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The Role of Islamic Ethics in Shaping Public Policies for Sustainable Industrialization

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Abstract. *The industrialization framework affects both the environment and society, yielding benefits such as reducing unemployment and improving welfare, but also causing environmental damage like water and air pollution. This research analyzes how public policies on environmental orientation in industrialization impact social-economic and ecological balance, environmental quality, and sustainable development in Bandung, Indonesia, from the perspective of Islamic principles. A quantitative methodology was employed, sampling 106 individuals, including entrepreneurs, civil servants, environmental specialists and public policy experts, and religious leaders from Bandung. A survey measured opinions on the balance of socio- economic and ecological factors related to industrialization with environmental quality and sustainability, all within the framework of Islamic teachings on stewardship (khalifah) and social justice (adl). Using Structural Equation Modeling (SEM), the findings revealed that industrialization significantly impacts social-economic balance, environmental balance, environmental quality, and sustainable development. These findings underscore the importance of balancing economic growth with environmental sustainability and advocate for policies grounded in religious values to achieve this balance.*

Keywords: *Islamic Environmental Stewardship, Industrialization, Socio-Economic Balance, Sustainable Development Policies, Public Policy.*

1. INTRODUCTION

Indonesia is presently directing its attention towards industrialization as a means of building a fair and wealthy society. This, however, has raised both beneficial and detrimental outcomes for the environment. The industrialization process entails using resources to produce goods and services for consumption, production, and capital accumulation, which will, in turn, generate novel technologies for industrial purposes.[1] Resources can be grouped into two: renewable and non-renewable. Therefore, it is vital to ensure the effective and efficient management of resources and the environment, guided by Islamic principles of stewardship (*khalifah*) and the ethical use of resources (*adl*). Specifically, the industrial expansion in Bandung has created areas for industrial clusters that have led to concerns about environmental sustainability.

[1] Rajesh Sharma, Muhammad Shahbaz, Pradeep Kautish, and Xuan Vinh Vo, "Analyzing the impact of export diversification and technological innovation on renewable energy consumption: Evidences from BRICS nations," *Renewable Energy* 178 (2021): 1034-1045.

Islamic teachings emphasize the importance of maintaining the balance (*mizan*) of creation, urging the government to implement policies that reflect these values. Policies outlined in the Environmental Impact Assessment (EIA), Environmental Management Plan, and Environmental Monitoring Plan should incorporate Islamic perspectives on environmental care.[2] The progression of the area has more far-reaching consequences than initially thought, including increased environmental contamination, unlawful settlements, and a lack of comprehension about managing sustainability. This threatens sustainable development in Bandung, underscoring the need for policies rooted in Islamic ethics to safeguard the environment and ensure just and sustainable growth.

However, the decline in environmental conditions has the potential to impede economic growth and lead to a rise in expenses for developing countries due to increased healthcare costs and diminished productivity.[3] The impairment of the environment, including the pollution of water sources, significantly contributes to global disease outbreaks. From an Islamic perspective, the preservation of human living conditions, the environment, and natural resources requires the joint effort of governments, employers, and local communities, guided by principles of stewardship (*khalifah*) and justice (*adl*). Neglecting the environment contradicts Islamic teachings on the responsible use of resources and will adversely affect a country's Gross National Product (GNP).[4] It is crucial to prioritize environmental preservation and consider the needs of future generations during development, in line with the Islamic concept of intergenerational justice. Capital assets encompass not only infrastructure like machinery and buildings, but also human expertise, existing abilities, and natural resources including forests, soil quality, and land.[5] Sustainable development is founded upon environmentally-conscious actions and the ethical use of resources. As industries grow, be it in primary, secondary, or tertiary sectors, they contribute to water, soil, and air pollution through industrial waste, which ultimately diminishes the quality of the environment. Islamic teachings advocate for the protection of these resources, emphasizing the balance (*mizan*) of creation and the moral obligation to avoid harm (*darar*) to the environment.

Industrialization not only affects the environment but also impacts the socio-economic and cultural activities of the affected region. In Islamic ethics, the environment plays a crucial role in national development, as the consequences of development and industrial activities affect all levels of society. The principle of stewardship (*khalifah*) mandates responsible care for the Earth, emphasizing that residents in polluted areas suffer losses both directly and indirectly, often without realizing the severity of the

[2] Agus Widodo, and Mohammad Belayet Hossain, "The Reconstructing Legal Policies of The Management and Control of Environmental Impacts for Industrial Areas in Urban of Central Java," *International Journal of Law Reconstruction* 6, no. 2 (2022): 241-256.
[3] Muhammad Sadiq, Moataz Ahmad Amayri, Ch Paramaiah, Nguyen Hong Mai, Thanh Quang Ngo, and Thi Thu Hien Phan, "How green finance and financial development promote green economic growth: deployment of clean energy sources in South Asia," *Environmental Science & Pollution Research* 29, no. 43 (2022): 65521-65534.
[4] Lorenzo Fioramonti, Luca Coscieme, and Lars F. Mortensen, "From gross domestic product to wellbeing: How alternative indicators can help connect the new economy with the Sustainable Development Goals," *The Anthropocene Review* 6, no. 3 (2019): 207-222.
[5] David William Pearce and Jeremy J. Warford. *World without end: economics, environment, and sustainable development.* (Oxford: Oxford University Press, 1993) p, 135.

environmental damage. This neglect contradicts the Islamic obligation to avoid harm (*darar*) and uphold social justice (*adl*). Therefore, the government needs to implement policies that improve the quality of life, socio-economic status, and culture of affected people, guided by Islamic principles of environmental stewardship and justice. This study seeks to examine environmental sustainability by analyzing the balance between socio-economic and environmental factors, environmental quality, and sustainable development in relation to policies regarding industrialization in Bandung. By incorporating Islamic ethics, the study aims to ensure that development is both morally and environmentally sustainable, addressing the needs of present and future generations while preserving the integrity of Allah's creation.

2. LITERATURE REVIEW AND HYPOTHESIS

Industrialization refers to development activities that prioritize the growth of the industrial sector.[6] Argue that industrialization is a developmental stage that can enhance a nation's economic growth. During industrialization, various production factors interact to achieve a desired level of output, marking a shift from labor-intensive agriculture to capital-intensive modern industry. The socioeconomic effects of industrialization are reflected in the social and economic activities of individuals, which is closely intertwined with the industrial sector. States that there are different indicators of economic and social activities empirically. For instance, economic activities such as investment, consumption, government spending, and foreign trade activities, and social activities including education, health services, housing, and inter-religious relations. By considering all these activities together, we can determine their output produced during a particular time period.

Another factor that is linked to achieving a sustainable development process, aside from industrialization, is environmental balance, as mentioned.[7,8] United Nations Environment Programme. International Resource Panel, United Nations Environment Programme, defines environmental balance as the way in which population, economic growth, natural resources, and the environment relate to each other. An optimal harmonization between humans and the environment is critical in attaining economic growth and promoting sustainability in development. Further emphasizes that a good environmental quality reflects the state of the physical environment,[9] including groundwater and air. Different aspects such as physical quality of nature, water, air, flora, fauna, land use, social status or aesthetics all contribute to achieving a better ecosystem.

On the other hand, industrialization demands sustainable development, namely development that is oriented towards economic growth and preservation of the environment or natural resources for the production process. So, sustainable development is an integration of social sustainability, environmental sustainability and economic sustainability. Sustainable development is also often described by improving

[6] Kiely, Ray, *Industrialization & Developmen*, (London: Routledge, 2005), 202.
[7] Md Abdul Jalil, "Sustainable development in Malaysia: A case study on household waste management," *Journal of Sustainable Development* 3, no. 3 (2010): 91.
[8] Fulekar, M. H., Bhawana Pathak, and Raosaheb K. Kale, *Environment and sustainable development*, (New Delhi: Springer India, 2014), 201.
[9] Glicksman, Robert L., David L. Markell, Daniel R. Mandelker, A. Dan Tarlock, and Frederick R. Anderson. "Environmental protection." *Law and policy* 5 (2003): 21-34.

the quality of life according to the carrying capacity of the environment.[10] In general, sustainability is defined as continuing without lessening, which means continuing activities without reducing. Provides an understanding that sustainable development can be interpreted as development that is able to sustain development itself to be unlimited. Sustainable development is often an elusive concept, even though it has become development jargon throughout the world.[11] The need for industrialization calls for sustainable development, which means balancing economic growth while also preserving the environment and natural resources used in production. This involves achieving social, environmental, and economic sustainability, and improving the quality of life within the limits of the environment's capacity. The idea of sustainability means continuing activities without reducing their resources. Argues that sustainable development is capable of sustaining unlimited development itself.[12] While the term sustainable development is widely understood, grasping its full meaning remains difficult.[13]

In theory, industrialization is seen as a developmental stage that can boost a nation's economic growth. It is commonly believed that the industrial sector serves as a primary driver of a country's economic progress. The process of industrialization can also produce chain reactions, expand markets within the country, and have implications for income distribution, particularly for poorer members of society.[14] The primary objective of industrialization and industrial development is to enrich people's lives by enhancing their standard of living and quality of life.[15,16] Ensuring the longevity of industrial activities depends greatly on the accessibility of natural resources and an intact environment, which serves as a valuable asset by furnishing various services. The environment, being a unique asset, offers a mechanism that can uphold the existence of human life.[17] Lack of appropriate resource upkeep leads to resource deterioration, leading to a community that is incapable of staying sustainable. Natural resources act as the foundation for the survival and progress of humans and are crucial as raw materials in the industrial domain.[18]

Proposed the Environmental Kuznets Curve (EKC) to assess the impact of industrial activities on the environment.[19] The EKC theory suggests that the relationship between

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[10] Akhmad Fauzi and Alex Oxtavianus. "Pengukuran pembangunan berkelanjutan di Indonesia", *Mimbar: Jurnal Sosial dan Pembangunan 30,* no. 1 (2014); 42-52.
[11] Tomáš Hák, Svatava Janoušková, and Bedřich Moldan, "Sustainable Development Goals: A need for relevant indicators," *Ecological indicators* 60 (2016): 565-573.
[12] Ben JE Biggs, Edgar Gutiérrez-Espeleta, Mohd Nordin Hj Hasan, Gregor Laumann, Bedrich Moldan, Ashbindu Singh, Joachim Spangenberg, and David Stanners, "Meeting conceptual challenges," *Sustainablity Indicators* (2007): 27.
[13] John Blewitt, *Understanding sustainable development*, (London: Routledge, 2012).
[14] Syukri Arief, *Teori dan Kebijaksanaan Pembangunan*, (Jakarta: CIDES, 1998).
[15] Jeonghwan Jeon and Yongyoon Suh, "Analyzing the Major Issues of the 4th Industrial Revolution," *Asian Journal of Innovation and Policy* 6, no. 3 (2017): 262-273.
[16] Lukman Arsyad, *Ekonomi Pembangunan*, (Yogyakarta: STIE YKPN, 1999).
[17] Tom Tietenberg, *Environmental and Natural Resources Economics. Sixth Edition. International Edition,* (New York: Addison Wesley, 2003).
[18] Muhammad Suparmoko, *Ekonomi Sumberdaya Alam dan Lingkungan (Suatu Pendekatan Teorets)*, (Yogyakarta: BPFE-UGM, 2006).
[19] Simon Kuznets, "Economic growth and income inequality." In *The gap between rich and poor* Routledge, 2019), pp. 25.

environmental quality and industrialization takes the form of an inverted U-curve[20] with the impact on sustainable development being mainly determined by environmental aspects. Reported research consistent with an inverted U-curve relationship between industrialization and environmental quality.[21] Social and political factors were found to have a significant impact on environmental quality.[22] Regarding sustainable development, research.[2324] Concluded that environmental factors had a substantial influence on the sustainability of a nation's development.

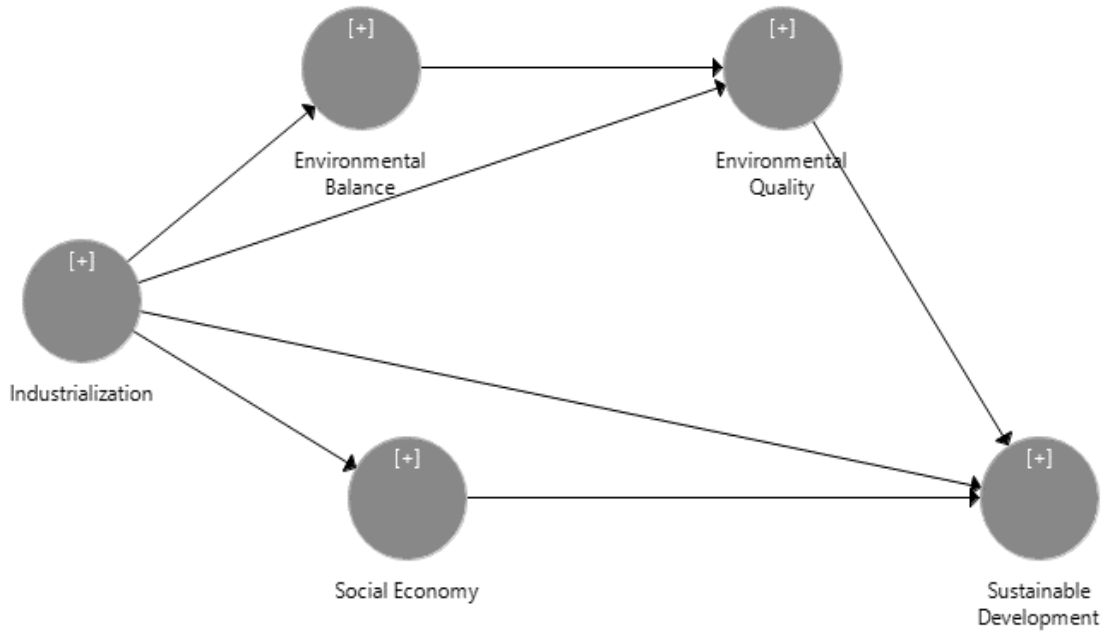

Figure 1. Theoretical Model of Islamic Ethics-based Environmental Policy.

Environmental orientation in industrialization-related policy making is crucial for ensuring sustainable development.[25,26,27] While industrialization significantly contributes to economic growth, it also has negative impacts on the environment, social and

[20] Mohan Munasinghe, "Is environmental degradation an inevitable consequence of economic growth: tunneling through the environmental Kuznets curve," *Ecological economics* 29, no. 1 (1999): 89-109.
[21] Hemamala Hettige, Muthukumara Mani and David Wheeler, *Industrial pollution in economic development: Kuznets revisited*, (World Bank Publications, 1998), p 209.
[22] Mariano Torras, and James K. Boyce, "Income, inequality, and pollution: a reassessment of the environmental Kuznets curve." *Ecological economics* 25, no. 2 (1998): 147-160.
[23] Xiaoming Pan, *Social and ecological accounting matrix: an empirical study for China*, (Italy: Macerata. 2000) p,423.
[24] World Bank. (2000). *The Quality of Growth*. New York: Oxford University Press
[25] Karl Aiginger and Dani Rodrik, "Rebirth of industrial policy and an agenda for the twenty-first century," *Journal of industry, competition and trade* 20 (2020): 189-207.
[26] Runhe Cheng and Wei Li, "Evaluating environmental sustainability of an urban industrial plan under the three-line environmental governance policy in China," *Journal of environmental management* 251 (2019): 109545.
[27] Luis Jesús Belmonte-Ureña, José Antonio Plaza-Úbeda, Diego Vazquez-Brust, and Natalia Yakovleva, "Circular economy, degrowth and green growth as pathways for research on sustainable development goals: A global analysis and future agenda," *Ecological Economics* 185 (2021): 107050.

economic aspects, and human health.[28,29,30] Islamic ethics emphasize the principle of stewardship *(khalifah*), which mandates responsible care for the Earth and consideration of the broader implications of human activities. Therefore, when formulating policies for industrialization, it is essential to consider the environmental implications of industrial activities in line with Islamic principles of avoiding harm (*darar*) and promoting social justice (*adl*). Environmental orientation in industrialization-related policy making can positively affect social and economic aspects by improving public health, creating employment opportunities, increasing competitiveness, improving resource efficiency, and attracting more investment.[31] These benefits align with the Islamic commitment to justice and the well-being of the community (*ummah*). Thus, policymakers must integrate Islamic ethical principles into their considerations, ensuring that policies for industrialization are environmentally sustainable and contribute to the overall well-being of society. By doing so, they fulfill their moral obligation to protect Allah's creation and ensure the fair and just development of their nation.

Environmental orientation in industrialization-related policy making is vital for achieving sustainable development goals.[32] Industrialization has a considerable impact on the environment, affecting ecosystems, biodiversity, and natural resources. The incorporation of environmental ethics is essential to ensure that economic growth is sustainable. The incorporation of environmental orientation in policy-making aligns with Islamic principles of avoiding harm (*darar*) and promoting the common good (*maslahah*). Such orientation ensures that environmental risks and impacts are minimized, and the benefits of economic growth are maximized.[33] Environmental assessment and regional planning, as tools for policy-making, reflect the Islamic duty to maintain balance (*mizan*) in creation and prevent exploitation of natural resources. These practices identify potential environmental impacts of industrial development and suggest mitigation measures to minimize these impacts, adhering to the religious mandate of protecting Allah's creation and ensuring justice for future generations. Thus, integrating religious ethics into environmental policy-making not only supports

[28] Bo Yang and Muhammad Usman, "Do industrialization, economic growth and globalization processes influence the ecological footprint and healthcare expenditures? Fresh insights based on the STIRPAT model for countries with the highest healthcare expenditures," *Sustainable Production and Consumption* 28 (2021): 893-910.

[29] Syed Abdul Rehman Khan, Chen Jian, Yu Zhang, Hêriş Golpîra, Anil Kumar, and Arshian Sharif, "Environmental, social and economic growth indicators spur logistics performance: from the perspective of South Asian Association for Regional Cooperation countries," *Journal of cleaner production* 214 (2019): 1011-1023.

[30] Khalid Zaman and Mitwali Abd-el Moemen, "Energy consumption, carbon dioxide emissions and economic development: evaluating alternative and plausible environmental hypothesis for sustainable growth," *Renewable and Sustainable Energy Reviews* 74 (2017): 1119-1130.

[31] Gerald Berger, Andrew Flynn, Frances Hines, and Richard Johns, "Ecological modernization as a basis for environmental policy: Current environmental discourse and policy and the implications on environmental supply chain management," *Innovation: The European Journal of Social Science Research* 14, no. 1 (2001): 55-72.

[32] Tasfiea Rifa and Mohammad Belayet Hossain, "Micro plastic pollution in South Asia: The impact of plastic pollution over the unsustainable development goals," *Lex Publica* 9, no. 2 (2022): 01-28.

[33] Rasmi Patnaik, "Impact of industrialization on environment and sustainable solutions–reflections from a south Indian region," *Conference Series: Earth and Environmental Science*, 120, p. 012016.

sustainable development but also fulfills a moral obligation to uphold environmental stewardship and social justice. Accordingly, Figure 1 was formulated to outline the research framework after reviewing literature and previous research findings. The following hypothesis has been put forward for this study:

H1: Environmental orientation in industrialization-related policy making, grounded in Islamic ethics, has a significant positive effect on social economic balance. The principle of social justice (*adl*) ensures that economic policies promote fairness and equity within society.

H2: Environmental orientation in industrialization-related policy making, guided by the Islamic principle of stewardship (*khalifah*), has a significant positive effect on environmental balance. This ensures that the natural world is protected and maintained in a state of equilibrium.

H3: Environmental orientation in industrialization-related policy making, reflecting Islamic teachings on avoiding harm (*darar*), has a significant positive effect on environmental quality. This focus on minimizing pollution and preserving natural resources enhances overall environmental health.

H4: Environmental orientation in industrialization-related policy making, aligned with Islamic ethics of preserving the common good (*maslahah*), has a significant positive effect on sustainable development. Policies that integrate environmental and economic considerations contribute to long-term sustainability.

H5: Social economic balance, achieved through policies rooted in Islamic social justice (*adl*), has a significant positive effect on sustainable development. Equitable distribution of resources and opportunities promotes societal stability and growth.

H6: Environmental balance, maintained by Islamic principles of stewardship (*khalifah*), has a significant positive effect on environmental quality. Balanced ecosystems are essential for maintaining healthy and resilient environments.

H7: Environmental quality, ensured through Islamic ethics-based environmental policies, has a significant positive effect on sustainable development. High environmental quality supports the well-being of current and future generations, aligning with the Islamic principle of intergenerational justice.

3. METHOD

Here's the revised research description with a focus on Islamic ethics: "This research was conducted using a quantitative research method, specifically combining descriptive and causal research. Descriptive research aims to clearly depict the characteristics of elements such as individuals, groups, or organizations. Causal research seeks to identify the cause-and-effect relationships between variables. In this study, industrialization is considered as an exogenous variable, while social economy, environmental balance, environmental quality, and sustainable development are treated as endogenous variables. Data collection was carried out by distributing questionnaires to stakeholders, with a sample of 106 respondents chosen using the nonprobability sampling method. The analysis technique used is Structural Equation Modeling (SEM). By incorporating Islamic ethics in environmental policy, the research

emphasizes the importance of stewardship (*khalifah*) in industrialization, ensuring that economic and environmental impacts are considered. The study aligns with Islamic principles of justice (*adl*) and the common good (*maslahah*) by evaluating how industrialization affects social, economic, and environmental outcomes, and aims to promote sustainable development in accordance with Islamic values.

Exogenous variable of industrialization were utilized, while endogenous variables included social economy, environmental balance, environmental quality and sustainable development. Through non-probability sampling, questionnaires were distributed to 106 stakeholders to retrieve data. The Structural Equation Model (SEM) was employed for data analysis. The Likert 5-point scale ranging from strongly disagree (1) to strongly agree (5) was utilized. The outer model establishes the connection between each indicator block and its corresponding latent variables. The reflective indicators of the outer model are evaluated through convergent validity, discriminant validity or AVE, and composite reliability. On the other hand, the inner model explains the association among latent variables in line with theoretical principles. The inner model's evaluation involves examining the R-squares of each dependent latent variable.[34] Alterations in the R-squares can be employed to gauge the impact of specific independent latent variables on the conditional latent variable.

4. RESULTS

The loading factor values provide information about the relative importance of each variable in contributing to the underlying factors being measured in the analysis. The results as shown in Table 1 showed that the variables are Industrialization (IN1-IN6), Social Economy (SE1-SE9), Environmental Balance (EB1-EB6), Environmental Quality (EQ1-EQ10), and Sustainable Development (SD1-SD9). A loading factor value closer to 1 indicates that the variable is more strongly related to the underlying factor(s), while a value closer to 0 indicates a weaker relationship. The results showed the loading factor values for the Industrialization variable (IN1-IN6) are all relatively high (above 0.86), suggesting that these items are strongly related to the underlying factor of industrialization in the model. Similarly, the loading factor values for the Social Economy variable (SE1-SE9) are also quite high (above 0.87), indicating that the measuring items are strongly related to the factor of social economy in the model. The Environmental Balance variables (EB1-EB6) also have relatively high loading factor values (above 0.86), indicating a strong relationship between the measuring items and the underlying factor of environmental balance. For the Environmental Quality variables (EQ1-EQ10), the loading factor values are generally high (above 0.86) except for EQ9 which has a value of 0.821. This suggests that most of the measuring items are strongly related to the factor of environmental quality, but one variable may be slightly less related. Finally, the Sustainable Development variables (SD1-SD9) have loading factor values ranging from 0.803 to 0.941, all of which are relatively high. This suggests that the measuring items are strongly related to the factor of sustainable development in the model.

[34] Imam Ghozali, *Structural Equation Modeling Metode Alternatif dengan Partial Least Square (PLS)*, (Semarang: Badan Penerbit Universitas Diponegoro, 2011) p, 213.

Table 1. Table caption. Table captions should always be positioned *above* the tables.

Items	Industrialization	Social Economy	Environmental Balance	Environmental Quality	Sustainable Development
IN1	0.862				
IN2	0.868				
IN3	0.886				
IN4	0.882				
IN5	0.873				
IN6	0.874				
SE1		0.872			
SE2		0.877			
SE3		0.872			
SE4		0.895			
SE5		0.885			
SE6		0.879			
SE7		0.876			
SE8		0.878			
SE9		0.944			
EB1			0.863		
EB2			0.901		
EB3			0.900		
EB4			0.906		
EB5			0.915		
EB6			0.906		
EQ1				0.892	
EQ2				0.924	
EQ3				0.909	
EQ4				0.886	
EQ5				0.909	
EQ6				0.910	
EQ7				0.868	
EQ8				0.893	
EQ9				0.821	
EQ10				0.952	
SD1					0.819
SD2					0.867
SD3					0.803
SD4					0.897
SD5					0.916
SD6					0.917
SD7					0.941
SD8					0.907
SD9					0.806

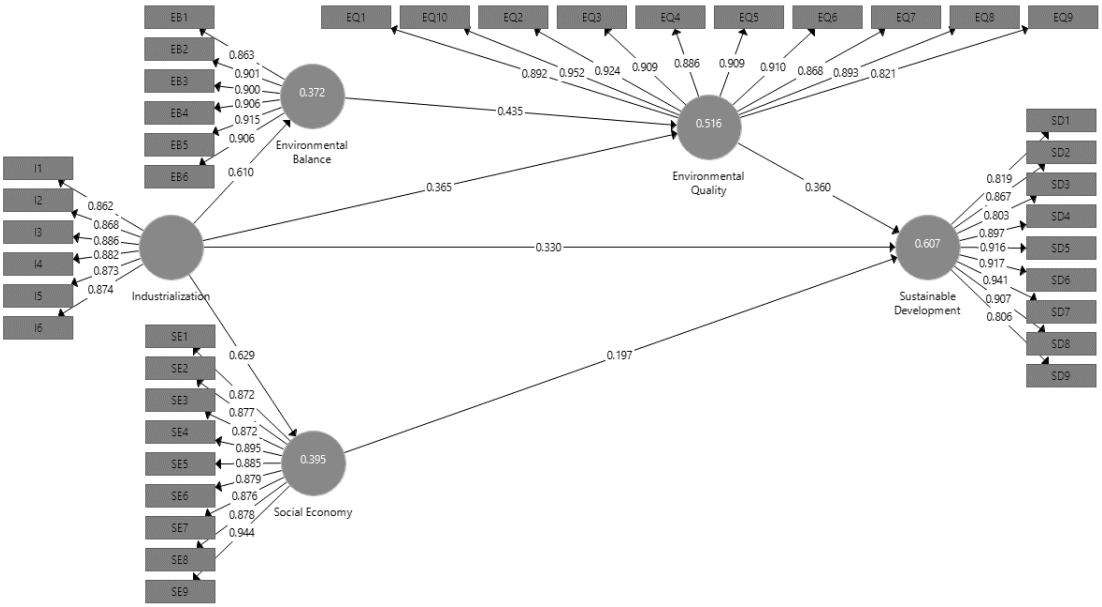

Figure 2. Analysis of Research Model.

Table 2 reports the convergent validity for five variables of Industrialization, Social Economy, Environmental Balance, Environmental Quality, and Sustainable Development. Convergent validity refers to the degree to which a set of measures is positively related to other measures that are theoretically expected to be related.

Table 2. Convergent validity

Variables	External loading factors	AVE
Industrialization	0.862-0.886	0.764
Social Economy	0.872-0.944	0.786
Environmental Balance	0.863-0.915	0.808
Environmental Quality	0.821-0.952	0.805
Sustainable Development	0.819-0.941	0.768

To fulfill convergent validity, a factor loading value greater than 0.6 is required for each indicator. The loading factor test results, presented in the table, demonstrate that all 40 items have been deemed valid. Moreover, Average variance extracted (AVE) measures the proportion of variance in the variable that is explained by its indicators. AVE values range from 0 to 1, with higher values indicating greater convergent validity. All AVE values reported in the table exceed the minimum threshold of 0.5, indicating good convergent validity of the measures used to assess the constructs of interest. The results of Table 2 suggest that the measurement tool used to assess the variables of Industrialization, Social Economy, Environmental Balance, Environmental Quality, and Sustainable Development has good convergent validity.

Table 3. Discriminant Validity

Variables	Environmental Balance	Environmental Quality	Industrialization	Social Economy	Sustainable Development
Environmental Balance	0.899				
Environmental Quality	0.658	0.897			
Industrialization	0.610	0.630	0.874		
Social Economy	0.618	0.696	0.629	0.887	
Sustainable Development	0.707	0.705	0.681	0.655	0.876

Discriminant validity refers to a situation in which a given construct or variable is distinct and unrelated to other constructs or variables. A basic way to assess this is to compare the root averages of the construct with the correlation values between those constructs. If the root averages are greater than the correlation values, then there is discriminant validity. The results showed that all AVE root values are greater than root correlation values, indicating that there is indeed discriminant validity present within the measurement instrument. The results as shown in Table 3 showed that the high discriminant validity coefficients, ranging from 0.618 to 0.899, indicate that these variables are distinct and represent different aspects of the environment and sustainability.

Table 3. Discriminant Validity

Variables	Cronbach's Alpha	Composite Reliability
Environmental Balance	0.952	0.962
Environmental Quality	0.973	0.976
Industrialization	0.938	0.951
Social Economy	0.966	0.971
Sustainable Development	0.962	0.967

According to Table 4, the test for reliability indicates that the research variables can be considered dependable, since the Cronbach's Alpha value surpasses 0.6. Consequently, these variables can be employed as a tool to gauge the specified variables in this investigation. In the context of the provided data, both Cronbach's Alpha and Composite Reliability values are high, indicating that the items in each variable measure the same underlying construct with good reliability. This suggests that the scale or questionnaire used to measure environmental balance, environmental quality, industrialization, social economy, and sustainable development is internally consistent and reliable.

In PLS, the effectiveness of the suggested model may be evaluated by utilizing R-Square (R2) and Path Coefficient (PC). To evaluate the interior model, consideration was given to the R2 value on the latent construct and the t-value on each latent variable on the latent construct that is affected by the exogenous variable. The inner model path illustration for this research is presented in Figure 3.

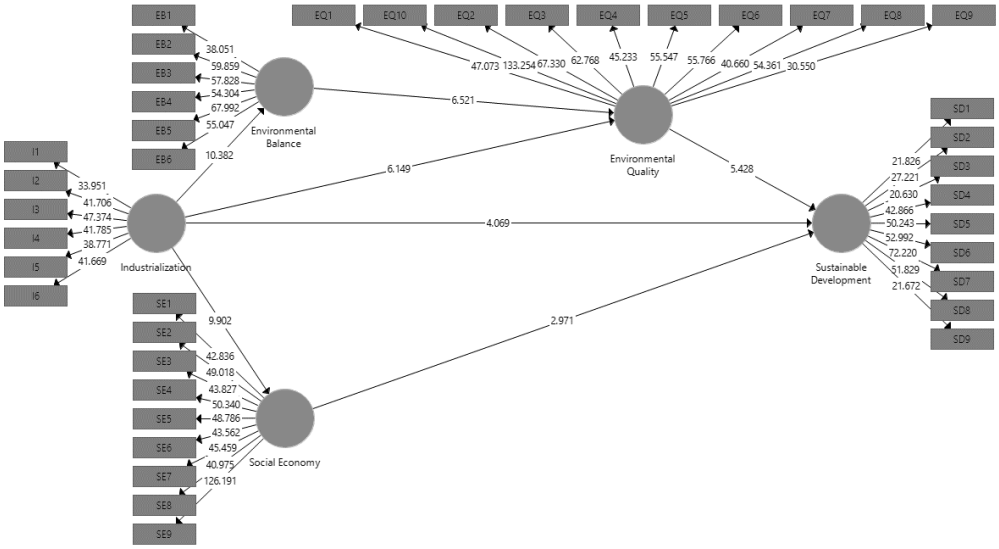

Figure 3. Bootstrapping's results.

Table 5 shows that the social economy variable can be explained by the industrialization variable of 39.5%. The same applies to the environmental balance variable, which can be explained by 37.2% of the industrialization variable. However, the environmental quality variable can be explained by the industrialization and environmental balance variables of 51.6%. On the other hand, the sustainable development variable can be explained by the industrialization, social economy, environmental balance, and environmental quality variables of 60.7%, which is currently considered strong.

Table 5. Table caption. Table captions should always be positioned *above* the tables.

Variable	R-Square	Adjusted R-Square
Social Economy	0.395	0.391
Environmental Balance	0.372	0.368
Environmental Quality	0.516	0.510
Sustainable Development	0.607	0.599

The hypothesis acceptance analysis evaluates the effect and orientation of the relationship between independent variables, as indicated by T statistics and path coefficients. Path coefficients should have a T statistic score higher than 1.96 which can be obtained from a table at a 0.05 significant level.

Table 6. R Square

Hypothesis	Path	T statistic	P-value	Information
H1	Industrialization -> Social Economy	9.902	0.000	Accepted
H2	Industrialization -> Environmental Balance	10.382	0.000	Accepted
H3	Industrialization -> Environmental Quality	6.149	0.000	Accepted
H4	Industrialization -> Sustainable Development	4.069	0.000	Accepted
H5	Social Economy -> Sustainable Development	2.971	0.003	Accepted
H6	Environmental Balance -> Environmental Quality	6.521	0.000	Accepted
H7	Environmental Quality -> Sustainable Development	5.428	0.000	Accepted

The impact of industrialization on the social economy has been extensively studied and yielded significant results, with a T statistic of 9.902 and a P value of 0.00, confirming that industrialization affects the social economy (H1). This suggests that the growth of industrial activities has led to increased social and economic activities, potentially boosting economic growth in Bandung through the multiplier effect of industrialization. These findings align with Islamic principles of promoting economic welfare and social justice (*adl*), which advocate for development that benefits all members of society and enhances well-being. Industrialization, as discussed,[35] involves elements such as technological advancements, specialization in production, and trade interactions, which can enhance per capita income and stimulate changes in the economic structure. From an Islamic perspective, this economic growth should be pursued with a commitment to equitable distribution and ethical practices.[36] The importance of incorporating social aspects as non-economic indicators in development. In Islamic ethics, this means considering not just economic benefits but also ensuring that development promotes justice, fairness, and the common good (*maslahah*), which aligns with the holistic approach to human welfare and sustainable growth.

Here's the revised paragraph incorporating Islamic ethics: "The impact of industrialization on environmental balance was found to be significant, with a T value of 10.382 > 1.96 and a P value of 0.000 < 0.50, leading to the acceptance of H2. This indicates that higher levels of industrialization are associated with improvements in environmental balance. From an Islamic perspective, this aligns with the principle of stewardship (*khalifah*), which emphasizes the responsibility to protect and preserve the environment while pursuing development. The government has responded to these findings with policies such as the Environmental Management Law No. 23 of 1997, aimed at addressing environmental issues. These policies are in line with Islamic teachings that advocate for responsible management of natural resources and ensuring that industrial activities do not lead to environmental degradation. The study supports the World Bank's research, which links development positively to environmental protection, as evidenced by measures like carbon reduction, forest conservation, and water pollution reduction. Incorporating Islamic ethics, it is crucial that development not only focuses on economic growth but also adheres to the values of environmental justice and sustainable stewardship. This ensures that industrialization contributes to the well-being of both current and future generations, reflecting the Islamic commitment to balance (*mizan*) and the ethical use of resources.

The findings showed a significance of the impact of industrialization on environmental quality was confirmed by a T statistic of 6.149, which is greater than the critical value of 1.96, and a P value of 0.000, which is less than 0.50. Therefore, the hypothesis that industrialization influences environmental quality (H3) is accepted. This indicates that the environment will be more sustainable if the quality of the environment is higher. For instance, production of goods for export is one of the activities of industrialization. Manufacturing automobiles and providing job opportunities in the industrial sector have a positive effect on environmental quality The findings of this study are consistent with the research conducted by the World Bank (2000),[37] which analyzed the effect of

[35] Tulus Tambunan, *Transformasi Ekonomi di Indonesia: Teori dan Penemuan Empiris*, (Jakarta: Salemba Empat, 2001)
[36] Michael, P. T., *Economics Development. Seventh Edition*, (New York: Pearson Education Limited, 2000)
[37] World Bank, *The Quality of Growth*, (New York: Oxford University Press, 2000).

development on environmental quality between 1975 and 1994 in both developed such as the USA and the Netherlands and developing countries such as Indonesia, Sri Lanka, and the Philippines. According to this research, development has a positive and significant influence on environmental quality.

The analysis showed a significant value of the influence of the social economy on sustainable development was found to be significant with a T statistics of 2.971 > 1.96 and a Pvalue of 0.003 <0.50. This supports H5 which suggests that social economy has an impact on sustainable development. The findings indicate that socio-economic activities in the city of Bandung can promote sustainable development by providing a variety of goods and services to meet societal needs. Sustainable development involves ongoing growth in per capita income. The research outcomes also correspond with research on economic growth factors.[38] In addition, social activities such as providing suitable educational facilities and infrastructure in Industrial Estates are essential for achieving sustainable development. The availability of these resources will produce high-quality human resources that can drive development through creating innovative solutions.

Through a research significance value with a T statistic of 6.521 > 1.96 and a Pvalue of 0.000 <0.50, it has been shown that there is a correlation between environmental balance and environmental quality. Therefore, the statement, H6, regarding the impact of environmental balance on environmental quality is supported. This highlights the importance of the harmonious relationship between humans and the environment in maintaining sustainability and preserving nature. Exploiting the environment can hinder development, while utilizing it in a balanced manner ensures environmental quality and ultimately promotes sustainable development. These findings align with[39] belief that achieving sustainable development requires a mutually beneficial relationship between humans and the environment.

The research confirmed the significance of the impact of environmental quality on sustainable development with a T statistic of 5.426 > 1.96 and a P value of 0.000 < 0.50, leading to the acceptance of H7. This indicates that high environmental quality plays a crucial role in promoting sustainable development, especially in the context of industrialization-related environmental policies in Bandung. Islamic ethics emphasize that sustainable development cannot be achieved without safeguarding natural resources. The presence of high environmental quality during industrialization is essential, reflecting the Islamic value of maintaining balance (*mizan*) and ensuring that development does not come at the expense of environmental health. This view is supported[40] argument that sustainable development requires the protection of existing natural resources.

Moreover, the study's results are consistent with research on the impact of air pollution

[38] Ramon Lopez, Vinod Thomas, and Yan Wang, *Addresing the education puzzle: The distribution of education and economic reform*, (Jakarta: World Bank, 1998).
[39] Suparmoko, *Ekonomi Sumberdaya Alam dan Lingkungan,* 97.
[40] Den Bergh Van, Jeroen CJM, and Peter Nijkamp, "Dynamic macro modelling and materials balance: Economic-environmental integration for sustainable development," *Economic Modelling* 11, no. 3 (1994): 283-307.

policies on the economy and household income in Indonesia.[41] Protecting nature to enhance urban air quality aligns with Islamic principles, facilitating economic growth and improving income while respecting the ethical obligation to prevent harm (*darar*) to the environment and promote the common good (*maslahah*). This approach ensures that industrialization contributes to long-term well-being and environmental justice, consistent with Islamic teachings on responsible resource management.

5. CONCLUSION

The analysis of this study showed that environmental orientation in industrialization policy making in Bandung has a positive and significant impact on social and economic aspects, ecological balance, and the attainment of sustainable growth targets. From an Islamic perspective, this aligns with the principles of stewardship (*khalifah*) and justice (*adl*), emphasizing the need to balance economic development with the protection of the environment and social well-being. The theoretical implications contribute to the literature by highlighting the importance of integrating environmental orientation into policy-making, in line with Islamic teachings on responsible resource management and ensuring the common good (*maslahah*). The study underscores the significance of considering social and economic aspects alongside ecological balance, reflecting the Islamic value of comprehensive welfare.

Practically, the study suggests that policymakers should prioritize environmental orientation in developing industrialization policies. This approach ensures that local ecology, social well-being, and economic growth are harmoniously integrated, respecting the Islamic mandate to avoid harm (*darar*) and promote sustainable development. The research could assist local businesses in adhering to environmental regulations and contributing to sustainable progress. As a result, the government and relevant stakeholders are advised to implement cohesive policies that balance industrial growth with environmental sustainability and socio-economic factors. This approach, grounded in Islamic ethics, will support long-lasting progress and ensure that industrial activities are conducted in a manner that preserves nature and aligns with religious values.

However, there are some limitations to the study that need to be acknowledged. Firstly, the study utilized cross-sectional data, prohibiting the examination of causality between the variables. Therefore, future research should utilize longitudinal designs that can capture changes in the variables over time and allow for the identification of causal relationships. Secondly, the study focused solely on the impact of industrialization policies on socio-economic and environmental balances, environmental quality, and sustainable development. It ignored other factors that may also influence these outcomes, such as political factors, cultural factors, and technological advancements. Therefore, future research should consider these additional factors to provide a more comprehensive understanding of the impacts of industrialization policies. Finally, the study only examined the impact of industrialization policies in one city. Therefore, the findings may not be generalizable to other cities with different socio-economic and environmental conditions. Hence, future research should consider conducting similar studies in other countries with different contexts to assess the

[41], Budy P. Resosudarmo and Erik Thorbecke, "The impact of environmental policies on household incomes for different socio-economic classes: The case of air pollutants in Indonesia," *Ecological Economics* 17, no. 2 (1996): 83-94.

external validity of these findings.

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