



# Development of sustainable Tamanu industry in Indonesia based on the green waqf model through sharia crowdfunding platforms

Muhammad Khoirul Fikri, Rizky Andean

Department of Sharia Economics, Faculty of Islamic Economics and Business UIN K.H. Abdurrahman Wahid Pekalongan, Pekalongan, Indonesia

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### Corresponding author:

Muhammad Khoirul Fikri  
[muhammad.khoirul.fikri@uingusdur.ac.id](mailto:muhammad.khoirul.fikri@uingusdur.ac.id)

### Author's email:

[rizkyandean@mhs.uingusdur.ac.id](mailto:rizkyandean@mhs.uingusdur.ac.id)

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Center for Islamic Economics Studies and Development, Faculty of Business and Economics, Universitas Islam Indonesia

## Abstract

**Purpose** – This study aims to describe how the green waqf-based model through sharia crowdfunding platform for sustainable Tamanu industrial development in Indonesia. The Tamanu industry is a sustainable industry engaged in the agricultural sector (agro-based industry) based on the utilization of Tamanu plants (*Calophyllum inophyllum*), which can consist of the plantation industry, biofuel industry and pharmaceutical and cosmetic industry.

**Methodology** – This research uses a descriptive qualitative approach in the form of a literature study of various literature relevant to the research topic. This research is a type of development research to formulate a model to answer the existing problems on how to find funding solutions for developing the Tamanu industry in Indonesia.

**Findings** – A green waqf-based financing model through a Sharia crowdfunding platform can be a solution to financing the sustainable Tamanu industry.

**Implications** – Through this model, the potential of existing waqf can be further maximized to impact the community's economic progress and environmental sustainability through developing a sustainable Tamanu industry.

**Originality** – This model is an elaboration between studies on renewable energy, Islamic philanthropy, Sharia financial technology, and green industry to support achieving sustainable development goals in Indonesia.

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## Introduction

The world we live in today faces sustainability challenges from all three aspects involving economic, environmental, and social dimensions. The escalation of this problem is mainly in unsustainable consumption and production, which leads to serious socio-economic crises and threatens life on the planet. As the world population grows, it increases consumer demand which translates into increased production of goods leading to increased production and business. This can cause serious damage to the ecology mainly due to the use of non-renewable inputs. In addition, resources are also being consumed at a faster rate. Increased emissions from production processes also make matters worse. The only way to address these issues is to pursue a sustainable development path. Thus, changing consumption and production patterns can help protect natural resources and ecology (Bag & Pretorius, 2022).

Global awareness of the energy crisis and environmental impacts associated with the use of fossil fuels has encouraged the use of alternative energy sources such as biodiesel. Since 2017, the use of biodiesel in Indonesia has been increasing. Biodiesel use reached 3.42 million kiloliters (KL) in 2017 and increased to 6.17 million KL in 2018. Then, biodiesel use stagnated at 8.4 million KL in 2019 and 2020. In 2021, biodiesel use in Indonesia reached 9.3 million KL (Pahlevi, 2022a). This puts Indonesia in third place as the country with the highest biodiesel consumption globally after the United States and Brazil (Pahlevi, 2021).

The government plans to continue increasing the use of biodiesel in the coming years. According to data from the Ministry of Energy and Mineral Resources of the Republic of Indonesia, biodiesel production is targeted to reach 11.6 million KL by 2025. The plan to increase the use of biodiesel is to save foreign exchange and reduce Indonesia's dependence on imported fuel oil (BBM) (Pahlevi, 2022b). Among the plants that can be used to produce biodiesel is Tamanu (*Calophyllum innoxium*). The Ministry of Forestry of the Republic of Indonesia mentioned that Tamanu is suitable for biodiesel production because it has a higher productivity rate (20 tons per hectare per year) compared to oil palm (6 tons per hectare per year) (Sanudin, 2020).

Another advantage of the Tamanu plant is that the oil content of the seeds is very high, around 50-73%. Tamanu oil can be processed into various derivative products with promising marketing prospects. Unfortunately, Tamanu has yet to be widely utilized by the community. Many must learn that Tamanu seeds can be processed and utilized in biodiesel, medicines, and cosmetics (Kustanto et al., 2021). Tamanu plants still need to be cultivated for industrial purposes. Based on data from the Ministry of Forestry, the area of Tamanu cultivation in Indonesia has only reached around 255 thousand hectares (Kartika et al., 2019). This differs from oil palm, which has a cultivation area of more than 14.6 million hectares (BPS, 2022). This has resulted in using Tamanu oil as biodiesel still not optimally applied (Musta et al., 2017).

Cultivating Tamanu plants on an industrial scale requires large funds. Efforts to raise funds for developing the Tamanu industry can be carried out through Islamic social fund instruments (Islamic philanthropy). Waqf is a form of Islamic philanthropy closely related to the benefit of the people. As a religious fund instrument that is closely related to socio-economic aspects, waqf has played a major role in the overall development of Indonesia, both in physical development and in human resource development (Syafiq, 2014).

Along with the times, the objects (assets) used as waqf are not only in the form of assets with high economic value in the form of land and buildings. Currently, there is an instrument of cash waqf (cash waqf). Cash waqf is waqf in the form of money, where the money is collected and managed by a waqf management institution (*nadzir*). Anyone can do cash waqf because it is more flexible, affordable, and productive. Through cash waqf, it is hoped that waqf can be a form of wealth transfer to achieve economic equality and prosperity for the entire community (Hiyanti et al., 2020).

Indonesia, the largest Muslim-majority country in the world, certainly has a huge potential for cash waqf. According to research by Fajariah et al. (2020), the potential of cash waqf in Indonesia can reach 20 trillion annually. Although based on data from the Indonesian Waqf Board (BWI), the realization of cash waqf in Indonesia in 2019 only reached 800 billion rupiahs (Lubis, 2020). This enormous potential is an opportunity to improve the community's welfare through cash waqf. Moreover, in sharia, waqf is not the same as zakat regarding its beneficiaries. If zakat recipients are limited to eight *asnaf (mustahik)*, waqf is unlimited in its beneficiaries (*mauquf 'alaih*). Moreover, the nature of the waqf object must be productive. Therefore, one form of innovation in using cash waqf in Indonesia is to provide expanded access to financing for developing the green waqf-based garden plant industry (Fajariah et al., 2020).

The digital era encourages innovation in various aspects of human life, including financial services. Financial technology, or Fintech is a dynamic segment at the intersection of the financial services sector and technology, where financial market participants introduce innovations in products and services that the traditional financial services industry has not previously provided. Fintech is gaining significant momentum and causing disruption to the financial services industry. The rapid development of Fintech has substantially changed the way the financial services industry operates. (Miskam et al., 2019).

Fintech is a technological innovation of financial services resulting in a business model, applications, and products related to digital technology-based financial services. The use of fintech services is currently so massive in society. The existence of digitalization which encourages a shift in people's lifestyles to be practical, has made fintech a part of people's daily life activities. Fintech is currently a choice for the community in carrying out financial transaction activities. The Financial Services Authority in November 2021 reported 104 fintech industries in Indonesia with millions of users. Among the various types of fintech that exist, Sharia crowdfunding can be a means of raising cash waqf funds (Mamuko et al., 2022).

To develop the Tamanu industry, an effective funding solution is needed. Furthermore, the solution needs to be formulated into a model that is practical in its implementation. On the other hand, the large potential of existing cash waqf must be optimally utilized. These two things can be integrated with the form of a green waqf model through a sharia crowdfunding platform for developing the Tamanu industry as a sustainable industry in Indonesia, which will be examined in this paper.

Previous studies have only examined the issue of sustainable industrial development separately, the potential of biodiesel as alternative energy, the potential of cash waqf in the community, and the massive use of financial technology today. Few studies combine these issues in one complete discussion, let alone create a model that tries to integrate them. This is what the author tries to do in this research.

This research aims to describe the development of the sustainable Tamanu industry in Indonesia based on the green waqf model through sharia crowdfunding platforms. For academics, this research is expected to be a reference to conduct more in-depth studies and further research about sustainable industrial development based on the green waqf model through financial technology platforms. For the community, this research is expected to provide an overview of the development of the sustainable Tamanu industry in Indonesia based on the green waqf model through sharia crowdfunding platforms. For the government, this research is expected to be considered in formulating policies on sustainable industrial development based on the green waqf model in Indonesia.

## Literature Review

### Sustainable Industry/Green Industry

The sustainable industry is the process of creating goods and services using a pollution-free, economical, safe, and healthy system for employees, consumers, and society, as well as conserving energy and natural resources. The sustainable industry is also known as the green industry. The concept of green industry is the integration of planning and implementation of environmental management in industrial management. The name green industry implies an environmentally sound industry. Environmental management has been given a place along with the design process in the operation of an industry (Ministry of Industry, 2014). The concept of the green industry, in a simple definition, can be interpreted as industrial development and production activities that do not harm environmental sustainability or are detrimental to human health. In this case, the green industry aims to strengthen the positive impact of industrial activities on environmental, climatic, and social aspects in the business activities of corporations or companies (Widyantoro, 2017).

According to Law No. 3 of 2014, which is the main foundation in the implementation of the green industry in Indonesia, the development of the green industry aims to realize a sustainable industry in the context of efficient and effective use of natural resources to be able to harmonize industrial development with the continuity and sustainability of environmental functions and provide benefits to society. Another goal of implementing green industry is to increase profits through increased efficiency in the use of existing resources (Hestanto, 2022). The capital approach to sustainability emphasizes capital must be maintained or increased over time to ensure that overall well-being does not decline. This approach has different views of sustainability in treating natural capital. However, it is about determining how to manage the nature available for exploitation by humanity efficiently and sustainably in a safe operating space (Barbier & Burgess, 2017).

There are nine types of the green industry, including 1) Energy forest development; 2) Ecotourism; 3) Establishment of botanical gardens or urban forests; 4) Captive breeding of wild and rare animals; 5) Development of non-timber forest products (such as sap, seeds, fruit, and so on); 6) Development of import substitution products; 7) Processing of waste energy from microbial utilization; 8) Utilization of renewable energy; and 9) Ecosystem restoration (Lentera Bisnis, 2018).

### Green Waqf

The word waqf comes from Arabic: *Al-Waqf*, which literally means to stop, contain, or preserve; *Al-Habs*, which means that the property is held (Muhammad & Prastiwi, 2015). Conceptually, waqf refers to charitable endowments. It is a voluntary and irrevocable dedication of one's wealth, either in cash or kind and its disbursement is dedicated to beneficial sharia-compliant projects (Zain & Sori, 2020). According to Law No. 41 of 2004 concerning Waqf and Government Regulation No. 42 of 2006, the concept of waqf can be summarized as follows: Waqf is a legal act of Waqif to separate and/or submit part of his property to be utilized forever or for a certain period following his interests for worship and/or public welfare according to sharia (Kalimah, 2020).

The pillars of waqf that must be fulfilled in carrying out the legal act of waqf are four, namely: (1) *Waqif* (the person who endows property); (2) *Mauquf bib* (the item or property being endowed); (3) *Mauquf 'alaih* (the party to whom the waqf is endowed); (4) *Shighat* (a statement or pledge by the waqif as a will to endow some of his property) (Asri et al., 2020).

Cash waqf can be defined as the activity of holding money and giving away the benefits generated as profit from its management (Asri et al., 2020). Cash waqf is waqf whose object is money, namely funds or money collected by waqf management institutions (*nadzir*) through the issuance of cash waqf certificates that a person or institution can own. Meanwhile, the Fatwa of the Indonesian Ulema Council (MUI) states that cash waqf is: (1) Cash waqf is an activity carried out by an individual, a group of people, or a legal entity that implements cash waqf; (2) Cash waqf can also mean certificates that have high economic value; (3) Cash waqf according to MUI is permissible; (4) Channeled to something halal only (Hardiati, 2020).

Green waqf is a step to collect, manage, and utilize cash waqf funds to support sustainable development based on agricultural and plantation aspects. Green waqf is an effort to encourage breakthroughs in utilizing existing waqf assets to support the achievement of sustainable development goals, as well as to address the challenges of climate change and the energy crisis that loom over people's lives, both at the national and global levels. In other words, how to create a waqf program that provides excellent socio-economic benefits, while having a significant ecological impact on the sustainability of quality human life (BWI, 2022b).

### Sharia Crowdfunding

Literally is financing by the crowd. Crowdfunding implies an open public offering of financing resources, mostly through the internet (Nivoix & Ouchrif, 2016). Crowdfunding is an online platform that is a medium for collecting and distributing funds obtained from investors to those in need (Hidajat, 2020). Crowdfunding is the act of a business owner, a group of social actions, or a non-profit venture to obtain a small amount of funding contributions from a large group of individuals online without the involvement of conventional financial intermediaries. Crowdfunding is a financial innovation that uses technology to facilitate donations and become an alternative solution to traditional financings such as banks and cooperatives. Crowdfunding is a new entrepreneurial bootstrapping technique for innovative start-up businesses with limited resources. Crowdfunding can be divided into four types, namely donation crowdfunding, reward crowdfunding, loan crowdfunding, and equity crowdfunding. Crowdfunding is a collaborative effort that connects investors/donors, entrepreneurs/project owners, and platforms as agents (Hendratmi et al., 2020).

Sharia crowdfunding is crowdfunding designed to comply with sharia principles. Sharia crowdfunding is described as the use of small amounts of money, obtained from a large number of individuals or organizations, to fund a project, business or personal loans, and other needs through an online web-based platform following sharia principles. The requirements of a Shariah-

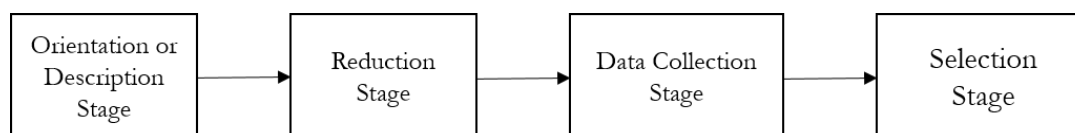
compliant crowdfunding framework include project initiators (e.g., individuals, organizations, and businesses), potential funders, crowdfunding operators, and the Shariah Supervisory Board. The role of the Sharia Supervisory Board is very important and necessary to identify projects offered by crowdfunding are halal following sharia (Abdullah & Susanto, 2019).

## Research Methods

This research is qualitative research using an exploratory descriptive approach. A descriptive approach is a research approach that aims to make a factual and systematic description of the problem under study. An exploratory approach is a research that tries to find and express findings on the problems studied. Through these two approaches, a solutive concept is then formulated to solve the problem, arranged in the form of a comprehensive discussion. This research is a research and development research design that seeks to formulate solutions to solve problems that exist in a model. This research is a type of literature survey carried out through a review of various literature relevant to the research (Suryana, 2010).

The data in this research were obtained from secondary sources. Data from secondary sources were collected through a review of various literature relevant to the research. The literature in question is in the form of books, scientific journals, and mass media news, which are considered credible and have national and international standards. The use of secondary sources was chosen because of considerations of effectiveness and efficiency to support the completion of this research (Sidiq & Choiri, 2019).

The data obtained is studied carefully by selecting data to produce accurate data. After the data is sufficient, the problems to be studied are formulated. Then from these problems, a solution concept is formulated as an effort to solve it, arranged in the form of a comprehensive discussion. Data analysis in this study used content analysis techniques, namely content analysis from secondary data sources used in research according to the needs and criteria set by the researcher (Yusuf, 2014).



**Figure 1.** Research Stages

This research was carried out through the following stages (See Figure 1). The first stage is the orientation or description stage. At this stage, the researcher describes the research issue, which includes the development of sustainable industries, the potential of green waqf, and the massive use of financial technology in the digital era. The second stage is the reduction stage to determine the research's focus. At this stage, the researcher reduces all the information that has been obtained in the first stage to focus the research on the problem of how to develop a sustainable Tamanu industry in Indonesia based on green waqf through sharia crowdfunding platforms, namely on how the concept is, how the mechanism flows, and who are the parties who can be involved in it. The third stage is the data collection stage. At this stage, researchers tried to find data relevant to the research topic from various literature such as books, scientific journals, and mass media news. This data search was carried out by typing keywords such as sustainable industries, biodiesel, Tamanu plants, green waqf, financial technology, and Islamic crowdfunding in search engines and various journal indexers. The fourth stage is the selection stage. At this stage, the researcher elaborates on the focus that has been determined to be more detailed based on secondary reference materials from various literature the researcher collects. The description is then organized into a research discussion which is then drawn to a conclusion (Suryana, 2010).

The results of data analysis were then studied further through focus group discussion (FGD) activities which were attended by Islamic economics academics, namely lecturers and students in the course of the Faculty of Islamic Economics and Business UIN K.H. Abdurrahman

Wahid Pekalongan. This research was conducted through planning, implementing, and compiling research results.

## **Results and Discussion**

### **Prospect of Biodiesel as Renewable Energy**

Energy consumption in Indonesia tends to increase every year. Based on an excerpt from Government Regulation No. 79 passed in 2014 regarding the National Energy Policy, the need for petroleum, coal, gas, and renewable energy will cumulatively increase over the next few decades (Murtiningrum & Firdaus, 2015). With limited fuel oil reserves, increased consumption will naturally lead to increased imports and subsidies to meet national energy needs.

Indonesia's oil reserves continue to decline. This problem can potentially increase Indonesia's oil imports, so serious steps are needed, including increasing the energy mix (Nuva et al., 2019). One of the efforts to improve national energy security in the long term is to reduce dependence on non-renewable fossil fuels by substituting them with renewable energy sources, especially biofuels (biodiesel, bioethanol, biomass, and biogas).

The government has issued various rules and policies to ensure the adequacy of national energy, including developing various new and renewable alternative energies to support the national energy mix policy, one of which is the development of biodiesel as a blending material for diesel fuel. One form of renewable energy that is developing in Indonesia is bioenergy, of which biodiesel is one part that is included in the biofuel group. The development of the biodiesel program in Indonesia has been progressing since 2006. This is certainly inseparable from Indonesia's position, which began to become a petroleum importer in 2005 (Nuva et al., 2019).

Biodiesel is generally made through a chemical process called transesterification or esterification reaction, which is a reaction of ester compounds and alcohol using a catalyst. Biodiesel is made from vegetable oil which is a renewable natural resource. Vegetable oil raw materials that have the potential as raw materials for making biodiesel include palm oil, soybean, sunflower, jatropha, avocado, sugar cane, and several other types of plants, including Tamanu. In addition to vegetable oils, feedstocks can come from animals, bakers, or recycled fats (Devita, 2015).

Ecologically, biodiesel has several advantages over petroleum fuels, including that it can be produced locally by utilizing available natural oil/fat sources, the production process and its use are more environmentally friendly with lower combustion emissions, and it more easily decomposed in nature. Using biodiesel can also reduce soil pollution and protect the sustainability of water and drinking water sources. Some factors supporting biodiesel development in Indonesia include the abundance of vegetable oil raw materials; relatively easy biodiesel manufacturing technology, and promising market opportunities and profits. With these supporting factors and the need to find alternative energy, the prospects for developing biodiesel as alternative bioenergy in Indonesia can be very prospective (Devita, 2015).

### **Development of Tamanu Plant Industry as a Sustainable Industry**

The industrial sector has a strategic and important role in realizing development goals, but it must also be a concern that the industrial sector currently has challenges in the form of clashing industrial activities with negative impacts related to environmental issues. There are growing issues and opinions about environmental degradation around industrial areas and conflicts between industries and surrounding communities related to welfare gaps and the potential for environmental pollution in land, water, and air. The birth of the 'sustainable industry' or 'green industry' is one of the industrial world's responses to environmental issues (Setiawan, 2020).

In Indonesia, the commitment coming from the government to organize a sustainable industry began in 2009 when the Manila Declaration was signed. Indonesia has understood that the development of the industrial sector which has been running for about 50 years, in addition to bringing positive impacts to the country, has also brought negative impacts, especially on environmental issues, especially related to pollution caused by waste generated by industry and

inefficient utilization of natural resources. For this reason, the demand to develop a sustainable industry has become an important issue (Widyantoro, 2017).

In terms of environmental considerations for industrial development in Indonesia, there is no doubt that conceptually, Indonesia supports environmentally sound development, including its application in the industrial context. Sufficient political will from the Government of Indonesia has been demonstrated, among others, by the birth of various laws and regulations, both for domestic and international environmental protection commitments (Setiawan, 2020).

The government's commitment to developing sustainable industries is contained in Presidential Regulation No. 28 of 2008, which aims to develop industries with the concept of sustainable development. One of the points in the regulation is related to the environment, where industrial development is expected to be able to maintain ecosystem balance, maintain sustainable resources, avoid exploitation of natural resources, and environmental conservation functions. In developing domestic industries to develop green industries, the Indonesian government takes an approach similar to the practices carried out by developed countries that have first developed green industries. First, by developing existing industries towards the green industry, and second, building new industries with green industry principles (Widyantoro, 2017).

The government formulated several strategies to face the challenges that arise in efforts to implement green industry and to encourage the participation of the industrial sector to participate in implementing green industry practices, including developing international cooperation related to policy formulation and funding in the development and development of the green industry; strengthening institutional capacity to develop the green industry; building coordination between the government, the community, and the private sector; promoting/socializing policies and technical regulations related to the green industry (including raw materials, production processes, technology, and environmentally friendly products); and improving human resource capabilities, technology transfer, and strengthening research and development (Ministry of Industry, 2014).

The development of the Tamanu industry is a sustainable industry in the type of energy forest development, development of non-timber forest products, development of import substitution products, utilization of renewable energy, and ecosystem restoration. Some of the advantages of Tamanu in terms of industrial prospects are that it is easy to cultivate, bears fruit throughout the year is resistant to extreme environments, does not compete with the objectives/interests of food crops in the absorption of nutrient content in the soil, and almost all parts can produce various kinds of products that have economic value (Kustanto et al., 2021).

Tamanu is a type of plant that has many benefits. All parts of this plant, including wood, fruit, flowers, leaves, sap, and seeds, can be used for various purposes. Most of the components of Tamanu can produce oil, but the highest oil content is found in the seeds. Tamanu oil is obtained from the seeds through extraction by pressing. Crude Tamanu oil contains various active components. The main components of Tamanu oil are fatty acids (palmitic, stearic, oleic, and linoleic) which have the potential to be processed into alternative biodiesel fuels. The minor components of Tamanu oil contain steroids, flavonoids, saponins, and triterpenoids that can accelerate wound healing, stimulate skin growth, fertilize hair, and cure rheumatism (Setyawardhani et al., 2022).

Developing the Tamanu industry as a sustainable industry can include three forms of industry, including 1) Plantation industry, with the main product being Tamanu seeds, the raw material for the biofuel industry. 2) The biofuel industry, which processes Tamanu seeds into Tamanu oil both in the form of biodiesel and other derivative products as a supply of raw materials for the pharmaceutical and cosmetic industries 3) The pharmaceutical and cosmetic industry processes Tamanu oil into medicines and cosmetics, both semi-finished and ready-to-use.

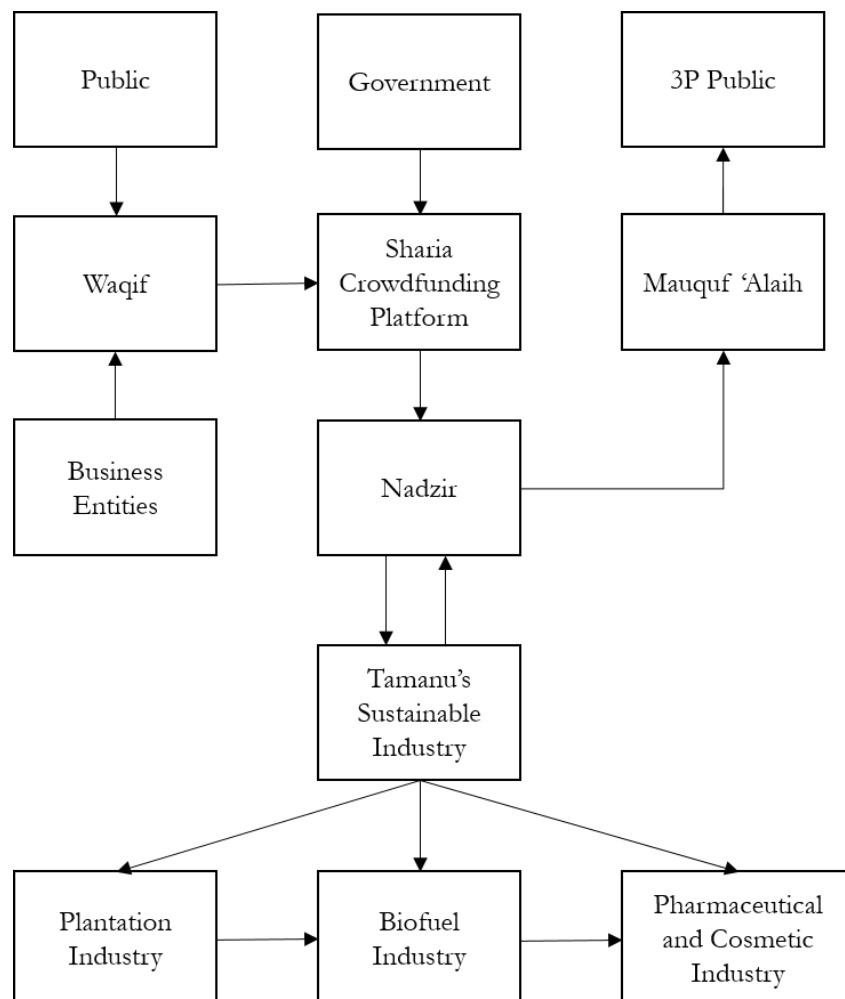
### **Green Waqf-Based Tamanu Industry Development Model Through Sharia Crowdfunding Platforms**

Financing is an obstacle that is often faced in efforts to realize a sustainable industry. However, Indonesia has committed itself to developing the sustainable industry, which will require investment for green projects and also the need to find new sources of financing. Green waqf can

be implemented through three different schemes as a funding instrument. The first scheme is direct waqf. In this scheme, the collected cash represents the waqf and is invested in profitable green projects. The second scheme is indirect cash waqf. Here, the collected cash represents a medium to create a waqf. Within this scheme, the waqf asset can be a tangible or intangible asset. The third scheme is a hybrid mechanism combining waqf and other Islamic social funds, such as infaq. Since the waqf assets need to be sustained, there is a requirement to involve a guarantee mechanism (BWI, 2022a).

Green waqf can be collected through sharia crowdfunding platforms in the digital era. Crowdfunding platforms represent a revolution in the financial services industry. Crowdfunding is a type of financial service that allows online donors to engage in projects that contribute to addressing social and environmental issues (Pratono et al., 2020). If Islamic finance has experienced widespread expansion since the beginning of the century, sharia crowdfunding is only just emerging. Crowdfunding is a new means of financing. Crowdfunding can easily combine several financing methods, such as crowdfunding, investment funds, and waqf. This is not a problem for Islamic finance if the funds are sharia-compliant in their management and use (Nivoix & Ouchrif, 2016).

The development model of the green waqf-based Tamanu industry through the Sharia crowdfunding platform is as follows (See Figure 2):



**Figure 2.** Development Model

Waqif distributes cash waqf funds through the sharia crowdfunding platform. Waqifs who channel cash waqf funds through the sharia crowdfunding platform can be divided into two categories. The first is waqifs from the general public. This waqif category is very broad in scope. The second is investors/waqifs from businesses run by the private sector and the government. Apart from



reasons of economic power, this category of waqf has social obligations in the form of Corporate Social Responsibility (CSR), which of course, can be channeled into the form of cash waqf for sustainable industrial development (Wardiwiyono & Jayanti, 2021).

The nadzir will then manage the funds collected through the Sharia crowdfunding platform. *Nadzir* manages the waqf funds for the development of the Tamanu industry. The *nadzir* can also collaborate with third parties in developing the Tamanu industry. Suppose a third party carries out the development of the Tamanu industry. In that case, the *nadzir* will act as a representative of the waqf to enter into a contract of cooperation for utilizing cash waqf funds with the third party to develop the Tamanu industry.

Cooperation agreements that can be made include 1) *Mudharabah*, a cooperation contract for developing the Tamanu industry between the *nadzir* as shahibul mal, which provides all the capital with a third party as *mudharib*. The profits that will be obtained are divided according to the ratio agreed upon in the contract. As for losses, all of them will be borne by shahibul mal unless the mudharib commits default. 2) *Musyarakah*, is a contract in which the *nadzir* and a third party enter into a cooperation (partnership) contract for the development of the Tamanu industry in which each party contributes funds/business capital (*ra's al-mal*) with the provision that profits are shared according to the agreed ratio or proportionally according to the amount of capital, while losses are borne by the parties proportionally unless the third party defaults. 3) *Musyarakah mutanaqishah*, is a musyarakah contract in which the ownership of assets (goods) or capital of one party (*syarik*/partner) decreases due to gradual purchases (with profits) by the other party. 4) *Musyarakah muntabiyah bittamlik*, is a *musyarakah* contract in which the ownership of a portion of the capital from one party is transferred to the other party in a lump sum at the end of the *musyarakah* contract period, either by sale and purchase or grant. 5) Other agreements following sharia principles (Wardiyah, 2019).

The value of benefits in the form of profits from the development of the Tamanu industry will then be distributed to mauquf 'alaih, namely the community, directly or indirectly. The distribution of the value of this benefit can be done through social assistance, educational scholarships, improved nutrition, and sanitation, access to clean water, training assistance and business capital, environmental conservation, and so on (Siswantoro et al., 2018). The distribution of the value of benefits must pay attention to the 3P points according to the triple bottom line concept, which is the orientation in sustainable development goals, namely, people, profit, and the planet.

The government will play a role in supervising and fostering the Sharia crowdfunding platform used to develop the green waqf-based plantation industry. Government elements that can be involved include various related ministries, the Indonesian Waqf Board (BWI), and the Financial Services Authority (OJK). Apart from government elements, other authoritative institutions can supervise and guide this sharia crowdfunding platform, such as the National Sharia Supervisory Board of the Indonesian Ulema Council (DSN-MUI) and the Indonesian Crowdfunding Services Association (ALUDI).

One example of the empirical contribution of waqf toward green development is a waqf forest. There are several communities with similar concepts, whereby a forest is built on the waqf to reduce natural disasters by providing ecological, economic, and social humanitarian support. The Bogor Waqf Forest Foundation is one of Indonesia's existing waqf institutions (*nadzir*) conducting those three programs (BWI, 2022a).

Land rehabilitation can provide ecological advantages by planting various trees on waqf land. To this end, the above foundation initiated fundraising to convert private land into waqf land and waqf forest. Ecological and economic benefits could be gained by planting trees that produce fruits that could be sold for a financial return. On the other hand, benefits in terms of social humanitarian aspects could be promoted by providing ecological and disaster-related education to the local community around the waqf forest. In addition to those benefits, the waqf forest aligns with several goals in the SDGs, including reducing poverty and hunger (SDGs 1 and 2), maintaining climate (SDGs 13), health (SDGs 3), and water supply (SDGs 6). In addition to the waqf forest, other waqf institutions in Indonesia have tree plantation programs to support green initiatives and empowers farmers in the surrounding areas (BWI, 2022a).

## Conclusion

Environmental protection and energy sustainability are two important yet intertwined issues in sustainable development. While fundamental for the livelihood of the global population, progress in achieving targets in these issues is still a challenge at the global level due to various factors, one of them being financing. This also applies to Indonesia as a developing country with an emerging economy.

Therefore, to support the development of a sustainable industry in Indonesia, this study proposes a sustainable Tamanu industry based on a green waqf model through sharia crowdfunding platforms as guidance for stakeholders who are willing to enhance national funding by utilizing waqf as a socio-religious scheme of funding to finance green projects in Indonesia.

Through the author's proposed model, waqf distributes cash waqf funds through a sharia crowdfunding platform. The nadzir will then manage the funds collected through the sharia crowdfunding platform to develop the Tamanu industry. The value of the benefits in the form of profits from the development of the Tamanu industry will then be distributed to the community following the triple bottom line concept, which is the orientation to sustainable development goals, namely people, profit, and the planet. This model needs to be supported by related parties who synergize with each other in running it.

The model is a collaboration between commercial finance and Islamic social finance concepts. Through this model, the potential of existing cash waqf can be further optimized to have a real positive impact on improving the social conditions of the community, encouraging the economic progress of the ummah, and preserving the environment through the development of sustainable industries through the use of financial technology in the digital era.

Researchers realize that this research still needs improvement and has weaknesses, shortcomings, and limitations. Among the limitations of this research are, first, the discussion is still limited to the concept design stage regarding the development of sustainable Tamanu industry in Indonesia based on green waqf through sharia crowdfunding platforms with no real implementation. So the focus of this study is more on how to build the concept to answer existing problems related to efforts to provide alternative energy and sustainable industrial issues. This research has not been able to explain how the sustainable Tamanu industry operates and how it impacts the community in terms of economic, social, and environmental aspects. Second, this research only uses secondary data from various kinds of literature relevant to the research topic, not using primary data support. Primary data support obtained from observations and interviews with experts and related parties would certainly be great to support better research results. In the future, further research needs to be carried out to support the discussion presented in this study related to the issue of a sustainable Tamanu industry because researchers feel that this topic will still be interesting to study.

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## Author Contribution

Conceptualization: Rizky Andean

Data curation: Muhammad Khoirul Fikri, Rizky Andean

Formal analysis: Muhammad Khoirul Fikri, Rizky Andean

Investigation: Muhammad Khoirul Fikri, Rizky Andean

Methodology: Muhammad Khoirul Fikri, Rizky Andean

Project administration: Muhammad Khoirul Fikri, Rizky Andrean

Supervision: Muhammad Khoirul Fikri

Validation: Muhammad Khoirul Fikri

Visualization: Rizky Andrean

Writing – original draft: Rizky Andrean

Writing – review & editing: Rizky Andrean

## References

- Abdullah, Z., & Susanto, A. A. (2019). The role of investment-based Islamic crowdfunding for halal MSMEs: Evidence from Indonesia. *Al-Iqtisad: Jurnal Ilmu Ekonomi Syariah*, 11(2), 289–302. <https://doi.org/10.15408/aiq.v11i2.13623>
- Asri, Aqbar, K., & Iskandar, A. (2020). Hukum dan urgensi wakaf tunai dalam tinjauan fikih. *Bustanul Fuqaha: Jurnal Bidang Hukum Islam*, 1(1), 79–92. <https://doi.org/10.36701/bustanul.v1i1.132>
- Bag, S., & Pretorius, J. H. C. (2022). Relationships between industry 4.0, sustainable manufacturing and circular economy: Proposal of a research framework. *International Journal of Organizational Analysis*, 30(4), 864–898. <https://doi.org/10.1108/IJOA-04-2020-2120>
- Barbier, E. B., & Burgess, J. C. (2017). Natural resource economics, planetary boundaries and strong sustainability. *Sustainability*, 9(10), 1–12. <https://doi.org/10.3390/su9101858>
- Biro Pusat Statistik. (2022). *Luas tanaman perkebunan menurut provinsi (ribu hektar) tahun 2019-2021*. <https://www.bps.go.id/indicator/54/131/1/luas-tanaman-perkebunan-menurut-provinsi.html>
- Badan Wakaf Indonesia. (2022a). *Green waqf framework*. <https://www.bwi.go.id/8338/2022/09/21/green-waqf-framework/>
- Badan Wakaf Indonesia. (2022b). *Wakaf hijau dan pembangunan berkelanjutan*. <https://www.bwi.go.id/8342/2022/09/22/wakaf-hijau-dan-pembangunan-berkelanjutan/>
- Devita, L. (2015). Biodiesel sebagai bioenergi alternatif dan prospektif. *Agrica Ekstensia*, 9(2), 23–26. <https://www.polbangtanmedan.ac.id/pdf/Jurnal%202015/Vol%209%20No%202/04%20LIZA.pdf>
- Fajariah, A. P., Sudana, S., & Rusydiana, A. (2020). Wakaf uang untuk optimalisasi pembiayaan usaha mikro kecil dan menengah (UMKM) melalui koperasi syariah di Indonesia. *Jurnal Manajemen Teori dan Terapan*, 13(1), 1–15. <https://doi.org/10.20473/jmtt.v13i1.14399>
- Hardiati, N. (2020). Wakaf tunai (cash waqf) menurut perspektif ulama dan tinjauan maqashid syariah. *Akselerasi: Jurnal Ilmiah Nasional*, 2(3), 106–117. <https://doi.org/10.54783/jin.v2i3.322>
- Hendratmi, A., Ryandono, M. N. H., & Sukmaningrum, P. S. (2020). Developing Islamic crowdfunding website platform for startup companies in Indonesia. *Journal of Islamic Marketing*, 11(5), 1041–1053. <https://doi.org/10.1108/JIMA-02-2019-0022>
- Hestanto. (2022). *Pembangunan industri hijau indonesia*. <https://www.hestanto.web.id/industri-hijau/>
- Hidajat, T. (2020). Unethical practices peer-to-peer lending in Indonesia. *Journal of Financial Crime*, 27(1), 274–282. <https://doi.org/10.1108/JFC-02-2019-0028>
- Hiyanti, H., Afyana, I. F., & Fazriah, S. (2020). Potensi dan realisasi wakaf uang di Indonesia tahun 2014-2018. *Jurnal Ilmiah Manajemen, Ekonomi, dan Akuntansi*, 4(1), 77–84. <https://doi.org/10.31955/mea.v4i1.207>
- Kalimah, S. (2020). Wakaf tunai sebagai solusi masalah kemiskinan di Indonesia. *Salimiya: Jurnal Studi Ilmu Keagamaan Islam*, 1(4), 90–111.

<http://ejournal.iaifa.ac.id/index.php/salimiya/article/view/202>

- Kartika, I. A., Rabbani, R. I., & Yuliana, N. D. (2019). Potensi cangkang buah nyamplung (*calophyllum inophyllum*) sebagai sumber resin alami. *Jurnal Teknologi Industri Pertanian*, 29(3), 269–277. <https://doi.org/10.24961/j.tek.ind.pert.2019.29.3.269>
- Kementerian Perindustrian. (2014). *Keberlanjutan ekonomi dengan green industry*. <http://pusdiklat.kemenperin.go.id/www/informasi/artikel-umum/artikel-nasional/480-keberlanjutan-ekonomi-dengan-green-industry.html>
- Kustanto, M. N., Ilminnafik, N., Darsin, M., Sugara, I. R., Andrianto, D. T., & Fawaid, A. I. (2021). Pelatihan pembuatan bahan bakar minyak nyamplung (*calophyllum inophyllum*) bagi masyarakat Banyuwangi Jawa Timur. *Jurnal Abdi Masyarakat Indonesia*, 2(1), 35–40. <https://doi.org/10.54082/jamsi.154>
- Lentera Bisnis. (2018). *Pengertian industri hijau*. <https://www.lenterabisnis.com/pengertian-industri-hijau>
- Lubis, H. (2020). Potensi dan strategi pengembangan wakaf uang di Indonesia. *IBF: Islamic Business and Finance*, 1(1), 43–59. <https://doi.org/10.24014/ibf.v1i1.9373>
- Mamuko, T. Y., Masruchin, & Krisnaningsih, D. (2022). Implementasi strategi customer relationship management pada industri financial technology microfinance syariah di Indonesia. *Jurnal Tabarru': Islamic Banking and Finance*, 5(1), 132–139. [https://doi.org/10.25299/jtb.2022.vol5\(1\).9154](https://doi.org/10.25299/jtb.2022.vol5(1).9154)
- Miskam, S., Yaacob, A. M., & Rosman, R. (2019). Fintech and its impact on Islamic fund management in Malaysia: A legal viewpoint. In *Emerging Issues in Islamic Finance Law and Practice in Malaysia* (pp. 223–246). <https://doi.org/10.1108/978-1-78973-545-120191019>
- Muhammad, T., & Prastiwi, I. E. (2015). Wakaf tunai perspektif syariah. *Jurnal Ilmiah Ekonomi Islam*, 1(1), 61–74. <https://jurnal.stie-aas.ac.id/index.php/jei/article/view/29>
- Murtiningrum, & Firdaus, A. (2015). Perkembangan biodiesel di Indonesia tinjauan atas kondisi saat ini, teknologi produksi & analisis prospektif. *Jurnal PASTI*, 9(1), 35–45. <https://publikasi.mercubuana.ac.id/index.php/pasti/article/view/467>
- Musta, R., Haetami, A., & Salmawati, M. (2017). Biodiesel hasil transesterifikasi minyak biji nyamplung (*calophyllum inophyllum*) dengan metanol. *Indonesia Journal Chemical Research*, 4(2), 394–401. <https://doi.org/10.30598/ijcr.2017.4-rus>
- Nivoix, S., & Ouchrif, F. Z. (2016). Is crowdfunding sharia compliant? *International Perspectives on Crowdfunding*, 185–198. <https://doi.org/10.1108/978-1-78560-315-020151011>
- Nuva, Fauzi, A., Dharmawan, A. H., & Putri, E. I. K. (2019). Ekonomi politik energi terbarukan dan pengembangan wilayah: Persoalan pengembangan biodiesel di Indonesia. *Sodality: Jurnal Sosiologi Pedesaan*, 4(1), 110–118. <https://journal.ipb.ac.id/index.php/sodality/article/download/19727/17690>
- Pahlevi, R. (2021). *Konsumsi biofuel Indonesia tertinggi ketiga di dunia*. Katadata.Co.Id. <https://databoks.katadata.co.id/datapublish/2021/11/11/konsumsi-biofuel-indonesia-tertinggi-ketiga-di-dunia>
- Pahlevi, R. (2022a). *Pemanfaatan biodiesel domestik capai 9,3 juta kiloliter pada 2021*. Katadata.Co.Id. <https://databoks.katadata.co.id/datapublish/2022/01/24/pemanfaatan-biodiesel-domestik-capai-93-juta-kiloliter-pada-2021>
- Pahlevi, R. (2022b). *Produksi biodiesel 2025 ditarget capai 11,6 juta KL*. Katadata.Co.Id. <https://databoks.katadata.co.id/datapublish/2022/04/14/produksi-biodiesel-2025-ditarget-capai-116-juta-kl>
- Pratono, A. H., Prima, D. A., Sinaga, N. F. N. T., Permatasari, A., Ariani, M., & Han, L. (2020).

- Crowdfunding in digital humanities: Some evidence from Indonesian social enterprises. *Aslib Journal of Information Management*, 72(2), 287–303. <https://doi.org/10.1108/AJIM-05-2019-0123>
- Sanudin. (2020). Persepsi dan sikap masyarakat terhadap pengembangan Nyamplung di desa Patutrejo, Kabupaten Purworejo. *Jurnal Agroforestri Indonesia*, 3(1), 55–66. <https://doi.org/10.20886/jai.2020.3.1.55-66>
- Setiawan, R. (2020). Pengelolaan kawasan industri berwawasan lingkungan di kota Dumai. *Jurnal Wedana*, 6(1), 8–18. <https://journal.uir.ac.id/index.php/wedana/article/download/7013/3297/>
- Setyawardhani, D. A., Rakhmawati, R., Kaavessina, M., & Danarto, Y. C. (2022). Diversifikasi Pemanfaatan minyak biji Nyamplung sebagai upaya meningkatkan nilai tambah produksi di CV Plantanesia. *SEMAR (Jurnal Ilmu Pengetahuan, Teknologi, Dan Seni Bagi Masyarakat)*, 11(1), 76–84. <https://doi.org/10.20961/semar.v11i1.55835>
- Sidiq, U., & Choiri, M. M. (2019). *Metode penelitian kualitatif di bidang pendidikan*. CV. Nata Karya.
- Siswanto, D., Rosdiana, H., & Fathurahman, H. (2018). Reconstructing accountability of the cash waqf (endowment) institution in Indonesia. *Managerial Finance*, 44(5), 624–644. <https://doi.org/10.1108/MF-05-2017-0188>
- Suryana. (2010). *Metodologi penelitian: Model praktis penelitian kuantitatif dan kualitatif*. [https://simdos.unud.ac.id/uploads/file\\_penelitian\\_1\\_dir/23731890cdc8189968cf15105c651573.pdf](https://simdos.unud.ac.id/uploads/file_penelitian_1_dir/23731890cdc8189968cf15105c651573.pdf)
- Syafiq, A. (2014). Wakaf tunai untuk pemberdayaan usaha kecil. *Jurnal Zakat Dan Wakaf*, 1(2), 404–428. <https://journal.iainkudus.ac.id/index.php/Ziswaf/article/view/1493>
- Wardiwyono, S., & Jayanti, A. F. (2021). Peran Islamic corporate social responsibility dalam memoderasi pengaruh zakat terhadap kinerja bank umum syariah. *Jurnal Akuntansi Dan Keuangan Islam*, 9(1), 73–89. <https://doi.org/10.35836/jakis.v9i1.241>
- Wardiyah, M. L. (2019). *Pengantar perbankan syariah*. CV. Pustaka Setia.
- Widyantoro, S. (2017). Implementasi kerjasama Indonesia dan Jepang dalam kebijakan Green industry. *Jurnal Bisnis Dan Manajemen (JBIMA)*, 5(1), 95–106. <https://journal.peradaban.ac.id/index.php/jbm/article/view/256>
- Yusuf, A. M. (2014). *Metode penelitian kuantitatif, kualitatif, dan penelitian gabungan*. Kencana.
- Zain, N. S., & Sori, Z. M. (2020). An exploratory study on Musharakah Sri Sukuk for the development of waqf properties/assets in Malaysia. *Qualitative Research in Financial Markets*, 12(3), 301–314. <https://doi.org/10.1108/QRFM-09-2018-0099>