

# The ecology of the Qur'an: Religion-based environmental preservation efforts

*by - -*

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**RELIGION, EDUCATION,  
SCIENCE AND TECHNOLOGY  
TOWARDS A MORE INCLUSIVE  
AND SUSTAINABLE FUTURE**

Edited by  
Maila D.H. Rahiem



## RELIGION, EDUCATION, SCIENCE AND TECHNOLOGY TOWARDS A MORE INCLUSIVE AND SUSTAINABLE FUTURE

This book addresses topics relating to religion, education, science, and technology, and explore their role in developing a more inclusive and sustainable future. With discussions viewed through the lenses of religious and Islamic studies, education, psychology, social science, economics, and natural science, the book is interdisciplinary. It also brings together a range of diverse work by academics around the world including Indonesia, Malaysia, the United States, Australia, Kenya, Germany, and the Philippines.

The papers are derived from the 5th International Colloquium on Interdisciplinary Islamic Studies (ICIIS 2022), a prestigious event designed to provide a global forum for academicians, researchers, practitioners and students to present their research findings to global experts. ICIIS was hosted by (State Islamic University/UIN) of Syarif Hidayatullah Jakarta's School of Graduate Studies, Indonesia in collaboration with UIN Sultan Thaha Saifuddin Jambi, Indonesia, UIN Mataram Nusa Tenggara Barat, Indonesia and Umma University Kajiado, Kenya.



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PROCEEDINGS OF THE 5TH INTERNATIONAL COLLOQUIUM ON INTERDISCIPLINARY  
ISLAMIC STUDIES (ICIIS 2022), LOMBOK, INDONESIA, 19–20 OCTOBER 2022

# Religion, Education, Science and Technology towards a More Inclusive and Sustainable Future

*Edited by*

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**Maila D.H. Rahiem**

*UIN Syarif Hidayatullah Jakarta, Indonesia*

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## Preface

Bringing together scholars from around the world, the 5th International Colloquium on Interdisciplinary Islamic Studies (ICIIS) provided an opportunity to share the most recent research and ideas on religion, education, science, and technology in an inclusive and sustainable world. This year's conference covered various topics, from religious philosophy, education issues, and health advancement to environmental concerns. ICIIS was hosted by (the State Islamic University/UIN) of Syarif Hidayatullah Jakarta's School of Graduate Studies, Indonesia, in collaboration with UIN Sultan Thaha Saifuddin Jambi, Indonesia, UIN Mataram Nusa Tenggara Barat, Indonesia and Umma University Kajiado, Kenya.

For the convenience of reading, this book is divided into three major sections: first, religious, educational, and psychological writings. The scope of the discussion extends from A philosophical and spiritual response to the acquisition and development of Enlightenment thought to Muslim Education in Kenya, multicultural education, mythology, and the Islamic tradition.

The second section consists of a collection of society and humanities-related essays on identity. The social movement of peasant women and society, Challenges confronting Muslim converts in the Republic of Kenya, the lives of the elderly, and the role of youth in developing peasant women's community and social initiative. Additionally, on Shifting education and technology through a constructivist lens.

Economics, various science and math-related themes, including the integration of Islam and science, science learning methods, and an overview of Indonesian students' high-order thinking, are all covered in the third section.

It is critical to understand that this book does not simply present research findings; it also makes recommendations to governments, educational institutions, and other stakeholders on improving the quality of education through technology-based educational programs.

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**Prof. Asep Saepudin Jahar, M.A., Ph.D.**

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## The ecology of the Qur'an: Religion-based environmental preservation efforts

J. Azizy\*, B. Tamam, N.A. Febriani, Sihabussalam, H. Hasan & H.H. Ubaidah  
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**ABSTRACT:** Environmental damage is a common problem that must be addressed with real solutions and real evidence. One of the causes of environmental damage is the anthropocentric paradigm. This paradigm states that humans are the center of the universe; hence, humans have the right to exploit natural resources because nature was created for them. This article will reveal the preservation of the environment based on religion in the scriptures, including whether humans are the center of the universe or partner with nature. This article will also explore the concept of Qur'an-based nature conservation so that it can be used in real-world conservation efforts. This research uses qualitative research methods with a content analysis approach. The conclusion of this article suggests that man and nature are partners with different roles and goals with their fellow creatures of God's creation. Humans can use nature and the environment to meet their needs, but they must also conserve and prosper nature. Humans are given various potentials/abilities to prosper and conserve the earth.

*Keywords:* environmental damage, conservation, preservation

### 1 INTRODUCTION

Environmental damage is becoming increasingly of concern today. The arrogance of man in exploiting nature without regard to the environment is to be blamed for this environmental damage. According to the Intergovernmental Panel on Climate Change (IPCC), the earth's temperature rises by 1.5 degrees Celsius (Hasan 2003), leading to global warming and melted icebergs in the Arctic, causing flooding because the sea cannot hold the water discharge. High air pollution, excessive use of forest land, and forest fires, among others, contribute to global warming (www.ipcc.ch 2019).

Humans are indeed creatures designed to harness the power of nature for their own purposes. However, one of the factors causing such damage is the irresponsible attitude toward the use of natural resources, which is said to be rooted in the anthropocentric paradigm. This paradigm states that man is the most important component of the universe. Humans are also considered the center of the universe, which allows them to freely exploit natural resources because the world was created for them. This exploitation of nature affects nature and the environment negatively.

Scientific debates about ecology and environmental damage have sprung up, with various solutions offered. Admittedly, however, classical and modern commentators have not yet explored the meaning of the greatness of the *Kauniyah* verses. This paper tries to make a scientific contribution to exploring the ecological concept of the Qur'an, which is read from

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the perspective of interpretation. This paper tries to provide an applicative solution on how to make a connection between humans and the environment/nature (*ḥabl min al-alam*).

## 2 METHODS

Based on the perspective of its analysis, this article is included in qualitative research, which is a type of research that is descriptive and uses analysis based on the data that has been collected. However, based on data sources, this research is included in the category of library research, namely inventorying and collecting data related to the word *khalīfah* and the role of humans in its creation, both contained in the Qur'an and its interpretation. The data sources used include two types, namely primary and secondary. The main source of the paper is a book of classical and modern interpretations. The classical tafsir is represented by *Tafsīr al-Qurṭubī* and *Tafsīr Ibn Kathīr*, while the modern tafsir book is represented by Muḥammad 'Alī al-Ṣābūnī, *Ṣafwah al-Tafāsīr*. Secondary sources of this study are information related to the topic being studied, both in the form of books and journal articles.

The object of this study is the word *khalīfah* and the role of humans in his creation in the Qur'an. In this paper, several phases have been carried out in the collection of data: (1) determining the problem to be studied, in this case, the word *khalīfah* and the role of humans in his creation; (2) look verses in which the word *khalīfah* is there and the role of humans in his creation using the kitab *al-Mu'jam al-Mufahras li al-Fāz al-Qur'ān al-Karīm*; (3) reveal the interpretation of the verses of *khalīfah* and the role of humans in his creation, both from the works of classical and modern interpretation; (4) analyze the data with content analysis and linguistic approaches; and (5) infer from the results of data analysis the answer to the formulation of predetermined problems.

## 3 RESULTS

### 3.1 Ecological discourse

The word "ecology" comes from the Greek words "oikos" (household) and "logos" (science), which was first introduced in biology by a German biologist named Ernst Haeckel (1869). It means the study of the relationship between one organism and another and between these organisms and their environment. William H. Matthews states that ecology focuses on the inter-relationships between living organisms and their environment (Hardjasoemantri 1994).

In Arabic, ecology is known as *'Ilm al-Bī'ah*. Etymologically, the word *bī'ah* is taken from the word *hawwa'a*; it means: stay, stop, and stay. *Al-bī'ah* means house/dwelling. Whereas the terminology *'Ilm al-Bī'ah* is the study of the environment. Mamduḥ Ḥamid 'Atiyyah states that *'Ilm al-Bī'ah* is a deep knowledge of the interaction of living beings with the surrounding environment. But in a more specific and comprehensive sense, 'Atiyyah states that ecology (*'Ilm al-Bī'ah*) is the study of the constant interconnection between humans and the entire ecosystem contained in the world ('Atiyyah 1998; al-Jirah 2000; Duwaidiri 2004).

Ecology is also understood as the entire ecosystem in which humans live with other beings; these ecosystems are interrelated with each other in carrying out their respective activities (al-Suḥaibani 2008; Rice 2009). One of the core concepts in ecology is ecosystems, which are ecological systems formed by the mutual relationship between living beings and their environment (Hardjasoemantri 1994). Ecosystems are formed by living components and do not live in interacting places to form an organized unity.

Humans are part of the ecosystem; humans are also managers of systems. Environmental damage is the side effect of human actions to achieve goals that have consequences for the environment. This expression is in line with the concept of the Caliphate as implied in the Qur'an in Surah al-An'ām [6]: 165. The purpose of the creation of humans on earth is, in

addition to being a submissive servant (*'abid*), obedient, and devoted to Allah Almighty, to become a Caliph on earth (*khalīfah fī al-Arḍ*). So with the sign that there is an inter-connection between nature and humans who need and influence each other, as implied in QS. Al-Rūm [30]: 9 and Hūd [11]: 61.

Not only does it use the function of humans as a caliph (substitute) in the world, but the ecological discourse based on the Qur'an is sustained by the realization that humans are the *'āmīr* (builder, manager, or regulator) of this earth. It is also a follow-up to humans' abilities as God's "substitute/representative" on earth. It is reinforced by the gesture that God has taught Adam (man) all the things that are on this earth. At its peak, these knowledge and abilities entrust the existence of processes and practices in environmental management and conservation.

## 4 DISCUSSION

### 4.1 Human as Khalīfah

Allah has given humans the authority to manage and maintain the earth in proportion (Surah Al-Baqarah [2]: 30 and Hūd [11]: 61). Humans are granted the right to use natural resources, explore natural materials to benefit and save human life and the environment, enjoy the beauty of God's creation, manage the earth, obtain a beautiful environment, and eat animal and vegetable nutrients.

Surah al-Baqarah [2]: 30

*"And [mention, O Muhammad], when your Lord said to the angels, "Indeed, I will make upon the earth a successive authority." They said, "Will You place upon it one who causes corruption therein and sheds blood, while we declare Your praise and sanctify You?" Allah said, "Indeed, I know that which you do not know."*

Surah Shad [38]: 26

*"[We said], "O David, indeed We have made you a successor upon the earth, so judge between the people in truth and do not follow [your own] desire, as it will lead you astray from the way of Allah." Indeed, those who go astray from the way of Allah will have a severe punishment for having forgotten the Day of Account."*

The word *khalīfah* is mentioned twice in the Qur'an: in QS. Al-Baqarah [2]: 30 and QS. Šād [38]: 26 (al-Bāqī 1364 H). The word *khalīfah* comes from the word *khalfun*, which means behind. From the word *khalfun* are formed various other words, such as the words *khalīfah* (substitute), *khilaf* (forget or mistake), and *khalafa* (replace) (al-Bāqī 1364 H). The word *khalīfah* linguistically means "substitute." This meaning refers to the original meaning of "behind." It is called *khalīfah* because the person who replaces is always behind or comes from behind, after which he replaces (al-Ašfahānīl 1997).

The word *khalīfah* is mentioned in the Qur'an in two contexts: (1) In the context of Allah's talk to angels regarding the creation of Adam (QS. Al-Baqarah [2]: 30). This dialogue informs us that God will create man as God's caliph (representative) on earth who is in charge of prospering or building civilization on earth with the concept that God has ordained to assign him. (2) In the context of Allah's kalam to the Prophet Daud (QS. Šād [38]: 26). Allah designated Prophet Daud as the caliph who was given the task of being a just leader and managing his fiefdoms in proportion. Both contexts of the term caliphate point to God's representatives to administer the earth.

The use of the word *khalīfah* in QS. Al-Baqarah [2]: 30 and QS. Šād [38]:26 can be understood to have four interrelated aspects, namely (1) the assignor, which is God; (2) the assignee, that is, the human being; (3) the place or environment in which humans live; and (4) assignments to be carried out (Raya 2007). The duties of the assigned caliphate will be of no value if the assignment material is not carried out. Allah gives supplies to humans before he

performs the duties of the caliphate, such as science (Al-Baqarah [2]: 31 and 32) and the tasks to be performed, as mentioned in QS. Šād [38]: 26.

Humans have obligations to nature as well, including the obligation to protect and serve the earth. Some of these obligations include humans' obligation to research nature. The leaders have the obligation to make policies with environmental insights and persistence in carrying them out. It is the obligation of humans to empathize with nature and maintain natural productivity. Whereas nature is completely submissive to Allah (*sunnatullāh*). Nature has natural rights that must be protected by humans in order to be a source of knowledge for human life. Natural rights include nature's right to worship, the right to live in a community, and the right to regenerate. Man should regard this right as a form of respect for the existence of Allah's creatures.

Thus, the anthropocentric paradigm, which is one of the factors causing humans to exploit natural resources less wisely, as revealed at the beginning, contradicts the concept of man as a *khalīfah* that entrusts a harmonious interaction between humans and the environment. Man is allowed to use natural resources, but he still preserves and respects the right to regenerate God's creatures. Man becoming God's caliph on earth means that man also replaces the role of God, who governs and cares for the earth to be the source of life for other created beings on earth, not just for man himself.

#### 4.2 Human as an ecology conserver

43  
Surah Hūd [11]: 61

*“And to Thamūd ( We sent) their brother Salih. He said: O my people! serve Allah, you have no god other than He; He brought you into being from the earth, and made you dwell in it, therefore ask forgiveness of Him, then turn to Him; surely my Lord is Nigh, Answering.”*

The word *ista'mara* is taken from the root of the word *'amar* *ya'muru*, which means to prosper and nourish. The letters *sin* and *ta'* that accompany the word *ista'mara* can be understood with the meaning of the word command, so that it means: Allah commands to prosper the earth and its contents, or means reinforcement to make man truly capable of flourishing the earth (Departemen Agama RI 2007). Ibn Kathīr states that Allah made humans the builders who prospered on the earth and who worked on its use reasonably (Jabr 1989; Kathīr 2000). The word *ista'marakum* applies an active attitude, meaning that humans make a proportion of everything on earth but are also active in maintaining and conserving the earth, such as plowing the land, farming, caring for plants, digging trenches or rivers for irrigation, and maintaining the stability of the environment or nature.

The words *yastahzi'ūn* and *yastashirūna* and *wasta'marakum fiha* cannot be interpreted with the meaning of finding, believing, and incomprehensible by request. It is impossible for God, the Creator, to ask humans. This sentence uses an expression that means to ask to perform an act through the medium of pronunciation of the person who is lower or below it. If the demand comes from a higher one and is addressed to a lower person, then it is an order and doing something. Whereas if someone asks for a higher one or a person who is above him, then it is a demand.

Surah Al-Rūm [30]: 9

*Have they not traveled in the earth and seen how was the end of those before them? They were stronger than these in prowess, and dug up the earth, and built on it in greater abundance than these have built on it, and there came to them their messengers with clear arguments; so it was not beseeming for Allah that He should deal with them unjustly, but they dealt unjustly with their own souls.*

The word *athār al-arḍ* means they cultivate the earth. According to al-Rāghib al-Aṣfahānī, the root of the word *athāru* is *thāwara*, meaning the spread of something. In the verse in QS. Al-Baqarah [2]: 71 *tuthīr al-arḍ* means to cultivate the earth or plow the land. Thus the word *athār al-arḍ* means that they have spread throughout the earth to cultivate the earth and grow crops (Al-Aṣfahānī 1997; Al-Qurṭubī 2006).



The meaning of *'amarū* is linguistically maximized in building, constructing, and establishing. The opposite word of lafaz *'amarū* is *al-khurāb* (destroying/knocking down). The process of building is not only a discourse but also requires concrete efforts. Similarly, building or creating environmental sustainability requires effort and a long process. Even this is apparent in the term used. The use of *fi'il māḍī*, which was used in the past, is used in this context, which tends to be conceptual. This shows that environmental conservation processes and plans must be definitive and calculating.

This verse is a warning to all humans, wherever and whenever they are, that they may know and live the essence of life and know the purpose for which God created humans. Humans were created by God as a caliph on earth to worship Him. Whoever whose purpose in life is not in accordance with what God outlines have deviated from that purpose. For them apply the *sunnatullāh* above as the end of the 'Ād and Thamūds (Al-Qurṭubī 2006; al-Ṣābūnī 1981).

## 5 CONCLUSION

Conservation of nature or the environment requires a balance between human rights and obligations to nature. According to the Qur'an, both humans and nature have their own roles and purposes in creation as fellow creatures of Allah. The pattern of interaction between nature and humans in their ecosystem is mutually beneficial and framed for the common goal of obedience to God. Humans can use nature and the environment to meet their needs, but they must also protect and preserve the environment.

The Qur'an describes the pattern of harmonious interaction between nature and humans as fellow creatures of God. Only humans are entrusted with managing the world and its contents. In carrying out this belief, humans are given various potentials/abilities to prosper and conserve nature, rather than damaging nature. The Qur'an invites humans to take lessons from the damage to nature caused by human actions in the past and to conserve nature so as not to repeat the mistakes.

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## Gotong royong, an indigenous value for a more inclusive and sustainable future

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**ABSTRACT:** Indonesia has a diversity of tribes, languages, religions, and belief systems. This diversity, on the one hand, has a great potential for the development of the Indonesian nation; on the other hand, there is also a sectarian danger where each person wants to prioritize the interests of their own group, resulting in conflicts between ethnic groups. If such conflicts are ignored, it will threaten the unity of the Indonesian nation. Therefore a strategy is required that will unite all ethnic groups, languages, religions, and belief systems. One of the cultures shared by all ethnic groups in Indonesia is *gotong royong*. *Gotong royong*, or mutual cooperation, can unite the entire Indonesia toward a just and prosperous nation. This paper wants to confirm the indicators of *gotong royong* and the sample of behavior that may explain the concept of *gotong royong*. Using confirmatory factor analysis, we found that *gotong royong* can be explained with the help of three indicators, namely: helping each other, making decisions together, and respecting the neighborhood. Furthermore, from the item difficulty analysis, the easiest item to answer as a sample of *gotong royong* is to *respect the neighborhood*. However, the most difficult item to answer comes from *making decisions together*.

**Keywords:** *gotong royong*, Indonesia, mutual cooperation, indigenous psychology

### 1 INTRODUCTION

*Gotong royong*, in particular, has been a major cultural operator in contemporary Indonesian writing about society. The term *gotong royong* might mean mutual help and reciprocity (Bowen 1986). The root of this expression probably comes from the Javanese verb *ngotongg* (which is cognate with Sundanese *ngagotongg*), meaning “several people bring something together.” This gives rise to images of social relations in traditional Javanese villages working smoothly, harmoniously, and privately, where work is done through reciprocal exchange, and villagers are motivated by a general ethos of selflessness and concern for the common good.

*Gotong royong* can be interpreted as a collective social activity. However, the deepest meaning of *gotong royong* can be explained as a philosophy of life that prioritizes collective life. The philosophy of *gotong royong* is now part of Indonesian culture because *gotong royong* does not belong to any particular ethnicity.

Based on his field research in Central Java, the Indonesian anthropologist Koentjaraningrat (1961) categorizes *gotong royong* into two types, namely spontaneous assistance and mutual cooperation. Spontaneous assistance generally occurs in collective activities in agriculture, house building, celebrations, public works, and in the event of a disaster or death. However, *gotong royong* is usually based on the principle of individual reciprocity, either at the initiative of citizens or imposed as an expression of *gotong royong*.

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From a socio-cultural perspective, the value of *gotong royong* as a traditional institution is spiritual in nature, manifested in the form of individual behavior or action to do something together for the common interest of the community (Slikkerveer 2019). In the context of community development, Koentjaraningrat's (1961) observation is important that the Gotong Royong institution makes human life in Indonesia more empowered and prosperous: "With *gotong royong*, various problems of living together can be solved easily and cheaply, as well as community development activities."

*Gotong royong* connects everyone with many other communities, both for their activities and for their communities. The purpose of *gotong royong* is to strengthen solidarity and relationships, or togetherness, of citizens. The values of *gotong royong* are important for the implementation of sustainable development in Indonesian society (Rahmi *et al.* 2001). Many Indonesians see *gotong royong* as a hallmark of Indonesia's national identity.

According to Bowen (1986), there are several forms of *gotong royong* including helping each other. Hatta (in Feith and Castle 1970) referred to reciprocal assistance (*tolong-menolong*): all heavy work that could not be done by one individual person was performed by the system of *gotong royong*. Villagers, by virtue of their status as community members, are obliged to assist on occasions such as raising the roof of a house, a child's wedding, or the death of a relative. Generalized reciprocity involves general liability and the notion of ultimate return. The result is that within a certain circle of relatives or neighbors, a person feels a general obligation to help, but a person also remembers how much he has been helped when he needed help in the past.

Furthermore, as an additional explanation of the concept of helping each other, according to the World Giving Index (2018), Indonesia is the most generous country in the world. The dimensions of giving are related to (1) helping strangers, (2) donating money, and (3) volunteering time. Indonesians typically like to live in a group or collective. They would kindly help somebody else.

Besides *reciprocal assistance* or helping each other, this way of life, based on common ownership of land in Indonesian history, has created *mutual consultation*. All decisions concerning common interests are taken by mutual consent, or as the Minangkabau (West Sumatran people – a part of Indonesia) proverb goes: "Water becomes one by passing through a bamboo pipe; words become one by mutual agreement." When they are in trouble they would like to discuss it first. The diplomatic way is the best consideration for getting a solution to the problem. Group harmony and cohesiveness are highly valued.

In the sense of mutual consultation, *gotong royong* is described as a sign of the political autonomy of the rural community and the enduring nature of village democracy as opposed to a strong state. Thus the spirit of *gotong royong* grows from the spirit of resistance to domination.

In cross-cultural comparisons, Hofstede (2001) found that in collectivist cultures where people respect their 'ingroup' as a whole, individuals identify themselves as part of a group, valuing their group goals as more important than individuals. As such, he is more connected to his group and tends to care less about his personal goals as an individual, but more about the combined goals of the group as a whole. Hofstede (2001) concludes that in collectivist societies: "people respect their 'ingroup' as a whole, considering how their actions give positive or negative impressions to the 'outgroups' while remaining closely tied to their ingroup." When they live in one area, the neighborhood sometimes becomes their closest family. Thus, respecting the neighborhood also becomes important, especially in forming *gotong royong* around neighbors.

Sukarno, the first president of Indonesia, highlighted the conception of *gotong royong* as a dynamic character, describing it as *satu karyo, satu gawe*, a combination of two phrases in Javanese and Indonesian languages, meaning "one, united, task." *Gotong royong* is to unite Christians and Muslims, rich and poor, and indigenous Indonesians and naturalized citizens in a mutually tolerant struggle against enemies. "*Gotong royong* is necessary in the fight against imperialism and capitalism, in the present just as in the past. Without bringing together all our revolutionary forces to be thrown against imperialism and capitalism, we cannot hope to win!" (Soekarno 1965:413).

## 2 METHODS

### 2.1 Participants

The participants consist of 127 Indonesian people. In the total sample, 38.6% are females and 61.4% are males. The demographic data regarding age are dominated by respondents who have an age range of 18–24 years, which is 37.8% of the participants. The demography of participants can be seen in Table 1.

Table 1. Participants' information.

Demographic variable	N	Percentage
<b>Gender</b>		
Male	78	61.4%
Female	49	38.6%
<b>Age</b>		
Under 18	1	0.8%
18–24	48	37.8%
25–34	47	37.0%
35–44	23	18.1%
45–54	7	5.5%
55–64	1	0.8%
Total	127	100%

### 2.2 Data collection

The data is collected through Google Forms. Participants agreed to complete a questionnaire measuring *gotong royong*. The questionnaires were distributed to the participants through social media platforms, such as Facebook, WhatsApp group, etc. The checklist for Reporting Results of Internet E-Surveys (CHERRIES) was applied as follows: (1) the survey was anonymous and did not require any personal data; (2) the study has been approved by the IRB (UIN Syarif Hidayatullah Jakarta ethical committee); (3) participants have been informed regarding the length of time of the survey, the data storage, the investigator, and the purpose of the study; and (4) the participants were asked to fill out the informed consent form if they agreed to participate.

### 2.3 Instruments

*Gotong royong* indicators include: helping each other, making decisions together, and respecting neighborhood. The instrument used is the *Gotong royong* scale, consisting of 6 items, using a 6-point Likert scale from “not like me at all” (score = 1) to “very much like me” (score = 6).

### 2.4 Data analysis

Confirmatory factor analysis (CFA) is used to validate the instruments using Lisrel 8.70. The demographic variables for gender were coded as 1 = male and 2 = female. We also used Rasch analysis to analyze which item answered was the easiest and which was the hardest.

## 3 RESULT

### 3.1 Construct validity test result of *gotong royong* scale

In this study, *gotong royong* is unidimensional, which means that it only measures *gotong royong*. CFA analysis was conducted to test the construct validity. In the initial calculation of the CFA data for the one-factor model, the fit model was obtained with  $\chi^2 = 11.2$ ;  $df =$

9; **p-value** = 0.22; **RMSEA** estimate = 0.049; RMSEA 90% CI = 0 to 0.12; probability RMSEA < 0.05 = 45; and CFI = 0.99. Furthermore, the factor loading coefficient and t-value of each item need to be checked to find out whether each item is valid in measuring what is being measured and determine whether there are items that need to be eliminated. According to Table 2, all items are valid because the factor loading coefficient is positive and the t-value > 1.96. Thus, all items only measure one *gotong royong* factor and can be included in the hypothesis analysis.

Table 2. CFA results for *gotong royong* scale.

Item	Coefficient	Standard error	T-Value	Item decision
1	0.67	0.08	8.08	Valid
2	0.63	0.08	7.40	Valid
3	0.73	0.08	9.18	Valid
4	0.66	0.08	8.00	Valid
5	0.81	0.08	10.44	Valid
6	0.83	0.08	10.97	Valid

### Item analysis result

Table 3. Item statistics: Measure order.

Entry Number	Total score	Count	Measure	Model S.E.	INFIT		OUTFIT		PTMEA CORR.	EXACT OBS%	MATCH EXP%	Item	G
					MNSQ	ZTD	MNSQ	ZTD					
4	491	127	0.5	0.1	1.12	1	1.19	1.5	0.71	45.6	44.3	Q4	0
2	495	127	0.43	0.1	1.24	1.9	1.37	2.7	0.68	43.2	43.8	Q2	0
1	558	127	0.37	0.13	1.1	0.8	1.09	0.7	0.68	52.8	54.5	Q1	0
6	552	127	-0.24	0.12	0.75	-2.1	0.75	-2	0.78	57.6	51.4	Q6	0
3	552	127	-0.38	0.12	0.96	-0.3	0.95	-0.4	0.72	59.2	51.3	Q3	0
5	578	127	-0.68	0.13	0.77	-1.8	0.76	-2	0.76	60.8	53.3	Q5	0
MEAN	537.7	127	0	0.12	0.99	-0.1	1.02	0.1		53.2	49.8		
S.D.	32.8	0	0.45	0.01	0.18	1.5	0.22	1.7		6.7	4.2		

From Table 3 it can be seen that the item difficulty level ranges from 0.50 to -0.68. The higher the measure, the more difficult the item, and vice versa.

As for item fit, based on the INFIT MNSQ and OUTFIT MNSQ criteria, the item is said to be ideal if the value is between 0.5 and 1.5 (Linacre 2002). The results of the analysis show that all items meet the OUTFIT MNSQ criteria and the INFIT MNSQ criteria for all items on the *gotong royong* instrument. Thus, this instrument fits the Rasch model.

Furthermore, in the PTMEA CORR (Point Measure Correlation) column, the distinguishing power of the items can be seen. Based on the criteria of Alagumalai, Curtis, and Hungi (2005), an item is said to be very good if the point measure correlation value is more than 0.40; it is said to be good if it is in the range 0.30 to 0.39; it is sufficient if it is in the range of 0.20 to 0.29; it cannot discriminate if it is in the range of 0.00 to 0.19; and **19** needs to be revised if it is below 0. The analysis results show that all are able to discriminate, with the point measure correlation ranging from 0.78 to 0.68.

The characteristics of the item difficulty level (measurement) can be seen in Table 4. The results of the analysis show that the Q4 item, namely "When he is in a serious conflict with his neighbors, he thinks that he should ask the community leader (RT/RW)" has the highest measure of 0.50. Item Q5 is "It is important for him to always show respect for his neighbors by caring about the welfare of others." has the lowest measure of -0.68

Table 4. Item order based on item difficulty level.

No.	Indicators	Item (English)	Item (Indonesian)	Item difficulty
Q4	Make decisions together	When he got into a serious conflict with neighbors, he thought that he should ask the community leader (RT/RW)	<i>Ketika ia terlibat konflik berat dengan tetangganya, ia berpikir bahwa ia harus bertanya pada pemimpin warga ( RT/ RW)</i>	0.50
Q2	Respect neighborhood	It is very important for him to celebrate religious celebrations with his neighbors.	<i>Sangatlah penting baginya untuk merayakan perayaan agama bersama dengan tetangga.</i>	0.43
Q1	Help each other	He thinks it is very important to help neighbors who are in need, including helping with money.	<i>Ia berpikir sangatlah penting untuk membantu tetangga yang sedang membutuhkan, termasuk membantu dengan uang.</i>	0.37
Q6	Help each other	He thinks it is important to be involved in community service activities (cleaning with neighbors) in the home environment.	<i>Ia berpikir penting untuk terlibat pada aktivitas kerja bakti (bersih-bersih bersama tetangga) di lingkungan rumah.</i>	-0.24
Q3	Make decisions together	When there are problems in the neighborhood (e.g., flooding, environmental pollution, waste problems, and so on) it is important for him to discuss these problems with his neighbors and decide on a solution together.	<i>Ketika ada masalah di lingkungan tetangga (misal: banjir, polusi lingkungan, masalah limbah dan seterusnya) penting baginya membicarakan masalah ini dengan para tetangga dan memutuskan solusinya bersama.</i>	-0.38
Q5	Respect neighborhood	It is important for him to always show respect for his neighbors by caring about the welfare of others.	<i>Penting baginya untuk selalu menunjukkan hormat pada lingkungan tetangga dengan cara peduli pada kesejahteraan orang lain.</i>	-0.68

### 3 CONCLUSION AND RECOMMENDATION

From this research, we can conclude that the *gotong royong* scale is valid in measuring three factors: *helping each other*, *making decisions together*, and *respecting the neighborhood*. This conclusion is based on the factor loading coefficient that is positive and the t-value > 1.96.

Furthermore, from the item difficulty analysis, the easiest item to answer as a sample of *gotong royong* is to *respect the neighborhood*. However, the most difficult item to answer comes from *making decisions together*. The difficult item to answer is about *asking the community leader (RT/RW) if one has a serious conflict with their neighbor (Q4)*.

From the item analysis, we can recommend increasing the intention of *gotong royong*; individuals can start by respecting the neighborhood. If this is already easy to do, *gotong royong* can be an indigenous value for a more inclusive and sustainable Indonesian future. As Sukarno said, it can unite Christians and Muslims, rich and poor, and indigenous Indonesians and naturalized citizens in a mutually tolerant struggle against enemies. *Gotong royong* is necessary in the fight against imperialism and capitalism, in the present just as in the past. We cannot hope to have a sustainable future, without bringing together the *gotong royong* values in our social lives.

The (re)application of this value of *gotong royong* into development policies and programs can indeed contribute to increasing local involvement and participation of all community members and is thus related to the realization of poverty alleviation and sustainable development throughout Indonesia. In the context of community development, Koentjaraningrat's (1961) observation is important that the Gotong Royong institution makes human life in Indonesia more empowered and prosperous: "With gotong royong, various problems of living together can be solved easily and cheaply, as well as community development activities."

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