Waqf Model for Climate Change: A Delphi Method Approach

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Waqf as one of the instruments of Islamic philanthropy has an important role in supporting the achievement of SDG-13. This is shown by the purpose of waqf in preserving the environment, which in turn affects climate change. This research aims to prioritize waqf aspects in achieving SDGs goal 13, namely Climate Action. The analysis method used in this research is the Delphi method with a questionnaire. In addition, the data also used in this study are the results of interviews with academics, practitioners and regulators of waqf and Islamic economics in general. Based on the results of the analysis, it was found that of the 14 variables of waqf aspects for SDG-13, 13 variables were agreed upon by experts and 1 variable was not agreed upon, namely related to the waqf model, namely waqf-zakat. Then regarding the attention criteria, the most important variable in waqf development according to SDG-13 is the environment. In Maqashid Syariah, the most important variable in waqf development according to SDG-13 is bi’ah. And in the Waqf model, the most important variable in waqf development according to SDG-13 is waqf-sukuk.

Keywords: Waqf; SDG 13; Climate Action; Delphi
INTRODUCTION

Climate change has significant impacts on the environment, people and wildlife. It is leading to more frequent and intense droughts, storms, heat waves, and rising sea levels. (World Health Organization, 2023; National Oceanic and Atmospheric Administration, 2023; United Nation, 2023) which can lead to food insecurity, the spread of disease, damage to ecosystems and infrastructure, increased mortality, impacts on food availability, and mental health problems (United Nation, 2023). Climate change also exacerbates existing socioeconomic inequalities by making underserved groups more vulnerable to its impacts (National Oceanic and Atmospheric Administration, 2023). The United Nations (UN) has stated that climate change is the defining issue of our time and that its impacts are global in scope and unprecedented in scale. (United Nation, 2023). To address this, the UN announced one of the Sustainable Development Goals (SDGs) that specifically addresses climate change, namely SDG goal 13, namely handling climate change.

Furthermore, Islam also plays a role in addressing climate issues and realizing SDG 13, namely through waqf. Waqf is an Islamic charitable institution that has been used for centuries to provide social and economic benefits to society (Latif et al., 2018). Anam & Fauzi (2021) explain that in Islamic teachings, waqf is a form of worship that has the ability to consider two main dimensions in human life simultaneously, namely the vertical dimension and the horizontal dimension. The vertical dimension of waqf lies in its function as a means of servitude, because waqf is considered as one of the shari'a that has the value of worship for Muslims, especially if the waqf property is intended to be devoted to Allah and expect His pleasure. Meanwhile, the horizontal dimension of waqf lies in its purpose to help others, so that the benefits of waqf can be enjoyed by all levels of society, especially to improve the welfare of the poor.

As it develops, waqf can make a significant contribution in supporting environmental programs such as forest planting, renewable energy development, and green infrastructure projects. In addition, waqf can also be used to support education, research, and technology development related to climate change mitigation and adaptation. This proves that waqf can also play an important role in achieving Sustainable Development Goal (SDG) 13, namely climate change management (Listiana & Mutmainah, 2022). The Green Waqf initiative can be offered as a scheme that can support solutions to address climate change, energy transition, and other environmental issues. (Indonesian Waqf Board, 2022). The Green Waqf framework was developed to offer an innovative Islamic financial instrument to help achieve sustainability goals and as a solution to help adapt to climate change and meet energy needs in a low-carbon way, while reforesting damaged forests.

Budiman's research (2011) stated that waqf as a charitable institution in Islam has potential and can be used as an important instrument for environmental protection, Yaakob et al (2017) also stated a similar thing that waqf can be incorporated into forest conservation and regeneration programs due to inadequate funds for forest regeneration and development which in turn will help overcome climate change problems. Waqf can be a sustainable source of funding and can be used to finance programs that focus on mitigation and adaptation to climate change. There are several studies that discuss the role of waqf in addressing climate change issues, including (Indonesian Waqf Board, 2022) explains the framework of green waqf to address climate change. Ali & Kassim (2020) examine the role of waqf in preserving forests and achieving SDGs. Listiana & Mutmainah (2022) examine the potential of waqf towards energy security and sustainability in Indonesia. Budiman (2011) examines the role of waqf in protecting the environment in Indonesia. And Yaakob et al (2017) explain waqf as a means of forest preservation, and research from Obaidullah (2018) examines the role of Islamic finance in addressing climate change.

Although research related to waqf in climate change management has been conducted, there is limited research that specifically discusses this theme in SDGs studies. Therefore, this study aims to examine the role of waqf in supporting the achievement of SDGs point 13, which is related to climate change management, where countries must take swift action to address climate change and its impacts. This research is expected to provide insights for future researchers to further explore the potential of waqf in financing the climate change sector. The results of this study are also expected to be used as a reference for developing waqf for the environment for regulators, academics, practitioners or the community.

LITERATURE REVIEW

The word waqf is an Arabic word that literally means to stop, hold, confine or prohibit (Hazami, 2016). In the literature of Islamic law, according to Kath in...
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(Indonesian Waqf Board, 2022) waqf means holding certain property and preserving it for the exclusive benefit of a particular philanthropy and prohibiting its use or diversion beyond its specific purpose. According to Law No. 41 of 2004 concerning waqf, waqf is a waqif’s legal action that serves to separate and/or transfer part of his property permanently or for a certain period of time for religious purposes and/or for public welfare in accordance with Sharia Law. Waqf has played a role in facilitating various activities, both religious and social, economic and environmental, such as places of worship, travelers, science, schools, scientific works, water supply and needs, poverty alleviation, environmental preservation, and so on (Yaakob et al., 2017; Ali & Kassim, 2020). Simply put, waqf is waqf property that is used for the purposes specified by the donor, the purpose of which must be benevolent, usually serving the interests of the community (McChesney, 1991). The nature of waqf includes diversity, positivism, humanity, comprehensiveness and firmness (Taleb, 2015). In addition, Islam proclaims basic human values that aim to spread the principles of brotherhood and cooperation among mankind (International Waqf Fund, 2023).

Furthermore, in its utilization, waqf is classified into two types: consumptive waqf and productive waqf. Consumptive and productive waqf have fundamental differences in the pattern of management and preservation of waqf assets (Qahaf in Hadyantari, 2018). Consumptive waqf aims to fulfill consumption needs or daily needs for people in need and provide direct benefits to people in need, especially those living in poverty or economic difficulties. Then, productive waqf aims to utilize waqf assets productively and continuously, so as to produce optimal benefits for the community or public interest. Productive waqf is generally used to fund development projects that can provide long-term benefits to society, such as the construction of mosques, madrasas, health centers, or infrastructure, among others. This explains that productive waqf is sustainable and continuous and permanent. Speaking of the sustainability of waqf, Munir (2015) argues that sustainable waqf must be managed productively in order to contribute or benefit. The benefits of waqf can be described as something that can be expanded, and can be utilized to respond to social needs and urgencies.

Climate is an average weather condition based on a long time for a location on earth (Achsan, 2008 in Anam & Fauzi, 2022). Each country or hemisphere has a different type of climate which is influenced by the geographical location and topography of the region. Currently, the phenomenon of climate conditions that appear different from usual has made many countries begin to study climate change. Global climate change is a crucial issue today, driven by increased greenhouse gas emissions that have widespread effects on the environment, such as glaciers and ice sheets shrinking, river and lake ice breaking up earlier, geographic ranges of plants and animals shifting, and plants and trees blooming faster. (NASA, 2023). In addition, climate change also exacerbates existing socioeconomic inequalities by making underserved groups more vulnerable to its impacts (National Oceanic and Atmospheric Administration, 2023).

Research by Anam & Fauzi (2022) explains that to address climate change, the first thing to do is to increase self-awareness. This is intended to form humans who are responsible for the environment they live in, which in turn can slow down climate change on earth. The need for action to address climate change is motivated by the consequences that can be caused by climate change, including food insecurity, the spread of disease, damage to ecosystems and infrastructure, increased mortality, impacts on food availability, and mental health problems. (United Nation, 2023). To address climate change, the UN has set SDG point 13 which specifically addresses climate change. SDG 13 explains the handling of climate change by achieving several targets, namely strengthening the capacity for resilience and adaptation to climate-related hazards and natural disasters in all countries, integrating climate change anticipation measures into national policies, strategies and planning, improving education, awareness raising, and human and institutional capacity related to mitigation, adaptation, impact reduction and early warning of climate change. (Bappenas, 2023).

There are several studies that are relevant to the role of waqf in addressing climate change, including (Badan Wakaf Indonesia, 2022) explaining the green waqf framework to address climate change in Indonesia. Environmental protection and energy sustainability are two important but interrelated issues in the field of sustainable development. Despite their importance and fundamental to the livelihood of the global population, progress in achieving targets on these issues remains a challenge at the global level due to various factors, one of which is financing. This is also true for Indonesia as a developing country with a growing economy. Therefore, to support the Indonesian government’s commitment to the Paris Agreement and SDGs agenda, a Green Waqf Framework is proposed as a guideline for stakeholders.
who wish to increase national funding by utilizing waqf as a socio-religious funding scheme to finance green projects in Indonesia which in turn will provide benefits in addressing climate change issues.

Ali & Kassim (2020) examined the role of waqf in preserving forests and achieving SDGs. The results of this study concluded that productive waqf forests can provide both tangible and intangible benefits that can be utilized for the development of forest waqf. Forest waqf supports several points in the SDGs such as reducing poverty and hunger, maintaining climate, health, biodiversity and water supply. Listiana & Mutmainah (2022) studied the potential of waqf towards energy security and sustainability in Indonesia. Budiman (2011) studied the role of waqf in protecting the environment in Indonesia. The results explain that waqf-based renewable energy, particularly the Green Waqf project, has great potential to address these issues while offering many benefits. 100% of informants agreed on the possibility of waqf to be involved in renewable energy projects. To proceed with implementation, identifying opportunities and challenges is crucial. This study has identified at least 17 opportunities and 17 challenges that need to be considered in order for waqf to engage in clean energy provision while protecting the environment. Furthermore, this study also sheds light on the potential of waqf to address the crucial issue of energy security and sustainability.

Yaakob et al (2017) describes waqf as a means of forest conservation. This research emphasizes the importance of forest areas in the ecosystem and continues with issues surrounding forest protection. Furthermore, Waqf, which has been implemented in several countries for the benefit of society, is seen as a potential tool to complement efforts to preserve the forest environment from depreciation. This research proposes that by allocating certain land or any immovable assets in the name of waqf, the state can improve the state of forests that provide water catchment areas, flood control mechanisms, and also habitats for biodiversity. Obaidullah (2018) examines the role of Islamic finance in addressing climate change.

This research discusses Islamic finance can contribute significantly to the global search for climate finance solutions. Islamic social funds can potentially play an important role in absorbing additional costs with clean technologies where subsidies are not available to absorb the same costs. Waqf institutions, along with zakat and ṣadaqah, can certainly play a role in addressing the humanitarian crisis of climate change. Waqf, like many foundations can be directly involved in the provision of goods and services related to mitigation and adaptation. Waqf can also be dedicated to research and development and to raising consumer awareness and creating stronger support for climate change mitigation action. Similar to SRI Funds, Islamic Green Funds and similar to Green Bonds, Islamic Green Ṣukūk can contribute significantly to the climate change agenda. Other related studies on waqf and SDGs, have been done by Abdullah (2018), Irfany et al., (2023), Fauziah & Kassim (2022), Rusydiana et al., (2022, 2023), Dukhan et al., (2021), and also Uddin et al., (2021).

**DATA AND METHODOLOGY**

This research aims to find priorities in waqf development based on SDG 13: *Climate Action*. The data used is primary data derived from interviews and questionnaires of 15 expert respondents consisting of practitioners, academics, and regulators related to the research topic. This research uses Microsoft Excel 2021 software analysis tools. The method used in this research is a qualitative method based on interviews with Delphi technique experts. The following are details of the 15 expert respondents in this study.

The Delphi method is a group process that involves interaction between a researcher and a group of experts relating to a particular topic using the aid of a questionnaire. This method is used to find common ground on future trends using a structured information gathering process. This method is useful in solving a problem that requires the opinion and judgment of experts and practitioners.

<table>
<thead>
<tr>
<th>No.</th>
<th>Respondent</th>
<th>Institutions</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ASA</td>
<td>Hidayatullah Institute</td>
<td>Practitioner</td>
</tr>
<tr>
<td>2</td>
<td>RR</td>
<td>Indonesian Waqf Education Foundation</td>
<td>Practitioner</td>
</tr>
<tr>
<td>3</td>
<td>KMA</td>
<td>Bogor Waqf Forest Foundation</td>
<td>Practitioner</td>
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<td>4</td>
<td>AA</td>
<td>IPB University</td>
<td>Academy</td>
</tr>
<tr>
<td>5</td>
<td>FK</td>
<td>Baitul Maal Khatulistiwa</td>
<td>Practitioner</td>
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Table 1: Name and expertise of respondents
In this study, three statistical indicators that are most widely used in the application of the Delphi method were used, namely the mean value (average), standard deviation value and interquartile range (IR).

Convergence measurement is done with 2 steps, the first is when all respondents’ responses or scores have a standard deviation value of less than 1.5 (<1.5). The standard deviation assessment formula is as follows.

\[ s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}} \]

\[ s = \sqrt{\frac{\sum x_i^2 - \frac{\left(\sum x_i\right)^2}{n}}{n-1}} \]

Description:

\( x = \) respondent A’s answer to the instrument \( n \)

\( \bar{x} = \) average of respondents’ answers to the instrument \( n \)

The next measurement is a consensus or convergence assessment when the answers or assessments from all respondents have an IR value of less than 2.5 (<2.5). The calculation of the IR value is obtained from the difference between the upper quartile and the lower quartile (IR = Q3 - Q1), the quartile value formula is as follows:

\[ Q_1 = \frac{x_{(n-1)4} + x_{(n+3)4}}{2} \]

\[ Q_2 = \frac{x_{2(n+1)4}}{4} \]

\[ Q_3 = \frac{x_{3n+14} + x_{3n+54}}{2} \]

The measurement to declare convergence or the level of consensus on all variables is when the standard deviation value is <1.5 and the interquartile range value is <2.5. If one of the indicators does not meet the requirements, then the variable is declared not converging or not agreed upon (divergent). Meanwhile, for variables that have met the requirements, the next step is to rank by ranking the highest mean value of each agreed variable (convergent). Actually there are several other indicators in Delphi statistics, only the author uses this indicators.

RESULT AND DISCUSSION

An analysis of the suitability of developing a waqf model based on SDG 13: Climate Change, with the criteria of 1) economic, 2) social, and 3) environmental; with maqashid sharia 1) diin, 2) nafs, 3) nasl, 4) ’aql, 5) maal, and 6) bi’ah; and with alternative waqf models 1) waqf-zakat, 2) waqf-takaful, 3) waqf-microfinance, 4) waqf-bank, and 5) waqf-sukuk. The selection of existing criteria is based on literature studies that have been conducted previously.

The following are the weighting results provided by 15 expert respondents consisting of
academics, practitioners, and regulators who have experience aligned with the field under study regarding all elements in the development of waqf models based on SDG 13: Climate Change.

<table>
<thead>
<tr>
<th>Table 2 Results of Expert Respondents’ Answers</th>
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<tbody>
<tr>
<td><strong>Attention</strong></td>
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<td>-----------------</td>
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<tr>
<td>Economic</td>
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<td>Social</td>
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<tr>
<td>Environment</td>
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<tr>
<td><strong>Maqashid Sharia</strong></td>
</tr>
<tr>
<td>Diin</td>
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<td>Nafs</td>
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<td>Nasl</td>
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<tr>
<td>Aql</td>
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<td>Maal</td>
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<td>Bi’ah</td>
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</tbody>
</table>

There are 3 statistical indicators that are most widely used in the Delphi method, including mean (average), standard deviation, and interquartile range (IR). Based on the data processing that has been carried out, the results of the calculation of priorities in waqf development based on SDG 13: Climate Change are shown in the following table.

<table>
<thead>
<tr>
<th>Table 3 Delphi Calculation Results of SDG 13 Waqf Model</th>
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</thead>
<tbody>
<tr>
<td><strong>Attention</strong></td>
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<td>-----------------</td>
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<tr>
<td><strong>Maqashid Sharia</strong></td>
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<td>Diin</td>
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<td>Nafs</td>
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<td>Nasl</td>
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<td>Aql</td>
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<td>Maal</td>
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<tr>
<td>Bi’ah</td>
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<tr>
<td><strong>Waqf Model</strong></td>
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<tr>
<td>Waqf-Zakat</td>
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<tr>
<td>Waqf-Takaful</td>
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<tr>
<td>Waqf-Microfinance</td>
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<tr>
<td>Waqf-Bank</td>
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<tr>
<td>Waqf-Sukuk</td>
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</table>
Based on table 3 above, in all 14 variables studied, there is 1 variable that is not agreed upon (divergent) by experts, namely related to the waqf model, namely waqf-zakat. This can be seen in the interquartile range which exceeds the value of 2.5 and the standard deviation exceeds the value of 1.5 which indicates non-convergent results. While the other 13 variables are agreed upon by experts (convergent).

In the Waqf Model Development based on its compatibility with SDG 13: Climate Change, on the attention criteria, the order of the most important according to SDG 13 is (1) environmental, (2) social, and (3) economic. In maqashid shar'ia, the order of importance is (1) bi'ah, (2) nafs, (3) nasl, (4) diin, (5) aql, and (6) maal. In the waqf model according to SDG 13, the most important are (1) waqf-sukuk, (2) waqf-bank, (3) waqf-microfinance, and (4) waqf-takaful. Meanwhile, the variable waqf-zakat according to experts is not agreed upon.

Findings

Based on the results of the analysis, there are several findings that can be used by related parties to make policies or develop waqf in supporting the achievement of SDGs 13. The findings are first, based on the attention criteria, the most important variable in waqf development according to SDG 13 is the environment, followed by social, and finally economic. Protecting the environment is crucial to realizing SDG 13 as it aims to adapt to climate change by mitigating adverse impacts and keeping temperature rise below 1.5° by the end of the century and preparing a low-carbon development plan (Küfeoğlu, 2022). This can be realized with strong synergies between SDG 13 and forests that can drive investments in sustainable forest management, forest restoration and forest conservation (Louman et al., 2019), the goal of which is to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. (UNEP, 2023) For example, floods, droughts and heatwaves signal climate change and require action now. (World Bank, 2023).

Furthermore, Rohmaningtyas (2021) explained that forest waqf can provide a solution related to climatological natural disasters caused by human behavior, where forest land that has been waqf'd cannot be reallocated but can be taken for the benefit of the general public. Budiman (2011) and Idllalène (2021) emphasize the important role of waqf to protect the environment. This is also supported by research from Yaakob et al (2017) which also emphasizes the benefits of waqf for the environment, which is motivated by the importance of forest areas in the ecosystem. This can be realized by allocating certain land or immovable assets in the name of waqf, the state can improve the status of forests that provide water catchment areas, flood control mechanisms or other climatological disasters, and also habitats for biodiversity. It can be concluded that the natural environment can be one of the beneficiaries of waqf (Ali & Kassim, 2020), and deserves important attention through conservation efforts, as explained in Abdullah's research (2019) that waqf can function and contribute to environmental conservation.

The various roles of Waqf in facilitating various activities both religious and social, economic and environmental such as places of worship, travelers, science, schools, scientific work, water supply and needs, poverty alleviation, preserving the environment, and so on (Yaakob et al., 2017; Ali & Kassim, 2020), can be used as an innovation to develop waqf to achieve SDG13 goals in various ways, for example, Green Infrastructure Development, where Waqf can be used to build green infrastructure such as city parks, urban forests, or other green open spaces that can help reduce air pollution and reduce carbon emissions. This green infrastructure can also help strengthen environmental resilience and reduce the negative impacts of climate change on the environment. Then, Environmental Education is by utilizing Waqf to support environmental education and awareness. Through waqf, training centers and educational programs can be established that focus on knowledge about climate change and how to overcome its impacts. Waqf can also be used for Renewable Energy Development to support the development of renewable energy resources such as solar and wind energy. These renewable energy resources can help reduce carbon emissions and improve energy security.

Second, based on Maqashid Shariah, the most important variable in waqf development according to SDG 13 is bi'ah. Bi'ah is part of Maqasid Al-Shari'ah, which aims to protect human rights and promote social justice, in other words, bi'ah refers to the protection of contracts and agreements related to climate action programs. This will ensure that contracts and agreements related to climate action programs are protected and implemented effectively and efficiently, leading to a more sustainable future for all. The application of bi'ah can be implemented through Islamic financial instruments, such as waqf, zakat and others. Such financial instruments can be used to support the development of renewable resources, the reduction of...
carbon emissions, and the enhancement of environmental resilience. In addition, financial instruments with sharia-compliant principles can increase people's access to clean energy and a healthy and sustainable environment.

In Ari & Koc (2021) investigate alternative equity-based financing models and propose a waqf-owned (which can also be called philanthropy, waqf, trust, foundation, and third sector-based) financial intermediary (WOFI). Simulation results of the WOFI waqf model show that the proposed WOFI dramatically reduces wealth inequality, while the conventional debt-based financing model increases inequality. In addition, the restructuring of waqf-based financial intermediaries also enables the raising of capital that is essential for large projects and is absent in the conventional waqf system. In summary, the study proved that waqf-based institutions have tremendous potential to contribute to sustainable development goals by considering long-term social implications, economic growth, and environment-friendly projects. This proves that the application of bi‘ah in financial instruments can promote the achievement of SDGs, particularly SDG 13 through environmentally friendly projects.

Finally, in the Waqf model, the most important variable in waqf development according to SDG 13 is waqf-sukuk. Sukuk are Islamic bonds that can be used to finance sustainable development projects, including those related to climate action. Research by Araminta et al. (2022) explains the role of green sukuk and its influence on the implementation of the Sustainable Development Goals (SDGs). Green sukuk provides benefits not only for all stakeholders involved but also for the environment. This provides an opportunity for innovation between sukuk and waqf. The integration of sukuk and waqf, which have unique properties, is an exciting development in Islamic finance. Sukuk has the potential to be an effective instrument in raising funds, while waqf is able to generate income and finance productive activities, the profits of which will be saved for future funding. The combination of sukuk and waqf can be an effective innovation to have cheap funds to promote sustainable development. Sukuk can be used to finance the development of waqf assets or even serve as the underlying asset (Musari, 2016). With the development of alternative financing sources, the waqf-sukuk integration can help realize the SDGs goals through climate-related projects.

CONCLUSION

Based on the results of data processing conducted using the Delphi analysis technique, of the 14 variables interviewed to experts, 13 variables were agreed upon (convergent) and only 1 variable was disagreed upon (divergent). One of the variables that was not agreed upon was related to the waqf model of waqf-zakat. Regarding the attention criteria, the most important variable in waqf development according to SDG 13 is the environment. In Maqashid Syariah, the most important variable in waqf development according to SDG 13 is bi‘ah. And in the Waqf model, the most important variable in waqf development according to SDG 13 is waqf-sukuk. In the future, it would certainly be better if this model was developed along with a complete, more comprehensive modus operandi.

REFERENCES


https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health