

# Green Banking Disclosure: The Antecedents and It's Consequences

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**Abstract.** Climate change is the greatest threat for modern human civilization. However, banking industry participants still lack awareness of the significant role they play in addressing climate change. It's also noted that the concept of green banking is still relatively new. This study investigates the antecedents and consequences of green banking disclosure. Based on agency theory, legitimacy theory, and resource based theory and the result of previous studies, ten hypotheses were formulated to explain the green banking phenomenon. To test the hypotheses, the current researchers documented secondary data on corporate governance, firm-specific, green banking, profitability, and reputation. Using the purposive sampling method, 30 commercial banks registered by the Indonesian Financial Service Authority were chosen as the final sample, resulting in 150 firm-year data that could be analyzed. Structural Equation Modelling-Partial Least Square, including bootstrapping, was used to analyze the data. The analysis shows that green banking practices benefit banks by enhancing their profitability and reputation. The impact of green banking disclosure on the possible benefit is significantly higher in conventional banks than in Islamic banks. The results also indicate that corporate governance, company size, and company age significantly impact green banking disclosure. Nevertheless, those variables do not show such an association for Islamic bank. This study provides new insight into the practice of green banking disclosure in Indonesia. It does so by comparing the disclosure made by conventional and Islamic banks in Indonesia, what factors determine the disclosure and what benefits the bank can get by disclosing their green banking initiatives.

**Keywords:** green banking, sustainable finance, CSR, antecedents, consequences

## 1. Introduction

Environmental damage is one of the ten biggest threats to human life that must be of concern to all countries and the world community [1]. In fact, the Secretary General of the United Nations, Antonio Guterres, said that one of the environmental damages in the form of climate change is the biggest threat to modern human civilization. Furthermore, [2] said that climate change is a crisis multiplier that has a profound impact on international stability and peace.

The climate change, marked by changes in temperature and weather patterns in the long term, can threaten food security, the availability of natural resources, and human migration, which can cause tension between countries or regions [2]

Even though climate change has been one of the goals in the Sustainable Development Goals and has been the main agenda in the Paris Agreement since 2015, the increase in the earth's temperature continues to occur and is even more alarming. [3] report that from 1981 to 2019, new records for the earth's temperature are constantly created. In addition, the Intergovernmental Panel on Climate Change also says that carbon emissions during the 2010-2019 period were the highest in the history of human civilization [4]. It means that the earth is not doing well, and climate change must be responded promptly.

In the 2018 UN Global Submit, the UN Secretary-General said that the financial and investment sector could be essential in mitigating and adapting to climate change and increasing community resilience in facing climate change. It can be done by channeling climate action financing and investments such as investment for environmentally friendly businesses, the creation of renewable energy sources, and others. Therefore, banks that are part of the infrastructure in the financial system should adopt and implement the green banking concept to support the global climate change agenda.

In the Indonesian context, to respond to the climate change mitigation agenda echoed by the United Nations, the Financial Services Authority (written FSA hereafter) has issued FSA Regulation 51 of 2017 concerning sustainable finance for all financial service institutions, including banks. The issuance of this regulation is accompanied by the obligation to make a Sustainable Finance Action Plan. This obligation makes the demand for green banking disclosure practices even stronger. However, [5] report that green banking disclosure practices in Indonesia are still changing from year to year. Each bank has different choices regarding green banking practices and how to disclose them. [6] also stated that the development of green banking disclosure practices is still slow. It could be because actors in the banking world still do not fully understand what benefits can be obtained from this disclosure practice. Awareness of banking business players about the magnitude of their role in supporting climate change is still lacking. In addition, it must also be remembered that the concept of green banking is still relatively new.

This research aims to analyze the influencing factors (antecedents) of green banking disclosure, and the benefits (consequences) banks will obtain when applying green banking. As previously stated, understanding the benefits banks will receive from disclosing green banking will increase the motivation of banking business actors to carry out green banking. Furthermore, the role of banks in supporting sustainable finance as part of climate actions will increase. This research will also be helpful for the development of sustainable finance, including Islamic finance. The relatively new concept of sustainable finance and green banking disclosure continues to develop. The innovation process in developing concepts and

practices from both needs to be continuously improved. Furthermore, updating research on both of them should always be carried out in order to obtain the latest finding.

## **2. Literature Review**

### **2.1. Green Banking Disclosure**

Banks, as a form of financial service institution, have a very strategic role in the economy nationally and globally. The existence of a bank allows the transfer of funds from fund surplus parties to fund minus parties so that the economic system can run smoothly. In line with the SDGs agenda and the Paris Agreement in dealing with climate change, banks can take an essential role through sustainable finance.

The European Commission defines sustainable finance as making investment decisions that consider the environment, society, and governance to create more long-term investments in sustainable activities and projects [7]. All forms of financial service institutions can practice sustainable finance to implement the corporate social responsibility (CSR) of these institutions towards society and the environment. Sustainable finance is often referred to as green banking in the banking industry.

Regarding green banking, these terms can be interpreted as an effort to implement, support, and promote environmentally friendly financial and economic practices and reduce carbon footprints in bank operations both internally and externally [8]. [9] identified green banking practices at state-owned banks in Indonesia and found that green banking practices are carried out in the form of green products, operations, customers, and policies. Furthermore, some previous studies such as [6][8][9][10] [11] identified green banking practices into 21 items. Unlike in general, the research conducted by [12] used 38 items, while the study by [13] used 16 items. The difference in the number of these items indicates that there is still no standard regarding green banking practices.

### **2.2. Prior Empirical Research**

Previous research on green banking can be grouped into several groups. The first group is descriptive research aiming to qualitatively identify green banking practices [9][13][14]. The second group is research aimed at analyzing green banking practices' determinants. Research in the second group reports that corporate governance is proxied by the board of directors, independent commissioners, and ownership structure as the factors that most often influence green banking practices [9][12][15] Apart from corporate governance, previous studies have also identified firm specifics such as credit risk, capital adequacy, growth in bank size, and age as factors that also influence green banking practices [6][15][16][17] Hoque, Masum, and Babu, 2021). In addition, [16] also found the effect of CSR on green banking. However, the

findings of [16] contradict [10], who failed to find a significant effect of CSR on green banking.

The following research group is research aimed at analyzing the benefits or consequences obtained by banks from green banking practices. [6][8][12][18] prove that green banking will increase firm value. In addition, [6][10] [19] as well as [20] report that green banking affects bank profitability. Green banking practices also impact bank social responsibility practices [6][18]. Besides finding the benefits of green banking in increasing profitability and CSR social responsibility practices, [6] also found that green banking can affect reputation and accountability.

The last research group is research that examines the role of green banking as a mediating variable. [6] proved that green banking can mediate the influence of corporate governance to generate benefits for banks, including increasing bank profitability and reputation. However, research conducted by [10] cannot prove the role of green banking in mediating CSR practices to improve bank performance.

The results of previous research previously indicated that green banking practice is a complex phenomenon that cannot be sufficiently observed with a simple or one-way model. Green banking is a practice that various conditions can influence. From an economic and financial perspective, green banking practices, which are expected to have a sustainable positive impact on the earth, also provide more benefits for the bank itself. Based on the explanation earlier, research is needed to see green banking practices as a complex phenomenon that is currently still limited. Therefore, the study intends to fill this void.

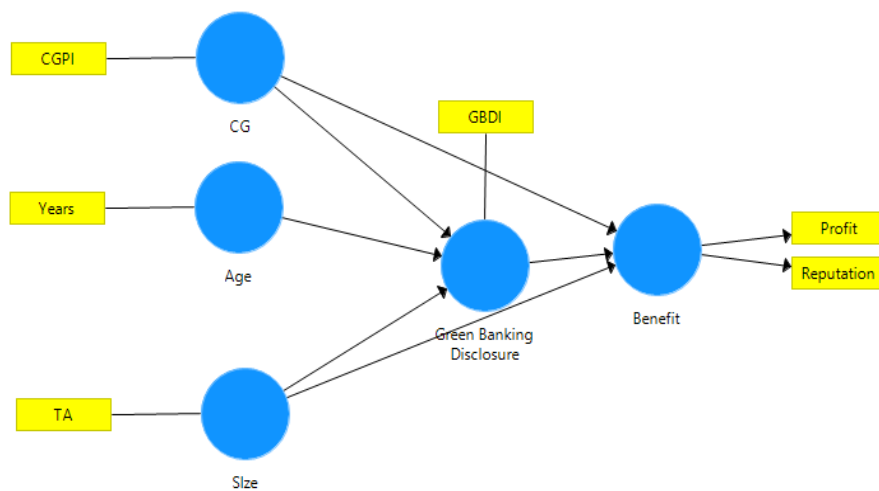
### **2.3. Theoretical Framework and Hypotheses Formulation**

Based on the results of the empirical studies described earlier and several theories such as institutional theory, agency theory, legitimacy theory, and resource-based theory, the conceptual framework in this study is shown in **Figure 1**.

Referring to the model depicted in **Figure 1**, green banking disclosure might be affected by corporate governance (GC) and firm-specific factors such as bank age and size. Corporate governance is usually proxied by the board of directors, independent commissioners, or ownership structure. According to institutional theory, as the number of board directors gets bigger, the pressure for the director to act environmentally friendly will get bigger. It is because a larger board of director are more under regulatory surveillance [21][22]. Similarly, as the number of independent commissioners increases, a company or bank tends to be more environmentally friendly. More independent commissioners mean more monitoring mechanisms to ensure management for acting ecologically. In terms of ownership structure, bigger public ownership means more extensive public scrutiny. Thus, a company or bank with bigger public ownership needs to be more environmentally friendly to legitimize its existence. Also, companies with bigger institutional ownership tend to have better

environmental actions or initiatives since institutions may have more power to force managers to act environmentally.

In the case of firm-specific, bigger and older banks tend to have more public scrutiny because they are usually more familiar and recognizable. Thus, they need to act environmentally friendly to legitimize their existence. Additionally, from a resource-based theory perspective, banks with large total assets have more resources to fulfill their responsibility toward stakeholders, society, and the environment. Thus, larger banks tend to disclose more green banking initiatives or actions.



**Figure. 1.** The Research Model

Furthermore, **Figure 1** also implies that green banking disclosure might benefit the bank by increasing its profit or reputation. Based on legitimacy theory, banks with good green banking disclosure tend to have good legitimation from the public. Therefore, they will be able to focus more on their operation because less public scrutiny results in better company performance. Additionally, [23] reported that green banking could reduce operational costs by minimizing stationary, water, and energy use. They also noted that green banking could enhance employee productivity by optimizing technology use. Reducing operating costs and improving employee productivity are promising signs for increasing bank performance, as a resource-based theory explains it. From an institutional theory point of view, banks with good green disclosure show that the banks have followed environmental regulations. Thus, the possibility of the banks earning ecological awards as a proxy of bank reputation will increase.

Based on the earlier discussion, ten hypotheses were developed to achieve the aim of this study. In summary, the ten hypotheses are shown in Table 1.

**Table 1.** Research Hypotheses

Code	Hypotheses	Parameter
H1	Corporate governance has a positive impact on green banking disclosure	CG → GB
H2	Bank age has a positive impact on green banking disclosure	Age → GB
H3	Bank size has a positive impact on green banking disclosure	Size → GB
H4	Corporate governance has a positive impact on benefits.	CG → Benefit
H5	Bank age has a positive impact on benefits.	Age → Benefit
H6	Bank size has a positive impact on benefits.	Size → Benefit
H7	Green banking disclosure has a positive impact on benefits.	GB → Benefit
H8	Corporate governance has an indirect impact on benefits through green banking disclosure.	CG → GB→Benefit
H9	Bank age has an indirect impact on benefits through green banking disclosure.	Age → GB→Benefit
H10	Bank size has an indirect impact on benefits through green banking disclosure.	Size → GB→Benefit

### 3. Research Method

This study involves 71 commercial banks registered by The Indonesian Financial Services Authority (FSA) as the study population. Using the purposive sampling method, the study sample was selected from the banks that meet the following criteria: 1). Registered by FSA in Indonesia, 2). Their annual reports from 2016 to 2020 were available and accessible; 3). Disclosing information related to green banking, 4). Having complete data related to research variables. Table 2 summarizes the final sample based on the sample selection criteria.

**Table 2.** Sample Selection Process

No	Sampling Criteria	Total	Conventional Bank	Islamic Bank
1	Number of Conventional and Islamic Banks registered in Financial Services Authority from 2017 to 2021	71	57	14
2	Bank with inaccessible annual report	(0)	(0)	(0)
3	Bank without information related to <i>green banking disclosure</i> and or <i>Corporate Governance Perception Index (CGPI)</i>	(41)	(32)	(9)
<b>Number of banks as the final sample</b>		30	23	7
<b>Number of data observations in 5 years (firm year)</b>		150	115	35

The final sample of this study is 150 firm-year data from 30 commercial banks, comprising 115 data from conventional commercial banks and 35 from Islamic commercial banks. Secondary data related to the research variables was documented from the annual report of each sample bank. For the green banking disclosure variable, the data were documented through content

analysis using Khan *et al.* (2021)'s 21 items as the benchmark. The research variables consist of dependent, independent, and mediating variables. Table 3 briefly displays the research variables, their measurements and where the data related to them were collected.

**Table 3.** The Research Variables

	Research Variables	Data Sources	Data Sources
Independent	Corporate governance (CGPI)	Corporate Governance Index	Corporate Governance Report
	Banks' age (Age)	Number of years when the bank was born up to the end of the observation year	Company Profile in Annual Reports
	Bank's size (TA)	Total asset	Balance Sheets
Dependent	Profitability (ROA)	ROA	Income Statement
	Reputation (Rep)	Dummy variable of 1 if the bank received any environment award and 0 otherwise.	Description of the banks' achievements provided in annual reports
Mediating	Green Banking Disclosure Index (GBDI)	GBDI = (number of disclosed items: 21) x 100%	Green banking disclosure in annual reports.

Regarding the data analysis method, this study utilized descriptive statistics analysis and Structural Equation Modeling-Partial Least Square (SEM-PLS). Descriptive statistics are used to describe the sample's data characteristics in terms of means, minimum, maximum, and deviation standard. For SEM-PLS, the method is used to test the research hypotheses. In turn, the results of hypothesis testing are used as a basis for answering the research question. The SEM-PLS analysis was executed using SMART PLS Version 3.

#### 4. Result and Discussion

Table 4 presents the results of the descriptive statistics analysis. It provides an overview of the research sample, primarily related to the mean, deviation standard, minimum, and maximum value of each variable.

**Table 4.** Descriptive Statistics of the Variables

Variables	Mean	Deviation Standard	Min	Max
GBDI (%)	78.47	20.35	10.00	100.00
CGI	85.42	7.18	34.25	95.34
Age (year)	31.69	19.33	4.00	73.00
TA (billion Rp)	189,206.31	312,092.74	1,974.45	1416,758.84
ROA (%)	1.36	2.03	-10.77	8.00

Variables	Mean	Deviation Standard	Min	Max
Reputation	Percentage of banks with an environmental award			53%
	Percentage of banks without an environmental award			47%

Table 4 shows that the average level of green banking disclosure in the 30 banks registered by OJK was high (78.47). It means that out of 21 green banking items that must be disclosed in the annual report suggested by [8], only approximately 4 items were not disclosed. Bank Central Asia (BCA) even disclosed all green banking items in five consecutive years of observation. Bank Mandiri Taspen also disclosed all green banking items in the last two straight years of the observation. These findings indicate that although green banking disclosure is voluntary, the commercial banks included in this study have made good disclosures. It seems that these banks are environmentally friendly. The slight green banking standard deviation, compared to the average, indicates that the variation in green banking disclosures in the sample during the observation period is relatively small. It means that the practice of Indonesian banks in disclosing green banking initiatives is fairly uniform.

Although several banks experienced losses during the observation period, Table 4 shows that the soundness of the banks sampled in this study in terms of ROA was healthy. In 2018, Bank Permata recorded the highest ROA during the observation period. For company size, Bank Rakyat Indonesia (BRI) is the bank with the most considerable total assets, but in terms of age, Bank Nasional Indonesia (BNI) is the oldest bank.

With regard to the results of the Structural Equation Modeling-Partial Least Square analysis, Table 5 and Table 6 present the summary of the results.

**Table 5.** Path Coefficient and Hypotheses Testing

Hypotheses	Parameter	All Banks			Conventional Banks	Islamic Banks
		Coefficient	t-value	p-value	Coefficient	Coefficient
H1	CG → GB	0,233	1,990	0,047**	3,514***	0,034
H2	Age → GB	0,542	1,746	0,081*	3,999***	0,795
H3	Size → GB	-0,398	1,205	0,229	4,071***	1,144
H4	CG → Benefit	0,164	1,181	0,238	4,750***	0,384
H5	Age → Benefit	0,745	2,253	0,025**	0,341	0,698
H6	Size → Benefit	-0,571	1,575	0,116	0,010	0,775



Hypotheses	Parameter	All Banks			Conventional Banks	Islamic Banks
		Coefficient	t-value	p-value	Coefficient	Coefficient
H7	GB → Benefit	0,214	2,286	0,023**	3,047***	0,551
H8	CG → GB→Benefit	0,050	1,977	0,049**	2,283**	0,015
H9	Age → GB→Benefit	0,116	1,308	0,191	2,219**	0,238
Note: ***Significant at 1% sig level			**Significant at 5% sig level		*Significant at 10% sig level	

**Table 6** Coefficient Determination

Dependent Variables	The Adjusted of R-square Values		
	All Banks	Conventional Banks	Islamic Banks
Green Banking Disclosure	10,9%	26,8%	9,2%
Benefit	20,9%	35,0%	9,1%

Table 5 presents the path coefficient, t-value and p-value for the overall, conventional, and Islamic banks models. Meanwhile, Table 6 displays the adjusted R-square value of the research model with green banking and benefit as the dependent variables.

Several conclusions can be drawn from Table 5. Firstly, two variables significantly influence green banking in a sample of all commercial banks registered by FSA in Indonesia (overall model). Those two variables are corporate governance and the bank's age. Secondly, for the models of conventional banks, all independent variables, which are corporate governance, bank age, and bank size, significantly affect green banking disclosure. In contrast, for the research model of Islamic commercial banks, none of the independent variables affects green banking disclosure.

With regard to the variable of benefits as measured by profitability and reputation, green banking is proven to provide significant benefits for the reputation and profitability of commercial banks both in the overall model and conventional banks' model. This result is confirmed by a further analysis using PLS which shows that, at the 1% level, green banking disclosure positively affects ROA and reputation with a beta coefficient of 0.165 and 0.322, respectively.

In general, firm age and corporate governance positively affect green banking practices. Older banks tend to disclose green banking practices better than younger ones. Likewise, banks with good corporate governance have high green banking disclosure. The model of conventional

banks found that bank size also affects green banking disclosure. However, the effect of company size on green banking in conventional banks has a negative sign. It means that the bigger the size of the bank, the less likely it is to practice green banking disclosure.

In short, the results of the hypotheses testing are summarized in Table 7. The table shows whether each hypothesis is supported or rejected in the overall, conventional, and Islamic banks models.

**Table 7.** Summary of the Hypotheses Testing Results

Code	Hypotheses	Decision		
		All Banks	Conventional Banks	Islamic Banks
H1	Corporate governance has a positive impact on green banking disclosure	<b>Supported</b>	<b>Supported</b>	Rejected
H2	Bank age has a positive impact on green banking disclosure	<b>Supported</b>	<b>Supported</b>	Rejected
H3	Bank size has a positive impact on green banking disclosure	Rejected	<b>Supported</b>	Rejected
H4	Corporate governance has a positive impact on benefits.	Rejected	<b>Supported</b>	Rejected
H5	Bank age has a positive impact on benefits.	<b>Supported</b>	Rejected	Rejected
H6	Bank size has a positive impact on benefits.	Rejected	Rejected	Rejected
H7	Green banking disclosure has a positive impact on benefits.	<b>Supported</b>	<b>Supported</b>	Rejected
H8	Corporate governance has an indirect impact on benefits through green banking disclosure.	<b>Supported</b>	<b>Supported</b>	Rejected
H9	Bank age has an indirect impact on benefits through green banking disclosure.	Rejected	<b>Supported</b>	Rejected
H10	Bank size has an indirect impact on benefits through green banking disclosure.	Rejected	<b>Supported</b>	Rejected

With regard to the test results of the coefficient of determination, the value of the adjusted R square ranges from 9.1% to 26.8%. It shows that corporate governance variables, bank age, and bank size explain 9.1% to 35% of the variation in green banking disclosure and its benefits for commercial banks. Other variables not examined in this study may explain the remaining 89.9% to 65%. Furthermore, the research model using data samples from conventional banks has the best predictive ability compared to models from all banks and data from Islamic commercial banks. The research model using sample data from Islamic commercial banks has the slightest predictive power. Therefore, this research has not adequately explained the phenomenon of green banking in Islamic commercial banks. It may be due to the relatively small number of analytical samples. Because the number of Islamic banks that attached green banking disclosures was only six, even though the observations had been made for five years, the total amount of observation data was still insufficient for analysis using SMART PLS.

In the context of conventional commercial banks, this research has successfully explained the green banking phenomenon as expected by researchers. Green banking practices benefit banks through increased profit-generating capabilities and reputation. Meanwhile, the implementation of green banking is influenced by the quality of corporate governance and bank age.

## **5. Conclusion and Recommendation**

This study aims to investigate the antecedents and consequences of green banking disclosure in Indonesia's conventional and Islamic commercial banks. A hundred and fifty firm-year data were documented from Indonesia's commercial banks' annual reports through content analysis. The results of SEM-PLS analysis show that green banking disclosure benefits conventional banks in terms of increasing profitability and reputation. With regard to the factor influencing green banking disclosure, this study confirms that corporate governance and firm-specific determinants significantly affect green banking disclosure in conventional banks. Similarly, this study also confirms that green banking disclosure could play a mediating role in enhancing the impact of corporate governance on reputation and profitability, as well as firm-specific determinants on reputation and profitability. However, it is not the case for Islamic banks, as the low number of data did not support all of the hypotheses in the Islamic banks model.

The finding of this study might be beneficial for banking practitioners in understanding the benefit of green banking disclosure. Additionally, policymakers could use the results to develop programs or activities to encourage green banking initiatives and innovations among banking practitioners. Though this study has already utilized 150 firm-year data for the overall model, it only involved 30 firm-year data from Islamic banks. Future researchers are encouraged to employ more data related to Islamic banks.

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