Zakat and Its Role in Achieving Main Pillars of Sustainable Development Goals (SDGs) in Indonesia

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ABSTRACT

As Islamic social finance, zakat has the potential to support the achievement of the Sustainable Development Goals (SDGs) in Indonesia. The economic, social, and environmental pillars are the three core pillars of the SDGs. This study aims to analyze the role of zakat in achieving these three main pillars of the SDGs in Indonesia. Using regression model estimation, we found that (1) in terms of the economic pillar, zakat has a positive contribution in boosting national economic growth and decreasing the unemployment level in Indonesia. (2) In terms of the social pillar, zakat not only contributes to decreasing poverty but also to the increasing the level of education in Indonesia. (3) In terms of the environmental pillar, zakat in Indonesia also contributes to improving and supporting access to clean water and sanitation for all Muslim communities, especially the poor people. Therefore, this study concluded that zakat has a positive impact on social and economic welfare as well as on overcoming environmental problems. Furthermore, , the model in this research is robust, as confirmed by a robust test The empirical findings are expected to provide an alternative policy for government authorities to continue creating and promoting zakat programs to support the achievement of the main pillars of the SDGs in Indonesia.

1. Introduction

The sustainable development goals, or SDGs are a global commitment applicable to all countries. The SDG comprises 17 goals which can be divided into three main dimensions or pillars, namely: Economic dimension (including Goals 7, 8, 9, 10, and 17); Social dimensions (including Goals 1, 2, 3, 4, 5, and 16); and Environment dimension (including Goals 6, 11, 12, 13, 14, and 15) (UNDP, 2021; Bansal et al., 2021).

The SDGs aims to benefit both the current and future generations (Miroshnichenko & Brand, 2021). Ermelena (2017) in Risanti et al. (2020) mentioned that there are six essential elements of SDGs

namely Planet, People, Dignity, Prosperity, Justice and Partnership. Therefore, SDGs will address issues and problems such as reducing the level of poverty, hunger, and inequality, while simultaneously increasing the quality of education, good health, and well-being through inclusive economic growth inclusively and also supporting environmental welfare.

Indonesia is one of the countries that are committed towards achieving the SDGs. As a country with the largest Muslim population in the world, zakat as an Islamic social finance instrument, has the potentials to address many issues facing the Muslim community in Indonesia (Indrawan & Herman, 2017). As mentioned by Metwally (1997), zakat is an essential cornerstone of financial structure in the Islamic economy. As one of the religious obligations of Islam religion, zakat has multi-dimensional impacts such as reducing poverty in realizing social and economic well-being, supporting efficient allocation, achieving the security of social goals, the distribution of personal income as well as national economic growth inclusively (Saputro & Sidiq, 2020). Kashif et al. (2018) mentioned that zakat provides the benefits for human living, for economic prosperity, and social well-being.

Moreover, Sulaeman and Ninglasari (2020a, 2020b) mentioned that the Muslims in Indonesia have the intention to pay zakat even during the crisis. Fajarudin (2019) mentioned that the Islamic social finance fund like zakat has a great potential for supporting any social program of the national government in Indonesia. According to Al Arif (2013), zakat supports the poverty reduction program of the national government in Indonesia where zakat can be an alternative source of funds to alleviate the poverty level and to achieve the social well-being of Muslim society. Al-Faizin et al. (2017) mentioned that zakat funds have a significant impact on the social aspect such as to create the Muslim security of life as well as to create the harmony of life for many Muslim community. Therefore, zakat has a bright potential to support the national agenda for achieving the SDGs in Indonesia.

In the previous empirical studies, there are several research which identified how the role of zakat may contribute to economic, social, and environmental. This includes Sulaeman et al. (2021) which documented a positive impact of zakat on social and economic welfare in Indonesia. Other researchers such as Anggraini (2016); Ardhiastuti (2018) and Munandar et al. (2020) have conducted empirical tests on the nexus between zakat and social and economic well-being. Despite this, there is limited empirical studies investigating specific areas of zakat, especially its role in achieving social, economic as well as environmental welfare in the context of Indonesia.

This study intends to extend the study of zakat and three main pillars of SGDs in Indonesia based an empirical analysis approach of multiple regression estimation model. This empirical research will focus on: (1) analyzing empirically the roles of zakat in affecting economic, social, and environmental pillars of the SDGs in Indonesia; and (2) providing policy recommendations for relevant implementing agencies such as BAZNAS and LAZ for enhancing the optimization of the great potential of Islamic social finance from zakat funds in Indonesia.

2. Literature Review

2.1. Definition of Zakat

Zakat is one of the five pillars of the Islamic religion, thuspaying zakat is mandatory/obligatory upon Muslims who meet the requirements of zakat (Owoyemi, 2020). Literally, zakat is defined as a purity and cleanness of maal or Muslim wealth, where zakat will cleanse the wealth (maal) of the payers (the Muzakki) and also will purify the zakat payers' hearts (Shad, 1986 in Samad & Glenn, 2010). Al-Qaradawi defined zakat as "growth" since fulfilling the obligation to pay zakat would enable the wealth of the payers to further grow and becoming more fertile (Samad & Glenn, 2010).

2.2. Objectives of Zakat Payment

According to Bilo and Machado (2020); Saad and Farouk (2019); and Samad and Glenn, (2010), in Islamic economic theory, paying zakat has main objectives such as reducing the level of poverty, maintaining the justice of social and economic pillars, protecting wealth, protecting the social problems; to purify Muslim wealth, to remove stringiness, and also to remind the Muslims to be thankful to Allah *ta'ala*.

Al-Faizin et al. (2017) said that the zakat payment as obligatory has an objective of ensuring redistribution system from Muslim wealth which are between eight zakat recipients or *mustahiq* and zakat payers or *muzakki*. Concurrently, they highlight zakat's crucial role in fostering societal balance within Muslim communities. Furthermore, zakat drives from several sources of wealth such as from the investment activities, saving in banks, trade activities, and plantation activities (Indrawan & Herman, 2017).

2.3. Development of Zakat in Indonesia

In Indonesia, there are several regulations supporting the development of zakat such as the regulation on No. 23/2011 about the zakat management. The Badan Amil Zakat Nasional (or BAZNAS) has important role to support the development and management of zakat including zakat collection and distribution for supporting the Indonesian economy, education quality, good health, and social welfare goals. According to the National Zakat Statistics from BAZNAS in 2019, there were 34 regional zakat institutions and 456 regency zakat institutions throughout Indonesia. Besides, there were 26 national management of zakat organizations (or Organisasi Pengelola Zakat – OPZ), 18 zakat organizations, and 37 regional zakat organizations (BAZNAS, 2020).

Based on the development of zakat in Indonesia, the potentials of zakat have always increased every year. This is reflected by the increase in zakat collection by approximately 10.2 trillion IDR or 84.95% in 2019 (BAZNAS, 2020), while in 2020, zakat collection has increased to 327.6 trillion IDR in 2020. Zakat collection in Indonesia is dominated by zakat paid by corporations amounting to 144.5 trillion IDR, and 139.07 IDR trillion is collected from goods and services. Other sources of zakat collections include zakat collected through cash (58.76 trillion IDR), livestock (9.51 trillion IDR), and agricultural sectors (19.79 trillion IDR) (Center of Strategic Studies the National Zakat Board, 2021). Clearly, Indonesia has a great potential to collect zakat from Muslim society to support national economic growth inclusively through zakat institutions like BAZNAS.

2.4. Overview of Sustainable Development Goals (SDGs)

The SDGs, implemented by the United National Development Program (UNDP) subsequent to the Millennium Development Goals (MDGs) era, represent a more expansive, intricate, and universally applicable framework encompassing a broader spectrum of developmental aspects. The SDGs framework holistically integrates the social, economic, and environmental sustainability. This framework comprises 17 goals and 169 targets, each operationalised through a suite of selected indicators. Therefore, the 17 goals serve as a global blueprint that improve conditions for both people and the planet, with an overarching aim for achievement by 2030 (UNDP, 2022).

Furthermore, the 17 SDGs represent the economic, social, and environmental pillars (Boar et al., 2020). First, the economic pillar aims to achieve the quality of economic growth through industry innovation and inclusion, sustainable employment sustainability, and achieving opportunities for business, good infrastructure, clean energy, and also supporting the global partnership.

Second, the social pillar, in essence, proposes the fulfilment of the basic quality of human rights

in justice for achieving well-being. Last, the environmental pillar, proposes to achieve natural resources sustainability and a friendly environment for supporting better human life (Eisenmenger et al., 2020; Swain & Yang-Wallentin, 2020; UNDP, 2022).

2.5. Development of SDGs in Indonesia

Indonesia's commitment to sustainable development is evident in its progress toward the SDGs, ranking 82 out of 163 countries with an index score of 69.2 in 2022 (United Nations, 2022). This shows that Indonesia is moving towards economic sustainability and prosperity, while simultaneously safeguarding social life, environment quality, and inclusive development. Indonesia recognizes the critical imperative to eradicate poverty, build national economic growth, and meet multiple social needs, including education, good health, and equality, as well as employment opportunities. Furthermore, the country is dedicated to mitigate climate change and improving ecosystem conservation. Therefore, Indonesia remains steadfast in its commitment to realizing all17 SDGs (BPS RI, 2021; Indonesia Sustainability, 2022).

The SDGs implemented in Indonesia are divided into three dimensions, it's social, economic, and environmental. Each dimension can be monitored through specific indicators, as illustrated by Setianingtias et al. (2019) in Table 1.

Table 1. SDGs Classification by Three Dimensions

Dimension	Indicator	Proxy
Social	SDG 1, 2, 3, 4, 5, 16	Poverty rate, Life expectancy, Married women whose births were assisted by trained health personnel, Married women whose last delivery was in a health facility, total fertility rate, and the proportion of adolescents and adults with technology skills.
Economic	SDG 7, 8, 9, 10, 17	GDP per capita, employment rate, unemployment rate, household gas usage, household access the internet, and proportion of individuals who used smartphones.
Environment	SDG 6, 11, 12, 13, 14, 15	Access to adequate water sources, access to proper sanitation services, and access to adequate and affordable housing.

Source: Setianingtias et al. (2019)

2.6. Previous Study

Previous empirical research relating zakat in achieving the three main pillars of SDGs such as from economic, social, and environmental have been quite enriching, however, studies relating the role of zakat role in environmental sustainability are still rare to find. In relating zakat and the economy, Suriani et al. (2021) examined between zakat and macroeconomic variables using quantitative analysis. The study found that zakat can influence sustainable development in the Aceh Province by significantly affecting the poverty level, hence the study concluded that zakat is the solution to reduce poverty, as an indicator of the social dimension.

Sulaeman et al. (2021) examined empirically the impact of zakat on Indonesian socio-economic welfare. From the results of multiple regression methods, they found that zakat can boost national economic growth and also increase the purchasing power of society. Further, zakat was found to

effectively eradicate national poverty before the pandemic crisis.

Suprayitno (2020) examines the impact of zakat distribution on macroeconomic in Indonesia, used quantitative analysis. They concluded that zakat contributes significantly to enhancing the economic growth. This finding aligns with Fitriyanti et al. (2019), who found that the distribution of zakat funds positively affects economic development variables, and negatively impacts unemployment in Bangka Belitung.

Research by Saputro and Sidiq (2020) identifies the substantial impact of zakat, infaq, and sadaqah (ZIS) funds on regional economic growth, the human development index, and health programs within Baitul Maal Aceh. The empirical findings indicate a strong correlation between ZIS funds and improvements in regional economic growth and social programs, particularly across human development index, education, and health sectors. Then the research by Hudaefi et al., (2020) explores practical experiences and the impact of zakat funds in supporting the environmental dimension of the SDGs, using qualitative analysis of the BAZNAS project in Kendal village, Indonesia, based on observation and interviews. The results show a direct correlation between zakat distribution and enhancements in health, access to clean water, and sanitation.

Furthermore, Munandar et al. (2020) examine the relationship between ZIS fund, economic growth and poverty from 2006 to 2017 in Indonesia. Using a multiple regression method, they found that ZIS funds contribute to a reduction in Indonesian poverty level. Meanwhile, while Indonesia's economic growth has insignificant individual effects on poverty rates, the simultaneous empirical results underscore the combined impact of ZIS funds on both national economic growth and poverty reduction in Indonesia.

In other empirical research, Bayinah (2017) examined the influence of zakat's role on regional purchasing power and regional economic growth in Aceh from 2011 to 2015. Her findings indicate that zakat plays an important role in boosting regional purchasing power and economic growth for Muslim society in Aceh. Anggraini (2016) examined that the relationship between ZIS funds, inflation and Indonesian economic growth during the period of 2011 to 2015. By using a regression model, she found that the ZIS funds impact macroeconomic variables such as Indonesian economic growth except the inflation level. Ardhiastuti (2018) conducted an empirical analysis exploring the nexus between zakat distribution and the income of zakat recipients based on report from Rumah Zakat in Solo. She concluded that zakat distribution positively affects the income of zakat recipients.

2.7. Hypothesis and Research Framework

Based on prior research, we summarize six hypotheses examining the impact of zakat on the three main pillars of the SDGs namely economic, social, and environmental. These arethe hypotheses:

H1. The zakat role positively affects the Indonesian economic growth as an economic pillar.
H2. The zakat role negatively affects the Indonesian unemployment level as an economic pillar.
H3. The zakat role negatively affects the Indonesian poverty level as a social pillar.
H4. The zakat role positively affects the Indonesian education level as a social pillar.
H5. The zakat role positively affects the Indonesian clean water as an environment pillar.
H6. The zakat role positively affects the Indonesian sanitation as an environment pillar.

3. Research Methodology

3.1. Data Collection and Variable Description

We use secondary data collected from the annual financial reports of BAZNAS accessed in www.baznas.go.id; the Badan Pusat Statistik (BPS) accessed in www.bps.go.id; and the World Bank

Database accessed in https://databank.worldbank.org. All collected data is from 2002 to 2023. The range of data describes the growth conditions of zakat in Indonesia over the past two decades. For the detail explanations of the data variables, we summarized all data in Table 2 below.

Table 2. Description of Research Variables

Variable		Indicators	Sources
Dependent Variable as Three Main Pillars of SDGs			
Economic Pillars	Economic Growth	GDP per capita (constant 2015)	World Bank
	Unemployment	Unemployment rate (annual %)	World Bank
Social Pillars	Poverty	Headcount ratio (% of population)	World Bank
	Education	Mean Years School (Year)	*Badan Pusat Statistik* (BPS)
Environment Pillars	Clean Water	Access to improve water (%)	*Badan Pusat Statistik*
	Sanitation	Access to adequate sanitation (%)	*Badan Pusat Statistik*
Independent Variables			
Zakat	Collection of zakat	The total of zakat collection fund (Rp)	BAZNAS
	Distribution of zakat	The total of zakat distribution fund (Rp)	
Control Variables			
Macroeconomic	Inflation	Consumer prices (annual %)	World Bank
	Population	Population growth (annual %)	World Bank

Source: Authors' own

3.2. Specification Empirical Models

In this empirical research, the specification models are outlined by Sulaeman et al. (2021), using the total of zakat collection fund and zakat distribution fund, we applied as zakat variable. While inflation rate and population growth are employed as macroeconomic or control variables. The independent variables comprise both zakat-related and macroeconomic variables. Whereas dependent variables in this study are comprehensive indicators of the three main pillars of the Sustainable Development Goals (SDGs) in Indonesia namely: (1) Economic growth and unemployment rates serve as proxy variables for economic pillar, (2) Poverty level and education indicators are utilized as proxy variables for social pillar, and (3) Clean water access and sanitation are employed as proxy variables for environmental health (see Table 2). To test all formulated hypotheses for this study, we attempt to use a multiple regression model based on the econometrics guidelines by Gujarati & Porter (2012).

There are three specification empirical models:

Model (1) Economic Pillar

- Equation 1.1
$$Economic\ Growth_t = \beta_0 + \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (1)$$

- Equation 1.2
$$Unemployment_t = \beta_0 - \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (2)$$

Model (2) Social Pillar

- Equation 2.1
$$Poverty_t = \beta_0 - \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (3)$$

- Equation 2.2
  $$Education_t = \beta_0 + \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (4)$$

Model (3) Environment Pillar

- Equation 3.1
  $$Clean\ Water_t = \beta_0 + \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (5)$$
- Equation 3.2
  $$Sanitation_t = \beta_0 + \beta_1 Zakat_1 + \beta_2 Inflation_2 + \beta_3 Population_3 + \varepsilon_t \quad (6)$$

Where t = periods, β_0 = constant term; $\beta_1, \beta_2, and\ \beta_3$ = coefficient of independent variables; and ε = error term.

4. Results and Discussion

4.1. Descriptive Statistics

The descriptive statistical analysis presents quantitative data and provides an overview of minimum, maximum, mean, and standard deviation values (Ferdinand, 2014). This study incorporates 22 annual data observations, with the results of the descriptive statistics presented in Table 3.

The dependent variables exhibit the following mean values: the economic growth (natural logarithm) at 7.96, unemployment at 5.52, poverty level at 71.31, education at 7.54, clean water at 62.51, and sanitation at 55.98.

The independent variable, the mean value for Zakat collection, after natural logarithmic transformation, is 23.97, with a range spanning from a minimum of 19.51 to a maximum of 26.83. Zakat distribution has 23.67 for mean value with natural logarithm and the highest value is 26.68 and the smallest value is 18.42. Among the macroeconomic variables, inflation records a mean value of 6.01, and population a mean of 1.27.

Table 3. Descriptive Statistics

Variables	Mean	Median	Max.	Min.	Std. Dev.
Economic Growth	2929	2915	2377	1968	650
Unemployment	5.52	4.83	8.06	3.62	1.50
Poverty	71.31	71.80	88.60	50.20	13.99
Education	7.54	7.55	8.54	6.68	0.59
Clean Water	62.51	64.41	90.87	44.19	15.86
Sanitation	55.98	56.47	80.29	35.03	15.10
Zakat Collection	87.20	367	448	296	120
Zakat Distribution	77.20	341	387	99.9	106
Inflation	6.01	5.71	13.11	1.56	3.20
Population	1.27	1.33	1.36	1.03	0.11
Natural logarithm Variables					
*Economic Growth	7.96	7.98	8.26	7.58	0.23
*Zakat Collection	23.97	24.32	26.83	19.51	1.98
*Zakat Distribution	23.67	24.25	26.68	18.42	2.24
Note: * is sign for variables transformed into logarithm Natural (LN)					

Source: Authors' own

4.2. Classical Assumption Testing Results

Based on Table 4, the classical assumption testing results show that the regression model demonstrates its suitability for analyzing the nexus between the dependent and independent or explanatory variables. The regression model exhibits a normal distribution and shows no indication of multicollinearity. While the Durbin Waston statistic for the autocorrelation test was inconclusive, the LM test (Breusch-Godfrey) indicated no autocorrelation.

Table 4. Results of Classical Assumption Testing

Classical Assumption Testing	Indicators	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
		Economic Growth	Unemploy-ment	Poverty	Education	Clean Water	Sanitation
Multicollinearity	Variance Inflation Factors (VIF)	Centered VIF < 10	NO	NO	NO	NO	NO	NO
Autocorrelation	B-G Serial Correlation LM Test	P-value > 0.05	NO	NO	YES	NO	NO	NO
Linearity	Ramsey RESET Test	P-value > 0.05	YES	YES	NO	YES	YES	YES
Normality	Jarque-Berra	P-value > 0.05	NO	NO	NO	NO	NO	NO
Heteroscedasticity	Breusch-Pagan-Godfrey Test	P-value > 0.05	NO	NO	NO	NO	NO	YES

Source: Authors' own

4.3. Effect of Zakat's Role on Economic Pillar of SDGs

As demonstrated in Table 5, the total collection and distribution of Zakat has an effect on the economic pillar of SDGs in Indonesia, with economic growth and unemployment identified as key dependant variable.

Based on the empirical results, both zakat collection and distribution directly increase Indonesian economic growth, as proxied by per capita income. Where both the total of zakat collection and distribution fund are significant at the 1% level, exhibiting a positive relationship with national per capita income. The respective coefficient values of 0.112227 (zakat collection) and 0.098828 (zakat distribution) indicate that the increase of zakat collection and distribution areassociated with 11.22% and 9.88% increases of economic growth in Indonesia.

In other word, the higher the collection of Zakat from muzakki and its subsequent distribution to mustahiq in Indonesia will have an impact in increasing economic development. This research results align with previous research by Suprayitno (2020) and Saputro and Sidiq (2020), both of whom assert a positive influence of zakat funds on national economic growth. Lahuri et al., (2021) states that the potential for significant economic growth through zakat in Indonesia could be optimized by the role of the Muslim population in Indonesia. Therefore, H1 is supported as shown in Table 8.

Based on the analysis presented in Table 5, the total collection and distribution of zakat directly have decreased the unemployment rate in Indonesia. Specifically, both the total collection and

distribution of zakat exhibit a statistically significant negative correlation with the unemployment rate at the 1% level and a coefficient value of -0.620743 and -0.544103, respectively. The findings indicate that the increase of zakat collection and distribution is associated with the decrease of 0.62% and 0.54% of unemployment rate in Indonesia. These findings underscore the significant potential of zakat funds which has a negative and significant effect on unemployment. It is measured by annual unemployment rate. Our findings aligns with the research by Fitriyanti et al. (2019) who state that Zakat distribution influence negatively toward unemployment. Therefore, H2 is supported as shown in Table 8.

   All the results indicate that the zakat potential in Indonesia has an essential role in supporting the achievement of SDGs, especially on the economic pillar. Besides, zakat is an Islamic financial instrument that can help economic problem (Amalia & Huda, 2020) and serves as a viable solution for national economy recovery in times of economic crisis.

Table 5. Effect of Zakat's Role on Economic Pillar of SDGs

Dependent Variables	Economic Pillar			
Independent Variables	(1) Economic Growth		(2) Unemployment	
Zakat Collection	0.112227*** (19.64089)		-0.620743*** (-6.061532)	
Zakat Distribution		0.098828*** -17.1952		-0.544103*** (-5.859964)
Constant	5.267711***	5.618712***	20.40441***	18.40323***
R-Squared	0.9554	0.9461	0.6712	0.6561
Adj. R-Squared	0.9529	0.9394	0.6529	0.6370
Prop. > F	385.7644 (0.000)	295.6751 (0.000)	36.74217 (0.000)	34.33918 (0.000)
Notes: ***, **, * is significance level of coefficients started from 1 %, 5 %, and 10 %.				

Source: Authors' own

4.4. Effect of Zakat's Role on Social Pillar of SDGs

In terms of social pillars, Table 6 illustrates a statistically significant relationship between the role of zakat and the social pillars of SDGs in Indonesia. Zakat demonstrates a measurable effect on key components of variable dependent, namely the poverty level and the education level.

   Based on Table 6, we can conclude that zakat directly contributes to a reduction in Indonesia's poverty levels, as proxied by the national poverty headcount ratio. Where zakat is significant at 1% to the level of poverty with a negative relationship and with a coefficient value of -6.537079 and -5.731496, respectively. The findings indicate that the increase of zakat collection and distribution is associated with the decrease of poverty level between 6.54% and 5.73%.

   The findings clearly indicate that an increase in zakat funds, encompassing both collection and distribution, correlates with a reduction in Indonesia's poverty level. This is proven that zakat contributes to a higher national income per capita, thereby improving the standard of living for impoverished Muslims. In line with the finding of Sulaeman et al. (2021) and Ardhiastuti (2018) who stated that both zakat collection and distribution positively influence *mustahiq* income and contribute to poverty alleviation in Indonesia. Furthermore, Munandar et al., (2020) also mentioned that zakat has positive role in eradicating Indonesian poverty level. Therefore, H3 is supported as shown in Table 8.

For the education level, based on Table 6, both zakat collection and distribution funds significantly contribute to an increase in the mean years of schooling in Indonesia. Zakat demonstrates a significant positive relationship with the education level, specifically at the 1% level, with a coefficient value of 0.287351 and 0.252020, respectively. The findings indicate that the increase of zakat fund is associated the increase of 28.73% and 25.20% of Indonesian education level. It means that the role of zakat both collection and distribution positively effect the education level in Indonesia. It is measured by mean years of schooling, which serves as a proxy. Therefore, H4 is supported as shown in Table 8.

Zakat plays a significant role in supporting the achievement of the social pillar in SDGs. Besides, zakat is as an Islamic social finance instrument which can boost the socio-economic welfare in Indonesia (Sulaeman et al., 2021). Zakat contributes to human and social development by improving the social welfare of the Muslim society in Indonesia.

Table 6. Effect of Zakat's Role on Social Pillar of SDGs

Dependent Variables	Social Pillar			
Independent Variables	**(1) Poverty**		**(2) Education**	
Zakat Collection	**-0.537079*** ** **(-10.49963)**		**0.287351*** ** **(14.47144)**	
Zakat Distribution		**-0.731496*** ** **(-9.748300)**		**0.252020*** ** **(12/81276)**
Constant	**228.0270*** **	206.9883***	0.6525	1.575432***
R-Squared	0.8596	0.8407	0.9209	0.9012
Adj. R-Squared	0.8518	0.8319	0.9165	0.8957
Prop. > F	110.2423(0.000)	95.02936(0.000)	209.4227(0.000)	164.1668(0.000)
Notes: ***, **, * is significance level of coefficients started from 1 %, 5 %, and 10 %.				

Source: Authors' own

4.5. Effect of Zakat on Environment Pillars of SDGs

In terms of environment pillars, Table 7 shows the results of relationship between zakat and the environment pillars of SDGs in Indonesia. Specifically, zakat demonstrates an influence on the level of clean water and sanitation, both crucially environmental issues in Indonesia, as highlighted by Setianingtias et al., (2019).

Based on Table 7, we can conclude that the results of zakat both collection and distribution directly increase the access to clean water for poor societies in Indonesia. Zakat demonstrates significance at the 1% level, exhibiting a positive relationship with a coefficient values of 6.795365 for collection and 5.898599 for distribution, respectively. The findings indicate that the increase in zakat funds is associated with improved clean water access between 5.58% and 6.79%. Our findings indicate that the growing of zakat role is directly associated with enhanced clean water access in Indonesia. This is proven that zakat provides the facility of clean water for all communities specially for poor people in Indonesia. Therefore, H5 is supported as shown in Table 8.

For the sanitation level, based on Table 7, both zakat collection and distribution have a significant to an adequate sanitation in Indonesia. Specifically, zakat demonstrates a statistically significant impact at the 1% level. The coefficient values of 7.289702 and 6.364093, respectively. Our findings prove that zakat is associated with an increase of 7.29% and 6.36% in sanitation in Indonesia. It means that growing of zakat role increases the access of Indonesian sanitation. This is proven that zakat

improves the facility of sanitation for all communities especially for poor people in Indonesia. Therefore, H6 is supported as shown in Table 8.

Furthermore, zakat has potential role in supporting the achievement of the environmental pillars of SDGs. Thus, as an Islamic social finance instrument, zakat can demonstrably boost the quality of living standards for poor people in Indonesia, particularly through enhanced access to clean water and sanitation.

Table 7. Effect of Zakat's Role on Environment Pillars of SDGs

Dependent Variables	Environment Pillar			
Independent Variables	**(1) Clean Water**		**(2) Sanitation**	
Zakat Collection	0.795365***		0.289702***	
	(6.847904)		(14.16869)	
Zakat Distribution		0.898599***		0.364093***
		(6.370308)		(12.06197)
Constant	-100.3965***	77.12149***	-118.7740***	-94.66736***
R-Squared	0.7226	0.6927	0.9177	0.8899
Adj. R-Squared	0.7072	0.6757	0.9131	0.8838
Prop. > F	46.89379(0.000)	40.58082(0.000)	200.7519(0.000)	145.4912(0.000)

Notes: ***, **, * is the significance level of coefficients starting from 1 %, 5 %, and 10 %.

Source: Authors' own

Table 8. Summary of Regression Results and Compatibility with Main Hypotheses

No.	Hypothesis	Relationship Tested	Regression Result	Decisions
1.	H1	Zakat → Economic Growth	(+) Significant	Supported.
2.	H2	Zakat → Unemployment	(-) Significant	Supported.
3.	H3	Zakat → Poverty	(-) Significant	Supported.
4.	H4	Zakat → Education	(+) Significant	Supported.
5.	H5	Zakat → Water	(+) Significant	Supported.
6.	H6	Zakat → Sanitation	(+) Significant	Supported.

Source: Authors' own

4.5. Robustness Checks

For robust checks, this study also uses two additional variables from macroeconomics, namely inflation and population. The robustness test is applied to ensure the estimation consistency in this empirical study. Further, based on empirical findings from the multiple regression analysis (Table 9), zakat collection and distribution have a significant relationship with all dependent variables across three pillars: economic growth and unemployment rate (economic pillars); poverty level and education level (social pillars); and clean water and sanitation (environment pillars). Therefore, these findings confirm the resilience or robustness of all models employed in this study, thereby strengthening the validity of the empirical analysis.

Table 9. Results of Robustness Checks

Dependent Variables	(1) Economic Pillar				(2) Social Pillar				(3) Environment Pillar			
Independent Variables	Economic Growth		Unemployment		Poverty		Education		Clean Water		Sanitation	
Zakat Collection	0.101925***		-0.550059**		-4.023661***		0.200364***		3.498709***		5.083334***	
Zakat Distribution		0.086742***		0.446226**		-3.452426***		0.170765***		2.912075***		4.182919***
Inflation	0.0013	0.0022	0.1037	0.1071	0.4000	0.3555	-0.011017	0.009228	-0.147133	-0.141795	-0.681563	-0.691665
Population	-0.292526*	-0.415151**	-1.470039	-0.635550	49.10219***	53.72115***	-1.786591***	-2.025703***	-76.04991***	-80.77556***	-32.91265**	-40.15791***
Constant	5.877902***	6.418388***	19.95137**	16.24815**	103.0695***	82.74310**	5.070820***	6.124453***	76.0055	96.90945*	-20.02413	12.0745
R-Squared	0.9632	0.9595	0.6913	0.6752	0.9279	0.9279	0.9690	0.9673	0.8370	0.8337	0.9540	0.9437
Adj. R-Squared	0.9563	0.9519	0.6335	0.6143	0.9144	0.9144	0.9632	0.9612	0.8064	0.8025	0.9454	0.9331
Prop. > F	139.5257	126.2948	11.94505	11.08749	69.68306	68.67605	166.9186	157.7774	27.38210	26.74064	110.6281	89.36125
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Notes: ***, **, * is significance level of coefficients starting from 1 %, 5 %, and 10 %.

Source: Authors' own

5. Conclusion and Implications

5.1. Conclusion

Based on the empirical analysis of the regression model regarding the role of zakat towards achieving three main pillars of SDGs in Indonesia for the period 2002-2023, we can conclude that: (1) for economic pillars, the empirical findings find that zakat has a significant role in Indonesian economic growth and the unemployment level. This is empirically evidenced by the fact that zakat collection and distribution can improve national income per capita and decrease the unemployment rate in Indonesia. (2) for social pillars, zakat also plays a significant role in addressing the Indonesian poverty rate and improving education. This is empirically evidenced as zakat collection and distribution can decrease the poverty level and improve educational attainment. (3) for environmental pillars, zakat has a significant impact on improving clean water and sanitation facilities for the needy in Indonesia. This is empirically evidenced by the finding that increased zakat collection and distribution improves Indonesian access to clean water and sanitation. Moreover, our empirical results confirm that our model is robust, as evidenced by the robustness check analysis.

5.2. Policy Recommendation

We have policy recommendations based on the empirical analysis, namely:

i. BAZNAS or LAZ can optimize the potential of zakat funds to support national programs aimed at achieving all SDGs goals. This includes empowerment program for improving the quality of life, providing educational training (both hard and soft skills) for reducing unemployment levels, offering scholarships for improving the quality of education, and providing clean water and sanitation facilities, especially in rural or remote areas in Indonesia.

ii. BAZNAS or LAZ can cooperate with Indonesian government authorities, such as the Ministry of Social Affairs, the Ministry of Environment and Forestry, the Ministry of Cooperatives and SMEs, the Ministry of Religion, and the Ministry of Trade, specifically for implementing zakat programs to support the achievement of SDGs in Indonesia.

iii. BAZNAS and LAZ can socialize and promote programs for achieving the three pillars of SDGs in Indonesia. Examples include the *Mustahiq* empowerment program through the *Mustahiq* Economic Empowerment Institute (LPEM), under the economic pillar. For the social pillar, programs like *Tanggap Bencana*, *Layanan Aktif*, *Sekolah Cendekia*, and BAZNAS Scholarship can be promoted. In the environmental pillar, program such as Zakat Community Development

(ZCD), *Rumah Sehat* BAZNAS, and the *BAZNAS Indeks* for sustaining safe and clean water as well as sanitation (BI-WAS) can be highligthed as BAZNAS's program in empowering zakat funds to support the availability of clean water and sanitation services.

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