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RESEARCH

Influence of Demographic and Economic Characteristics, Knowledge, Perception, and Clean-Living Behaviour on Participation in Household Scale Waste Handling Activities

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ABSTRACT

PURPOSE: The aim of this paper is to analyse the factors influencing clean lifestyles in urban communities, emphasising the role of education.

DESIGN/METHODOLOGY/APPROACH: In this study, we used an ordinary least square (OLS) model to assess the level of hygiene behaviour in urban communities. In the model, the regressed dependent variable is the level of hygiene behaviour. The score ranges from 1 to 5, where 1 represents the most imperfect way of life (or dirty way of life) and 5 represents a clean way of life, as indicated by the guided classification.

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FINDINGS: The highest level of hygiene is achieved when a person has undertaken 12 years of education. For the case of Indonesia, this implies that a person will have a high level of hygiene behaviour in their living conditions when they have completed senior high school (12 years of schooling). The level of hygiene behaviour becomes higher when per capita expenditure (as an intermediary of salary) increases. This suggests that family units with higher incomes will have higher hygiene scores, resulting from cleaner living conditions.

ORIGINALITY: This paper gives a new perspective on the relationship between education, income and urban environmental quality. The integration of socio-economic and environmental factors can serve as a policy basis for designing targeted interventions to promote sustainable urban living and improve people's well-being.

KEYWORDS: *Demographic and Economic; Knowledge; Perception; Clean-Living Behaviour; Household Waste.*

INTRODUCTION

In Indonesia, environmental quality varies across regions and sub-regions. Influencing factors such as banking sector development, economic growth and income inequality have a negative impact on environmental quality (Florence *et al.*, 2024). At the macro level, this shows clear differences, especially in Java and outside Java. As the centre of both population and national economic activity, Java faces a disproportionately high level of environmental stress compared to other regions. Decentralisation and urbanisation also worsen environmental quality. The development of green technologies and strict environmental policies are needed to reduce the negative impacts of the industrial sector, which is mostly located in Java (Pujiati *et al.*, 2023). Overall, better environmental quality is found in cities and provinces on Java Island, although disparities still occur within those provinces and cities. From this, it can be seen that certain living conditions have clear patterns when mapped with other socio-economic factors. It can be seen that the distribution of property ownership looks good in certain high-income areas, while others have less satisfactory properties, or even look shabby in low-income areas. A snapshot of elite and slum housing in Surabaya can be seen in Figure 1.

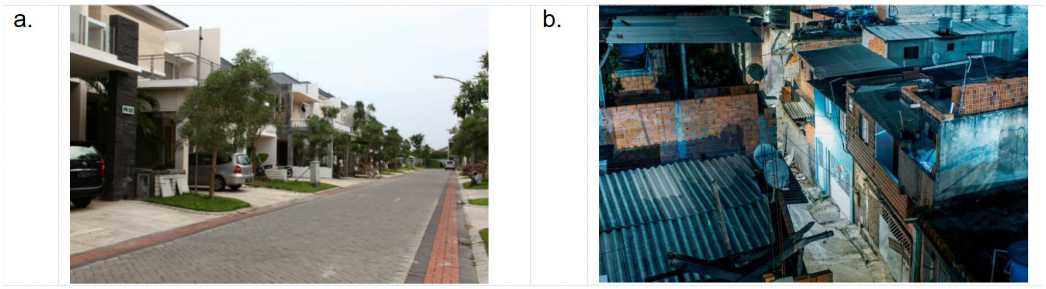

Figure 1: (a) Pakuwon City elite housing in Surabaya and (b) Kapsari slum housing in Surabaya
Source: budiono.net & mojok.co

Starting from this phenomenon, the authors see that inequality in quality of life is caused by inequality in economic welfare, which is preceded by inequality in education. In Indonesia, a 1% increase in education will increase the economy by 2.01% (Herdiansyah *et al.*, 2021). In addition, higher education and regional income correlate with the level of environmental quality. Education improves the environmental sustainability of a region and reduces CO2 emissions. It contributes to the development of innovation, planning, transparency, stakeholder training, negotiation and social networks. Research in Thailand shows that education initiates knowledge-based green actions (Chankrajang and Muttarak, 2017). In this paper, the author wants to prove that efforts to improve environmental cleanliness (living conditions) can start with improving education. If educational improvements have been made, they will be followed by better economic conditions, especially for people living in slums or people living in areas with low quality of life.

Improving the quality of higher education and labour welfare significantly increases Total Factor Productivity in Indonesia: this emphasises the need for adequate government budget allocation to improve the quality of education. The integration of climate education into the Indonesian education system can improve social welfare by preparing future generations to address ecological challenges and encouraging the advancement of innovation in sustainable technologies (Suyeno *et al.*, 2025). Environmental education positively impacts environmental conservation and quality by developing attitudes, values and skills and synchronising research findings with field practices. Environmental education in Indonesia needs to be improved to foster public awareness and concern for the environment so that it can easily overcome environmental problems that occur due to resource exploitation, industrialisation and urbanisation. Sustainable economic policies in Indonesia positively affect welfare, while income inequality and environmental degradation hinder economic progress. In this study, the authors will show how environmental improvement should start with improving education to achieve better economic conditions.

Environmental cleanliness itself comes from the individuals living in the location, as the entity responsible for preserving the environment. At the individual level, environmental care activities are influenced by individuals' abilities, namely their habits, formal education, economic conditions,

and willingness to pay or contribute to a healthy and clean environment. The ability of individuals to adapt to environmental and social changes is strongly influenced by the dynamic ability of self-management. This ability can detect changes early and increase environmental and social commitment, thus encouraging contributions to better environmental sustainability (Buil-Fabregà *et al.*, 2017).

Education plays an important role in the formation of strategic environmentalism, especially in children and adolescents. Shaping childhood experiences and education that emphasises skills and democratic values can encourage pro-environmental actions. In addition, the development of both personal and collective competencies can also encourage engagement in public issues and environmental action (Chawla and Cushing, 2007). This process of engagement and skill development has been found to have a positive correlation with personal well-being. Environmental skills development programmes that involve training in problem solving and adaptive use can improve well-being.

It can be argued that appropriate interventions can enhance an individual's ability to contribute to a healthy and clean environment. Increasing active environmental care requires personal factors such as self-esteem, sense of belonging, self-advancement, personal control and optimism, as well as using behavioural interventions to change behaviour (Geller, 1995). Connectedness to nature is closely related to personal well-being and environmental awareness. The heightened awareness that accompanies these conditions frequently serves as the primary catalyst for the adoption of pro-environmental behaviours. Pro-environmental behaviour is influenced by 18 personal and social factors with complex interactions that determine outcomes in environmental stewardship. Consequently, researchers have sought to ascertain which of these personal and social factors exert the most significant influence in specific contexts. Based on research, ideological views and beliefs in society do not influence waste management capabilities, but the demand for better environmental conditions and involvement in voluntary activities do (Matsumoto, 2020). This finding is significant because it suggests that active participation and tangible demands for change are more powerful drivers than abstract societal beliefs.

While connection to the natural environment is important for well-being, the socio-economic dimension may be even more influential in modern society, with economic well-being and education playing a pivotal role. Economic well-being and formal education shape how people live and respond to external conditions. Of these two components, formal education often serves as the primary mechanism for individuals to improve both their economic standing and their overall life prospects.

Education can increase access to non-alienated employment and economic resources, while it can also increase a sense of control over one's life and access to stable social relationships. Conversely, a lack of education can create significant barriers, leading to a cascade of negative outcomes, particularly concerning mental health. Low education results in a 5.3% greater prevalence of moderate mental distress with approximately 32% of the effect of differences in job quality

(Blaikie *et al.*, 2023). Individuals with higher education tend to experience lower levels of emotional and physical stress, although not necessarily lower dissatisfaction because education reduces stress through paid work and economic resources associated with high personal control. This stress-reduction mechanism is part of a broader, well-documented link between educational attainment and better overall health outcomes (Veenstra and Vanzella-Yang, 2021). Educated people are more likely to have satisfying full-time jobs, high incomes and low levels of economic hardship, which in turn significantly improves the quality of health. Furthermore, the positive impacts of education and income are not confined to the working-age population but extend significantly into later life.

The findings of the study demonstrated a positive correlation between high income, the quality of social networks and competencies acquired through education on the one hand, and subjective well-being in older people on the other. The data indicated that life satisfaction in older people is influenced by children's contacts rather than friendships (Qing *et al.*, 2024). Higher levels of education and status of accommodation ownership and financial stress contribute to the subjective economic well-being of households. This is due to the fact that education is a primary predictor of employment quality and income potential. Furthermore, the ownership of one's residence provides a fundamental sense of stability and security, thereby effectively mitigating the acute financial stress of housing instability experienced by households.

Economic status has a stronger impact on subjective well-being in low-income developing countries and individuals with low education levels, while the relationship is weaker in high-income developing countries and highly educated individuals. This distinction is critical, as in environments of scarcity, economic status is a primary driver of daily survival. In contrast, in high-income nations where fundamental needs are predominantly met, the marginal utility of supplementary income on well-being diminishes. Non-economic factors, such as personal relationships, work-life balance, and self-actualisation, may assume a more significant role as determinants. A high level of education is positively correlated with life satisfaction. This positive link can be attributed to the fact that education expands an individual's capabilities, improves health literacy, and fosters a greater sense of personal control and purpose, far beyond the confines of mere economic output. High levels of education contribute to the creation and development of an informed society with high awareness that is essential for building the economy and living standards. An informed populace is more adaptable to technological shifts, more innovative, and better equipped to participate in democratic processes, all of which are prerequisites for sustainable economic development. According to Giambona *et al.* (2014), many good ways of life occur in high-income areas, where in contrast low-income areas show unsatisfactory living conditions, or even slums. This spatial dimension of well-being highlights severe structural inequalities, suggesting that well-being is not just an individual attribute but is heavily influenced by geographic location and the quality of local socio-economic infrastructure.

Formal education plays an important role in raising environmental awareness and positive attitudes. It acts as the primary vehicle for transmitting knowledge about ecological systems, the

consequences of environmental degradation, and the pro-social norms that encourage conservation. Research in China shows that increasing the number of years of formal education significantly improves environmental and personal behaviour. This suggests a dose-response relationship, where each additional year of schooling embeds a deeper understanding of environmental causality. Higher formal education increases environmental knowledge and awareness of pollution that influences environmental behaviour. In addition, higher formal education is also associated with higher socio-economic status and better economic income; this increases individuals' interest in the environment and ability to take environmentally friendly actions (Sun *et al.*, 2020). This is a crucial distinction: awareness alone is insufficient.

Higher economic status, often a result of education, provides the financial 'breathing room' and access necessary to translate awareness into action, such as purchasing organic food, investing in energy-efficient appliances, or affording solar panels. Higher education has a significant impact on reducing carbon emissions, especially in formal and informal entrepreneurship. Educated entrepreneurs are more likely to recognise the long-term business case for sustainability (cost savings, brand reputation) and are better equipped to innovate and implement green technologies or circular economy models within their enterprises. Education also contributes to environmental sustainability by raising awareness and motivation for green consumption and clean production (Prabawati and Frimawaty, 2025). This involves fostering a "sustainability mindset" where individuals are educated not just as citizens, but as consumers, making them more likely to demand and choose products that are ethically sourced and have a minimal environmental footprint. Quality education not only contributes to economic growth and improvement but also to environmental balance and sustainability. Therefore, education is positioned as a critical nexus point, linking human capital development directly to ecological preservation. Education plays a role in shaping environmentally friendly economic behaviour for sustainable development (Dincă *et al.*, 2022).

Various measures and policies have been implemented to address environmental degradation, including government interventions by limiting resource utilisation and public awareness campaigns. Awareness campaigns have proven to be more effective than restrictive policies in promoting a balance between economic growth and high environmental quality (Grassetti *et al.*, 2024). This is because restrictive policies (such as taxes or bans) often rely on external enforcement, which can be met with resistance. In contrast, awareness campaigns seek to foster internal motivation and social norms, reframing environmentalism not as a burden but as a desirable value, leading to more durable behavioural change. The effectiveness of these campaigns lies in their ability to change individual and collective behaviour towards a more environmentally friendly lifestyle. In this case, improving economic welfare through the promotion of formal education is one of the best efforts that policy-makers can make to improve environmental quality. This policy framework suggests a 'win-win' scenario, where education acts as the central lever for achieving the dual goals of economic prosperity and environmental protection.

Formal education not only increases individuals' capacity to understand environmental issues but also encourages awareness of the importance of a clean and healthy lifestyle. The level of education aids employment and income opportunities that allow individuals to fulfil basic needs while contributing towards secondary needs such as involvement in environmental conservation. This argument is rooted in the hierarchy of needs; individuals preoccupied with basic economic survival have limited cognitive and financial resources to dedicate to abstract or long-term issues. Education breaks this cycle of poverty. Once individuals are no longer in a state of economic precarity, they gain the capacity, both financially and psychologically, to elevate their focus to 'secondary' or post-materialist concerns, including environmental quality and conservation.

Better economic well-being also encourages greater willingness to invest in infrastructure and services that support environmental quality. Therefore, improving economic welfare through the promotion of formal education is one of the best efforts policy-makers can make to improve environmental quality. A more educated and economically secure populace is not only more aware but also more willing to support and pay for green policies, public services, and infrastructure that protect the environment. This framework can work well if education promotion helps improve every aspect of life, including economic well-being; this will then be followed by a clean lifestyle at the individual level. Ultimately, this framework posits that education does not force a choice between the economy and the environment; rather, it creates the human capital that makes it possible for both to thrive simultaneously.

METHODOLOGY

Data Description and Collection Method

Primary data collection consisted of 8 sessions in total, profiling household and individual conditions, and other socio-economic aspects through more than 80 questions. Taken from all questions from eight interview sessions, this study uses various variables from three of the eight sessions: (i) Household profiling, (ii) Individual profiling on age, education and occupations, and (iii) Guided self-assessed scores of living aspects.

The sampling method used on primary data collection was purposive random sampling, where random households were taken from designated urban communities where waste-management problems exist and that had a large number of populations. After the household was chosen, enumerators recorded responses at the household level, and followed by individual responses.

Economic Modelling and Regression Method

In this study, the author used an ordinary least square (OLS) regression model to estimate the degree of clean lifestyle on urban citizens. The study examines how several possible regressors (independent variables) might impact on the degree of clean lifestyle at the individual level. The regressions took several attempts in order to look for fit estimates; this also confirms the theoretical framework and literature.

In the model, the dependent variable regressed is the degree of clean lifestyle. This variable was derived from guided self-assessment on clean lifestyle of the respondents. The score ranges from 1 to 5, where 1 represents the least clean (or nearly dirty lifestyle) and 5 represents a clean lifestyle, according to the guided categories. There are five categories of clean lifestyle, such as (i) throwing garbage in the correct place, (ii) knowing how to handle garbage, (iii) knowing the importance of correct waste-handling, (iv) having regular cleaning activities, and (v) makes an effort to spread a clean lifestyle, or at least prevent other people from littering. The guided self-assessed score made the self-assessed score of clean lifestyles (degree of clean lifestyle) objective, through those discrete categories. Each category was worth 1 point, with the minimum score of 0 and a maximum of 5. In this study, degree and score of clean lifestyle has the same meaning.

In this study, the dependent variables are regressed with various independent variables, covering socio-economic conditions, income groups, and dummy variable of regional agglomeration factors. The socio-economic conditions aspect was estimated with years of schooling and age. Income groups, as the proxy of welfare, were estimated through expenditure per capita, dividing respondents into deciles of income-expenditure group. The dummy variable of agglomeration factors (cities in this case) was then applied to profile with the spread of environmental well-being and clean lifestyle among respondents.

The variable of interest in this study is education, approximated by the years of schooling and income groups, approximated by the deciles of expenditure per capita. Higher years of education means higher formal education has been taken, and a higher decile of income group means higher expenditure per capita, and higher prosperity and economic welfare at the individual and household level. Regional properties and characteristics are also added in this study to map where good living conditions and clean lifestyles are spreading.

The regression model in this study is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where,

Y = Degree (score) of Respondent's Clean Lifestyle
β_0 = Constant
β_1-β_5 = Coefficient parameters of independent variables
X_1 = Years of Schooling
X_2 = Years of Schooling^2 (squared)
X_3 = Income groups; 10 Deciles of Expenditure per Capita
X_4 = Age of Respondent
X_5 = Dummy of cities
ε = Error terms

RESULTS AND ANALYSES

Regression Result

In this study, the author examines how the relevant independent variables can cause the degree of clean lifestyle. The degree of clean lifestyle is processed using regression with independent variables that can explain what factors cause the distribution of clean and dirty lifestyles in urban communities. From various exercises, the best four results were obtained that can explain what variables significantly affect the degree of clean lifestyle in urban communities. The four resulting (estimated) models will be used in the further analysis process. All models are designed to explain the relationship between the independent variable and the dependent variable. The results of the regression analysis will be used to understand the pattern of relationships between these variables. Table 1 summarises the regression results as part of this study.

Table 1: Regression Results of Variable Relationships

Variables	*(1) est1 Degree of Clean Lifestyle*	*(2) est2 Degree of Clean Lifestyle*	*(3) est3 Degree of Clean Lifestyle*	*(4) est4 Degree of Clean Lifestyle*
Years of Schooling	-0.0118***	0.0538***	0.0588***	0.0212
	(0.00395)	(0.0163)	(0.0195)	(0.0183)
Years of Schooling^2		-0.00331***	-0.00298***	-0.00133
		(0.000801)	(0.00100)	(0.000935)
10 deciles of PCE	0.0448***	0.0440***	0.0440***	0.0671***
	(0.00546)	(0.00544)	(0.00664)	(0.00676)
Age			0.000527	0.000559
			(0.00121)	(0.00112)
				(0.259)
Constant	3.831***	3.569***	3.447***	3.293***
	(0.0505)	(0.0810)	(0.104)	(0.109)
Observations	1,979	1,979	1,263	1,263
R-squared	0.036	0.044	0.042	0.206

Standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1
Source: Constructed by author

According to the regression table, years of schooling has a negative and statistically significant impact on the first model, but is positive on the other models. In this part, attention should be paid to the 2nd and 3rd estimates. On those estimates, years of schooling has a positive and significant impact, meaning that the respondent's education level is proportional with the degree of clean lifestyle. In other words, a person with a higher level of educational background will likely have a higher degree of clean lifestyle, and vice versa. The 4th estimation also has a positive relationship

yet is statistically insignificant. An increase of 1 year in formal education will increase the degree of clean lifestyle by 0.058 (model 3). Overall, education level approximated by years of schooling has a positive impact on the degree of clean lifestyle, meaning that well-educated people are likely to have a clean lifestyle and, relatively, cares about the cleanness of their living environment.

In addition, the author also included the squared form of years of schooling as an independent variable. The results of the analysis show that, in all models, the square of years of schooling has a negative relationship with a clean lifestyle. This means that the effect of formal education on improving a clean lifestyle will peak at a certain level of education, before starting to decline. This relationship is consistent with the mathematical properties of the quadratic function where, if $y = -ax^2$, an inverted U-shaped curve is produced, with -a as the slope of the curve. This phenomenon illustrates that formal education provides maximum benefits up to a certain limit. To prove the importance of the quadratic variable of years of schooling, the author predicts the value of the dependent variable based on years of schooling through simulation. The results of this prediction are visualised in the form of a graph, which illustrates the pattern of the relationship. More details can be seen in Figure 2.

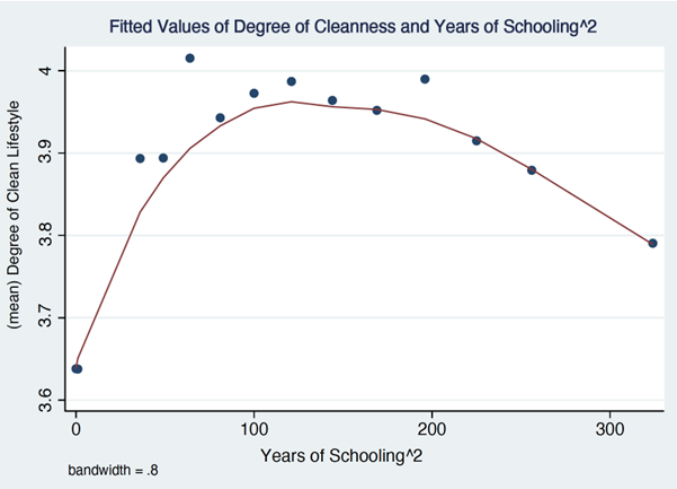

Figure 2: Predicted (Fitted) Values of Degree of Clean Lifestyle based on Years of Schooling^2 shows Inverted U-Shaped Curve
Source: Constructed by authors from survey data

In the first model, educational background has a significant and negative relationship due to the autocorrelation effect and the law of diminishing returns, where a certain time in years of schooling will not give any additional benefits to a person, the benefits may even diminish. In this study, that is why the other models also use the squared form of years of schooling. The first model, that does not have squared years of schooling, is included as a logical reason underneath the other models. According to the fitted values, the authors found that the highest degree of cleanness

will be achieved when an individual has reached 12 years of schooling. In the case of Indonesia, it means that an individual will have a good clean lifestyle in their living environment when they have finished senior high school (12 accumulated years of schooling). By using the same equations, where the squared form of years of schooling is included, Figure 3 shows a predicted graph of dependent variable based on years of schooling.

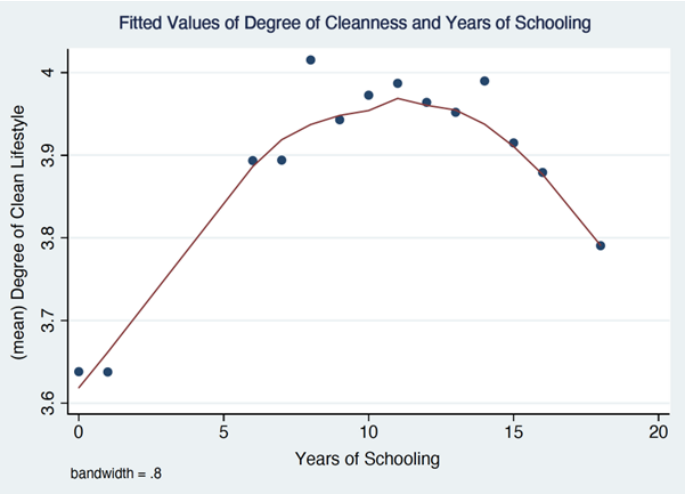

Figure 3: Predicted (fitted) values of degree of clean lifestyle based on years of schooling, confirms that highest possible clean lifestyle will be achieved after nearly 12 years of schooling

Source: Constructed by author

The next variable is the income group. In this study, the author examines the respondent's economic welfare based on income group measured by their expenditure per capita. Expenditure per capita has been used as best proximation of the welfare, assuming income equals expenditure. In the current study, expenditure per capita for each respondent was grouped into deciles, making the first decile the group containing the 10% of respondents with lowest expenditure per capita, and the tenth decile the group containing the 10% of respondents with the highest incomes. In the other words, the higher the decile means better economic welfare. According to the regression result, the decile of personal consumption expenditures (PCE) shows a positive and significant relationship to the degree of clean lifestyle. This means a higher income/expenditure per capita, the better economic state, is likely to increase the degree of clean lifestyle. This means a better and cleaner lifestyle and environment occurs for high-income respondents.

This finding confirms previous literature and studies where individuals in a good economic state are likely to pay attention to their secondary and tertiary needs since their basic necessities are fulfilled. Better economic conditions also mean that an individual is more willing to pay for a clean and healthy environment relative to those with lower economic conditions. According to Figure

3, the fitted values of the degree of clean lifestyle get higher when expenditure per capita (as the proxy of income) is increasing. It shows that higher income households and individuals will have a higher score of clean lifestyle, resulting in a cleaner living environment. This finding answered why high-income districts (where high-income households are agglomerated) has a much cleaner environment compared to low-income districts that often show a dirtier environment, and/or even slums.

The paper finds that policies should have been enforced by local officers or governor in order to promote clean lifestyle and behaviour. The most important policy implications for local government officers are to improve the formal education level of their citizens. Educational improvement can be quality improvement of existing educational facilities, or improving the infrastructure of existing schools that are currently in a bad condition. Policies promoting educational improvement must be done in determined way with increasing attention due to its non-instantaneous effect. After quality disparities among education facilities have been reduced, the ratio of school environment must be increased through raising the local government budget on educational benefits. The school enrolment ratio could be increased through reduction and subsidies made by local government on the cost of attending school. After educational improvement has been accomplished, citizen's income per capita is likely to increase, exhalating lower income groups to have better life and increasing their ability to fulfil secondary and tertiary needs. Therefore, after primary needs have been met for exhalated low and middle-income households, they should enough residual capital to take care of their living environment.

CONCLUSIONS

This research proves that improving formal education is the first step to promoting a clean and healthy environment. Improvements in education can be made either through improving infrastructure or quality of education facilities. Promoting education also includes an increase in the school enrolment ratio, especially for citizens who are classified in the lowest income groups. Increasing the school enrolment ratio will increase their future income per capita as their welfare grows. After educational improvement has been carried out and the school enrolment ratio has risen, citizens' ability to fulfil further secondary and tertiary needs will increase, together with their willingness to pay for a clean living environment. The score of clean lifestyles for urban citizens will gradually rise following their increased participation in education meaning that their economic welfare will improve.

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REFERENCES

Blaikie, K., Eisenberg-Guyot, J., Andrea, S.B., Owens, S., Minh, A., Keil, A.P. and Hajat, A. (2023): Differential Employment Quality and Educational Inequities in Mental Health: A Causal Mediation Analysis. *Epidemiology*, Vol. 34, No. 5, pp.747-758. Available at: https://doi.org/10.1097/EDE.0000000000001629

Buil-Fabregà, M., Alonso-Almeida, M.D.M. and Bagur-Femenías, L. (2017): Individual dynamic managerial capabilities: Influence over environmental and social commitment under a gender perspective. *Journal of Cleaner Production*, Vol. 151, pp.371-379. Available at: https://doi.org/10.1016/j.jclepro.2017.03.081

Chankrajang, T. and Muttarak, R. (2017): Green Returns to Education: Does Schooling Contribute to Pro-Environmental Behaviours? Evidence from Thailand. *Ecological Economics*, Vol. 131, pp.434-448. Available at: https://doi.org/10.1016/j.ecolecon.2016.09.015

Chawla, L. and Cushing, D.F. (2007): Education for strategic environmental behavior. *Environmental Education Research*, Vol. 13, No. 4, pp.437-452. Available at: https://www.tandfonline.com/doi/abs/10.1080/13504620701581539

Dincă, G., Bărbuță, M., Negri, C., Dincă, D. and Model (Săndulescu), L.-S. (2022): The impact of governance quality and educational level on environmental performance. *Frontiers in Environmental Science*, Vol. 10, p.950683. Available at: https://doi.org/10.3389/fenvs.2022.950683

Florence, O.O., Sunday, O.O., Saheed, A.A., Omotayo, A.O; Adesope, O.P. and John, A.K. (2024): Assessing the Environmental Impact of Municipal Solid Waste. *Journal of Environmental Science and Sustainable Development*, Vol. 7, No. 2, pp.618-639. Available at: https://doi.org/10.7454/jessd.v7i2.1276

Geller, E.S. (1995): Actively Caring for the Environment: An Integration of Behaviorism and Humanism. *Environment and Behavior*, Vol. 27, No. 2, pp.184-195. Available at: https://doi.org/10.1177/0013916595272004

Giambona, F., Porcu, M. and Sulis, I. (2014): Does Education Affect Individual Well-Being? Some Italian Empirical Evidence. *Open Journal of Statistics*, Vol. 4, pp.319-329. Available at: https://flore.unifi.it/handle/2158/1096197

Grassetti, F., Mammana, C. and Michetti, E. (2024): Capital exploitation and environmental awareness: How they affect the economy and the environment in a dynamic framework. *Annals of Operations Research*, Vol. 337, No. 3, pp.1067-1088. Available at: https://doi.org/10.1007/s10479-023-05815-3

Herdiansyah, H., Brotosusilo, A., Negoro, H.A., Sari, R. and Zakianis, Z. (2021): Parental Education and Good Child Habits to Encourage Sustainable Littering Behavior. *Sustainability*, Vol. 13, No. 15, p.8645. Available at: https://doi.org/10.3390/su13158645

Matsumoto, S. (2020): Do individuals free ride on participation in environmental policies? Personal values and waste management practices. *Ecological Economics*, Vol. 174, p.106669. Available at: https://doi.org/10.1016/j.ecolecon.2020.106669

Prabawati, A. and Frimawaty, E. (2025): Assessing plastic waste management performance: Insights from the waste management performance index. *Waste Handling and Environmental Monitoring*, Vol. 2, No. 1, pp.1-17. Available at: https://doi.org/10.61511/whem.v2i1.2025.1320

Pujiati, A., Nurbaeti, T. and Damayanti, N. (2023): What are the factors that determine differing levels of environmental quality? Evidence from Java and other islands in Indonesia. *Management of Environmental Quality: An International Journal*, Vol. 34, No. 2, pp.290-307. Available at: https://doi.org/10.1108/MEQ-02-2022-0034

Qing, Z., Wu, C. and Gao, T. (2024): The impact of social participation on Subjective Wellbeing in the older adult: The mediating role of anxiety and the moderating role of education. *Frontiers in Public Health*, Vol. 12, p.1362268. Available at: https://doi.org/10.3389/fpubh.2024.1362268

Sun, L., Yang, S., Li, S. and Zhang, Y. (2020): Does education level affect individuals' environmentally conscious behavior? Evidence from Mainland China. *Social Behavior and Personality: An International Journal*, Vol. 48, No. 9, pp.1-12. Available at: https://doi.org/10.2224/sbp.8488

Suyeno, S., Putra, L.R., Ngindana, R. and Kumalasari, I. (2025): Reframing Educational Cities as Waste Governance Laboratories. *Journal of Environmental Science and Sustainable Development*, Vol. 8, No. 1, pp.127-147. Available at: https://doi.org/10.7454/jessd.v8i1.1292

Veenstra, G. and Vanzella-Yang, A. (2021): Does household income mediate the association between education and health in Canada? *Scandinavian Journal of Public Health*, Vol. 49, No. 8, pp.857-864. Available at: https://journals.sagepub.com/doi/abs/10.1177/1403494820917534

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