ramus and Killmer (2007) argue that pro-environmental behaviour is part of prosocial behaviour because this behaviour has benefits for others and the environment. Also, According to Bronfman et al. (2014), a pro-environmental behaviour is a concern, awareness, and understanding of the personal consequences of environmental protection.

Pro-environmental behaviour has six dimensions (Bronfman et al., 2015), namely:

1. Power Conservation: energy-saving behaviour. Like not turn on the light during the day and unplug the unused cable.
2. Ecologically Aware Consumer Behavior: the behaviour of buying products that have environmentally friendly materials. Like buying organic food products.
3. Biodiversity Protection: protecting biodiversities, such as taking a pet to a veterinarian, visiting a park and planting trees or plants.
4. Water conservation: water-saving behaviour. Like turning off the tap while brushing your teeth.
5. Rational Automobile: behaviour undertaken to reduce air pollution. Like to prefer to use a bicycle to travel rather than using a motor vehicle.
6. Ecological Waste Management: waste management behaviour to reduce household waste. Like, recycle items that are not used.

There are factors that may influence pro-environment behaviour, i.e. age, gender, and socioeconomic status which in this study uses income.

### 1.2 Willingness to Sacrifice

Willingness to Sacrifice (WtS) is the extent to which decisions made by individuals will improve their well-being despite sacrificing their self-interest, cost, or effort (Davis, Le, & Coy, 2011). According to Chen and Zheng (2016), WtS is a sacrifice made by individuals who have a positive or positive impact on others, especially for the next generation. Factors that

may affect WTS include age, education level, and socioeconomic status which in this study uses income (Willuweit, 2009).

## 2 METHODS

This research uses incidental sampling technique. Characteristics of the sample in this study were DKI Jakarta citizens aged 21-65 years. Measurements are made through two measuring instruments. The pro-environmental behaviour variable uses the General Ecological Behavior Scale (GEB) developed by Bronfman et al. (2015) and the Willingness to Sacrifice variable using the Willingness to Sacrifice for The Environment Scale developed by Davis et al. (2011). The GEB measurement tool has Cronbach's Alpha reliability of 0.79, and the Willingness to Sacrifice for The Environment Scale has Cronbach's Alpha reliability of 0.823.

### 2.1 Analysis and Result

This study used 332 respondents with age 21-39 years (N = 288) and age 40-65 years (N = 44). Female gender (N = 208) and male (N = 124), and earnings ranging from 0-25.000.000 rupiah range. Before doing linearity and regression test, the researcher performs normality test. The data can be said to be normal if the significance value  $p > 0.05$  (see table 1).

Table 1. Normality Test Result

	Unstandardized Residual
Kolmogorov-Smirnov Z	0.804
Asymp. Sig. (2-tailed)	0.538*

\* $p > 0.05$

### 2.2 Preliminary Analysis

In this study, researchers controlled the demographic variables that could affect the pro-environment behaviour variables other than the WtS variable. The control test by using regression hierarchy test. However, before conducting regression tests, the researchers correlated between demographic variables and pro-environment behavioural variables (see table 2). Demographic variables to be controlled are age, sex, and income.

Table 2. Correlation Test Result

Demographic Variables	R	Sig.
Pro Environmental Behaviour Sex	-0,080	0,147
Pro Environmental Behaviour Income	0,172**	0,002
Pro Environmental Behaviour Age	0,184**	0,001

Table 2 shows that pro-environment behavioural variable has a significant correlations with income demographics (SES) and age variables. Therefore, the researchers control the two variables. However, pro-environment behaviour has no significant association with sex. Nevertheless, researchers continue to exercise control over the sex variables, given the comparison between the sexes of men and women who are almost balanced. Therefore, the researchers conducted a different test (see table 3).

Table 3. The Different Test Based on Gender

Demographic Variables	M	Sig.
Male	100.38	
Female	97.98	0.005

Based on the above table, the researchers found significant value on the different test of gender demographic variable with significance value  $p = 0.005$  were ( $p < 0.01$ ). On the sex difference test, the male has  $M = 100.38$ , and the female has  $M = 97.98$ . From the results of the mean (M) that have been described, it can be said that men have a slightly higher level of pro-environment behaviour than women. After the correlation test and different test, the researchers then conducted a multilevel regression test. Based on the result of the multilevel regression test, the value of R2 before controlled is 0.081 and after control, the R2 value decreases to 0.031 (see table 4).

Table 4. Multilevel regression test

Model	R Square	R Square Change	F	Sig.
1	0.050	0.050	5.781	0.001
2	0.081	0.031	7.229	0.001

### 3 DISCUSSION

The result of simple regression test shows that the significant value is 0.001 ( $p < 0.05$ ) which means that the accepted research hypothesis WtS plays a significant role in the pro-environment behaviour. In this study found that the role of WtS is 3.1% of pro-environment behaviour, where 96.9% is the influence of other factors. Other factors are personal norms, personal values, awareness of consequences, an ascription of responsibilities, and attitudes toward the environment (Oreg & Katz-Gerro, 2006; Willuweit, 2009; Chen & Zheng, 2016).

The results of hypothesis testing are in line with research conducted by Katz-gerro (2006) and Willuweit (2009), where WtS can be one of the factors that can influence the formation of pro-environment behaviour. According to Davis, et al. (2011) states that individuals who have WtS will experience a cognitive change where the individual will focus on sacrificing for others compared with the individual self itself, this is called a transformation of motivation. This is because WtS is a form of altruism motivation where individuals will feel the moral obligation, awareness, and responsibility for pro-environmental behaviour (Chen & Zheng, 2016). Therefore, WtS has an important role in shaping pro-environment behaviour (Han & Hyun, 2016).

Also, Davis et al. (2011) state that the important role of WtS is used to determine the actions of pro-environmental behaviour to be undertaken by individuals. Where in this case involves psychological pressure between following self-interest and orientation to the future for the welfare of the surrounding environment (Sara & Nurit, 2014). Also, individuals with WtS to protect the environment will become more active in conducting pro-environment behaviour (Iwata, 2002) (in Han & Hyun, 2016). According to Bronfman et al. (2014), environmental protection depends not only on the government but on the choice of community activities and sacrifices in protecting the environment (Bronfman et al., 2014). The behaviours resulting from WtS encouragement include buying environmentally-friendly products even more expensive than non-environmentally friendly products, willing to pay taxes when raised by the government, and willing to lower lifestyle standards (Chen & Zheng, 2016).

Another finding in this is the value of its role in pro-environment behaviour in Jakarta citizens is 3.1%, in this case, it can be said the value of the role is low. That is, WtS in Jakarta society has a low contribution to shaping pro-environment behaviour. The low contribution of WtS to pro-environment



behaviour can be caused by people who have not looked at environmental protection as a top priority, but people are still trying to achieve economic prosperity (Dunlap & Mertig, 1995; Willuweit, 2009; Phuphisith, Kurisu, Hanaki, 2017). According to Bronfman et al. (2015), as for people in cities in developing countries who care about environmental protection only reached the concern for the area where he lived at that time but have not reached the thought for the next generation.

The researchers' assumptions, the delegation of responsibility to the environment can also affect the level of WtS in individuals (Chen and Zheng, 2016). The delegation of responsibility for environmental management comprises two: self-delegation of responsibilities and assignment of responsibility to the government (Bronfman et al., 2014). According to Bronfman et al. (2014) and Chen & Zheng (2016), the modern community of developing countries delegates more responsibility to the government than the developed countries, so the people do not feel the responsibility to protect the great environment. This can affect the WtS owned by the individual.

## 4 CONCLUSION

According to the results of research that has been done to 332 respondents, willingness to sacrifice has a significant role in the pro-environment behaviour in Jakarta citizens. Nevertheless, the purpose generated between WtS towards pro-environment behaviour is only 3.1% percent.

### 4.1 Sugestion

1. For future researchers are expected to pay attention to the distribution of data for both ages, place of residence, and income so that the results of the study can become more comprehensive.
2. For future researchers, it is expected to add other factors such as attitudes toward the environment and commitment to the environment in one study that can shape pro-environmental behaviour.
3. Further research is expected to exercise control and categorization of subjects who have pro-environmental behaviour and who do not have pro-environment behaviour.

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